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Supported by
Pakistan Resilience Partnership
August 2021

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District Level Hazard and Vulnerability Assessment in the Karakoram

By

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Bachelors Thesis

DEDICATION

To my parents and grandparents, for their endless prayers on my back. My siblings, who have been my constant support and pillars of strength. Especially my sister, Nida, who has guided me throughout my life and without whom I could never have been able to complete my research work.

ACKNOWLEDGEMENTS

I am thankful to Almighty Allah who is the most powerful and beneficent. I am grateful to Dr. Siddique Ullah Baig for his efforts and support. I wish to express my sincere gratitude to the local inhabitants of Gilgit Baltistan especially Hammad Bhai for helping me out with the relevant data. Special thanks to my Department and colleagues for guiding me whenever I needed assistance. The guidance and support received from all the members who contributed to this study was vital for the completion of this study. I am gratifying to all of them for their constant support and guidance either directly or indirectly towards completion of my thesis.

Nirmeen Nadeem Janjua

ABSTRACT

Over the last three decades, Pakistan has experienced extraordinary transformation in economic activities and population growth. As inclined to threats and with a majority of inhabitants in high-risk areas, there is a critical need to address the different hazards (man-made as well as natural) and the risks (cumulative) which they present at multiple levels. In our study, an evaluation of such hazards was carried out, based on their severity and recurrence. Expert opinion was taken in regard and vulnerability and hazard potential factors were derived. A combined total risk assessment map, addressing the physical, environmental and socio-economic dimensions of vulnerability was then fashioned for the districts of Gilgit-Baltistan, Pakistan. The total integrated vulnerability map in return discloses the coping capacity and extent of damage, providing support to the local authorities, non-governmental organizations and disaster prevention officers. According to our results, Ghanche (82.06%), Kharmang (100.82%) and Shigar (96.42%) had the highest vulnerability risk whereas, Diamer (197.49%) district has the lowest vulnerability risk. The total vulnerability results showed that districts with medium and high vulnerability levels correspond to the areas with low points of economic activity. The total hazard risk data indicated that district Gilgit has the highest total hazard risk of 295.15 % followed by Hunza (264.15%). Diamer and Kharmang are among the districts with the lowest hazard risk of 46.2 % and 53.4 % respectively. The hazard analysis indicates that 30% of the total Gilgit-Baltistan region lies within the high-risk zone and only 10% falls within the low risk zones. Higher risk areas constitute regions with both hazard and vulnerability risks at higher levels. Moreover, disaster management in Pakistan, especially about natural hazards, concentrates mainly on relief and rescue practices. There is a lack of information and little insight of the procedures involved in risk assessment and management, hazard identification, and the connection between people's livelihoods and disaster preparedness. Each hazard is unique and has a spatial component that defines when a hazard transforms into a disaster, and therefore may affect susceptibility to spatially pertinent natural hazards.

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LIST OF ABBREVIATIONS

FAO	Food and Agriculture Organization
GB	Gilgit-Baltistan
GBDMA	Gilgit Baltistan Disaster Management Authority
GIS	Geographic Information System
GLOFs	Glacial Lake Outburst Floods
GSP	Geological Survey of Pakistan
HDI	Human Development Index
HVA	Hazard vulnerability analysis
LHZ	Landslide Hazard Zonation
NDMA	National Disaster Management Authority
PMD	Pakistan Meteorological Department
SUPARCO	Space and Upper Atmosphere Research Commission System
UNDP	United Nations Development Program
WFP	World Food Program
WMO	World Meteorological Organization

Chapter 1

Introduction

Introduction

Pakistan is one of the most natural disaster-prone countries in the world. Hydro-metrological hazards particularly heavy rain falls induce flash floods are permanent feature of Pakistan. All provinces of Pakistan including Gilgit-Baltistan are vulnerable to geo-hydro metrological disasters (Afzal et al., 2009).

Karakoram is one of the most geographically active areas of the world, located in plate boundary between the Eurasian plate and the Indo-Australian plate. The distinctive geography and environmental conditions of Gilgit-Baltistan have collectively increased the vulnerability of area. Western edge located districts of Gilgit-Baltistan, are extremely predisposed to hydro meteorological hazards during spring, summer, and winter (Easterling et al., 2000). As Karakoram is characterized by a topography of sharp slopes and rocky peaks with great heights, it exhibits several natural disasters. Floods, GLOFs, rock sliding, avalanches, land slips, earthquakes are a list of natural disasters threatening the districts (Ghizer, Shigar, Nagar) in Pakistan's Himalayan region of Gilgit Baltistan. They are also liable to medium to low intensity earthquakes which occur throughout the Karakoram region at frequent intervals (Rafiq et al., 2012).

Glacial Lake Outburst Floods (GLOFs) pose a great threat for the downstream populations in context of shifting climatic conditions in the glaciated zones of Pakistan. The residents at a substantial distance downstream, from the volatile lakes, are exposed to life-threatening hazards to their properties and lives. This situation entails an in-depth observance on GLOF hazard in the proximity North Himalayan area (Rasul et al., 2008). As a result of increased rate of glaciers melting in the Himalayas, massive lakes have emerged which impose a threat of floods into the surrounding areas due to lake outbursts. Floods are the main cause of socio-economic damages faced by the area and happen every year or every alternate year. Main cause for these floods is lakes and glaciers located at high altitude zones (alpine). Heavy rains, snow melt and thunderstorm cause flooding. Flash floods, landslides, rock fall, debris flow, and GLOF have caused mass level damage to livelihood assets (Hewitt, 1982).

As a result of climate change and rising temperature, glaciers of our region are under serious threat. A series of GLOF chain events in the Karakoram Range and upper Hunza valley within a short period of time, in the year 2008, had an overwhelming effect on the near-by communities. The occurrence of such events has increased over the past few years as a result of the increased events of glacier lakes created at glacier terminus (end). For the past two

hundred years, the Karakoram Range has documented about 35 different detrimental outbursts of floods (Habib et al., 2017).

The steep geography of this area and glacier/snow melts in the higher mountains, as well as frequent precipitation has exacerbated the threats. Villages among the upper (single cropping) zones continue to stay isolated for around 2-3 months every year because of floods, landslides, avalanches, or some other natural incident (Roohi et al., 2012). The areas vulnerable to natural disasters, induced by climate change, impose life threatening situations for the residents. Ghizer Valley struggles with the gravest floods in over decades. Several glaciers (underground) lakes under nallahs impose threat as they could burst and cause unforeseen disaster. This situation highlights a picture of repeated natural hazards, which have an impact on almost all the communities located in such districts of Pakistan (Hussain et al., 2005).

Monsoon floods and flash floods are the major disasters with high occurrence. Their intensity depends upon the extent of rain and can result in large magnitude of disruption. In order to cope and to assign tasks, the GBDMA has allocated responsibilities and roles to partner organizations and departments, for the flood contingency plan (Searle and Michael, 2011).

1.1 Hazard Assessment

1.1.1 Hazard Scenarios in Pakistan

Pakistan is subjected to several catastrophic events including seismic tremors, cyclones, floods, droughts, and landslides (Ganser, 1975).

Earthquakes

Pakistan is located on a series of tectonic plates and experiences earthquakes of various intensities (GSP 2001). They happen ordinarily along the Karakorum and Himalayan range, to some parts of Hindu Kush towards the north, and Koh-e-Suleiman Range in the west. Also Mekran and Zob fault line, along the south-west coast (Azar and rain, 2007).

Cyclones

According to the World Disaster Report of 2003, the coastal belt of Pakistan (960 km long) faces periodical spells of cyclones, causing harm to the property and life of the coastal regions, particularly of Gawadar, Thatta and Badin (Cicone et al., 2003).

Floods

Floods influence many parts of the South Asian region and Pakistan is one of the 5 regions that has the highest average annual number of individuals affected by flooding (UNDP 2001).

The muddy fields of Indus stream are prone to occasional flooding. During the summer storms, riverine floods occur (especially along the Indus plain). Frequent landslides and streak floods occur in the northern mountains and western parts of the country (Afzal et al., 2009).

Drought

Pakistan is most likely to be affected by the dangerous impact of global warming. Dry spell or drought is one of the likely consequences of such weather shift, causing the drying of wetlands and lowering of water table levels (PMD 2002). Areas that are more prone to such conditions are located along the eastern and southwestern parts of Pakistan (Cicone et al., 2003).

1.1.2 Hazard Scenario in the Districts of Gilgit Baltistan

Landslides

Landslide is a significant geological threat that affects the social and natural environment of a region. Annually, it causes an average loss of 1000 lives and properties of worth $4 billion. Such damages can be avoided for up to 90% if the problems are identified beforehand. Therefore, hazard assessments must be analyzed at various levels (Bessarabov, 2015).

GLOFs

The catastrophic outburst of water reservoirs that have formed either in the front, at the sides, beneath, within or at the surface of glacier is termed as Glacier lake outburst floods. GLOFs occur mostly independent of hydro-meteorological floods, but they can exceed their peak emissions according to the magnitude the upper river reaches. Glacier lakes blocked by discarded moraines are more susceptible to outbursts that is triggered by debris or ice falls, earthquakes, piping, or overflowing waves that surpass the shear endurance of dam. Such lakes are developed behind uneven ice-cored moraines, and can possibly burst, producing GLOFs. These catastrophic events mostly remain unrecorded in terrains located at remote areas, thereby eroding the barriers within no time, releasing sediment-loaded floods that travel downstream for >100 km (Muhammad et al., 2019).

Flood

Pakistan's population in the North-Western region faces from time to time different naturally induced disasters and their impacts. Causalities and material loss, every year, caused by such flooding, significantly affects the low-income residents. The topographic disparity, physical land characteristics, and the climatic setup are also key contributors in the exacerbation of

flood in the province (Afzal et al., 2009). Flood peaks caused by GLOFs typically mitigate inside Himalayan headwaters, but it can compete with the monsoon-fed flows in the rivers kilometers downstream. Given the increasing developments in infrastructure, population and hydropower projects, hazards related to such lake outburst should be addressed. Monsoonal floods are amongst the highly damaging natural hazards in the Hindu Kush, greater Himalayan region, and Karakoram (Fleischhauer, 2006).

Earthquakes

An earthquake (also known as a tremor, quake, or temblor) is the trembling of surface of Earth as a result of sudden release of force in Earth's lithosphere that generates seismic waves. The intensity of earthquakes can range from very weak to such vicious enough to push people and objects in air and cause destruction across cities. The seismicity of an area is the size, type, and frequency of earthquake experienced over a time period (Flint and Luloff, 2005). The extent of destruction depends on the intensity of seismic activity, subsurface geology, local topographic features, and groundwater. A powerful earthquake is always followed by a series of aftershocks. The intensity of shaking of ground will vary within areas due to factors as bedrock type, topography, and orientation as well as the location of the fault rupture. These factors affect the outcome of seismic waves (Gilbert, 1995).

Glaciers

Continued glacier melt in the regions of Himalayas has progressively generated more than 5,000 glacier lakes that are controlled by moraines that are potentially unstable. Breakage of such dams or glacier lake outburst floods can lead to geomorphic and societal impacts that are catastrophic in nature. Future projected glacial loss can generate unpredictable moraine-dammed lakes than today. Furthermore, GLOF hazard may arise in the regions that presently have few lakes but large glaciers (Grieving, 2006).

1.2 Vulnerability Assessment

Vulnerability is a process as well as a condition, which is a result of various factors. It is fairly a new approach that links up risk investigation with hazard distributions and implies it to the susceptibility of communities, individuals, or regions in relation to their technological and natural hazards (Clark et al., 1998). The increase in vulnerability in return increases the susceptibility of an area or community, to a hazard that results from social, physical, and environmental aspects (Cutter, 1996). As it depends on the ability of the community or an area to withstand or react to a particular disaster, hence it involves the concepts of coping and response (Adnan and Ullah, 2020).

Vulnerability imposes a social nature and is limited not only to demographic determinants or physical damage (Cutter, 1996). It states that disasters occur only when the losses caused by it exceed the capability of population to cope with it (Birkmann, 2007).

1.3 Hazard-Vulnerability Analysis

Hazard vulnerability analysis (HVA) is a methodical approach for detecting risks and hazards that are likely to impact the adjoining community. Hazard Vulnerability Analysis (risk assessment) is an objective evaluation of the possibility of damage or adverse outcomes when social and physical elements are subjected to potentially damaging technological and natural hazards (Cutter, 2003). A hazard is described as an agent that can induce harm to any susceptible target. Hazards can be characterized as either natural or/and human induced.

Natural disasters can arise at any given time, with no warning and are believed to be more hazardous than the man-made catastrophes (Weapons of Mass Destruction). Natural risk research holds significant importance to increase community awareness and reconstructing events so that the events of destruction and property loss can be minimized (Joyce et al., 2009).

The effects that these disasters have on human lives is not only dependent on the extent of exposure but is also on how efficient they are along with their surroundings for anticipating, coping with, resisting, and recovering from their consequences. One may take into consideration that environment is a disaster or hazard agent and the roots of disaster and risk are in the physical environment (Kumpulainen, 2006). From this viewpoint, disasters are considered as a function of external mediators and the communities as the targets of extreme incidents. Alternative viewpoints also exist which put societal circumstances within the focal point of disaster descriptions and interpretations, in which disasters are not certainly the inevitable consequence of a hazard's impact but is an outcome of intersections amongst average vulnerabilities and hazards (Staines, 2002).

For the analysis of the vulnerability and related hazards of an area, a multi-faceted type spatial planning is needed, involving a multitask approach. The resulting total risk assessment map then allows the assessment of whether the extent of risk is associated to an area's vulnerability, its hazard potential, or to both, and facilitates the simple graphical depiction of disaster risk (Tralli et al., 2005). The Delphi method implemented for the determination of the suitable weightings for total vulnerability and total hazard assessments is based on the common insight of the relevance of vulnerabilities and hazards to districts (Wu et al., 2002).

In this study, an assessment was undertaken of the hazards that were selected based on their frequency and severity. Moreover, hazard potential and vulnerability aspects were first established upon the assertion of expert's opinion (Martin, 2005). A combination of the said variables was then utilized to make a risk evaluation/assessment map that focuses on the environmental, physical, and financial aspects of vulnerability for the different districts of Gilgit Baltistan. The study includes a number of hazardous events that occur naturally such as earthquakes, GLOF, floods, landslides and avalanches etc. (Ali et al., 2015).

Pakistan has undergone extraordinary shifts regarding economic and population situations. As a hazard inclined nation, with more individuals living in high-chance (high risk) regions than any other time, it is progressively significant to effectively address the natural characteristic, man-made hazards, and the aggregate risks that they present at various spatial and temporal scales (Cook and Butz, 2015).

This common insight can help us in providing a vital foundation for the consensus among local authorities and policy makers to.

(a) Determine an acceptable degree of risk,

(b) Determine the level of protection that needs to be placed, and

(c) Determine the predefined mitigation measures (best) for application.

Chapter 2

Literature Review

Pakistan is situated in South Asia, sharing borders with Iran, India, China, and Afghanistan. The land covers a total area of 770,875 km^2, divided in as three geographic regions: the Indus River plain, Balochistan Plateau, and the northern mountain ranges (the Karakorum, Himalayas, and the Hindukush). The climate differs largely depending on the topography, but majority of the country is covered by dry deserts – 60% of total land area is categorized as arid, receiving less than 200 mm of annual rainfall (ADRC, 2016). Despite the semi-arid to arid conditions, Pakistan covers a wide range of ecosystems, categorized into twelve vegetative zones from cold deserts and snowfields, to swamps and mangrove forests at the Indus River plains (Baig and Al-Subaiee, 2009).

Pakistan is amongst the most disaster-prone countries in the region of South Asia, that has undergone an approximate 18 billion US$ in losses and damages during the last decade (World Bank, 2017). Tectonic developments at the colliding boundaries of the Eurasian and Indian tectonic plates in the region are causing substantial seismic instabilities. As a result of seasonal low depressions emerging over the Bay of Bengal or the Arabian sea, regular flooding at the Indus river basin cause major floods during the period of July-September monsoon season (NDMI, NDMA, UNDP, 2007). Heat waves in the summers may also lead to flooding at numerous sites because of rivers being snow-fed. Other hazards include landslides, droughts, cyclones, storms, avalanches, glacial lake outburst floods (GLOFs), and technological accidents (NDMI, NDMA, UNDP, 2007). The Climate Vulnerability Index of 2019 has ranked Pakistan 8th amongst the 10 most affected countries, because of extreme weather conditions between 1997 and 2016 (German Watch, 2019).

2.1 Economic Impact of Disasters

Several large-scale disasters affected Pakistan and the development of its economy. As a country predisposed to disasters, with high exposure to geophysical and hydro meteorological hazards and reoccurring seasonal characteristics, damages caused by earthquakes, storms, droughts, flooding, and landslides are very common (ADRC, 2016). Disasters have a deep impact on economic growth, affecting not only the human capital but also the assets and infrastructure in a way which effects the annual GDP negatively.

During the period 1998-2001, a harsh period of drought lowered the GDP growth by 50% (LEAD, 2015). Followed by the 2005 earthquake in Kashmir, the flooding in 2010, 2011 earthquake, and severe flooding in 2012. These reoccurring incidents have led to 1.16% reduction (on average) of the annual national GDP and compelled the households to redirect

resources from the productive sectors towards recovery and rebuilding activities (LEAD, 2015). In 2010, unprecedented monsoonal rains caused heavy flooding of the Indus River that propagated through Khyber Pakhtunkhwa, Balochistan, Punjab, and Sindh, encompassing almost one fifth of the total land area in water as a result of which approximately 7 million people were left homeless. The flooding was the most destructive event, causing US$ 4.5 billion in overall agricultural damages and losses (FAO, 2018).

The overall cost of the flooding (in terms of direct damage and indirect losses) was estimated to reach US$ 10.1 billion, with additional costs for reconstruction, estimated to be US$ 6.8 billion in the Preliminary Damage and Needs Assessment (ADB, World Bank & the Government of Pakistan, 2010). According to the Fiscal Disaster Risk Assessment, the economic impact of flooding alone has caused an estimated loss and annual damage of up to US$ 1.8 billion, which is an equivalent of 0.5 percent of the annual GDP (World Bank and GFDRR, 2015), and caused an estimated loss of 3-4 percent to the annual federal budget.

The impact of such events affects low-income households the most. As an agricultural country, the agriculture sector is one of the crucial contributors to the household economy of Pakistan, as almost 45% of the total work force is employed in agriculture (Usman, 2016). It contributed to almost 19% of the yearly GDP between 2017 and 2018 and has undergone a growth of 3.81% as the manufacture of cash crops began rising (Ministry of Finance, 2018). Livelihoods in the rural regions are more and more subjected to the impacts of adverse weather, and as a result of harsh conditions and lack of livelihood, families are becoming more vulnerable to climate change and the related hazards.

2.2 Social Impact of Disasters

Disasters affects human life adversely. The 2010 flooding affected an approximate of 18 million people, caused 1984 casualties, dislocated about 150,000 families, and destroyed or damaged approximately 1.8 million houses across the 78 affected districts (WHO, 2011). Among the 9,721 health facilities in the country, 515 were either destroyed or damaged. The interruption in the delivery of health services because of the lack of medication, medical equipment, and displaced staff were restricting the effectiveness of relief efforts.

Monthly household incomes in the regions dropped by half. Income generation or livelihoods took up to six months to recuperate in regions that suffered severe impacts of flooding (Kirsch et al., 2012). The households led by a person without any formal education recovered at a much slower rate due to lower socio-economic background (Kirsch et al., 2012),

suggesting that poor households were amongst the hardest hit. Half a million cases of dysentery and other diseases had been reported as a result of the flooding by August 2010, and approximately 3.5 million children were estimated to be at risk of contracting cholera, diarrhea, and other water-borne diseases (Looney, 2012). Months following the flooding, cases of Crimean-Congo hemorrhagic fever, cholera, dengue, polio, measles, and diphtheria started developing (Warraich et al., 2011). Such losses of livelihoods and health impacts following the cascading disasters affect families due to the enforced need to redirect the resources to recovery events. Also the children with low-income backgrounds are forced to drop out of education in order to seek employment opportunities as to support their families (LEAD, 2015).

2.3 Disaster Risk Profile

2.3.1 Hazards and Climate Change

Pakistan is under strain from various hazards, comprising seismic activity beginning in the Himalayan region, along with frequent hydro meteorological hazards such as cyclones, flooding, and adverse weather. Coastal areas are prone to swell waves and cyclones, the low-lying plains of Indus River are prone to flooding, the northern regions are highly vulnerable to avalanches, landslides, snowstorms, and earthquakes (Ullah and Takaaki, 2016). These events occur frequently and at all scales, thus escalating vulnerabilities and generating cycles of poverty as they erode the strength of highly vulnerable inhabiting extremely exposed areas.

Most damaging events in the past have been floods, cyclones, landslides, and droughts; 75% of all the disasters between 1980 and 2013 have occurred because of hydro meteorological hazards (Ullah and Takaaki, 2016). Seismic events still impose an alarming situation due to the vicinity of the Himalayan zone, activity of which has triggered severe large-scale earthquakes.

Karakoram Glaciers have showed declining stability, resulting in the increased risk of GLOFs because of melting. About 80% of the Hassanabad village has been found to be highly exposed to large-scale flooding in the near future, and the low-lying areas of Hunza River are vulnerable to catastrophic damages as they are in the locality of the Shishper glacier which has shown highly anomalous behavior due to melting 2018-2019 (Shah et al., 2019).

Climate change has adverse effects on the major food crops, and the increasing population has been assumed to face the dilemma of decreased food security (Ali, 2017). Around 90% of the agricultural output comes from irrigated land, and 50 to 80% of water running through the

irrigation network is obtained directly from the glaciers and snow melt in the Hindukush mountain ranges (USAID, 2013). Thus, any change in the glacier mass could significantly decrease the availability of water and affect the energy production as 33 percent of the energy supply is hydropower driven (USAID, 2013).

2.3.2 Exposure

Millions of individuals in Pakistan are subjected to the environment by living in the locality of flood plains, the ocean or in the northern regions predisposed to seismic activity and landslides. One of the vital resources in Pakistan is water. Increasing temperature and fewer rainfall, as a result of changing rainfall patterns and climate change may increase the frequency of droughts. Pakistan has been categorized among the most water-stressed countries; between 1947 and 2013, per capita water availability has been decreased nearly six-fold (Abid et al., 2016). In rural regions, where farming is a lifeline of many, climate change and decreasing water resources are a substantial threat. In terms of tectonic hazards, due to the complex web of active fault lines, earthquakes are common and have a potential to cause massive-scale destruction mainly in the northern mountainous regions.

Flash flooding is causing significant damage to livelihoods. Such events are common especially in the mountain ranges due to steep topography and unpredictable climate which increases the soil instability (Shabir, 2013). Deforestation has been a contributor to the increased flood damages along the Indus river basin, especially in regions where illegal felling and clearing of riverine forests for farmland and settlements have reduced the natural buffer zones to prevent inundation (White, 2011). Forest cover decline and environmental degradation have been found to be prevalent in most of the regions (Baig and Al-Subaiee, 2009).

2.3.3 Socio-Economic Vulnerability

Nearly 80 percent of the poor populations reside in rural regions and are heavily dependent on agriculture and the availability of water for irrigation (Abid et al., 2016). Thus, rural farmers are disproportionately vulnerable to variations in the regional weather patterns because they often do not have access to improved seeds or advanced technologies which could lessen climatic risks (Abid et al., 2016), and because they may adopt negative coping mechanisms such as planting weather resilient cotton which is more resilient to weather but requires increased irrigation – which in turn contributes to lessened availability of water (Mustafa et al., 2018). Thus, due to lack of other options, climate change has forced

households to adopt methods which increase vulnerability to droughts as a trade-off for environmental resilience. In the coastal communities, where low-income households are engaged with fishing or agriculture, families tend to be disproportionally affected by climate change, especially if they lack basic infrastructure, income diversification opportunities, and access to education (Salik et al., 2015)

Also, the poorest and landless tend to inhabit low-lying regions and on the peripheries of villages, rendering them increasingly exposed to flooding impacts (Ullah and Takaaki, 2016). Highly vulnerable regions have been considered to have lowest income and education levels, with limited access to clean water and infrastructure (Rafiq and Blaschke, 2012). The issues of low quality housing for the poor are partly structural and have roots in the structure of the economy; 68 percent of the population (lowest income) have 1 percent of the available housing units within their buying reach (Siddiqui, 2014), indicating that the poorest are forced out of safer areas.

2.3.4 Physical Vulnerability

It has also been established that in regions where poverty is high, increase in physical vulnerability follows. The landless and the poor tend to construct low-cost houses with easily available materials, and such buildings are susceptible to damages of disasters due to lack of engineering (Ullah and Takaaki, 2016). According to a risk assessment, well developed areas and major hubs of economic activities have a very low risk ranking, whereas low-income districts with high numbers of vulnerable populations in the south-west (including Gawadar, Turbat, Khuzdar, Awaran and Bolan) and some areas in the north have a very high risk of flooding, earthquakes, droughts or cyclones (Rafiq and Blaschke, 2012).

2.4 Hazard Assessment Methodology

To reduce risk in a population, it is important to decide.

a) The temporal and spatial patterns of various risks i.e. the timespan and areas of various risks and hazards,

b) The potential severity of a specific hazard, and

c) The degree of exposure to hazards (UNDP, 2001) (UNDP, 2003).

Unfortunately, several factors combine and make this a difficult task, including the lack of proper and practically duplicate information regarding the spatial area as well as the extent of hazards, their span, and intensities. Pakistan is predisposed to various natural hazards, but due

insufficient accessibility to information, only five hazard types have been selected for this investigation (Rehman et al., 2014).

Even though these five hazard types (earthquakes, floods, landslides, GLOF's, and Glaciers) are considerably significant for the region of Gilgit Baltistan, they do not however represent a comprehensive list. They have been categorized by the number of hazardous events and their intensities along with their incidents (Khan et al., 2016).

As every hazard is unique, with specific characteristics (with respect to their intensity and recurrence), it is difficult to classify all the types of hazards. Each hazard type was therefore characterized individually, based on the combined intensity and frequency of hazard type (Bhatta et al., 2019).

2.4.1 Landslide Hazards

Landslides are natural events that may get turned into a hazard, leading to loss of lives and destruction of man-made and natural structures. For landslide hazard and risk management, its hazard assessment is used. Geographical Information System (GIS) and Remote Sensing are the tools extensively being used since the last decade to evaluate landslide hazards (Adnan and Ullah, 2020). High-resolution satellite data and Aerial photographs are beneficial in the mapping, detection, and monitoring of landslide processes. LHZ models that are GIS based not only help to monitor and map landslides, but also assist in the prediction of future slope catastrophes. The developments in Geo-spatial technologies have unlocked doors for accurate and detailed assessment of hazards. Hazard zonation can be used to determine the susceptibility of an area to landslides (Rafiq and Blaschke, 2012). A landslide hazard map can be utilized as a tool, to help in the identification of land areas suited best for development (by examining the potential risk of land sliding). Furthermore, the identification of susceptible landslide area can help in the development of investment projects that can prevent, avoid, or significantly reduce the hazard (Fleischhauer, 2006).

Landslide hazard can be calculated by.

- The determination of Acceptable Risk
- Landslide Hazard Mapping
- Integration of Landslide Hazard Zonation Maps into the Development Planning Process

2.4.2 GLOFs Hazards

Disasters associated to GLOFs have had the highest death toll worldwide in the Himalayas. In the past 200 year's history of GB it has observed 35 destructive GLOF events. In accordance with data, the intensity and frequency of GLOF events have significantly increased over the recent years. Five different GLOF events arose through the year 2008-2009, in the Gojal valley of district Hunza. Analysis of GLOF events demonstrates that these events were connected to the conditions (weather) in terms of rainfall, temperature rise, and heat waves (Roohi et al., 2012). Meteorological data sets of two types, (Observed data from Pakistan Meteorological Department, Reanalysis data from National Centre for Environmental Prediction and Water and Power Development Authority Pakistan) have been utilized to study the weather conditions (current) for GLOF events. GLOF hazard is responsible for many historic lake outbursts and several lakes currently present (Azar and Rain, 2007).

Following factors were selected from glacial characteristics to assess the hazard degrees of GLOFs,

- The scale of glacial lakes,
- Downstream gullies.
- Meteorological conditions, moraine dam parameters

2.4.3 Flood Hazard

Information from 3 exclusive sources have been merged by methods for Geographic Information System (GIS):

- The most flood inclined areas, as explored by the PMD,
- A flood dissemination map for Pakistan from the WMO,
- Those districts that are most prone to be influenced, as shown by the Federal Flood Commission of Pakistan (Grieiving, 2006).

2.4.4 Earthquake Hazard

The distribution of seismic zones and chronological records of earthquake occurrences were analyzed and projected by Geological Survey of Pakistan (GSP). It was also utilized to differentiate the areas that are more inclined towards seismic activities (Tralli et al., 2005).

2.4.5 Glaciers Hazard

Glaciers around the world are significantly shrinking because of climate change. As a result, more melt water is storing in the lake systems behind moraine dams (at high altitude), especially in the Andes and Himalayas. Simultaneously, to flourish economic growth along with high demands of resources and electricity, high altitude mining and hydropower generation is becoming progressively important. Prolonged glacier melts in the Himalayas region has progressively created more than 5,000 glacier lakes, dammed by unstable moraines (Ali et al., 2015).

2.5 Vulnerability Indicator Descriptions

A few indicators used in this study are enlisted below (Rafiq and Blaschke, 2012)

- Increased population of an area can enhance the damage along with the worsening of situation by the combination of inadequate access to health services and low-income levels.
- The 'house structure' generally indicates the physical vulnerability of an area and can be indicative of the social position of community. For example, a high number of mud houses may decrease the coping ability of an area against flooding and can intensify the damage.
- When reflecting vulnerability at a local scale, income level is considered as a vital factor (Habib et al., 2017).
- It is commonly assumed that households with high income levels are less vulnerable as compared to those with low income (Birkmann, 2007); high income levels can consequently be considered to enhance the coping capacity and reduce vulnerability.
- Degree of dependency within households is another important factor (Azar and Rain, 2007).
- Children and the elderly are the most vulnerable groups during disaster events, but only child dependency ratios have been used due to the lack of demographic information available.
- The 'literacy ratio' measures a community's ability to understand written information. It is assumed that people with a low educational level fail to understand information concerning risks, which decreases their capacity for coping and hence are more vulnerable.

- The ‘hospital bed per 1000 population’ indicator determines the capacity per district of government health-care facilities. This is assumed to have great impact on the coping capacity of an area in terms of emergency response and mitigation activities during disaster events.
- Research and experience have shown that forests also play an important role in reducing the vulnerability of communities to natural disasters, in terms of both reducing their physical exposure to natural hazards and providing them with the livelihood resources to withstand and recover from crises. The damage potential for less forested areas will therefore increase, which ultimately means that the coping capacity of the community will decrease (Clark et al., 1998)).
- A greater amount of agricultural land may generally indicate increased agricultural productivity, generating rural jobs and raising the income levels of the rural inhabitants, but the damage potential of agricultural land from severe floods is high (Cutter, 1996) (Cutter, 2000).

According to literature, Pakistan has no suitable spatial planning tool. Awareness about natural hazards and the associated risks has significantly amplified over years in Pakistan (Khan and Salman, 2012). However, effectiveness of such planning and their management associated activities remain limited. An assessment of social susceptibility with regards to environmental hazards that utilizes county scale indicators throughout United States (Cutter, 2003) presented guidance regarding study in Pakistan. However, certain custom changes are necessary while designing the methodology for Pakistan, as insufficient data is available for the understanding of social vulnerabilities (at local level), or of the relation between social and biophysical vulnerabilities. Instead, proxy indicators have been derived either from auxiliary data by implying GIS analyses or by census data. Data from relevant literature (Cutter, 1996) (Clark et al., 1998) has showed that combined multi-hazard risk approaches are however still very rare in many parts of the world.

2.6 Problem Statement

The region of Gilgit Baltistan is prone to different Hazard and Vulnerability factors. A constant major challenge for Gilgit Baltistan’s authorities is that natural hazards happen frequently. Each hazard is unique and has a spatial component that defines when a hazard

transforms into a disaster, and therefore may affect susceptibility to spatially pertinent natural hazards. As it is almost impractical to forecast and prevent such occurrences, we must prepare ourselves to minimize the damages because of these disasters.

2.7 Objectives

1. To identify and investigate naturally induced historical events (e.g. Earthquakes, Landslides, Lake Outbursts, Glaciers and Floods) in ten districts of Northern Pakistan (Gilgit Baltistan).
2. To investigate hazard and vulnerability indicators in 10 districts of Gilgit Baltistan (Karakoram) Pakistan.
3. To analyze risk and vulnerability based on historical events and vulnerability indicators."

Chapter 3

Materials and Methods

3.1 Study Area



Figure 3.1 Districts of Gilgit-Baltistan

The Karakoram is situated among one of the world's most geologically active areas, at the plate boundary between Eurasian and Indo-Australian plate. It ranges about 500 km (311 mi) in length and has the highest number of glaciers in the world outside the Polar Regions. The study was conducted in 10 districts of Gilgit Baltistan such as Shigar, Nagar, Hunza, Astore etc., to get a better understanding of naturally induced events and to analyze the risk and vulnerability of such events which have had taken place in those regions and which have the potential to occur in near future (Rahim et al., 2018).

3.2 Sampling Technique and Sampling Size

The study was conducted through stratified random sampling. The study aimed at selecting different strata. The sample size consisted of 20 individuals from whom information about their respective districts (villages) in Gilgit Baltistan was asked and according to that further study was conducted through the help of questionnaires, interviews, GIS maps and reports (Adnan and Ullah, 2020).

3.2.1 Data Collection

1) Primary Data: Through questionnaires. Primary source of data collection was the local community of Gilgit-Baltistan and the officials.

2) Secondary Data*:* Through maps and reports. Secondary source of data collection was from

the published reports and maps which have had helped in identifying the different fort lines present in that region.

3.3 Total Hazard Classification

The significance of different hazards is defined in terms of their frequency and intensity. Therefore, weighted percentages were assigned accordingly. Helmer in 1996 developed Delphi method that was adopted in this study to allocate weights for each Hazard type. The expert opinions and advices taken under consideration are mostly from Disaster management organizations from research and development institutions (NDMA, GBDM etc.) (Roohi et al., 2012). Total Hazard risk map was created by adding together the weighted intensities of each hazard type, then classifying them into overall hazard classes/scaling (i.e.) 1 (least affected), 2 (low), 3 (medium) and 4 (highly affected), respectively (Birkmann, 2007).

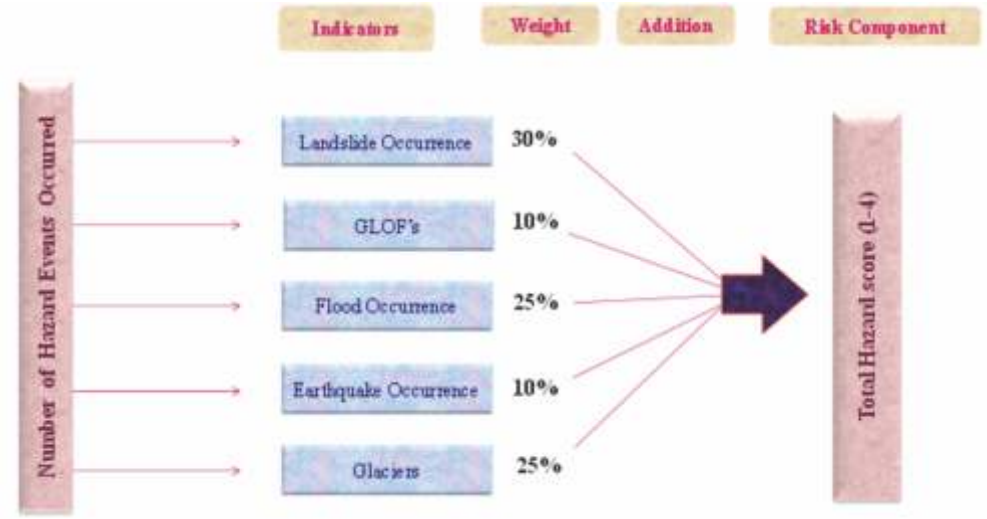

Figure 3.2 Calculation of total Hazard score

3.4 Vulnerability Assessment Methodology

- Census Report Pakistan.
- Census Report Gilgit Baltistan.
- Land use/land cover data (derived from Landsat satellite data).
- Published statistical reports: FAO, WFP, and UNDP.
- Pakistan Socio-Economic Survey (Adnan and Ullah, 2020).

3.4.1 Vulnerability Indicator Selection

Total integrated vulnerability map uncovers the damage capacity and the coping potential of districts. Integration of environmental, socio-economic, and physical dimensions of vulnerability is used for the estimation of the potential damages and coping capacity (Habib et al., 2017). However, due to the versatile nature of vulnerability as well as data limitation, it is not an all-inclusive approach. To determine the vulnerability indicators covering both the extent of damage and coping capacity, both environmental, and physical considerations were selected (Rafiq and Blaschke, 2012).

Categories of Vulnerability	Indicators	Used in calculation	Class ranges
1. Population	Population Density	People/km2	High/Medium/Low
2. Poverty	» Poverty %	House Structure	High/Medium/Low
		(Kacha or Mud house)	
	» Income Range	Monthly Household Income	High/Medium/Low
	» Sanitation	Houses with no improved-	High/Medium/Low
		Water facilities %	
3. Education	Literacy Rate	Literacy Ratio %	High/Medium/Low
4. Health Facilities	» Total hospital facilities	Number of hospital facilities	High/Medium/Low
	(total number of doctors per	per 1000 population	
	1000 population + total no of		
	nurses per 1000 population +		
	Total number of hospital beds		
	per 1000 population)		
	» Hospitals	Total number of hospitals	High/Medium/Low
5. Life Expectancy	Life expectancy in years	Ratio %	High/Medium/Low
6. Degree of Dependancy	Age dependancy ratio		High/Medium/Low
7. Economic Activities	Agricultural Land		High/Medium/Low
8. Environment	Total Forest Land		High/Medium/Low

Table 3.1 Vulnerability indicators selection

Two sets of indicators were distinguished:

- Damage potential indicators: That apply to physical structures which can be destroyed/damaged by a hazard and to estimate the scale of possible damages in a region; and
- Coping capacity indicators: That reflect the ability of a community or a region to respond to or prepare for a hazard (Birkmann, 2007).

The lack of vulnerability-related datasets (socio-economic, environmental etc.) not only constrained our approach to the vulnerability assessment for the districts, but also limited the number of possible indicators. It has, however, been possible to identify nine indicators related to health, poverty, environment, and education (Azar and Rain, 2007).

3.5 Vulnerability Assessment in Gilgit Baltistan

3.5.1 Population Density

The total population density was obtained from Gilgit Baltistan Multiple Indicator Survey (2016).

3.5.2 Poverty (House Structure)

Total number of mud houses in each district was obtained from 'Food Insecurity in Pakistan – 2009' by WFP and Gilgit Baltistan Multiple Indicator Survey (2016).

3.5.3 Income Level

Average household income levels for each district were obtained from 'Food Insecurity in Pakistan – 2009' by WFP.

3.5.4 Literacy Rate

Literacy rate and percentage of education among (men/women/children) of different ages was obtained from Gilgit Baltistan Multiple Indicator Survey (2016).

3.5.5 Clean water Facility

The total number of houses in each district with access to clean water was obtained from Gilgit Baltistan Multiple Indicator Survey (2016), 'Food Insecurity in Pakistan – 2009' by WFP.

3.5.6 Degree of Dependency

The average ratio between the number of dependent children in a household and the number of economically active adults was obtained for each district from 'Food Insecurity in Pakistan.

3.5.7 Health Facilities

The total hospital facilities at district level has been measured on the basis of the total number of doctors per 1000 population, total number of nurses per 1000 population and hospital beds per 1000 population (obtained for each of the districts from the Pakistan Socioeconomic Survey.

3.5.8 Total Agricultural Land

Vector layers extracted from the National Land Use Plan for Pakistan (2003), prepared by SUPARCO (based on Landsat TM data) were utilized to measure the total area of agricultural land for each district.

3.5.9 Total Forest Land

Vector layers extracted from the National Land Use Plan (2003) were also utilized to calculate the total area of forest in each district.

3.6 Total Vulnerability Calculation

Although the indicators designated for the total vulnerability assessment are possibly interrelated, it has been presumed for this study that every indicator can contribute individualistically to the vulnerability of a community or individual. Hence, are considered distinctly. As the indicators were derived from various sources, values of each indicator were first aggregated, and a weighting was assigned (using Delphi method) before it could be used for total vulnerability classification. Figures were derived for the indicators and were ranked from 1 to 4 (1 high, 4 very low), using the Jenks' Natural Breaks Classification method provided as one of the classification choices in ArcGIS (Adnan and Ullah 2020) (Rafiq and Blaschke, 2012).

3.7 Risk Assessment Methodology

A collective total risk map was formed by merging the total vulnerability map with total hazard map, assigning equal weightage to the components in order to distinguish between areas that are at high risk because of their total hazard classification, their vulnerability, or both (Grieiving, 2006) (Rafiq and Blaschke, 2012).



Figure 3.3 Calculation of total Vulnerability score

Chapter 4

Results and Analysis

4.1 Vulnerability Analysis:

As shown in the table given below, different factors were used to analyze the vulnerability risk of the districts. According to the results, Hunza has the highest literacy rate of 14.36 % whereas, Ghanche has the lowest literacy rate, being 8.72 % as compared to the other districts. Health facilities i.e. hospital facilities were distributed almost equally among Gilgit, Skardu and Hunza (0.2 %). However, districts such as Shigar, Nagar and Kharmang lacked these basic facilities. The life expectancy has been calculated the highest among the residents of Hunza, average being 95 years. The locals of Ghanche have an estimated average life expectancy of 58 years (the lowest among all the districts).

Degree of child dependency ranged from 0.01 to 0.04, with Gilgit and Astore having the dependency ratio as 0.04 % and Diamer with the lowest percentage of 0.01 %. Based on land area, Diamer covers the longest total forest land, with an estimated area of 1773.2 sq. /km^2 while Kharmang covers the lowest area of 5.47 sq. /km^2. Ghizer covers the longest agricultural land i.e. 110.8 sq. /km^2 while Shigar covers the smallest area of 5.06 sq. /km^2.

The population density is lowest in the district of Hunza, as being 0.64 % and the highest among the districts of Diamer and Kharmang (3.51%). The income range has been divided as high, medium, and low among the districts. Gilgit and Hunza share the highest income range, Ghizer, Nagar and Skardu fall among the medium income range whereas the other districts fall under the low-income range. The poverty percentage is the highest in the district of Diamer, being 14.3 % and was calculated as the lowest in the district of Ghizer (2.89 %).

Districts	HDI						Degree of Dependency		Environment				Population Density		Income Range		Poverty Percentage	
	Literacy Rate (%)		Health Facilities (Hospitals)		Life Expectancy (years)		(Child Dependency)		Total Forest Land (area sq./km^2)		Agricultural Land (area sq./km^2)							
		5%		5%		5%		10%		5%		5%		10%		15%		25%
Gilgit	67.10	**13.42**	5	**0.25**	65-85	**75**	0.38	**0.04**	253.95	**12.69**	43.10	**2.15**	15.13	**1.51**	High	**15**	23.5	**5.87**
Ghizer	64.00	**12.8**	2	**0.1**	55-75	**65**	0.22	**0.02**	63.13	**3.1**	110.8	**5.54**	19.71	**1.97**	Medium	**11.2**	11.5	**2.89**
Astore	55.10	**11.02**	3	**0.15**	70-90	**80**	0.39	**0.04**	300.17	**15**	31.16	**1.55**	22.38	**2.24**	Low	**6**	28.5	**7.12**
Hunza	71.80	**14.36**	4	**0.2**	90-100	**95**	0.21	**0.02**	3.82	**0.19**	9.33	**0.46**	6.40	**0.64**	High	**15**	13.7	**3.42**
Skardu	53.60	**10.72**	4	**0.2**	80-95	**87.5**	0.22	**0.02**	27.92	**1.39**	30.40	**1.52**	8.86	**0.89**	Medium	**11.2**	21.3	**5.34**

Districts	HDI						Degree of Dependency		Environment				Population Density		Income Range		Poverty Percentage	
	Literacy Rate (%)		Health Facilities (Hospitals)		Life Expectancy (years)		(Child Dependency)		Total Forest Land (area sq./km^2)		Agricultural Land (area sq./km^2)							
		5%		5%		5%		10%		5%		5%		10%		15%		25%
Diamer	66	**13.2**	3	**0.15**	61-77	**69**	0.67	**0.01**	1773.2	**88.6**	54.39	**2.71**	35.05	**3.51**	Low	**6**	57.2	**14.3**
Shigar	46.40	**9.28**	0	**0**	66-78	**72**	0.21	**0.02**	13.54	**0.6**	5.06	**0.2**	19.56	**1.96**	Low	**6**	25.4	**6.36**
Kharmang	49.90	**9.98**	0	**0**	64-80	**72**	0.22	**0.02**	5.47	**0.2**	45.99	**2.2**	35.05	**3.51**	Low	**6**	27.6	**6.91**
Nagar	66.40	**13.28**	0	**0**	73-88	**80.5**	0.21	**0.02**	46.44	**2.3**	21.40	**1.07**	10.27	**1.03**	Medium	**11.2**	13.7	**3.42**
Ghanche	43.60	**8.72**	1	**0.05**	51-65	**58**	0.24	**0.02**	4.29	**0.21**	30.48	**1.52**	26.65	**2.67**	Low	**6**	19.5	**4.87**

Table 4.1 Vulnerability chart

Based on this data, total vulnerability risk was calculated. The vulnerability risk was inversely proportional to the percentage obtained i.e. the district with highest calculated risk has the lowest vulnerability risk. Therefore, Ghanche, Kharmang and Shigar had the highest vulnerability risk.



Figure 4.1 Total vulnerability risk

The districts were assigned a range based on the calculations determined. The scale along with the vulnerability risk range is mentioned below. According to this, Diamer district has the lowest vulnerability risk as compared to district Shigar, Kharmang and Ghanche that have the highest vulnerability risk.

Scale	Total vulnerability risk
4	100 and below
3	101-120
2	121-150
1	151-above

Table 4.2 Scale for total Vulnerability risk

	SCALING (1-4)			
Districts	1	2	3	4
1.Gilgit	2	2		
2. Ghizer	3	3	3	
3. Astore	2	2		
4.Hunza	2	2		
5. Skardu	3	3	3	
6. Diamer	1			
7. Shigar	4	4	4	4
8. Kharmang	4	4	4	4
9. Nagar	3	3	3	
10. Ghanche	4	4	4	4

Table 4.3 Scaling of districts

A graphical representation of scaling is shown below. Different districts along with their scale points can be clearly seen.

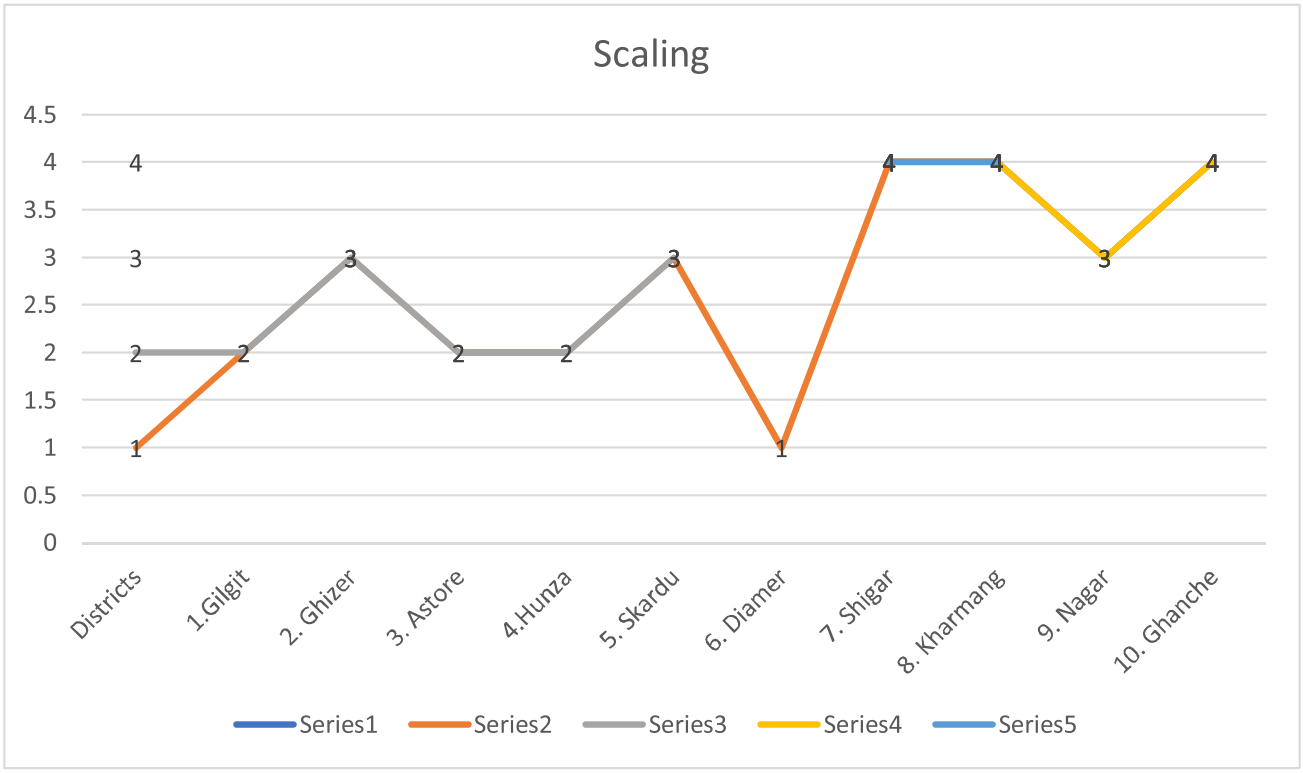

Figure 4.2 Scaling of districts

Districts	Landslides		GLOF's		Flood (Hazard)		Earthquakes (no of events)		Glaciers	
		30%		**10%**		**25%**		**10%**		**25%**
1. Gilgit	90	**27**	8	**0.8**	High (100%)	**25**	6	**0.6**	967	**241.75**
2. Ghizer	75	**22.5**	-	**0**	High (100%)	**25**	1	**0.1**	770	**192.5**
3. Astore	80	**24**	9	**0.9**	Medium (75%)	**18.75**	1	**0.1**	434	**108.5**
4. Hunza	111	**33.3**	8	**0.8**	High (100%)	**25**	3	**0.3**	819	**204..75**
5. Skardu	70	**21**	-	**0**	High (100%)	**25**	5	**0.5**	431	**107.75**
6. Diamer	45	**13.5**	-	**0**	High (100%)	**25**	2	**0.2**	30	**7.5**
7. Shigar	15	**4.5**	-	**0**	High (100%)	**25**	1	**0.1**	439	**109.75**
8. Kharmang	11	**3.3**	-	**0**	High (100%)	**25**	1	**0.1**	100	**25**
9. Nagar	19	**5.7**	-	**0**	High (100%)	**25**	1	**0.1**	540	**135**
10. Ghanche	65	**19.5**	6	**0.6**	High (100%)	**25**	2	**0.2**	120	**30**
Total:	**581**		**31**				**23**		**4650**	

Table 4.4 Hazard chart

Different hazards encountered by the districts were analyzed and the data was compiled as shown in the table above. According to our findings, district Hunza has the highest risk of landslides, about 33.3% whereas Kharmang has the lowest risk of about 3.3 %. Astore, Hunza and Gilgit are also prone to GLOFs, with being the estimated risk as 0.9, 0.8 and 0.8, respectively. Other than Astore (which has a medium risk), all the other districts have a very high risk of flooding, for up to 100 %.

Gilgit and Skardu have had the highest incidents of earthquakes, 0.6 and 0.5 % respectively. Gilgit district has the highest number of glaciers followed by Hunza. Diamer district however shares the lowest number of glaciers.

According to our findings, total hazard risk of the districts was estimated. According to which, district Gilgit has the highest total hazard risk of 295.15 % followed by Hunza (264.15%). Diamer and Kharmang are among the districts with the lowest hazard risk of 46.2 % and 53.4 % respectively.

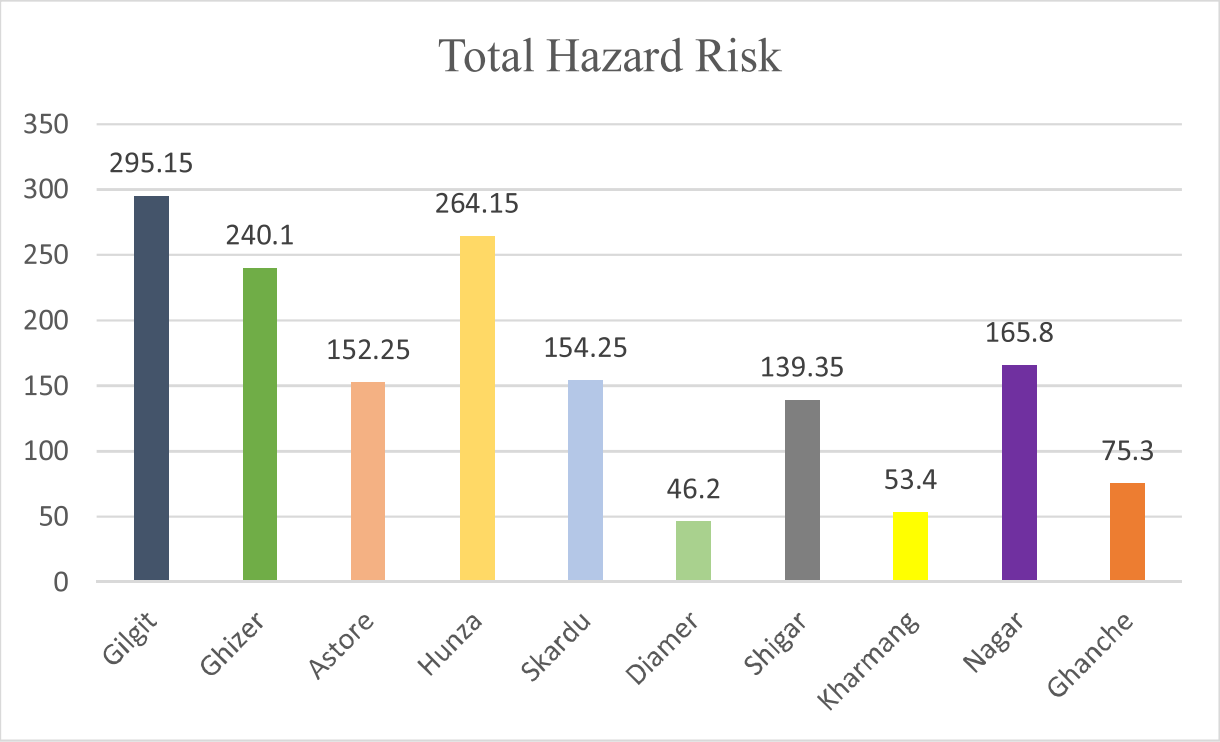

Figure 4.3 Total Hazard risk

Scale	Total hazard risk
4	181 and above
3	101-180
2	50-100
1	Below 50

Table 4.5 Scale for Total hazard risk

A scale was developed as shown in the table above. According to this, the different districts were analyzed into 4 different scales based on the total hazard risk calculated.

	SCALING (1-4)			
Districts	1	2	3	4
1.Gilgit	2	2		
2. Ghizer	3	3	3	
3. Astore	2	2		
4.Hunza	2	2		
5. Skardu	3	3	3	
6. Diamer	1			
7. Shigar	4	4	4	4
8. Kharmang	4	4	4	4
9. Nagar	3	3	3	
10. Ghanche	4	4	4	4

Table 4.6 Scaling of districts

According to the findings, Gilgit, Ghizer and Hunza fall under the category of areas with the highest hazard risk and Diamer district has the lowest hazard risk.

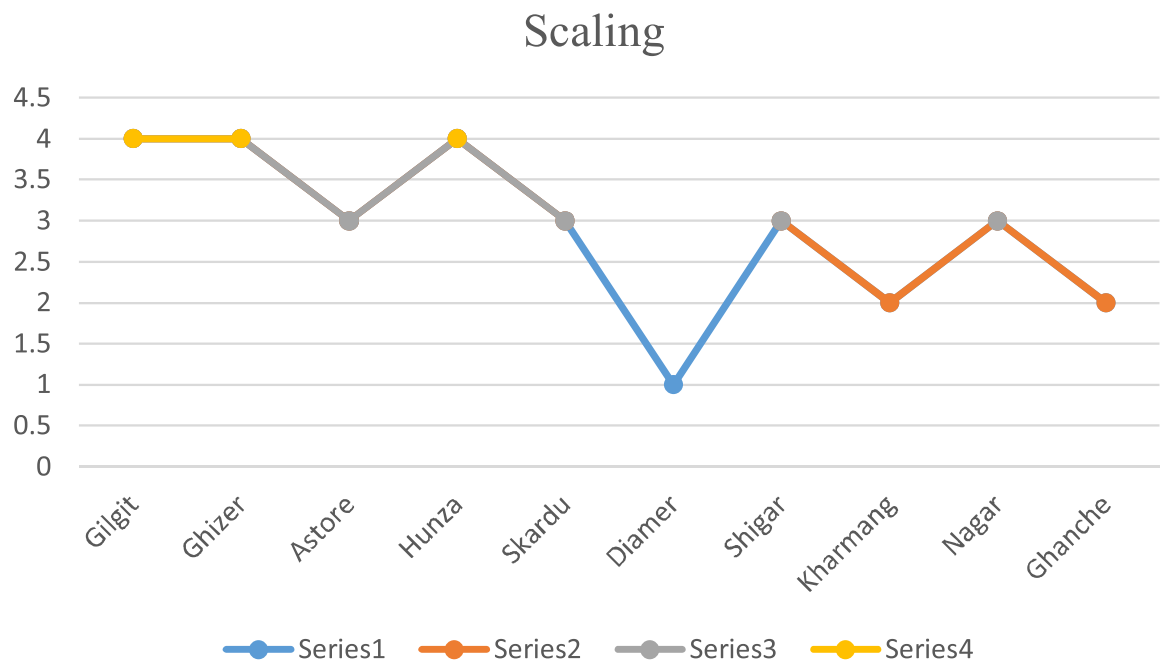

Figure 4.4 Scaling of districts

Chapter 5

Discussion and Conclusion

5.1 Total Hazard Analysis

The hazard analysis of our findings indicates 30% of the total Gilgit-Baltistan region lies within the high-risk zone and only 10% falls within the low risk zones. High risk zone districts include Gilgit, Ghizer and Hunza whereas Diamer district constitutes the low hazard risk zone.

5.2 Total Vulnerability Analysis

The total vulnerability calculation results showed that districts with medium and high vulnerability levels correspond to the areas with low points of economic activity, in particularly among those having the lowest education and income levels. Shigar, Kharmang and Ghanche constitute the highest vulnerability risk and Diamer (similar to hazard risk) constitute the lowest vulnerability risk.

5.3 Total Risk Analysis

Higher risk areas constitute regions with both hazard and vulnerability risks at higher levels, while lower risk areas befall where both the risks are low (Rafiq and Blaschke, 2012).

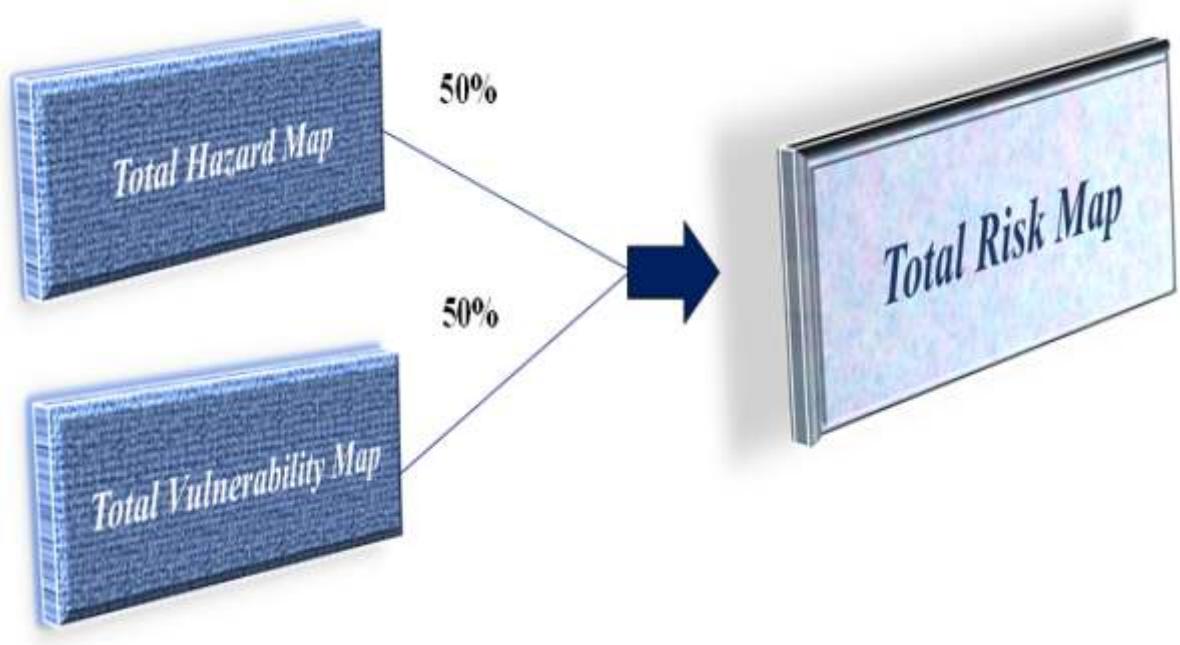

Figure 5.1 Total Risk Evaluation score

Disaster Risk and Vulnerability, Gilgit Baltistan.



Figure 5.2 Districts by hazards and vulnerability analysis

Making a general interpretation and disregarding certain anomalies, the total risk assessment map naturally divides Gilgit-Baltistan into four comprehensive multi risk zones: very low risk, low risk, moderate to high risk and high-risk zones. The total risk assessment map evidently demonstrates that incidents of high frequency natural hazards and extremely high vulnerability constitute the high-risk areas (Adnan and Ullah, 2020).

On the basis of the methodology adopted and the data obtained from the study, a total of 30% of the total area of Gilgit-Baltistan falls under the category of high risk, about 35% under moderate to high risk, 25% constitute area under low risk while only 10% of the area falls under very low risk.

5.4 Conclusion

A constant major challenge for Pakistan's authorities is that natural hazards happen frequently. As it is almost impractical to forecast and prevent such occurrences, we must prepare ourselves to minimize the damages because of these disasters. Though, it can never be full proof, yet attempts in this direction can help us to minimize the scale of damages. Residents of such districts should not only be mindful about the relief measures of calamities but must also be educated about the measures to modify their livelihoods. Therefore, assessment of such natural events is vital for the betterment of society.

Moreover, disaster management in Pakistan, especially about natural hazards, concentrates mainly on relief and rescue practices. There is a lack of information and little insight of the procedures involved in risk assessment and management, hazard identification, and the connection between people's livelihoods and disaster preparedness. Each hazard is unique and has a spatial component that defines when a hazard transforms into a disaster, and therefore may affect susceptibility to spatially pertinent natural hazards.

5.5 Limitations

Due to partial availability of the data, a number of assumptions were made during the previous studies, setting certain limitations on the results

- The data relating to hazards was insufficient for the evaluation of total risk levels caused by a specific hazard or a combination of hazards. However, they were sufficient for the identification of the differences in a single or multi-hazard risk among various areas.
- The criteria be regarded as relative as allocating weights to various factors is a subjective process. Also, the judgments and observations involved might vary from one specialist to another.
- The multi-hazard risk ranking was conducted on district level. Therefore, the results identify only the most susceptible districts, devoid of sufficient spatial resolution for the identification of vulnerable areas among the districts.

Chapter 6

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Analyzing the Basic Level of Knowledge and Awareness among Healthcare Workers of Ayub Teaching Hospital regarding COVID-19

By

Romesa Abid

Bachelors Thesis

DEDICATION

This work is entirely dedicated to my esteemed parents, who have been a source of inspiration and strength when I felt like giving up, and who have consistently provided moral, spiritual, emotional, and financial support. Thank you for being there for me through thick and thin.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank ALLAH Almighty, the Most Merciful and Beneficent, for assisting me in finishing my final year report during these pandemic days. He gave me the strength and patience to work hard and consistently.

I'd like to thank my supervisor, Dr. Siddique Ullah Baig, who always encouraged and guided me to complete my research. I would not be able to succeed without his assistance

I would like to express my appreciation to the Ayub Teaching Hospital for their cooperation and sharing of valuable information.

I am eternally grateful to my parents for granting me permission to conduct research during the pandemic, as well as for their financial support and love.

Finally, I'd like to express my gratitude to my friends for their unending moral support and encouragement.

Romesa Abid

ABSTRACT

COVID19 is a pandemic that started in December 2019in China. The World Health Organization (WHO) has expressed concern that Pakistan could become the pandemic's next epicenter. Pakistani is currently unprepared to deal with the danger of an impending epidemic. The primary goal of this study was to evaluate the basic knowledge of health care workers (HCWs) of Ayub Teaching Hospital about COVID-19, its control, and prevention. The participants' knowledge of the symptoms, the spread of viral infection, and the vaccine was assessed. A self-designed questionnaire was distributed among HCWs in this cross-sectional study, including physicians (25%), nurses (25%), lab staff (15%), pharmacists (15%), paramedics (10%) and orderlies (10%). The findings revealed that people were unaware of COVID19 and infection prevention and control strategies. According to the findings, frontline staff are unprepared for the country's dire situation. Infection control program should be implemented and practiced, and it is dependent on knowledge, preparation, and cooperation.

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LIST OF ABBREVIATIONS

ATD	Abbottabad
COMSATS	The Commission on Science and Technology for Sustainable Development in the South
HEC	Higher Education Commission
WHO	World Health Organization
COVID	Coronavirus Disease
SARS	Severe Acute Respiratory Syndrome
SPHEC	Sixth Public Health of Emergency Services
MERS	Middle East Respiratory Syndrome
NCOC	National Command Operation Center
ATH	Ayub Teaching Hospital
PHEIC	Public Health Emergency of International Concern
CDC	Centers for Disease Control and Prevention
UNICEF	United Nations Children's Fund
HIV	Human Immunodeficiency Virus
PPE	*Personal Protective Equipment*
KPK	Khyber Pakhtunkhwa

Chapter 1
Introduction

1.1. Background

Pandemics are dissimilar to other disasters because of their wide scope and prolonged, unsteady timeline. COVID-19 (caused by the SARS-CoV-2 coronavirus) is shaping up to be different from previous coronavirus infections, impacting more than one organ system, not simply the lungs, inflicting widespread issues associated with thrombosis and inflammatory reactions.

On December 8, 2019, COVID-19 was first identified as a cluster of pneumonia cases of unknown an etiology in Wuhan, Hubei, Mainland China (Peng, 2020). Despite the fact that the initial cases seem to be linked to the Huanan South China Seafood Market, where animals such as birds, bats, and other were sold, the origin and source of the SARS-CoV-2 remain unknown. Bearing in mind, that a lot of the early patients worked in or visited the market in contrast to the exported cases, it was speculated that either person-to-person transmission or a more widespread animal source caused the endemic to become a pandemic (Zu ZY, 2020). Travel-related cases of COVID-19 infection had been announced by different countries (Millán-Oñate J, 2020). On January 30, 2020, the World Health Organization (WHO) declared the COVID-19 outbreak to be the sixth public health emergency services (SPHEC) (Satilmis Bilgin et al, 2020). This isn't the first time the coronavirus has spread. The Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome Coronavirus were among the previous coronavirus outbreaks (MERS-CoV).

1.2. Symptoms and Isolation Period

COVID-19 infection symptoms are similar to a cold, and include respiratory symptoms such as a dry cough, fever, and shortness of breath. The infection can cause pneumonia, severe acute respiratory syndrome, kidney failure, and death in more serious cases. (WHO, 2020). COVID-19 is commonly transmitted from person to person by coughing or sneezing, as well as air droplets secreted by the infected person's respiratory tract.

Quarantine is a historical preventative measure that plays an important role in the prevention of epidemics and pandemics. It is simply the isolation of a suspected patient for a set period of time (Manuell et al, 2010). During this isolation, if a person develops symptoms, he or she is transferred to a hospital for further treatment. If he or she does not exhibit any of these symptoms, he or she is released (Benjamin, Stratton and Sivitz, 2006). The quarantine period

varies according to the disease. According to current reports, the time between exposure and the onset of symptoms typically ranges from 2 to 14 days, with a 5-day average.

1.3. Timeline of the COVID-19 Pakistan

COVID-19 is thought to be spreading in Pakistan. On February 26, 2020, the first case of COVID-19 was reported in Karachi, Pakistan, with a population of 204.65 million people. The virus has gradually spread throughout the country and has now become epidemic. Within 45 days, on April 10, 2020, Pakistan had 4601 confirmed COVID-19 cases, 727 patients had recovered, and 66 patients had died.

According to Pakistan's most recent update on May 10, 2021, 861,473 coronavirus cases have been reported in the country. Till now, Islamabad has reported 78,200 cases, Punjab has reported 319,365, Sindh has reported 292,644 cases, Khyber Pakhtunkhwa has reported 124,484 cases, Baluchistan has reported 23,9447, and Azad Jammu Kashmir has reported nearly 17,945 cases. Punjab accounts for about a third of all incidents. Sindh had the second-highest number of cases (34%), followed by Khyber Pakhtunkhwa (33%). (KPK; 14 percent). The lowest number of incidents (2%) were reported in Azad Jammu Kashmir (AJK), followed by Islamabad (9 percent). In Pakistan, a total of 18,993 people have died as a result of the virus. The highest death rate is in Punjab, followed by Sindh and KPK. So far, the United Kingdom has the lowest mortality rate, at 0.5 percent. In Pakistan, 762,105 people have recovered from the virus.

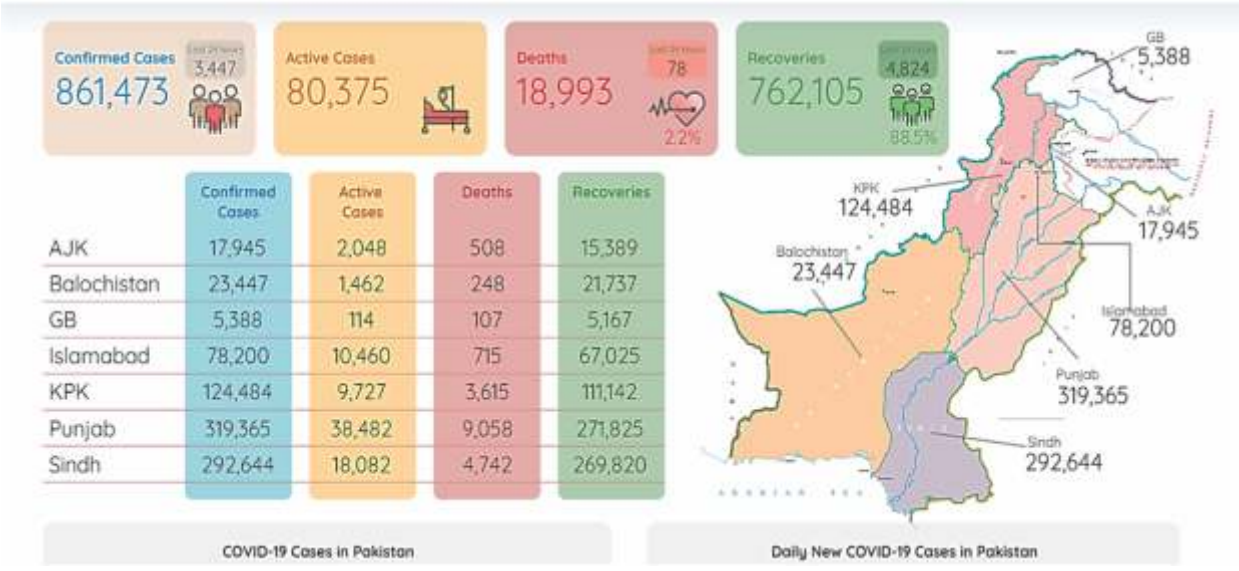

Figure 1.3-a Pakistan Cases Detail

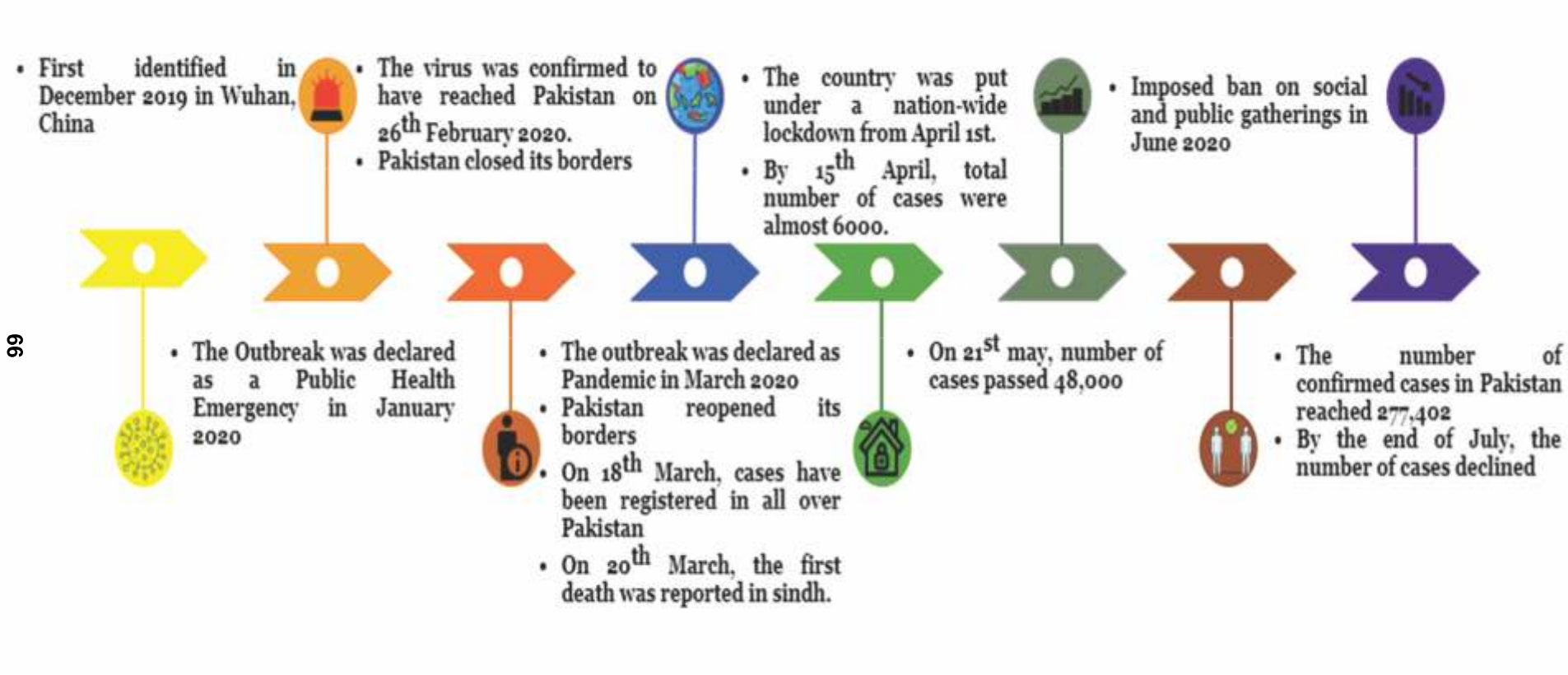

Figure 1.3-b COVID-19 Timeline Pakistan 1

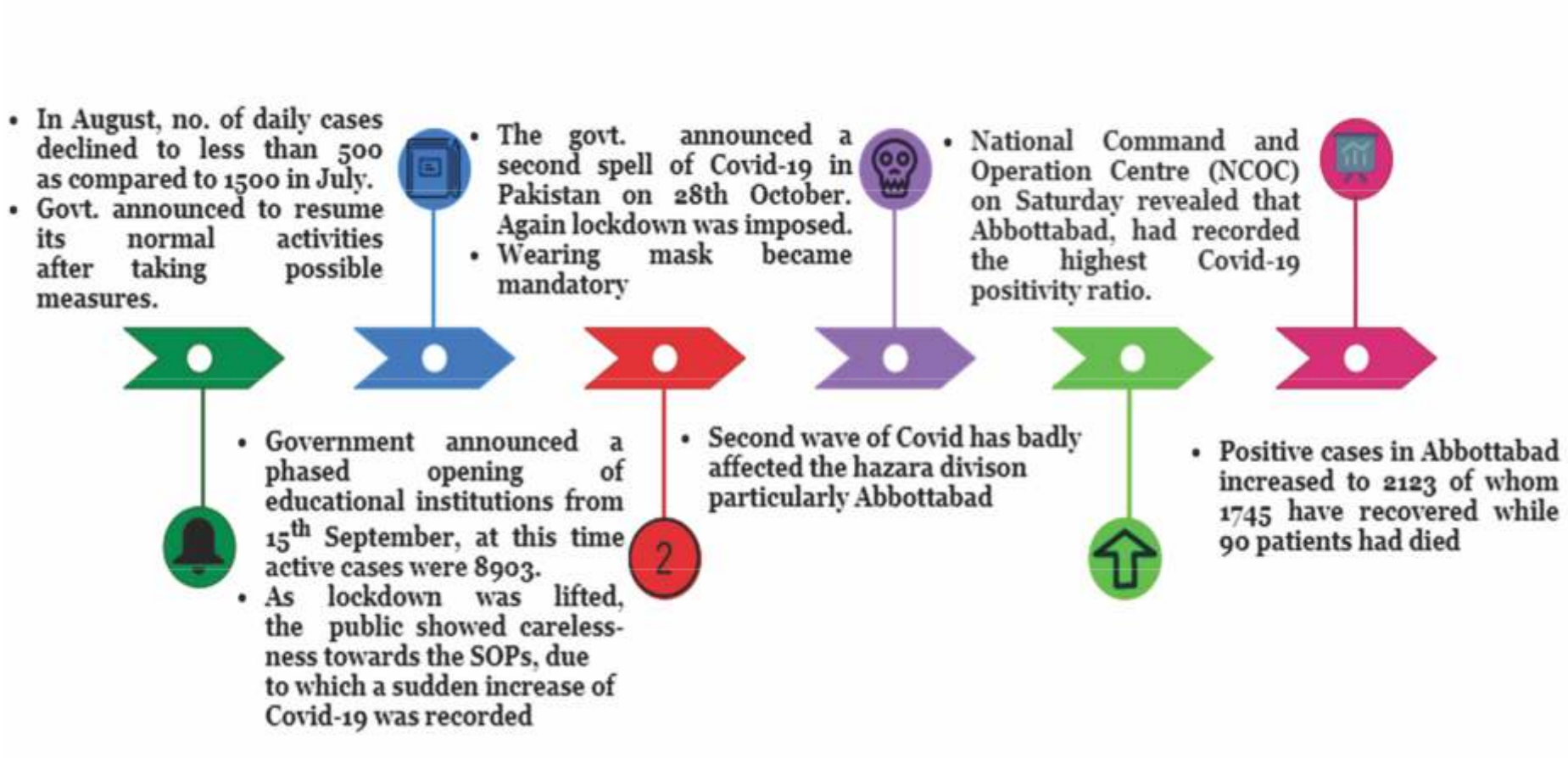

Figure 1.3-b COVID-19 Timeline Pakistan 2

1.4. Pakistan Losing its Grip Amid COVID-19

Pakistan, a close ally bordering China and Iran, is a part of the ongoing coronavirus pandemic in 2019. There was a risk of the virus spreading due to the high frequency of travel and trade. The increased influx of travelers via air, land, and sea aided in the spread of the virus. On February 26, 2020, Pakistan reported its first two confirmed cases among religious pilgrims. These were related to travel histories in Iran (Shahid, 2020), as well as later travel histories from other nations, mainly the Kingdom of Saudi Arabia (KSA), the United Kingdom, and Italy (Mandhro, 2020). On April 17, 2020, the number of confirmed cases nationwide increased to 7,025 after more cases were registered among clusters of Iranian pilgrims in Sindh and Punjab, as well as 135 deaths in Tablighi Jamaat. Sindh was the province worst hit by the outbreak. The situation is developing and is very alarming; the number of cases every day, as elsewhere in the world, is rapidly increasing. Due to limited testing capacity, the exact number of cases in this country may be much higher than the above-mentioned number (Montanari, 2020). The situation is currently getting worse. (NIH, 2020)

Pakistan is in a precarious situation, and strict measures must be implemented to avoid a national health crisis. The World Health Organization has already expressed concern that Pakistan will face a serious COVID19 challenge due to inadequate health infrastructure (Dagia, 2020). They warned that unless effective measures are taken, Pakistan could become the next epicenter of this pandemic. It is believed that the country's educational and health-care institutions did not take basic infection-control protocols, such as handwashing and the use of personal protective equipment, seriously. Pakistan's Ministry of Health has announced a new infection control strategy based on WHO recommendations. However, basic infection control protocols can only be implemented when people and employees understand the introduced strategies and are given clear guidelines. The level of awareness and compliance of healthcare workers is critical to the effective and timely prevention and control of a public health disaster (Storr J et al, 2017). To ensure that healthy policies are effective, a multidisciplinary team, including key frontline staff, should be included in the policy plan. Pakistan faces numerous specific infection control challenges that must be addressed through the development of national policies.

1.5. The COVID Situation in KP

COVID-19 has been reported in almost every country on the planet. Extensive measures have been implemented to slow or stop the spread of the virus, but transmission remains uncontrollable. The vast majority of the population in KPK does not believe in the pandemic's reality and appears to be more inclined to conspiracy theories. The vast majority of the population in KPK does not believe in the pandemic's reality and appears to be more inclined to conspiracy theories. The first case was reported in Khyber Pakhtunkhwa (KPK) province on March 17 in the Mardan region; a 50-year-old male who had travelled to Saudi Arabia on March 9 for religious purposes. After returning home, he feasted in his honor, according to local legend. According to his son, approximately 600 people attended the feast. The patient died on March 18, becoming the first person to die as a result of COVID-19 (BBC, 2020).

Taimoor Khan Jhagra, the Health Minister, confirmed to Geo TV (a national news channel) that the total number of cases in KPK was 3499. There were 874 (25%) recoveries and 194 (5.5%) deaths among these cases. When compared to other provinces, KPK has a high death rate.

However, it demonstrates the gravity of the situation, but little attention is paid to these guidelines, which are distributed via various social networks; many people in KPK do not take this disease seriously and are unconcerned about their health. The government should make people aware of the danger hanging over their heads (Natasha Kamran et al, 2020).

1.6. Abbottabad

Abbottabad, the capital city of the Hazara division, is not only known for its beautiful scenery, but it also has some excellent professional and educational institutions, including the Pakistan Military Academy, Army Burn Hall School and College, Abbottabad Public School and College, Pakistan International Public School and College, Iqra Academy, and others. The Ayub Teaching Hospital established in August 1978 adds a lot of charm to it. Abbottabad is the 40th most populous city in Pakistan and the sixth most populous city in the province of KP.

1.6.1. The COVID Situation in Abbottabad.

The first and second waves of the coronavirus devastated the Hazara region, particularly the Abbottabad region, and the third wave now poses a serious threat. In March-April 2021, approximately 400 positive cases were reported, increasing the burden on the Ayub Teaching Hospital, the only tertiary care hospital in the region. Indoor restaurants and wedding halls,

according to Asad Umar, minister of planning and head of the National Command and Operations Center (NCOC), are “super-spreaders” of the virus. He announced smart mini-lockdowns in certain cities, including Abbottabad, to contain the spread. Despite the deaths caused by the third wave of coronavirus, doctors, nurses, technicians, and other medical personnel in the area are still working to save lives and provide routine care to patients. Deputy Commissioner Muhammad Mughees Sanaullah said section 144 (6) CrPC had been imposed as an immediate preventive and speedy remedy to ensure public safety in the wake of decisions taken by the National Command & Control Center. He warned citizens that if they did not wear masks in public places, they would face harsh penalties. He stated that the decision was made in response to an increase in the number of coronavirus cases during the third wave (Zubair Ayub, 2021).

1.6.2. Ayub Teaching Hospital

Ayub Teaching Hospital is a non-profit, public-sector tertiary academic health science center in Abbottabad. ATH, founded in 1998, is one of the region's largest trauma centers, serving the northeastern districts of Khyber Pakhtunkhwa, southern Gilgit-Baltistan, and northern districts of Azad Jammu & Kashmir. Over the course of more than 40 years, Medical Complex has grown into one of the country's largest and most reputable medical institutions, earning a high reputation and fame both domestically and internationally through its alumni.

Why Ayub?

Ayub is a public-sector hospital that is easily accessible to all socioeconomic groups and offers all general clinical disciplines. It is the largest and most important health care facility in Northern Pakistan, as well as the only tertiary care center for the Hazara Division. NCOC has also designated Ayub Teaching Hospital as the designated hospital to combat the COVID 19 pandemic.

1.6.3. Healthcare Workers and COVID-19

COVID-19 not only harmed patients' lives, but it also harmed the lives of caregivers, nursing staff, and many other healthcare professionals who are at the forefront of this battle all over the world. Pakistan is feeling increasing pressure as we steadily raise this steep upward swing of the curve to its highest possible peak. When doctors, nurses, and other support personnel give their all, the challenges they face in the COVID-19 crisis go far beyond the training they received or even signed up for. COVID-19 puts health-care workers and their families at risk in ways never

before seen. Although not representative, data from many countries across the WHO regions suggest that COVID-19 infections among health workers are significantly higher than in the general population. While health workers account for less than 3% of the population in the vast majority of countries and less than 2% in almost all low- and middle-income countries, they account for approximately 14% of COVID-19 cases reported to WHO. In some countries, the proportion can reach as high as 35%. Thousands of health-care workers worldwide have died as a result of COVID-19 infection (Pappa et al, 2020).

Why HCWs of Ayub?

Health care workers play an important role, putting their own health at risk to serve their patients. As a health care worker, it is critical to understand and be aware of the disease mechanism, transmission, and all possible precautions regarding this pandemic in order to ensure their own safety and the safety of the local community that they are treating.

1.7. Problem Statement

The world ignored public health discipline and was caught off guard by the expected pandemic, paying a high price as a result. Pakistan has reported nearly 6,40,000 cases, with a total of 14,000 deaths; however, everyone agrees that this number is underreported. In Pakistan, the number of deaths from COVID-19 has surpassed the death rate from many other diseases (Malik, 2020). The World Health Organization (WHO) is concerned that Pakistan will become the next epicenter. We hypothesize that Abbottabad is currently unprepared to deal with the threat of this looming pandemic, as NCOC reports that the national positivity ratio was 7.59 percent, with Abbottabad having the highest at 25.53 percent.

With the newly emerging variants of SARS-CoV, it is clear that our people, including the literate, are ignoring SOPs on a daily basis, making Abbottabad one of the country's hotspots.

1.8. Significance of Study

The first thing this study will help us understand is that HCWs play a critical role in the control and prevention of COVID-19. The data generated by our study will allow us to determine whether they have a solid understanding of Coronavirus. Because this hospital is visited by every ordinary citizen throughout the Hazara region, we can generalize these findings to the entire Abbottabad community.

1.9. Objectives

- Analyze the current status of COVID-19 cases (deaths, affectees, recoveries).
- To analyze the level of awareness and basic knowledge among health care workers (HCWs) regarding COVID-19, its control, and prevention.
- Verify that Health care workers caring for patients with COVID-19 are at elevated risk of exposure

Chapter 2
Review of Literature and Theoretical Background

2.1. Background

Coronavirus (CoV) infections is an emerging respiratory virus that is known to cause diseases ranging from the common cold to severe acute respiratory syndrome (Yin et al, 2018). COVID-19 is a zoonotic pathogen that can be spread through animal-to-human and human-to-human interactions (Li Quin, et al, 2020). In 2002 (SARS), there were multiple epidemic outbreaks and about 800 people died. In 2002 (MERS-Cov2), multiple epidemics occurred with 860 deaths (Bhagavathula & Shehab, 2020). About eight years after the MERS-CoV epidemic, the current outbreak of the new coronavirus (COVID-19) in Wuhan, China, has become a global epidemic and a major public health problem (Lai, et al, 2020). On January 30th 2020, the World Health Organization (WHO) declared COVID-19 a public health emergency of international concern (PHEIC) (Eurosurveillance editorial Team). Surprisingly, in the first week of March, numerous cases were reported globally, and COVID-19 became a pandemic. As of 12 March 2020, more than 125,000 confirmed cases and more than 4,500 deaths were reported in 118 (WHO, 2020). COVID-19 spreads through human-to-human transmission through droplets, fecal mouth, and direct contact, with an incubation period of 2-14 days. Therefore, taking preventive measures to control COVID-19 infection is the most critical intervention. Healthcare workers (HCWs) are the primary sector in contact with patients and are fully exposed to the infected cases in hospitals; therefore, the risk of infection in HCWs are expected to be at high. By the end of January, the WHO and Centers for Disease Control and Prevention (CDC) issued recommendations on the prevention and control of COVID19 for HCWs (WHO, 2020). WHO has also launched several online training courses and materials on COVID-19 in multiple languages to strengthen preventive strategies, including raising awareness and training HCWs for preparedness activities? In some cases, misunderstandings between HCWs, delayed control efforts to provide necessary treatment (Hoffman, et al, 2018), leading to rapid spread of infection in hospitals (Selvaraj, et al, 2018) (McCloskey, et al, 2020), and endangering the lives of patients. In this regard, the COVID-19 epidemic provides a unique opportunity to investigate the level of knowledge of HCWs during this global health crisis. In addition, we aim to explore the role of different information sources in shaping HCWs' knowledge and perceptions of COVID-19 during this peak period (Akshaya Srikanth, et al, 2020).

2.2. Use of Face Mask among HCWs to Limit the Spread in Hospitals

In order to minimize the risk, HCWs must follow recognized infection control measures. In addition to hand hygiene, one of the infection control measures is the regular use of masks. Many countries, including Pakistan, currently use face masks in their pandemic lans. The working principle of the mask is to provide a physical barrier between the wearer's mouth and nose and potential contaminations in the surrounding environment (Ho HSW, 2012).

In an environment with limited resources, the incidence of infectious disease is high, and the environmental conditions in hospitals are usually poor. Hospitals may rely heavily on masks to protect medical staff from COVID-19 and prevent cross-contamination between patients and HCWs. The World Health Organization (WHO) and the Centers for Disease Control and prevention (CD) strongly recommend the use of masks in HCWs as a standard for transmission based preventive measures (Jane D Siegel, et al, 2007). In addition, the correct use of these masks is especially important during this time, there use is becoming more and more common (Wada, Koji, et al, 2012).

The WHO points out that improper use and disposal of this mask may actually increase the rate of transmission. If you wear a mask, you must know how to use it and discard it properly. There is evidence that the HCWs have insufficient knowledge and poor practice regarding the use of mask (Kelkar, Udhay, et al, 2013). The purpose of this study is to investigate the knowledge, attitude, and practices of HCWs who wear face masks, especially standard surgical masks, to limit the spread of COVID-19.

2.3. COVID-19 in South Asia

South Asia is a poor, densely-populated area with weak public health infrastructure and seems to be extremely vulnerable to COVID-19. Inadequate testing in South Asian countries may conceal the true extent of the epidemic. Younger demographics might also explain the region's low mortality rate. Although the health impact of the coronavirus is not as destructive as some people fear, the social, economic and political consequences are already severe. The pandemic is exposing and exacerbating some of the main weaknesses in the region, including poverty, gender inequality, persecution of minorities, authoritarian governance, and geopolitical competition. In this sense, the coronavirus is not only "mirror" reflecting South Asia's problems, but also a "catalyst", which intensifies the problems. (Rupert Stone, 2020).

2.4. South Asia's Vulnerability

South Asia (the region that encompasses India, Pakistan, Bangladesh, Nepal, Sri Lanka, Afghanistan, Maldives, and Bhutan) appears to be a perfect breeding-ground for the novel coronavirus, SARS-CoV-2, and the resulting illness, COVID-19, which originated in China in late 2019. It is the most populous and most densely-populated region in the world, with half of the ten most populated cities, facilitating community transmission and making social-distancing all but impossible.

South Asian cities have enormous slums, which are hotbeds of infectious disease. The Ebola epidemic in West Africa from 2014–16 was driven by transmission in slums. Overcrowding, lack of clean water and sanitation, indoor pollution, the prevalence of chronic medical conditions and malnutrition all make slum residents susceptible to disease. About 25–30 per cent of the populations of India's largest cities live in slums. Around two-thirds of Karachi's population and 4 million people in Dhaka are slum dwellers.

Moreover, South Asia is adjacent to countries that were heavily infected by the coronavirus, China and Iran, raising the risk of contagion. Many Chinese workers live in South Asian countries, particularly Pakistan, where Beijing has enormous infrastructure projects, and recent years have seen a surge of Chinese tourists to the region. Borders in South Asia are porous, especially between Afghanistan and Iran, Pakistan and Iran, Pakistan and Afghanistan, India and Bangladesh, and India and Nepal. The return of infected pilgrims from Iran to Afghanistan and Pakistan in early 2020 illustrated this fact (Saira Asher, 2020).

South Asian countries are also more vulnerable to coronavirus because of their very weak public healthcare systems. Pakistan's healthcare system is woefully under-resourced. Last year, spending on healthcare was the lowest it had been since 2016. Doctors lack protective gear. One of the first to die in Pakistan of coronavirus was a doctor. One doctor in Khyber Pakhtunkhwa wrapped his head in a plastic bag when treating patients and posted the images on Twitter in protest at the lack of protection (Yousafzai, 2020). In Karachi at the start of the pandemic there were reportedly 600 intensive care beds. Across the country there were only 1700 ventilators.

Infectious diseases and chronic medical conditions were already widespread in South Asian countries, making people more vulnerable to the effects of the virus. Pneumonia is widespread in India and Pakistan, with high childhood mortality. Malaria and dengue fever are found

throughout the region, with Bangladesh experiencing a surge of dengue in 2019. Cholera, measles, and typhoid are also present in the region. Rabies, long controlled in most countries, remains problematic in Pakistan. Pakistan and Afghanistan are the last two countries in the world where polio is still endemic. Then there are cases of HIV, which nearly doubled in Pakistan between 2010 and 2018 (Zia-Ur-Rehman and Maria Abi-Habib, 2019). Last year there was a significant HIV outbreak among children in Pakistan, when 1000 people in Sindh were infected likely due to reusing dirty needles 38 per cent of children in South Asia have stunted growth (UNICEF, 2018).

Social customs such as handshakes and embraces, common in Afghanistan and Pakistan, make social-distancing more difficult. South Asia also has a high level of formal religious observance. Large numbers of people regularly gather at mosques and temples to worship, facilitating contagion. A large number of early infections in South Asia can be traced back to Tablighi Jamaat gatherings in Pakistan and India. The Pakistani government persuaded the group to cancel its meeting in Lahore, but only after 150,000 people had gathered nearby (Afzal, 2020).

2.5. Low number of Infections

Various theories have been propounded. The region's warm climate may have kept cases to a minimum. However, the virus has spread in hot weather, including in India, and the World Health Organization has dismissed the idea that light or heat can prevent infection. Another theory contends that tuberculosis vaccination and malaria exposure have protected people from coronavirus. It has also been suggested that the virus in the region is weaker. However, all of these explanations have been rejected by scientific experts. Random surveys reveal far more coronavirus cases than official figures suggest. A test in Islamabad recorded around 300,000 infected people out of a population of over 1 million (Ikram Junaidi, 2020). Random tests in Lahore found between 6–14 per cent were infected (Ayesha Tanzeem, 2020).

2.6. COVID-19 Testing

There aren't enough free government testing centers in Pakistan. A private lab test costs $50, whereas the average monthly wage in Pakistan is $200. Conspiracy theories are also preventing people from having tests, with some fearing they will be killed and sold to the United States for experimentation. There is also a stigma, with people concerned that if they die of disease, few people will attend their funerals for fear of infection, and they will not be buried in family

cemeteries. Despite the low testing, the pandemic appears to be easing in Pakistan. There are fewer patients in Karachi hospitals, and fewer are on ventilators. In June, at the peak of Pakistan’s epidemic, hospitals were being overwhelmed. The proportion of positive tests has apparently halved (Saeed Shah, 2020). Pakistan's prime minister, Imran Khan, controversially lifted the country's lockdown in May, eventually adopting a more targeted “smart lockdown” approach that involved closing down specific areas where clusters of infections had emerged. It is unclear whether the new policy is to blame for the decrease in cases.

Chapter 3
Research Methodology

The purpose of this chapter is to improve the research methodology through different kinds of research techniques. This chapter will detail the overall design of the study and the methods used for data collection. It consists of three key parts. The first part explains the design of the thesis. The second part introduces the qualitative and quantitative methods used for the collection of data. The last part demonstrates the general background of the analysis. (Sileyew, Kassu Jilcha, 2019).

3.1. Research Methodology

This is a set of systematic technique used in the research. This only means research guidelines and methods of conduct. It describes and analyzes various methods, gains a better understanding of the limitations and resources, clarifies their presuppositions and consequences, and connects their potential to the twilight zone at the frontiers of knowledge. Research methodology points out the development logic of the process used to produce the theory, which is the procedural framework within which the research is conducted (Mohajan, 2017). It provides the principles for organizing, planning, designing, and conducting research. The decisions of the method depend on the research paradigm followed by the researcher. The Research paradigm not only guides the choice of data collection and analytical methods but also guides the choice of theoretical competitive methods (Sayer, 1992).

3.2. Importance of Research Methodology

In both scientific and non-scientific fields, research is necessary. In our lives, new problems, events, phenomena and, processes appear every day. In order to solve the emerging problems, practical and solutions and suggestions are needed. Scientists must study them and find their causes, solutions, explanations, and applications. Use experimentation, observation, analysis, comparison and reasoning for research. To be precise, research helps us understand nature and natural phenomena and leads to a new way of life that makes it enjoyable and glorious (S. Rajasekar et al, 2006).

The purpose of the analysis should be to conduct a background analysis based on the research within the broader research body. Research must always be of high quality in order to create information that is relevant to the research. In addition, the results of the research may have an impact on the implementation of policies and future projects (Green et al, 2014).

3.3. Research Design

The purpose of this research is to understand and analyze the level of knowledge and awareness of HCWs about the COVID-19 pandemic; this research will be based on quantitative techniques.

3.3.1. Quantitative Research

It is a systematic method of collecting information through sampling methods, for instance, questionnaires, online polls and online surveys. It is collected from both potential and existing customers and, clients and is depicted in terms of numerical. (Hitesh Bhasin, 2019)

3.3.2. Significance of Quantitative Research Design

Quantitative research is a way to understand a specific population (called a sample population). Using scientific inquiry, quantitative research relies on observed or measured data to examine questions about the sample population. The results of quantitative research explain what is important, unimportant, or phenomenon that affects specific populations. Quantitative research also provides answers to questions about the frequency of occurrence of phenomenon or the influence of a phenomenon on the sample size (Allen, 2017).

3.4. Study Area

This study would be conducted in Abbottabad City, with a total population of about 200,000 (census 2019). The District lies between 33° 50’ to 34° 23’ North latitudes and 72° 35’ to 73° 31’ East longitudes. It is bounded by District Mansehra on the North, District Haripur on the West and Southwest, District Muzaffarabad of Azad Jammu, and Kashmir on the east, District Rawalpindi on the South, and District Islamabad on the Southeast. To the East, the River Jhelum, and to the Northeast the River Kunhar serves as the boundary between District Abbottabad and District

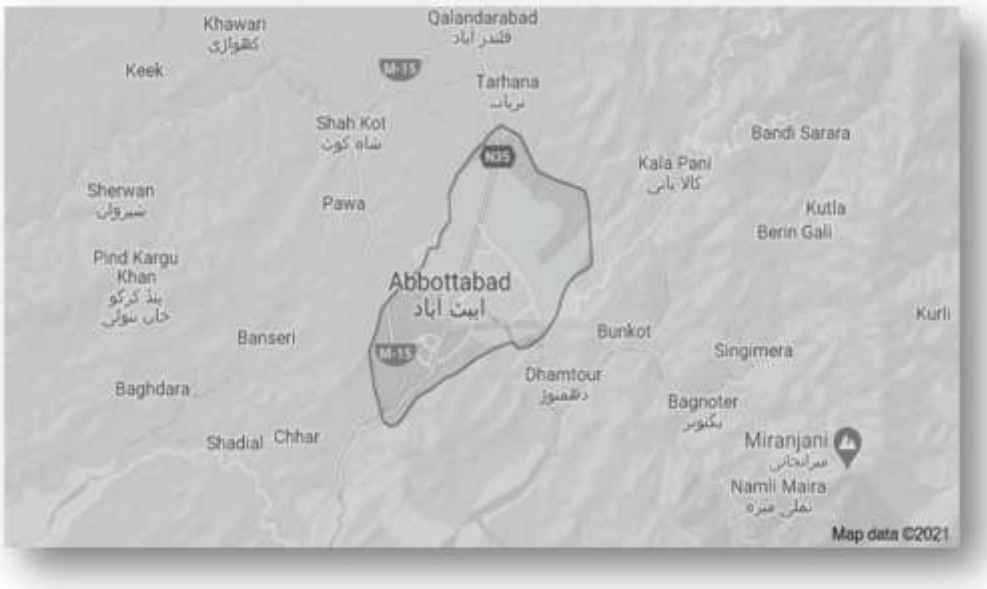

Figure 3.4 Abbottabad

Muzaffarabad of Azad Jammu and Kashmir. The total area of the District is 1,969 Sq. KM (Geography of Abbottabad, 2007). As the town is known as the City of schools & colleges, the physical interaction remains the highest due to the uplift of lockdown on the education sector and the second reason is the existence of Asia's second-largest hospital Ayub Teaching Hospital in the city.



Figure 3.4 Ayub Teaching Hospital

3.5. Target Population

The study's target population included both male and female health care workers from Abbottabad's Ayub Teaching Hospital.

3.6. Data Collection

Quantitative techniques will be used to obtain data for this analysis. As a result, questionnaires will be used to collect primary data. Similarly, data for the secondary form will be gathered from a study of government documents, notifications, newspapers, and other sources.

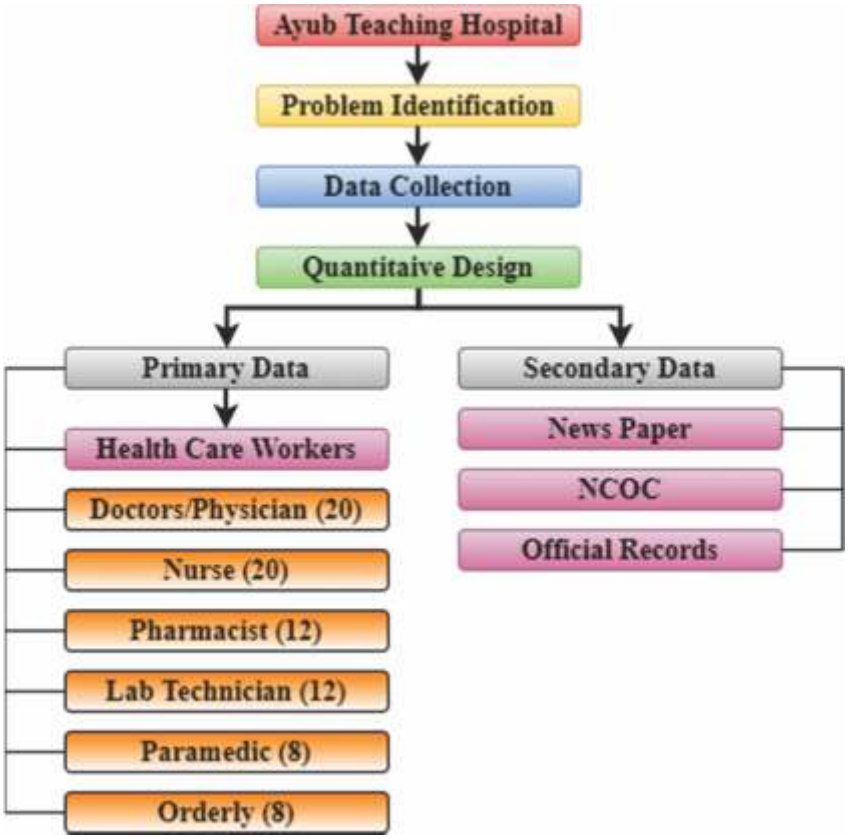

Figure 3.6 Flowchart of Data Collection

3.7. Sample Size

This research involved a total of 80 participants. There are 80 health-care workers in total, including 20 doctors, 20 nurses, 12 paramedics, 8 laboratory technicians, 12 pharmacists, and 8 orderlies.

3.8. Sampling Technique

Purposive Sampling was used in this analysis, which implies "non-probability sampling method and occurs when the researcher judges selected elements for the sample," according to Black (2010). Researchers also believe that by using a sound evaluation, they would be able to produce a representative sample, saving time and resources. The reason for selecting purposive sampling is to target the exact respondents from the population of our choice.

3.9. Tools for Data Collection

Data collection is simply how information is gathered. In this cross-sectional study, primary data collection would be formulated on the basis of a standardized questionnaire and for the secondary one, we will review published reports.

3.9.1. Questionnaire

View of HCWs from ATH regarding the recent public health emergency of the pandemic COVID-19 was collected by filling in a standardized questionnaire. Questionnaires were distributed using the quick mode of communications including Online Google Form, WhatsApp and in hard copies to those who did not understand technology. Anonymous responses were also recorded and ethical approval was required for this survey. Feedback was taken based on their knowledge about COVID-19, its spread, and prevention and control measures implemented at their organizations. The questionnaire consisted of 27 questions assessing demographics; information source; knowledge, attitude, and common practices during the outbreak of COVID, control programs and policies, training, and orientation to improve understanding of common modes of transmission, signs, and symptoms. Demographic characteristics included were name, gender, age, and profession.

3.9.2. Ethical Considerations

Throughout the analysis, the confidentiality of the study participants' information was protected by keeping the participants' information anonymous and asking them to provide truthful answers. The participation of qualified HCWs in this survey was voluntary and unpaid. Prior to participation, each participant gave their informed consent.

3.9.3. Content of the Study Tool

The survey instrument comprised 26 closed-ended questions and took approximately 3 minutes to complete. The 26-item questionnaire was divided into two parts, including participant characteristics (3 items), awareness of COVID-19, knowledge about symptoms of COVID-19-affected patients, different modes of transmission, precautions, and perception (23 items) of COVID-19.

3.10. Data Analysis

A quantitative questionnaire is used to obtain primary data. This information is saved and analyzed in MS Excel to determine the proportional differences between different respondent classes. The tabular and graphic representations of quantitative data draw attention to it.

3.11. Field experience

The researcher spent almost a month in the field for the purpose of data collection. During the research work many difficulties were faced by the researcher. A few problems cropped up during the process of data collection.

1. It was very difficult to locate the respondents and convince the respondents to fill out the survey form.
2. Irritating behavior faced by the respondents about research.
3. Respondents did not give proper time for the data collection.
4. Most of the respondents were less educated so it was hard to explain to them that the research was being carried out for some academic purpose.
5. In some cases, the respondents did not cooperate and were suspicious about the researcher and thought the concerned person came from any government agency. They were worried that the researcher might create some trouble by providing information.
6. In some cases, respondents were unwilling to listen. So, researcher had to spend a lot of time in explaining the purpose of the study to the respondents and other people because they did not understand the importance of social science research.

Chapter 4

Results and Discussion

Epidemics and pandemics are accidental situations, and they present multiple challenges to the affected population. The lack of knowledge may lead to apathy and make it difficult to curb the disease. Pakistan has weak infrastructure, lack of emergency preparedness mechanisms and unqualified testing rates, and is struggling to fight the coronavirus. The number of recorded cases of COVID has increased exponentially, especially after the second lockdown imposed in September 2020 was eased in March 2021; with a daily rise of approximately 1000 cases per million populations. Research has proven good knowledge to be a significant predictor of correct practices in infection control (Chen S,et al, 2003) (B Pawłowski , et al, 2001), while highlighting how a knowledge deficit can lead to an inadequacy.

Government of Pakistan has taken all the appropriate actions of updating their webpage, providing information regarding prevention and guidelines for the public. Informative television channels, numerous awareness campaigns by local nongovernmental organizations alongside the launch of healthcare related applications over mobile platforms have played a remarkable role in educating the citizens about the nature of the disease.

Below is the analysis of current COVID scenario in ATI, total number of cases reported, deaths and recoveries during third wave of COVID and data obtained from HCWs of Ayub Teaching Hospital. The study focuses on level of knowledge and awareness regarding COVID-19. To better comprehend the subject, perception of all the healthcare were taken to analyze their experience.

4.1. Current Status of COVID19 in MTI Ayub Teaching Hospital

Since the outbreak of COVID-19, ATH healthcare facilities have had no trouble treating patients. Hospitals have serious shortcomings when it comes to the provision of ventilator support services to treat extreme acute respiratory syndrome. It is overwhelmed by people from surrounding areas since it is Abbottabad's only tertiary hospital. It's impossible to handle a huge group of people who are either COVID positive or suffer from other severe illnesses. There are 1275 general beds available, as well as ICU beds. Unfortunately, since many infected patients are receiving care at home, the hospital beds were not completely filled.

In addition, after a sharp increase in the number of COVID-19 patients in the third wave of the pandemic, the out-patient departments (OPDs) at Ayub Teaching Hospital were closed.

According to a hospital spokesperson, the OPDs were closed to address the deteriorating situation following a spike in coronavirus patients.

Only emergency services, including accident victims, will be handled, with all patient and relative movements in the hospital, including the entry of children and senior citizens, stopped. After an acute shortage of beds at the corona ICU, other departments of the ATH were designated as corona wards.

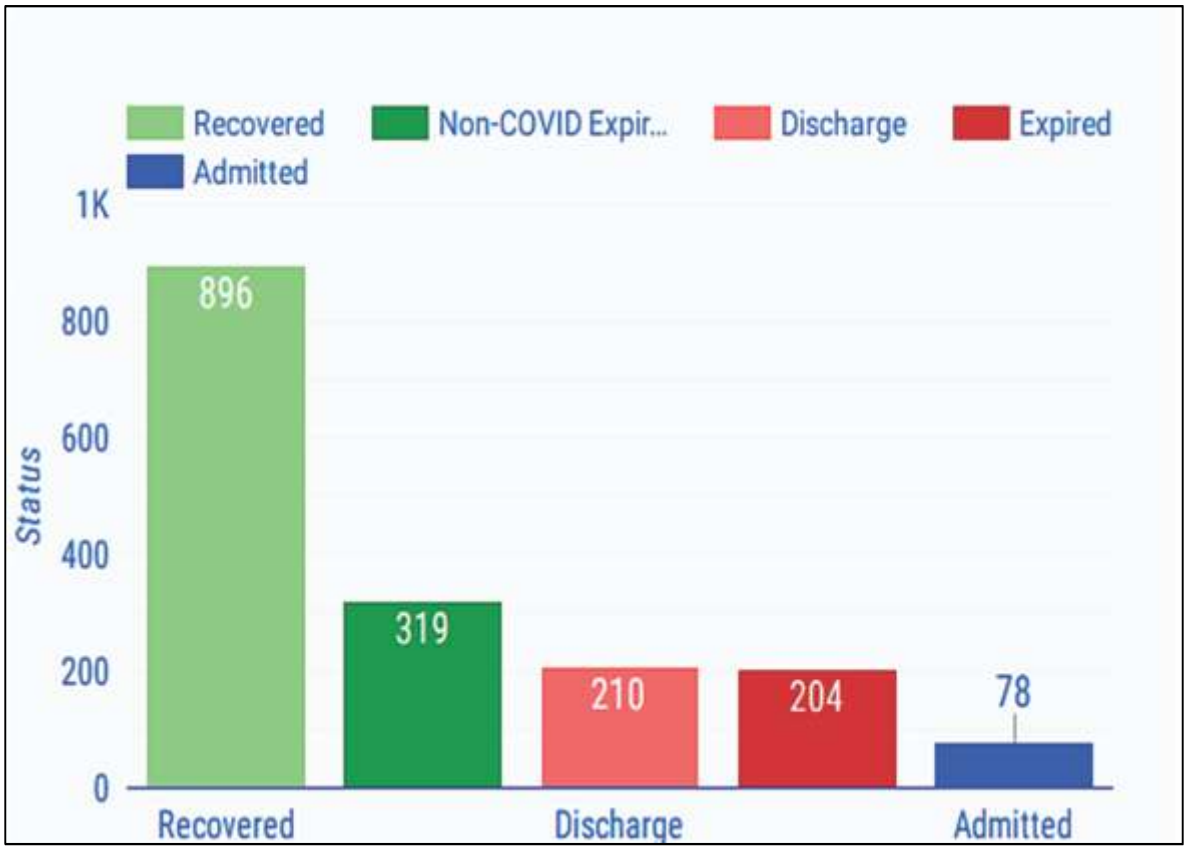

Figure 4.1 Current Status of COVID-19 in MTI, Ayub Teaching Hospital

According to the above figure, a total of 1707 people were admitted between March and April 2021, of which 896 recovered, 204 died as a result of COVID, 319 died for other reasons, and 210 were discharged. Currently, there are 78 people admitted who are COVID positive, with 17 in COVID ICU.

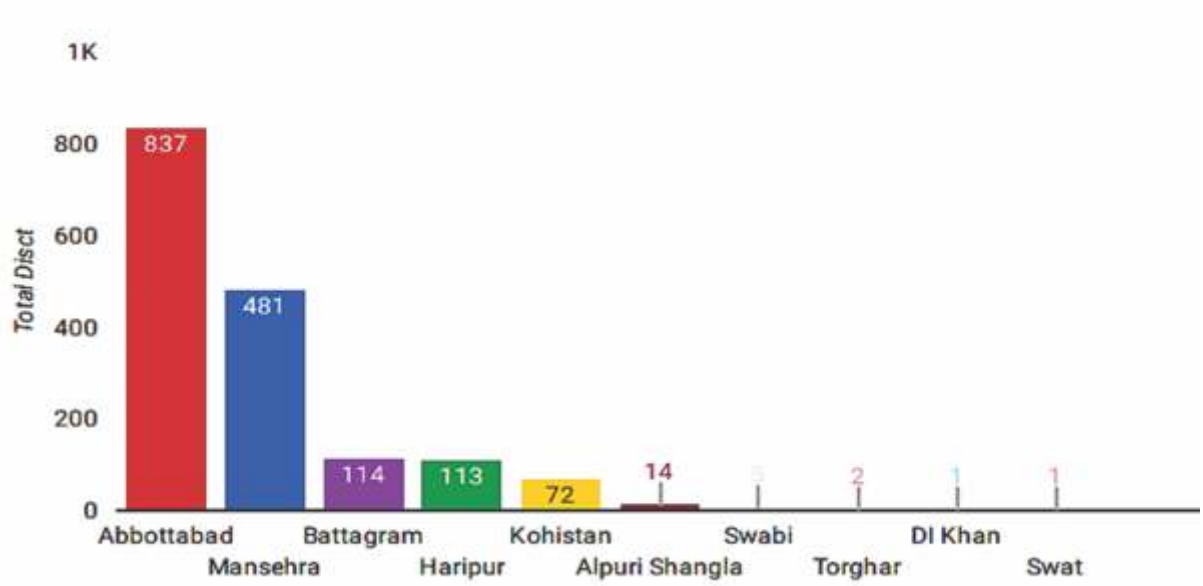

Figure 4.1 Number of People Admitted from Various Districts

4.2. Characteristics of Study Group

A total of 80 ATH HCWs responded to the survey, with 25% of them being doctors/physicians, 25% being nurses, 13% being lab technicians, 15% being pharmacists, 10% being paramedics, and 10% being orderlies. Figure 4.2 depicts the age, gender, and organizational characteristics of the study groups. Out of these respondents, 18.9% were between the ages of 18 and 28, 38.4% were between the ages of 29 and 38, 32.9 percent were between the ages of 39 and 49, and 9.8% were aged 50 and up, with 65.2 percent males and 34.8 percent females.

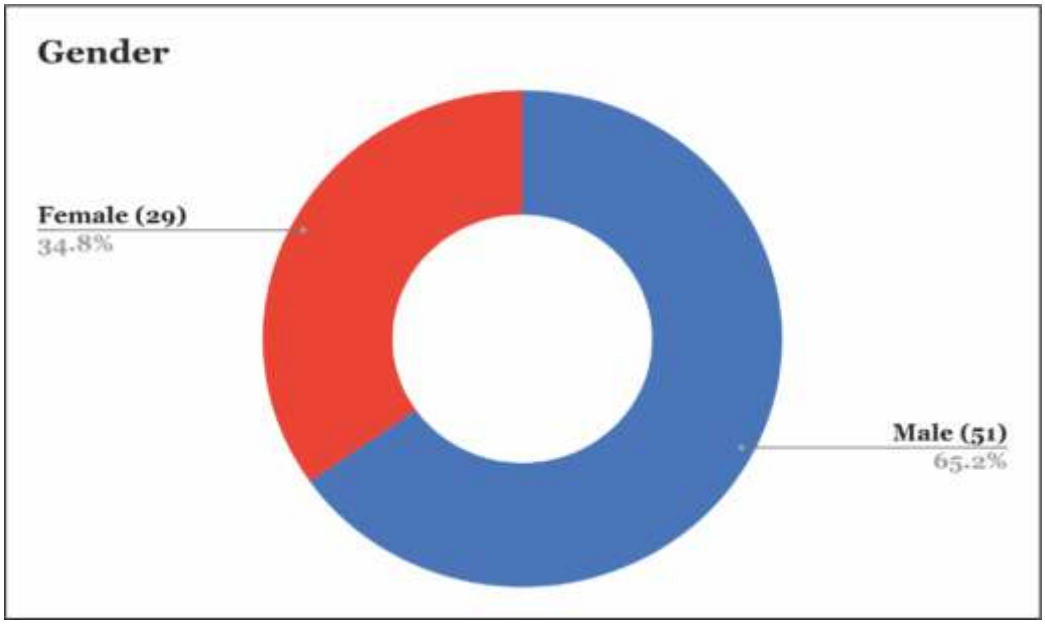

Figure 4.2-a Gender

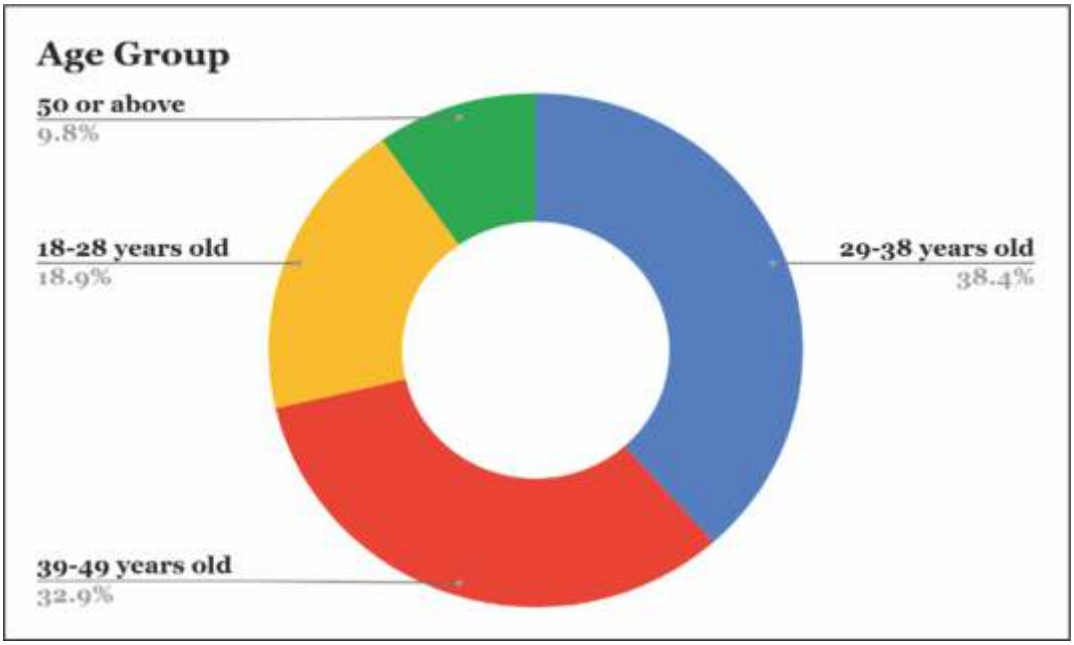

Figure 4.2-b Age Group

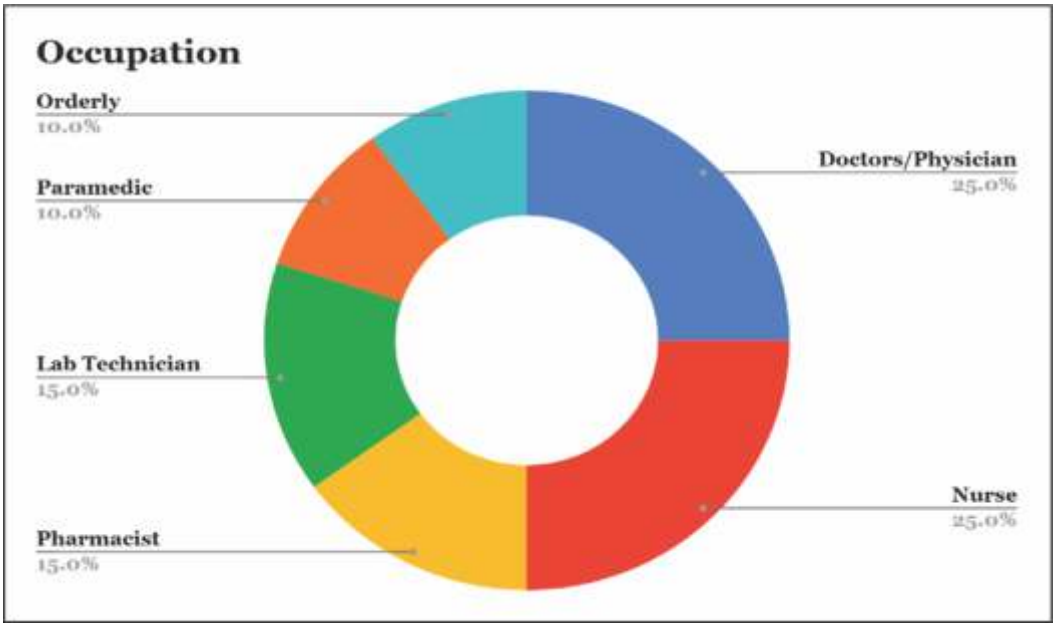

Figure 4.2-c Occupation

Figure 4.2: Visual representation of demographic characteristics of study group

The research drew a total of 65.2 percent (blue) males and 34.8 percent (red) females. A total of 18.9% of participants were between the ages of 18 and 28, 38.4% were between the ages of 28 and 39, 32.9 were between the ages of 39 and 49, and 9.8% were 50 years or older. Doctors/physicians made up 25% of the participants, followed by nurses (25%), lab technicians (15%), pharmacists (15%), paramedics (10%), and (10%) orderlies.

4.3. Gender-Wise Distribution of Responses from HCWs

The proportion of men and women in various occupations differed significantly. Physicians, lab technicians, paramedics, and pharmacists were significantly less likely to be male and female than predicted, while the rest were significantly more likely to be female and less likely to be male. The gender of respondents is used to ensure that both male and female respondents' views are considered. The distribution of responses to the questions differed by occupation, so we looked at whether gender had an effect on responses. Male and female response distributions, on the other hand, are strikingly similar.

Occupation	Gender	
	Male	Female
Doctor/Physician	14	6
Nurse	6	14
Pharmacist	12	0
Lab Technician	8	4
Paramedic	6	2
Orderly	4	4

Table 4.3-1 Gender-based distribution of healthcare professionals

Results contained in the above table reveals that majority of survey respondents were male.

4.4. Age-Wise Distribution of HCWS'

Profession	Age group			
	18-28	29-38	39-49	50 or above
Doctor/Physician	6	6	3	5
Nurse	3	9	8	0
Pharmacist	1	7	4	0
Lab Technician	4	3	5	0
Paramedic	5	2	1	0
Orderly	0	1	5	2
Percentage	18.9	38.4	32.9	9.8

Table 4.4-1: Age wise distribution

It shows that the majority of respondents (38.4%) are between the ages of 29 and 38, indicating that these respondents are of a mature age group capable of making wise decisions for their societies. 32.9 percent of the population is between the ages of 39 and 49. The table also indicates that 18.9% of the population is between the ages of 18 and 28, with the remaining 9.8% falling between the ages of 50 and older

4.5. Profession Based Awareness

Responses to questions were compared among all Healthcare workers. Response percentage in each group were obtained and are summarized in table 3. The responses to questions regarding basic knowledge and awareness, that is name, origin, common signs and symptoms, vaccine, sources of infection of COVID-19 varied greatly.

S.	Responses	Frequency of responses N/%	Doctors (20)	Nurses (20)	Pharmacists (12)	Lab Technicians (12)	Paramedics (8)	Orderlies (8)
	Number/ Percentage of group							
1	Main clinical symptoms of COVID-19 are fever, cough, shortness of breath, and fatigue.							
	Yes	66/82.5	20/100	15/75	11/91.67	12/100	7/87.5	1/12.5
	No	5/6.25	0/0	4/20	0/0	0/0	1/12.5	0/0
	Maybe	9/11.25	0/0	1/5	1/8.33	0/0	0/0	7/87.5
2	Not all persons with COVID-19 will develop severe cases. Those who are elderly, have chronic illnesses, and with suppressed immunity are more likely to be severe cases							
	Yes	65/81.25	20/100	16/80	10/83.33	10/83.33	7/87.5	2/25
	No	5/6.25	0/0	1/5	1/8.33	0/0	0/0	3/37.5
	Maybe	10/12.5	0/0	3/15	1/8.33	2/16.67	1/12.5	3/37.5
3	Persons with COVID-19 cannot infect the virus to others if he/she has no any symptom of COVID-19							
	Yes	20/25	4/20	10/50	2/16.67	1/8.33	3/37.5	0/0
	No	43/53.75	16/80	7/35	7/58.33	6/50	4/50	3/37.5
	Maybe	17/21.25	0/0	3/15	3/25	5/41.67	112.5	5/62.5
4	Hand washing, covering nose and mouth while coughing, and maintaining physical distance from sick people can help in the prevention of COVID-19 transmission.							
	Yes	70/87.5	20/100	18/90	12/100	12/100	7/87.5	1/12.5
	No	8/10	0/0	2/10	0/0	0/0	0/0	6/75
	Maybe	2/2.5	0/0	0/0	0/0	0/0	1/12.5	1/12.5
5	Children and young adults don't have to take measures to forestall the infection by the COVID-19 virus							
	Yes	17/21.25	2/10	6/30	0/0	1/8.33	3/37.5	5/62.5
	No	49/61.25	18/90	6/30	11/91.67	9/75	4/50	1/12.5

	Maybe	14/17.5	0/0	8/40	1/8.33	2/16.67	1/12.5	2/25
6	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place.							
	Yes	65/81.25	18/90	15/75	11/91.67	12/100	8/100	1/12.5
	No	6/7.5	0/0	0/0	0/0	0/0	0/0	6/75
	Maybe	7/8.75	0/0	5/25	1/8.33	0/0	0/0	1/12.5
7	Are individuals being given fundamental information about Coronavirus through various mediums?							
	Yes	60/75	14/70	12/60	7/58.33	9/75	8/100	0/0
	No	15/18.75	5/25	7/35	1/8.33	1/8.33	0/0	1/12.5
	Maybe	15/18.75	1/5	1/5	4/33.33	2/16.67	0/0	7/87.5
8	Is there enough or required treatment available for infected patients in terms of medicine, ventilators, wards?							
	Yes	41/51.25	10/50	14/70	7/58.33	6/50	4/50	0/0
	No	19/23.75	6/30	2/10	1/8.33	3/25	4/50	3/37.5
	Maybe	20/25	4/20	4/20	4/33.33	3/25	0/0	5/62.5
9	Touching an object or surface with the virus on it, then touching your face, nose, or eyes with the unwashed hand would result in the infection by the COVID-19 virus							
	Yes	63/78.75	16/80	18/90	10/83.33	12/100	7/87.5	0/0
	No	14/17.5	3/15	2/10	1/8.33	0/0	1/12.5	7/87.5
	Maybe	3/3.75	1/5	0/0	1/8.33	0/0	0/0	1/12.5
10	Patients with underlying chronic diseases are at a higher risk of infection and death							
	Yes	59/73.75	15/75	16/80	10/83.33	12/100	6/75	0/0
	No	4/5	3/15	0/0	0/0	0/0	0/0	1/12.5
	Maybe	17/21.25	2/10	4.20	2/16.67	0/0	2/25	7/87.5
11	HCWs are at a higher risk of infection							
	Yes	56/70	12/60	15/75	10/83.33	12/100	7/87.5	0/0
	No	5/6.25	5/25	0/0	0/0	0/0	0/0	0/0

	Maybe	19/23.75	3/15	5/25	2/16.67	0/0	1/12.5	8/100
12	Do you think the provision of PPE suit can give you adequate protection when managing COVID patients?							
	Yes	58/72.5	16/80	16/80	7/58.33	11/91.67	8/100	0/0
	No	8/10	4/20	1/5	2/16.67	0/0	0/0	1/12.5
	Maybe	15/18.75	0/0	4/20	3/25	1/8.33	0/0	7/87.5
13	Do you think going to school, hospital or any organization is safe?							
	Yes	21/26.25	4/20	7/35	0/0	1/8.33	2/25	7/87.5
	No	43/53.75	13/65	11/55	10/83.33	3/25	5/62.5	1/12.5
	Maybe	17/21.25	3/15	3/15	2/16.67	8/66.67	1/12.5	0/0
14	Do you think people are ignorant about the severity of the situation?							
	Yes	45/56.25	15/75	18/90	11/91.67	2/16.67	6/75	3/37.5
	No	10/12.5	5/25	1/5	0/0	0/0	1/12.5	3/37.5
	Maybe	15/18.75	0/0	1/5	1/8.33	10/83.33	1/12.5	2/25
15	Do you think the lockdown was successful in lessening the spread of the virus?							
	Yes	52/65	20/100	10/50	7/58.33	8/66.67	7/87.5	0/0
	No	17/21.25	0/0	8//40	1/8.33	1/8.33	0/0	7/87.5
	Maybe	11/13.75	0/0	2/10	4/33.33	3/25	1/12.5	112.5
16	Do you think social distancing helps prevent COVID-19?							
	Yes	69/86.25	20/100	19/95	9/75	12/100	8/100	1/12.5
	No	6/7.5	0/0	0/0	0/0	0/0	0/0	6/75
	Maybe	5/6.25	0/0	1/5	3/25	0/0	0/0	1/12.5
17	Do you think tests that are being directed for COVID-19 are genuine?							
	Yes	40/50	11/55	11/55	4/33.33	8/66.67	675	0/0
	No	12/15	2/10	1/5	2/16.67	0/0	1/12.5	6/75
	Maybe	28/35	7/35	8/40	6/50	4/33.33	1/12.5	2/25

18	Do you feel that all staff in your institute are following promptly infection control policies, rules and guidelines?							
	Yes	20/25	4/20	6/30	0/0	4/33.33	3/37.5	3/37.5
	No	41/51.25	9/45	12/60	8/66.67	6/50	4/50	2/25
	Maybe	19/23.75	7/35	2/10	4/33.33	2/16.67	1/12.5	3/37.5
19	Is hand sanitizer effective against coronavirus?							
	Yes	40/50	14/70	9/45	6/50	9/75	2/25	0/0
	No	13/16.25	3/15	4/20	0/0	0/0	3/37.5	3/37.5
	Maybe	27/33.75	3/15	7/35	6/50	3/25	3/37.5	5/62.5
20	Do you think social interaction is main cause behind rapid growth of positive COVID-19 cases in Abbottabad?							
	Yes	57/71.25	18/90	18/90	10/83.33	2/16.67	8/100	1/12.5
	No	7/8.75	0/0	2/10	0/0	0/0	0/0	5/62.5
	Maybe	16/20	2/10	0/0	2/16.67	10/83.33	0/0	2/25
21	Are people wearing masks and following SOPs in your surrounding?							
	Yes	20/25	4/20	6/30	2/16.67	3/25	5/62.5	0/0
	No	43/53.75	14/70	11/55	6/50	6/50	3/37.5	3/37.5
	Maybe	17/21.25	2/10	3/15	4/33.33	3/25	0/0	5/62.5
22	Are you skeptical about the COVID-19 vaccine?							
	Yes	26/32.5	7/35	8/40	3/25	4/33.33	3/37.5	1/12.5
	No	36/45	13/65	5/25	8/66.67	0/0	3/37.5	7/87.5
	Maybe	18/22.5	0/0	7/35	1/8.33	8/66.67	2/25	0/0
23	Would you accept a vaccine if it were recommended by your employer and was approved safe and effective by the government							
	Yes	41/51.25	14/70	7/35	10/83.33	6/50	4/50	0/0
	No	10/12.5	2/10	2/10	0/0	1/8.33	1/12.5	4/50
	Maybe	29/36.25	4/20	11/55	2/16.67	5/41.67	3/37.5	4/50

Table 4.5-1: Distribution of responses according to profession (frequency is shown by total number of responses/ percentage)

When asked about the key clinical symptoms of COVID-19, 82.5 percent said they were conscious, 11.25 percent said they weren't sure, and the remaining 6.25 percent said they didn't agree. The second question was whether the disease is so severe that it exempts all but those who are chronically ill or have suppressed immunity; 81.25 percent said yes, 12.5 percent said no, and 6.25 percent said no way. The lab technicians and orderlies had the most skepticism. The third question was, "Persons with COVID-19 cannot infect anyone if they have no symptoms of COVID-19," of which 53.75 percent disagreed, 25% agreed, and 21.25 percent said maybe it is valid and maybe not. In response to the fourth question, “Hand washing, covering nose and mouth while coughing, and maintaining physical distance from sick people will help in the prevention of COVID-19 transmission,” 87.5 percent claimed that following the listed SOPs is key to preventing oneself from contracting COVID, 10% said it wouldn't help, and the remaining 2.5 percent were unsure. In answer to the fifth issue, “Children and young adults do not need to take precautions to avoid infection by the COVID-19 virus,” 21.25 percent of respondents said yes, 61.25 percent said no, and 17 percent said maybe. From our results, it is clear that most people have heard about the name and origin of COVID-19 but people who think that they are aware of signs and symptoms are not aware of it. Physicians, nurses and pharmacists seemed to be most aware of the signs and symptoms of COVID-19 indicating that awareness level is linked to the profession of an individual. Another query was “Are individuals being given fundamental information about Coronavirus through various mediums?” 75% reported yes, 18.75% said no and other 18.75% reported maybe. Next question was “HCWs are at a higher risk of infection”, 70% agreed, 6.25% said they don’t think it’s true and remaining 23.75 were again not certain. We also asked “whether they think it’s safe to open schools, universities and other public places or should they remain close?”, 26.25% said yes,53.75% were against this idea and 21.25 were not very sure. 87.5% orderlies wanted the organizations to resume and 83.33% pharmacists were against the reopening of any institution be it school, university or any organization. Our 16th query posed “does social distancing prevents COVID”, 86.25 said yes, 7.5 said no and remaining 6.25 were not quite sure whether it helps or not. When asked about the accuracy of COVID testing, 50 percent said they are authentic, 15% said they are not, and 35% said they are possibly genuine. Pharmacists were the most divided, with 16.67 percent believing that the tests being performed are not authentic. In addition, there were insignificant differences in responses to the

question of whether they are suspicious of the vaccination: 32.5 percent said yes, 45 percent said no, and 22.5 percent said maybe. With regards to the staff's behavior. Regarding the staff behavior. A total of 51.25% believe that their fellow staff is not prompt, 25% said they are and remaining were not sure. In general, individuals are not cautious enough to protect themselves and people around. According to the findings, health-care workers do not believe their organization is prepared for an infection outbreak. The overall response to the question about social distancing was positive, with about 60% of respondents believing that being out in public and at work is unsafe.

Doctors on the front lines of the COVID-19 pandemic have made personal sacrifices by assisting and treating patients with little care, despite the fact that they have the ethical responsibility for their own safety. Resulting in a lack of proper equipment, an insufficient number of healthcare facilities offering COVID-19 assistance, and the government's unpreparedness to cope with the

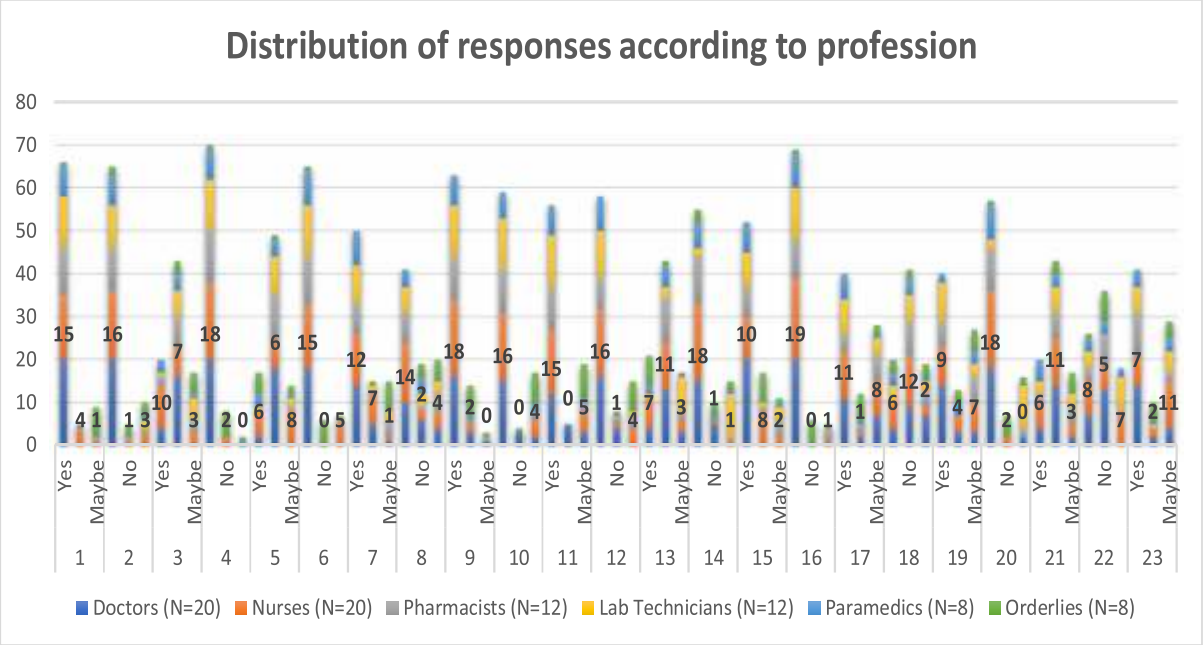

Figure 4.5 Distribution of responses profession-wise

crisis, front-line doctors and other healthcare professionals encountered challenges in effectively treating COVID-19 patients.

Chapter 5
Conclusion

5.1. Conclusion

To avoid an outbreak, HCWs' must have up-to-date information, understanding, and attitudes about COVID-19 response. However, our research findings indicate that the Pakistani people are unaware of the seriousness of the situation. Furthermore, frontline personnel are unprepared to handle the situation. It is imperative that awareness be promoted at all levels.

Considering the recent increase in COVID-19 cases in Pakistan, there is a risk of noncompliance with preventive protocols. In addition, due to recent challenges, hospitals lack infection prevention and control policies. In this case, it is necessary to conduct a series of appropriate training, strictly enforce the rules and regulations, and detailed guidelines related to the spread of the virus, and disseminate correct information through conducting awareness campaigns aimed at safety and health practices and correct evidence-based information on this infection. The hospital must ensure that government regulations are followed correctly. Similarly, the data uncovered the need to begin capacity-building activities for COVID19 as a necessary first step in establishing an effective surveillance system in Pakistan.

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1.

Impact of COVID-19 on Learning: A Case Study of COMSATS University Islamabad, Abbottabad Campus

By

Sabahat Jadoon

(MDS) Thesis

DEDICATION

To my Beloved Parents and Respected Teachers

ACKNOWLEDGEMENTS

I would like to take this opportunity to first and foremost thank Almighty Allah for being my strength and guide in completing the rigorous process of research and thesis writing. Without him I would not have the ability to do so.

I express my gratitude to Dr. Adeel Jalal Malik for his kindest efforts, patience and for devoting much time in reading my work over and over again.

In the end, I cannot forget the appreciation, motivation and encouragement from my family that they gave me throughout my academic life. I also feel great and valuable by being a part of COMSATS University.

Sabahat Jadoon

ABSTRACT

The COVID-19 pandemic has become a global health issue and has disrupted the normal functioning of various activities across the world including learning and education. This situation challenged the education system across the world and forced educators to shift to an online mode of learning to reduce the spread of deadly virus. The whole educational system from primary to tertiary level has been distorted during the lockdown period of the novel coronavirus disease 2019 (COVID-19) not only in Pakistan but across the globe. Many academic institutions that were earlier reluctant to change their traditional pedagogical approach had no option but to shift entirely to online teaching–learning. Educational institutions (schools, colleges, and universities) in Pakistan are currently based only on traditional methods of learning, they follow the traditional set up of face-to-face lectures in a classroom. Although many academic units have also started blended learning, still a lot of them are stuck with old procedures. The closure of educational activities in Pakistan due to the ongoing COVID-19 pandemic resulted in an unplanned shift from traditional learning to a setup that exclusively involves digital teaching and learning. COMSATS University also shifted its academic practices to MS Teams. This study aimed at assessing the impact of COVID-19 on learning in COMSATS University Islamabad, Abbottabad campus and to explore students' perceptions regarding the effectiveness of synchronized online learning and to evaluate their academic performance after shifting to E-learning in comparison to classroom learning. The paper employs both quantitative and qualitative approach to study the perceptions of teachers and students on online teaching-learning modes. Undergraduate and postgraduate students were surveyed to find their perspectives about E-learning. The findings of the study highlighted that online learning cannot produce desired results in underdeveloped countries like Pakistan. The study revealed some challenges students encounter in the close down of university. Students are unable to study effectively from homes thus, making the online system of learning quite ineffective. It came to light that the pandemic really has had a negative impact on their learning.

Keywords: *COVID-19; E-learning; Students' Perspective; Challenges; technology; Students' Performance*

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LIST OF ABBREVIATIONS

COVID-19	Coronavirus disease of 2019
E-learning	Electronic learning

Chapter 1

Introduction

1.1. Introduction

Education is an important aspect that plays a huge role in the modern era and is necessary to be able to survive in this competitive world. It is a tool which provides people with knowledge, information, skill and technique, enables them to know their rights and duties toward their family, society as well as the nation. It expands outlook and vision to see the world. It is considered as a social institution and helps in creation of a better society, understanding the responsibilities, encourages innovation and creativity, creates better human beings and makes the world a better place to live in. Hence education is necessary for evolution of a country and is one of the most important factors for poverty alleviation and economic growth in developing countries (UNDP 2005; UNESCO 2005; WSIS 2005). It has been the substratum of development of every nation and its sustainability is a principal to growth and development of all nations. John Dewey defines education as a *"process of living through, a continuous reconstruction of experiences"*. It is the process of socialization that starts as soon as human being starts the life (Dewey, 1916).

Education have been hit over centuries with several challenges ranging from changes in school curriculum to closing down of Educational Institutions due to either a demonstration by students or staff, outbreak of a disease and/or instability in governance of a nation of which the education system of Pakistan is of no exception, while access to education was already a problem in Pakistan. Pakistan's education system is met with several major challenges such as lack of uniformity, education without direction, outdated curricula, lack of professional development of teachers, lack of quality teachers, alarming dropouts, system of examination, poor supervisory standards, internal and external influences, lack of resources, policy implementation, low budgetary allocation for education, corruption and now COVID-19 has its footprints on education.

Human history has recorded a number of substantial pandemics including smallpox, cholera, plague, dengue, AIDS, influenza, severe acute respiratory syndrome (SARS), West Nile disease and tuberculosis (Owusu et al., 2020). Influenza pandemics can have severe consequences on societies worldwide. Several disease outbreaks have hit the world within the past two decades of which have had impact on the world's economy and education to some

extent (Owusu et al., 2020). The World Health Organization (WHO) used the term 2019 novel coronavirus (2019-nCoV) to refer to the coronavirus that was diagnosed from the lower respiratory tract of patients with pneumonia in Wuhan, China on 29 December, 2019 (Li et al., 2020).

The disruptive effects of the COVID-19 pandemic have impacted almost all segments of society and higher education is of no exception. Circumstantial evidence paints a bleak picture for both students and universities. Students face an increasingly uncertain environment as financial and health shocks along with the transition to online learning may affect their academic performance, there is a sense of uncertainty among students that what would happen to their educational plans and expectations about future employment.

1.2. Global Impact of COVID-19 on Education

The COVID-19 is not only a global public health issue but has affected education all over the world leading to widespread closure of alma maters in many countries and compelled the human society to maintain social distancing. It has significantly messed up the education sector which is a critical determinant of country's economic future. According to UNESCO monitoring, over 100 countries have implemented nationwide closure of schools, impacting approximately 90% of the world's student population. (UNESCO, COVID-19 Educational Disruption and Response, 2020). Students are out of educational institutes due to temporary or indefinite country wide school closure authorized by governments in an effort to slow the spread of COVID-19 (Goldberg, 2020). As of 29th March, 2020, nearly 90% of the world's learners were impacted by closures (UNESCO, 2020). School closures in response to the COVID-19 pandemic have shed a light on numerous issues affecting access to education, as well as broader socio-economic issues (UNESCO, 2020).

The outbreak of COVID-19 has taught us that change is inevitable and has worked as a catalyst for the educational institutions to grow and opt for digital platforms, which have not been utilized before (Jena, 2020). This resulted in rise of e-learning, whereby teaching and learning is undertaken through digital platforms and remotely, which has changed education system drastically. In the fight against the outbreak of the 2019 novel coronavirus disease (COVID-19), online education has replaced traditional education as a defensive tool by many countries. This practice of online education differs from conventional online education as it is

suddenly, abruptly unreadily and forcefully implemented. Although many countries have been earlier exposed to natural and human-made disasters, distance education has not been used as a solution in those hard times in the same way it has been applied in the wake of coronavirus pandemic (Lily et al., 2020).

1.3. E-learning in Pakistan

Pakistan, like some other developing countries cannot fully endorse e-Learning systems because E-learning is facing a lot of obstacles and challenges in developing countries. While most of the educational institutes in Pakistan have shifted to online classes*, this approach isn't benefitting students with lower-income families and remote areas*. Though online teaching and learning is one of the promising alternatives to the physical classroom, students show a negative perception of online learning behavior. The successful implementation of e-learning systems depends on how the program is performed by students and instructors. The satisfaction levels of students enrolled in distance courses is much lower than students studying in a face-to-face environment, suggesting that these students are more vulnerable to drop-out (Levy, 2005; Simpson, 2004).

This directive from government to close down all institutions was welcomed by parents and other stakeholders of education as a good measure to prevent the students from contracting the virus. COMSATS' university also followed the directives of HEC to start online classes and shifted all its educational activities to an online platform known as MS Teams without realizing the ground realities of readiness which has been met with some challenges of its own among students. As a result of an inadequate learning approach, both students and instructors face numerous challenges and difficulties.

Digital learning comes with many challenges and students from marginalized backgrounds are experiencing most significant learning losses. Generally, students are facing technical difficulties because of the high usage rate of online learning systems and other digital tools. The platforms are overloaded having poor audio/video quality and unstable internet. Any break in data connectivity causes lack of continuity in learning for students. Weak infrastructure, unavailability of internet, unavailability of hardware and software support, instability of power supply, cost of internet and financial problems are the challenges that

make distance learning not feasible at present. Because of these factors and lack of devices, some students struggle to participate in digital learning. Engineering and science students have to face additional challenges because online classes alone cannot provide adequate skills or knowledge regarding analysis of scientific data or laboratory experiments, such things can only be better done in physical environment. Online classes seem to be more stressful than regular classrooms because students have more workload and not many are experienced with the novel concept of e-learning (Dhawan, 2020). Most of the students are facing genuine issues but their voices remain unheard.

The main aim of this study is to understand the perspectives of students and teachers about E-learning, the impact and challenges of E-learning on COMSATS' university educational system and the possible effects of the different mode of learning on students' performance during the closure of university because the above factors have made distance learning during this pandemic quite challenging to them.

1.4 Statement of the Problem

The COVID-19 pandemic has shifted education system of COMSATS University entirely from physical classes to digital platform known as MS Teams, which has impacted the learning of students in a number of ways. This study explores the perspectives of both students and teachers about E-learning, their experiences and the variable effects of new mode of learning on learning outcomes and students' overall performance of different groups.

1.5 Objectives

The specific objectives of the current study are:

- To understand the students' as well as teachers' perspective of the impact ofE-learning during COVID-19
- To assess the effect of the different mode of learning during COVID-19 on student's overall performance

Chapter 2

Literature Review

2.1. E-Learning

E-Learning is a learning process which utilizes electronic technologies to access educational curriculum outside of a traditional physical classroom. Mostly, it refers to a program, course or degree that is delivered completely online (http://www.elearningnc.gov/).

2.2. History of Distance Learning

Before any discussion about distance learning, there is a need to look at the way how the term has been defined in the past and how it is currently defined in the literature. This term can be used to illustrate any of a number of instructional situations and it has been around for well over 100 years. One of the former forms of distance learning was done through correspondence courses started in Europe. This stayed the primary means of distance learning until the middle of this century when instructional radio and television became more popular (Imel, 1996). As technology has changed, so has the definition of distance learning. Videotaped lectures have been a standard in university and professional courses for the last two decades (Moore & Lockee, 1998). Audiotapes and lessons sent through the mail have been used in correspondence courses to teach subjects such as foreign language for quite some time (Teaster & Blieszner, 1999). Today, the Internet and compressed video have taken distance learning in new directions, allowing distance learning to occur in real time. Live video instruction is the most popular and fastest growing delivery mode in the United States (Ostendorf, 1997).

Various terms are used to describe learning that is delivered online, via the internet, ranging from Distance Education to computerized electronic learning, online learning, internet learning and many others. It can be defined as courses that are specifically delivered through internet to somewhere other than the classroom where the instructor is teaching. The sessions are interactive as you can also communicate with your teachers, professors or other students in your class. Sometimes it is delivered live, where you can raise your hand "electronically" and interact in real time and sometimes it is a prerecorded lecture (http://www.elearningnc.gov/). The teacher always interacts with you, grades your participation, your assignments and your tests. Online learning environments can offer students chances for flexibility, communication

and collaboration clearly different from face-to-face learning environments. Nevertheless, current practices of e-learning are not without constraints and criticisms.

The World Health Organization (WHO) has declared COVID-19 as a pandemic on January 30, 2020 that has posed a contemporary threat to humanity (https://www.who.int/). COVID-19 has successfully forced global shutdown of several activities, including educational activities and has resulted in terrific crisis-response migration of universities with E-learning serving as the educational platform. The universal acceptance of social distancing policy, as announced by WHO as a measure to control the spread of COVID-19, has caused school closure and this has resulted in unexpected disruption of traditional teaching and learning method.

Gedera (2014) conducted a study to develop an understanding of students' experiences and their perspectives of learning with the specific online learning technology of Adobe Connect virtual classroom and the results have shown that Adobe Connect virtual classroom, used in an online learning environment affected students' active participation in e-learning activities. The unanticipated technical problems also caused some learners to feel unsatisfied, participating in synchronized virtual classroom activities can also be challenging for some students if they lack knowledge of the virtual classroom's functions. Most learners were not comfortable but challenged while participating in virtual classes, possibly because of its unfamiliarity. Having little knowledge of using the virtual classroom, students lacked knowledge to use it to its full potential. In general, students struggled to transfer communication practices and their skills from face-to-face environments to virtual settings.

Aristovnik et al (2020) presented the most comprehensive and large-scale study on how students perceive the impacts of the first wave of COVID-19 crisis in early 2020 on various aspects of their lives globally. The study revealed that amid the worldwide lockdown and transition to online learning students were most satisfied with the support provided by teaching staff and their universities' public relations. Still, poor ICT skills and the perception of a higher workload prevented them from perceiving their own improved performance in the new learning environment. Students were mainly concerned about issues to do with their future professional career and studies and they were significantly less satisfied with their academic work/life during the crisis and the key factors influencing students' satisfaction with the role of their university were also identified.

Sherry (1995) had found in his study that effectiveness of distance education deals with many factors which affect their success or failure including the influence of distance learning theory upon instructional design and delivery, redefining the roles of stakeholders in distance education teams, medium of delivery, technology adoption, implementation, methods, strategies, interactivity, inquiry, active learning, learner characteristics and modes of learning, teacher negotiation and learner support, operational issues, policy and management issues, and cost/benefit tradeoffs.

Valentine (2002) examined the problems, thought on the promises, future possibilities and modes of distance learning in his research. Distance learning and its link with new technologies have mutually offered many promises to the field of education. In practice however, the combination often falls short of what it attempts to achieve. Some of the shortcomings are due to technology problems; others have more to do with administration, instructional methods, or learners. Regardless of the problems, many users like technologies such as compressed video and see continued development in the area.

Adzovie & Nyieku (2020) examined the perception of students regarding the new modes of learning introduced by their schools, bearing in mind issues of digital divide (those who have ready access to computers and the internet, and those who do not) which exist in developing countries. The study explored differences in accessing and using e-learning platforms, availability, accessibility and reliability of internet were also considered. Developing countries are ill-prepared regarding the acceptance of e-learning solutions as one major alternative to traditional teaching and learning. The emergence of COVID-19 pandemic has exposed to a large extent, lack of adequate facilities and technology for the implementation of e-learning solutions, especially in tertiary levels. There is a possibility that social media platforms could be the future of e-learning, especially in developing countries.

Aboagye, Yawson & Appiah (2020) explored the challenges faced by students in tertiary institutions during online learning in the era of coronavirus pandemic. The challenges include social and accessibility issues, learner's motivation, academic and generic issues, learner's intentions and demographics. The most important challenge for students to study online was accessibility issues, followed by other issues stated above. Students were not ready to study

online as well. Problems associated with the shift of conventional learning (face to face) to online learning (e-learning) in the educational system are well documented.

Almaiah, Al-Khasawneh & Althunibat (2020) concluded in their research that the provision and usage of e-learning system is the main challenge for many universities during COVID-19 pandemic. The effective practice of e-learning system depends on understanding the adoption factors as well as the main challenges. The authors identified a clear gap in the knowledge on the critical challenges and factors of e-learning usage. The critical factors identified that affect the usage of e-learning system are technological factors, system quality factors, cultural aspects, self-efficacy factors and trust factors. The results also indicated the three main challenges that impede the usage of e-learning system, namely, change management issues, technical issues and financial support issues.

A study conducted by Al-Araibi et al (2019), which puts the technological issues as the main criteria for the success of e-learning system, indicated that 45% of e-learning projects in developing countries are total failures, 40% are partial failures, while only 15% are successful. Therefore, based on these findings, along with other studies, many researchers in the field of IS/IT have conducted researches in order to look into the challenges to the successful implementation of e-learning system initiatives (Al-Araibi et al., 2019; Esterhuyse and Scholtz, 2015; Islam et al., 2015).

It is evident that the introduction of electronic learning initiatives has failed because institutions and learners were not prepared for the experience. Besides, people are attached to already existing teaching methodologies and practices making it difficult for them to adjust to innovations and upgrade existing ones. Student perception about online learning has been negative due to past experiences as it resulted in high dropouts and low motivation of learner. Other factors were low student satisfaction associated with online learning experience. However, research suggests that students and instructors are satisfied with online learning just like traditional learning.

2.3 Effectiveness of E-Learning Program

E-learning is beneficial but its effectiveness is contextualized. In developing countries, students score lower in online learning and are likely to withdraw from the online courses as

compared to students in developed countries. In the US, a meta-analysis of existing data revealed that students engaged in online learning performed better than those in face-to-face sessions while students who blended online and traditional learning performed the best of all (The Council of Independent Colleges, 2016). A student may be part of the online learning but may not actively use the service or follow the tutor (Bean et al., 2019).

2.4 Barriers to E-Learning Program

Barriers identified in E-learning include high cost, inadequate infrastructure, lack of ICT skills, rejection of e-learning by faculty members, and lack of accessibility to quality internet connection and electricity.

Start-up cost for online learning may be expensive (Queiros & Villiers, 2016). The high cost of purchasing ICT equipment affect the adoption of online learning (Sinha & Bagarukayo, 2019). Technology and gadgets needed to make learning effective may not be cheap, affecting the online process negatively (Srichanyachon, 2014). Limited funding can affect institutions from hosting online learning (Bean et al., 2019). Online education is more expensive to develop and deliver than face-to-face courses.

In Tanzania, 68% of teachers declared they lacked access to computer, while 73% revealed they experienced low internet bandwidth (Mtebe & Raisamo, 2014). Teaching and learning can take place at anywhere and at any time with the help of ICT tools (Cradler & Bridgforth, 2002). Inadequate access to technology, studying materials and computers can leave students marginalized and anxious, which affect the online learning process (Queiros & Villiers, 2016). Lack of technology skills and inadequate background experience with online learning are constraints to online education (Olesova, Yang, & Richardson, 2011). Lack of experience with online teaching is a barrier to organizing online education (Luongo, 2018). Students who do not have prior knowledge and experience in online learning sometimes also lack technical assistance and support systems (Srichanyachon, 2014). According to Mtebe & Raisamo (2014), 63% of teachers engaged in online learning lacked the skills needed to create or use online educational resources. Some faculty members also consider developing online courses as time consuming in comparison to traditional methods of teaching (The Council of Independent Colleges, 2016). Hesitance by faculty members to teach online courses and their

lack of acceptance of online instruction is a perceived barrier to online learning (Turk & Cherney, 2016).

Slow and unreliable internet connections affect the quality of online learning and instructions can be delayed as a result of poor internet connections (Srichanyachon, 2014). Limited internet access which includes poor internet connection and low speed demotivate institutions for pursuing online education (Sinha & Bagarukayo, 2019). Lack of internet access and computers in homes, Lack of constant supply of electricity in rural communities also makes it difficult to adapt the online education process. Online learning entirety depends on technological devices and internet, instructors and students with poor internet connections are liable to be denied access to online learning. The dependency of E-learning on technological equipment and the provision of the equipment was a big challenge for institutions, faculty and students. Students with obsolete technological devices might find it hard to meet up with some technical requirements of online learning.

Chapter 3

Research Methodology

3.1 Introduction

In this section of the paper, the research methodology used for conducting this research is discussed. Research methodology is a specific procedure or a set of systematic techniques used to identify, study, select, process and analyze information about a problem under study. This section provides explanation like how the data is designed, collected, organized and generalized. It infers more than just a technique of data collection rather it gives an insight on the ideas and theories which underline these techniques. The justification prOVIDes grip of researcher on the research idea and decisions to carry out the process. It is fundamental for a researcher to plan a methodology for the issue picked for conducting a research study.

3.2 Study Area

This study is conducted in COMSATS University Islamabad, Abbottabad Campus. The grand structure of CUI, Abbottabad covers an area of 308 Kanals. Conveying quality education, contributing effectively to the research base of Pakistan, offering state-of-the-art facilities to students, assisting in social uplift of the community it is located in, the campus symbolizes a modern and progressive seat of learning. Abbottabad Campus became functional in July 2001, and the first academic session started in September 2001. From a modest start with three departments and 121 student strength, three undergraduate programs and physical structure comprising old World-War II barracks, emerged the leading institute of the region which has now eleven departments, a student strength of 5500 (47-fold increase), 17 undergraduate programs, 24 graduate programs, a qualified faculty strength of 575 including more than 200 PhDs and 85 modern laboratories. COMSATS physical infrastructure emulates the best educational institutions of country.

3.2.1 Data collection in COVID-19

A comparative study involving different universities could be possible if the situation were different but in current circumstances, when COVID-19 has its footprints everywhere, it was difficult to access respondents for data collection from other universities. Hence, CUI Abbottabad is chosen on the basis of ease and convenience for collecting data with minimal contact to the virus. The process of data collection is done through social media platforms and over phone calls.

3.3 Research Design

The combination of qualitative and quantitative data is used. Qualitative data was important because of subjective nature of the problem and to understand perspectives, impact and hardships of E-learning due to the transformation of physical classes to online classes. In case of performance evaluation, quantitative data was needed to compare Grade Point Average (GPA) of students and to correlate the performance with different mode of learning. Using mix method enabled the researcher to compare and contrast results and gain much deeper insights.

3.4 Target Population

The target population of this study are teachers and students of COMSATS University Islamabad, Abbottabad campus.

3.4.1 Sampling Technique

Stratified random sampling technique is used to conduct this study. It is a method of sampling that involves the division of a population into strata. The strata are formed based on members' shared attributes or characteristics.

Four different strata have been created on the basis of different disciplines because they are facing different challenges and experiences within E-learning.

1. Natural Science disciplines such as Biotechnology, Pharmacy, Chemistry)
2. Engineering, (EE, PE, Civil)
3. IT and Computer related fields (CS, SE, TN)
4. Social Sciences (DS, MS)

Students from natural sciences, engineering and IT departments are more concerned about their academic performance and learning outcomes because online classes cannot provide them with practical applications and lab work which is a fundamental requirement of their academic disciplines than those who are enrolled in theoretical courses like social sciences.

3.4.2 Sample Size

Total population of CUI Abbottabad campus is 6000, out of which a sample of 60 was selected through stratified random sampling. The total sample size included 52 students and 8 faculty members, 13 students from each stratum were selected.

3.5 Data Collection

Both questionnaire and interview methods were used in data collection. Questionnaire were used to collect primary quantitative data from students to gather valid, reliable and unbiased information while interviews were most effective for qualitative research as they helped better understand and explore students' as well as teachers' perspectives and experiences so that in-depth information could be collected.

3.5.2 Data Collection Tools

The aim of questionnaire in this study was to determine the impact of E-learning on university students, GPA comparison, satisfaction levels, experiences and their academic performance. The questionnaire containing an "Open-ended" and "The Likert Scale" questions was constructed and distributed among 52 undergraduate and postgraduate students belonging to four different strata through social media and online platforms. The questionnaire also included perception-based questions where statements about various issues were put in the questionnaire.

Structured interviews were conducted with respondents over telephone to collect qualitative data which helped the researcher to understand teacher's perspective about E-learning, students' overall performance and online teaching.

3.6 Data Analysis

Data collected from questionnaires was organized, summarized, categorized and analyzed using Microsoft Excel while thematic analysis was used to analyze qualitative data gathered through interviews. The findings obtained were incorporated into themes and the data analyzed has been highlighted through tabular and graphic form.

3.7 Limitations of the Study

The findings of study cannot be generalized because it was conducted in only one university as comparative study was not possible at that time and other universities could not have been made part of this study due to travelling restrictions and in access to students of different universities. Lack of field work was also the limitation particularly in data collection process because of hard times in COVID-19 pandemic and it seriously impacted the researcher's ability to personally interact with teachers for conducting interviews. A lot of thought is lost when face to face interaction is not possible especially in perception-based parts of study

3.8 Future Research

Future studies can be improved by increasing sample size for obtaining more detailed and unbiased results. Correlational studies about problems, challenges, perspectives and academic performance can also be an interesting sphere of work if multiple institutes are chosen. A comparative study between government and private universities can also be interesting. The findings are mainly based on the opinions of students and teachers from one of the higher-ranked universities of Pakistan, analyzing the opinions of low ranked universities with less access to the latest digital technologies might produce more critical results.

Chapter 4

Results and Discussions

Results and Discussions

This chapter includes the crucial information about main theme of research i.e. it identifies the key issues faced by students due to shift of physical classes to E-learning in times of COVID-19 and its impact on students' academic performance. It also includes the quantitative and qualitative analysis of research findings with an aim to prove whether the study has achieved its objectives or not. A structured questionnaire was constructed, tabulated and analyzed to gather information regarding the impact of E-learning on students and the various problems faced by them. Interviews were conducted separately from faculty members to understand teacher's perspective of online teaching. This chapter not only includes the graphical representation of important data set but also involves discussion about the issues and hardships faced by most of the students and teachers.

4.1 Demographic Analysis

Demographic information was collected in surveys about age, sex, place of residence and academic discipline.

4.1.1 Age of Respondents

Age	Frequency	Percentage
15-20	12	20.00
21-25	23	38.33
26-30	18	30.00
31+	7	12.67

Table 4.1

Table 4.1 represents age composition of students and shows that majority of students lie between 21-25 years of age. Only 12% of respondent lie in the age limit of more than 31 years.

4.1.2 Gender of Respondents

Gender	Frequency	Percentage
Male	32	53.33
Female	28	47.67

Table 4.2

The study approached a mix population of both male and female with 53% male and 47% female respondents which include 52 students and 8 teachers to get an idea of issues and perspectives of both segments of population.

4.1.3 Family Setting

Place of residence	Frequency	Percentage
Rural area	36	60.00
Urban area	24	40.00

Table 4.3

It is evident from table 4.3 that majority of respondents are from rural areas with 60% of population while 40% of respondents live in urban area.

4.1.4 Academic Discipline of Respondents

Academic discipline	Frequency	Percentage
Natural sciences discipline (biotechnology, pharmacy, chemistry)	13	25.00
IT and computer related fields (CS, SE, TN)	13	25.00
Engineering (EE, PE, Civil)	13	25.00
Social sciences (development studies and management sciences)	13	25.00

Table 4.4

Data was collected from students of four different academic disciplines to understand their perceptions, experiences and challenges because they might hold different opinions based on the nature of their academic discipline. The number of students from each discipline remained the same i.e. 13.

4.2 From Onsite to Online Lectures

In order to reduce the spread of the novel coronavirus COMSATS shifted its educational practices to online platform MS Teams. The transition was quick and not much time was available to properly consider the organization of the new forms, noting that the quality of teaching and learning in these new circumstances need proper attention. When looking at the Sustainability, Pakistan stands out by ranking among the bottom countries on all scales concerning the online delivery mode which is related to negative experiences with the rapid transition to online classes. The students were asked to compare their workload before the onsite classes were cancelled with the new circumstances after the lockdown. The biggest proportion of students reported that their workload had become larger or significantly larger. In the midst of pandemic where students stay out of school, COMSATS University also resorted to e-learning which substitute the normal contact with the teacher in a physical classroom to a virtual classroom via the use of the internet and technological devices. The study revealed that majority of households in Pakistan do not have reliable internet access which had led MS Teams (online learning platform) being suspended. Those who have access to the internet also complain of high cost of data bundle to fully access MS Teams to regularly participate in classes while home. Some of the respondents asserted to the fact that the online learning is quite effective but the accessibility has been the issue since you need technological devices such as smart phones or the computer and the internet to be able to access it. This has made learning in the house during this pandemic very challenging to them.

4.3 Exploring Students' Perspectives

This table presents the perspectives of students regarding university closure and E-learning due to COVID-19 pandemic.

Statement	S.A	A	N	D	S.D
Online learning seems to be more effective than physical classes	2 (4)	3 (6)	18 (35)	17 (33)	12 (23)
More self-study is required for online classes as compared to physical classes	14 (27)	21 (40)	7 (13)	6 (12)	4 (8)
E-learning has improved my GPA	13 (25)	16 (31)	11 (21)	7 (13)	5 (10)
I am satisfied with quizzes, sessional and terminals which are being taken on portal	12 (23)	10 (19)	9 (17)	11 (21)	10 (19)
It was easy to adapt online learning environment	5 (10)	8 (15)	11 (21)	15 (29)	13 (25)
Online classes were more convenient for me	11 (21)	18 (35)	4 (8)	8 (15)	11 (21)
Internet connectivity is a major issue of online classes	16 (31)	21 (40)	2 (4)	8 (15)	5 (10)

Table 4.5 Student's perspectives

S.A=Strongly Agree A=Agree N=Neutral D=Disagree S.D=Strongly Disagree ( )=Percentage

67% of respondents agreed to the statement that they have to study more to retain the knowledge and work really hard in online classes as compared to physical classes while 13% of them remained neutral. It represents that getting understanding of concepts during individual studies is way more challenging as compared to learning in groups and with the teacher around.

56% of respondents disagreed to the effectiveness of online learning because students easy lose focus and move away if the content is not interesting to them, 35% of respondents were neutral that means online classes are not that effective and physical classes are preferred to online one.

56% of respondents agreed that their GPA has improved because of shift to E-learning, 21% of them got the same GPA and 23% of respondents disagreed to the statement as their GPA dropped. The increase of GPA is mainly due to objective based exam and the answers received from one another through messages.

When it came to the satisfaction level of students regarding quizzes, sessionals and terminals which are being taken on portal, 42% responded positively, 17% of respondents were neutral and 40% of respondents were dissatisfied with this mode of assessment. Those who attempt the exam in group settings were highly satisfied but the disadvantaged students have shown their concerns about existing mode of assessment.

54% of students' response was negative about easily adapting the E-learning environment, this is due to the fact that many people genuinely take time to adapt and adjust to change, 21% remained neutral, only 15% students were ready to adapt online learning environment.

In order to check the convenience of online classes, a question was asked from students. 71% of respondents agreed that online classes are comparatively more convenient and relaxing than physical classes because students can join the class anywhere and anytime.

Internet connectivity was the biggest complaint which was revealed by 61% of respondents, 15% of respondents didn't face any connectivity issues and remaining 4% of respondents were neutral.

According to Students' perspective, they really miss being in person with their fellow students and faculty members, and having those spontaneous, organic conversations. For most of the students, online learning was just a formality and not a real substitute for regular teaching, they are not acquiring real, long-lasting knowledge. Some students lack electronic devices and sometimes the number of these devices in households is limited which can be very inconvenient for online meetings that take place simultaneously. Also, some teachers don't consider the fact that during online quiz, internet connection may get lost and when this happens, the student gets graded based on the number of questions answered before the connection was lost. Students also face problems managing their time because if connectivity drops at teachers' end, they used to reschedule the class without taking into consideration that students also have to manage their time for other activities as well. Some instructors were not

committed to the allotted time of the lectures, they used to come late for the lectures and did not start it on time. Some students gave their collective perspective that online classes are relaxing, convenient and cost effective as it reduced travel and some other costs required to participate in physical classes and it's not limited by learner's location, a respondent said "I live away from university campus and it usually takes two hours daily to reach there. So, these online classes saved my time by reducing my daily exertion of going to campus and coming back home". As far as effectiveness of E-learning is concerned, it has been proven to be very ineffective as the learner may have many distractors at their disposal which may impede learning and understanding. Many homes in Pakistan do not provide adequate learning environment hence students are therefore obliged to learn either in the living room or their bedrooms which is very ineffective, a student mentioned "Most of the times, I struggled to find a suitable place at home for taking online classes, my family did not realize that I am seriously busy in classes and that put a lot of pressure on me".

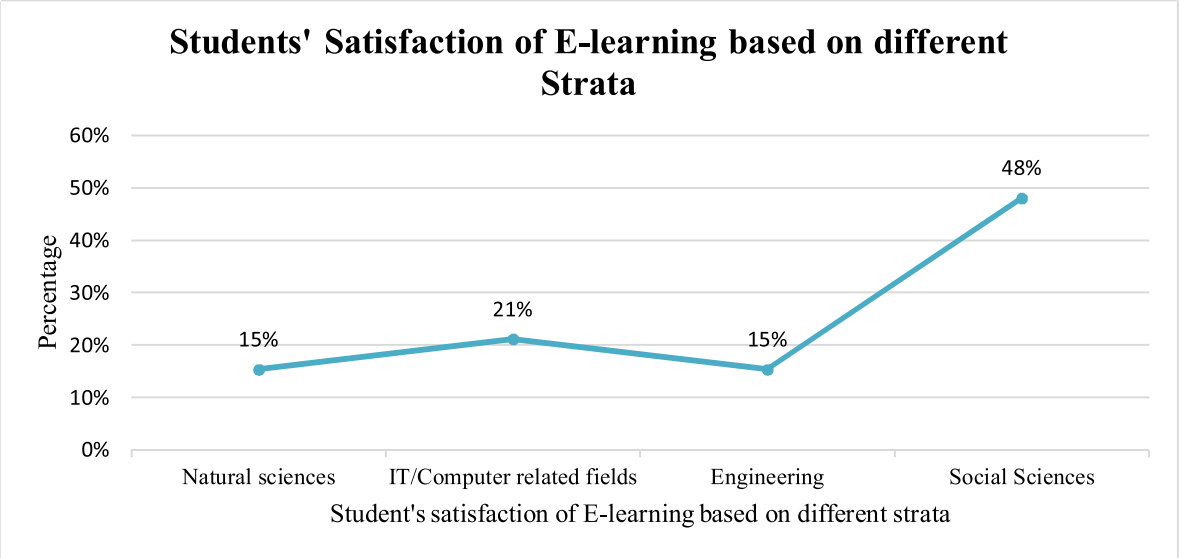

Figure 4.1 Students' satisfaction of E-learning based on different Strata

Figure 4.1 represents that the satisfaction levels of students of E-learning from natural sciences discipline (biotechnology, pharmacy, chemistry), IT/computer related fields (CS, SE, TN) and Engineering (EE, PE, Civil) are the lowest i.e. 15%, 21% and 15% respectively because half of their work is supposed to be done in labs through practical application which were not

conducted during lockdown while students from social sciences (development studies and management sciences) have shown greater satisfaction levels i.e. 48%.

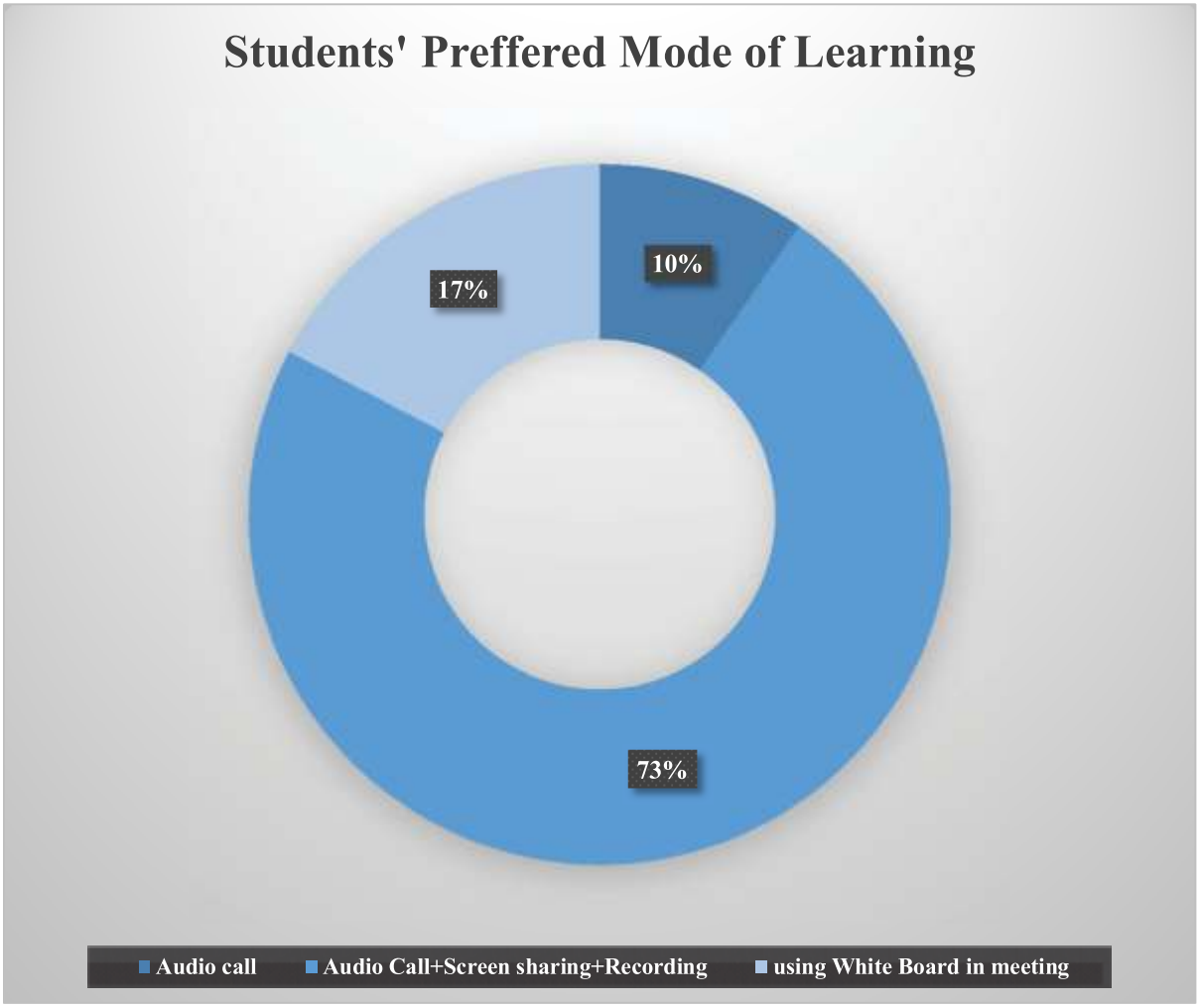

Figure 4.2 Preferred Mode of Learning

Different modes of learning in MS Teams were used by teachers to teach online; for instance, audio call, audio call with screen sharing and recording and using whiteboard in meetings. Majority of students (73%) preferred audio call along with screen sharing and recording, they stated that recorded lectures by teachers were the best part of online classes and benefitted them a lot as students could listen to the lecture again and again to better understand and master the content.

4.4 Students' Performance

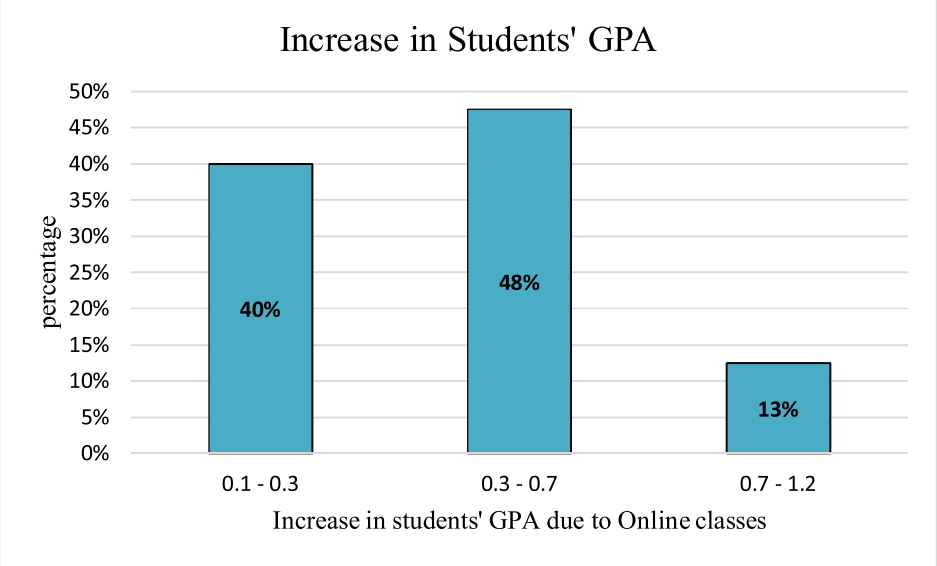

Figure 4.3 Increase in Students' Grade Point Average (GPA)

29 out of 52 students scored better in online classes, 12 students acquired comparatively low GPA while GPA was neither increased nor decreased in case of 11 students.

Among those 29 students who performed better, 40% students have improved their GPA to 0.1 – 0.3, there was an increase of 0.3 – 0.7 in case of 48% students and the GPA was boosted up to 0.7 – 1.2 in 13% of cases. Not much variation is found in GPA of students on the basis of strata as the GPA has been increased almost equally.

A sudden shift to E-learning has happened in spring-20 semester due to COVID-19 pandemic, before that academic activities were smoothly going their way via. traditional classes in COMSATS University and this shift has impacted students' performance in a number of ways. The study compared the Grade Point Average (GPA) of students of two consecutive semesters i.e. Fall-19 (physical classes) and Spring-20 (online classes) and the results have shown that most of the students acquired better GPA in Spring-20 semester which has many reasons. Students were quite truthful for the increase of GPA and revealed that they've used unfair means in quizzes, sessionals and terminals as the teacher wasn't around to monitor their activities. Also, they used to attempt the exam collaboratively in group settings for collective

benefit of all the group members. Another reason for acquiring better GPA was objective nature of exams where students could score 100% because subjective assessment was not possible at that time. Although, the grades have improved significantly but GPA is not an only indicator of students' performance. Students' attentiveness, attendance, participation in class discussion, general seriousness, students' attitude in class, concepts of students, ability to speak and adding to the experience of teacher are all indicators to evaluate performance of students which is believed to be suffered and went down as a result of E-learning.

4.4.1 Teacher's Perspective of Online Teaching and Students' Overall Performance

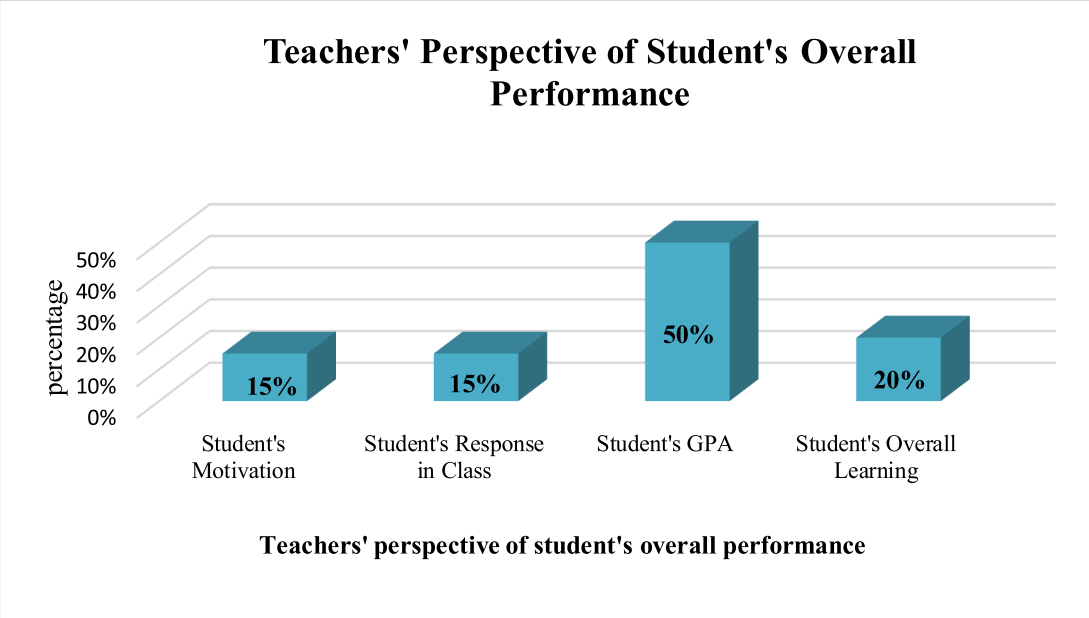

Figure 4.4 Teachers' Perspective of Students' Overall Performance

E-learning commonly requires more self-discipline and motivation to follow through online lessons. It is evident from the above figure that although student's GPA has improved in E-learning but their performance is not up to the mark. Teachers have shown their concerns about students' responses and motivation to learn in online classes.

Interviews were conducted with teachers to elucidate their perceptions and experiences about online teaching and the findings have shed a light on various aspects of online teaching. Majority of respondents were in favor of face-to-face instruction rather than teaching online as

they find physical classes more effective but considering the current circumstances, online classes are best and the one and only alternative. Technological problems, internet connection, power supply, students' unresponsiveness, students' motivation, mode of assessment, use of unfair means in exams and communication gap between teacher and student were indicated to be the major challenges by respondents. Most of the teachers agreed that they felt technically prepared to teach online and there was adequate technical support for online course teaching. A number of respondents stated that students have performed better in online classes in terms of GPA only but the overall learning has suffered a lot. When a question was asked that how online teaching has impacted student's learning, a respondent replied "it varies from student to student, some students are focused, dedicated, work hard and do really well but most of the students have not learnt much, it is sad that some good students who live in remote areas are disadvantaged". In response to an aforementioned question, a respondent stated "I am not satisfied with mode of evaluation as there was no check on students, they scored better because of open book exam and unfair means".

4.5 Challenges

There are many identifiable challenges to students' learning in online context; for instance, being attentive, lack of social interaction, understanding the course content, technical skills, learner motivation, time and support for studies, cost and access to Internet, digital divide and technical problems. Students believed that E-learning leads to lack of discipline because the teacher is not physically present to monitor their activities. Students may find it difficult to study on screen material, sitting in the same chair for long time and waiting for lecture to end as they are used to traditional methods of paper-based readings. Many students are not provided with the high bandwidth or the strong internet connection which are the requirements of E-learning and thus fail to catch up with their virtual classmates, being unable to connect to the server for longer periods of time due to low bandwidths or electricity problems is also an issue. Social isolation from instructors and peers and lack of face-to-face interaction with them is another problem in E-learning. Some students are technophobic; hence, they resist impeding the desired learning outcomes and this resistance to change didn't allow them to adapt to the E-learning environment easily. Students from vulnerable communities face additional challenges, the fact that almost half of the students don't even own computers/laptops and the

only available devices for participating in online classes are mobile phones also contributes to the challenges of E-learning. While studying isolated at home, students may face a lack of self-discipline or an inappropriate learning environment which evokes a feeling of work overload and thus a higher level of stress. Students also found it difficult to focus during the online classes in comparison to physical classes and reported perceiving a worse study although they had adapted quite well to the new teaching and learning experience.

Figure 4.2 represents the actual signal strength for mobile data and broad band devices in respondents' residential areas. 25% of respondents have limited internet access i.e. 2G, majority of respondents (44%) are utilizing 3G while 31% respondents are 4G subscribers having good quality internet. Slow Internet connections like 2G and 3G or restricted access from homes in rural areas can contribute to students falling behind academically. Students who lack high-speed Internet are also less likely to attend classes. Those who have better broadband access also have higher digital skills overall.

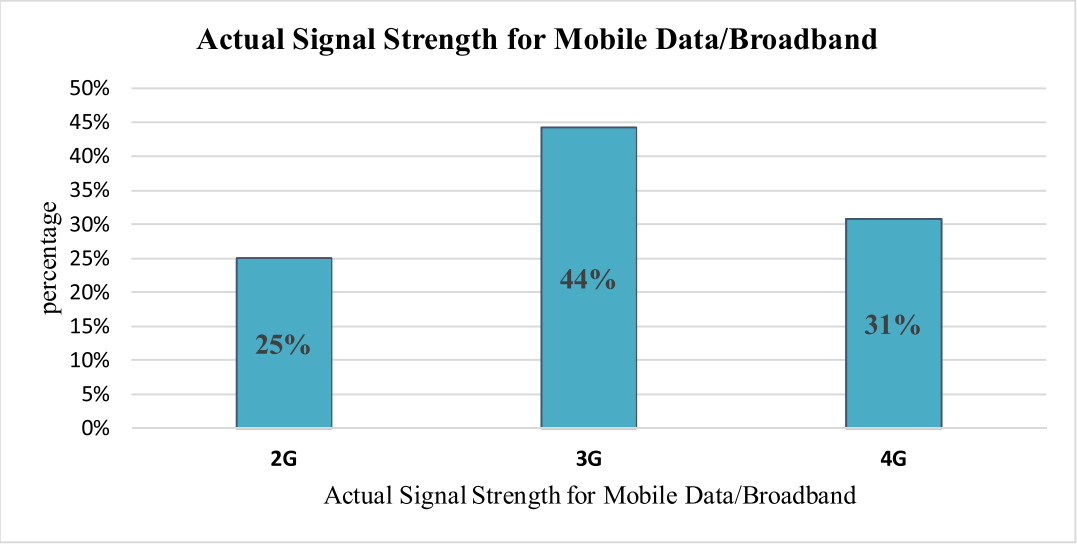

Figure 4.5 Actual Signal Strength for Mobile Data/Broadband

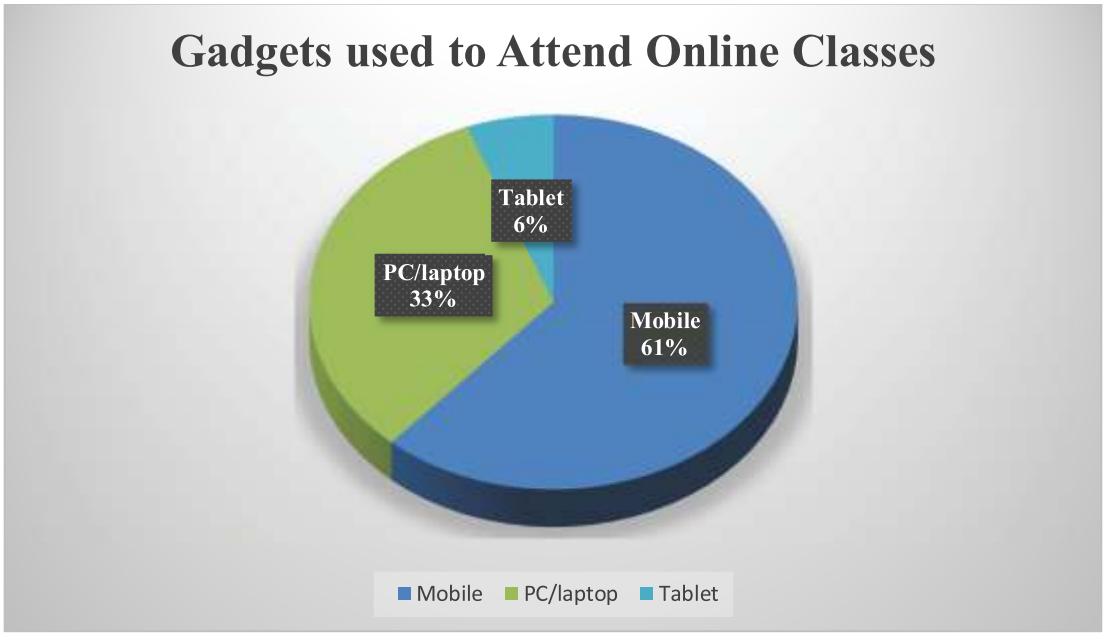

Figure 4.6 Gadgets used to attend Online Classes

Majority of students (61%) utilize mobile phones to participate in online meetings, 33% students have an advantage of owning laptops whereas tablet users account for only 6%. The figure clearly depicts that students who could only get Internet access at home on their cell phone struggled to utilize the resources available on the Internet.

Chapter 5

Conclusion

5.1 Conclusion

The study focused on understanding the perspectives of both students and teachers regarding E-learning and identification of basic issues faced by students and teachers in learning online after the shift of physical traditional classes to E-learning. The main findings explain that this abrupt and sudden shift to E-learning pose a number of challenges to students and impacted their learning in a negative way. The challenges include cost and access to Internet, social isolation, inappropriate learning environment at home, lack of direct interaction with teachers, work load, digital divide and technical problems. Students from engineering, IT, natural sciences disciplines and marginalized communities faced additional challenges. Online learning works better in some disciplines like theoretical courses but not suitable for disciplines where lab work, hands-on-learning or applications are required. Physical classes are preferred to online classes by both students and teachers. The major challenge for teachers is existing mode of assessment because in most cases, the tasks are not being done independently but is an outcome of group effort. As far as overall learning of students is concerned, COVID-19 and E-learning both had negative impact on it and learning has compromised.

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COVID-19 Outbreak in Pakistan: Policy Analysis and Its Implications through General Perception of People in District Abbottabad.

BY

SHAHBAZ KHAN.

Bachelors Thesis

DEDICATION

This thesis is dedicated to my parents a special feeling of gratitude for my loving parents who have been a source of inspiration and taught me the value of hard work and who not only helped me and guided me through each step of my life but also supported me emotionally throughout this journey. None of this would have been possible without their undying support and constant motivation, thank you.

ACKNOWLEDGEMENTS

Thanks to Allah Almighty for giving me the opportunity, courage, and resources to do something productive and blessed me to complete the research of the bachelor level, along with His other countless blessings. Without the blessings of Allah Almighty, I am unable to do anything.

I express my special thanks to Dr. Zahid Hussain, my research supervisor for his support, wise counseling, encouragement, valuable suggestions, and for always being there to help me throughout this research endeavor, this wouldn't have been possible if it wasn't for his excellent mentorship.

My deepest gratitude goes to my parents for never giving up on me and always motivating me to do better. And I am thankful to all my friends and seniors for their constant encouragement and support and always being there whenever I needed them, this wouldn't have been possible without your people.

Shahbaz Khan

CUI/SP16-BDS-007

ABSTRACT

In a crisis such as the 2020 outbreak of the newly emerged coronavirus, it is of utmost importance to monitor public perceptions of risk, protective and preparedness behaviors, public trust, as well as policy analysis and implications, and general perception of people regarding the COVID-19 outbreak. The purpose of this research was to analyze the spatial and temporal evolution in the COVID-19 outbreak in Pakistan. And to assess the policy implications and responsibilities of federal and provincial governments to the COVID-19 outbreak with the local perception of people in District Abbottabad. This study used a mixed approach. The research will use both qualitative and quantitative methodologies with a pre-designed and pre-constructed comprehensive questionnaire for the collection of quantitative data and some face to face interviews with the same structured question guides for qualitative data from the local people of District Abbottabad. Thus the findings of the study show that policies by federal and provincial governments regarding the COVID-19 were quite good according to the local perception of Abbottabad. Although the first 2 weeks of lockdown severely affected the economic conditions of people but being able to control the spread is appreciated. Awareness through media cannot be questioned as it played an important role to provide information about the pandemic and the instruction to minimize the effects but few individuals assume that continuous and nonstop news about COVID-19 also contributed to the psychological pressure. Effects were more decreased if the implementation were as good as policies, according to the local perception the implementation of policies was not so good as compared to the policy itself. Like many stores especially general stores were not completely closed and demonstrated leniency towards their customers because they didn't want to drive the customers away by being too strict and lose their sales. Whereas on the other hand Ehsaas Emergency Cash program has been introduced in the context of the economic hardship being experienced by the vulnerable due to the ongoing coronavirus crisis. The financial assistance under the program is meant to help the needy and poor people of Pakistan who faced difficulties in earning during the lockdown. According to respondents, Ehsaas relief funds were good initiatives during the first wave of COVID-19 but somehow the government lacks in fully accommodating all economic classes in the society because of its own financial limitations. As it is found through the research study that the last and

most importantly governments must ensure that resources, legalization, and support measures are in place to facilitate community participation in following the defined SOP and other community mitigation strategies and should work more and pay attention towards policy enforcement authorities so that every single individual from each economic class can get benefit from the government policies and plans because this global pandemic has affected each and every individual of the world.

Key Words: *coronavirus outbreak, Policy responses to COVID-19, public health intervention measures, COVID 19, World Health Organization (WHO), Government of Pakistan, measures against the COVID-19, COVID-19 outbreak.*

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LIST OF ABBREVIATIONS:

W World Health Organization (WHO)

P Public Health Emergency of International Concern (PHEIC)

S Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

M Middle East Respiratory Syndrome (MERS)

N National institute of health (NIH)

C The Central Emergency Relief Fund (CERF)

CHAPTER 1
INTRODUCTION

1.1 Introduction

The World Health Organization (WHO) declared the 2019–20 coronavirus outbreak a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 (Tait 2020) and a pandemic on 11 March 2020 (WHO 2020). Local transmission of the disease has been recorded in many countries across all six WHO regions (WHO 2020).

History has demonstrated that pathogens may cause devastating consequences in our health and economy. Thus, the rapid spread of the new SARS-CoV-2 pathogen, causing the Coronavirus disease 2019(COVID-19) is a clear current example. In this regard, the Director-General of the World Health Organization (WHO) has recently declared COVID-19 a global pandemic on 11 March 2020 starting in Wuhan, Hubei Province, China in December 2019 (WHO, 2020c). According to the WHO, the current COVID-19 outbreak situation has confirmed 1,812,734 cases and 113,675 deaths involving 213 countries (WHO, 2020a) where Spain is one of the leading countries of this global health crisis with 172,541 confirmed cases and 18,056 confirmed deaths (ISCIII, 2020) (data reported on April 14th, 2020) in a population of about 47 million people. Nonetheless, experts are warning that there could be many more cases that have not been detected and/or informed, especially in undeveloped countries. This strain continues to spread globally, overwhelming intensive care units, and health system capacity. The present outbreak of this coronavirus-associated acute respiratory disease is the third documented spillover of an animal coronavirus to humans in only two decades and has been identified as a zoonotic coronavirus, similar to SARS coronavirus and MERS (Liu et al., 2020).

The countries bordering Pakistan, including China, were severely affected by COVID-19. In the west, Italy with the highest number of COVID-19 mortalities while in the north, Iran a high number of mortalities after Italy. (Saqlain et al., 2020) In Pakistan, the first case of COVID-19 was confirmed by the Ministry of Health, on February 26, 2020, in Karachi, Sindh province. On the same day, another case confirmed by the Pakistan Federal Ministry of Health was in Islamabad. Within fifteen days, the number of total confirmed cases (COVID-19 Positive) reached twenty 20 out of 471 suspected cases with the highest numbers in the Sindh province followed by Gilgit Baltistan. All of the confirmed cases had recent travel history from Iran, Syria, and London.

1.2 Policy Responses to COVID-19 in Different Countries

One of the key policy choices facing governments in the COVID-19 pandemic is whether to shut down economic activity to slow the spread of the disease. Many types of consumption take place in settings with a high density of people (e.g., restaurants, public transit) or involve direct physical contact (e.g., hairdressers, dentists) and contribute to the disease spreading. Other types of consumer spending (e.g., retail shopping) involve proximity to shopping assistants and other consumers and therefore also pose risks. Most governments have implemented social distancing laws that restrict some of these economic activities. However, the severity of these restrictions vary considerably across countries and many governments are considering day-by-day whether to loosen, maintain, or tighten restrictions in response to new data on COVID-19 cases and mortality.

The two neighboring countries, Denmark and Sweden, were exposed to the COVID-19 pandemic in a very similar way. In both countries, the epidemic started on 26-27 February 2020, and mortality rates increased at a similar pace over the following weeks. The policy response, however, differed significantly in the two countries. Starting on 11 March 2020, Denmark took measures to limit social interaction to contain the virus: congregations of more than 10 people were prohibited; schools, universities, and other non-essential parts of the public sector were shut down; borders were closed for foreign nationals, and the population was encouraged to stay at home and minimize social contact. The measures had direct implications for many types of economic activity involving high social proximity: restaurants were not allowed to seat customers; the entertainment industry including nightclubs, cinemas, and concert venues was shut down; personal services such as hairdressers and dentists were closed; retail was restricted to high-street shops with malls being shut down entirely, and public transport was limited. Compared to Denmark and almost every other Western country, Sweden took a much lighter touch approach: the population was encouraged to stay home if feeling unwell and to limit social interaction if possible; large-scale events were prohibited, and restaurants and bars restricted to table service only, but private businesses were generally allowed to operate freely. Consistent with the notion that restrictive measures help reign in the pandemic, mortality rates in Denmark and Sweden diverged sharply around two weeks after the Danish shutdown. (Andersen et al., 2020)

Because Denmark and Sweden were exposed similarly to the epidemic, but only the Danish government restricted economic activity, a comparison of spending dynamics in the two countries allows us to isolate the effect of the restrictions. Importantly, the comparison captures both the direct effects of the restrictions through the reduced availability of goods and services and the indirect effects of the restrictions through the reduced spreading of the virus. By isolating the differential effect of government policy, our analysis is fundamentally different from recent papers estimating the total change in consumer spending through the COVID-19 pandemic in the United States. (Andersen et al., 2020)

1.3 Facilitation by the Government of Pakistan Against COVID-19

The Government of Pakistan is taking all the measures against the COVID-19 to provide and ensure the responsibilities of the state for their people. Since the first day when the first case was confirmed in Karachi city of Sindh, all the services and measures were used with extreme capabilities to ensure the safeness of life in the region. Meanwhile, all the cases have a travel history, suggesting transmission elsewhere being imported in the country. The government of Pakistan provides COVID-19 mitigation strategies with their measures. Such as early case detection and Tracing and tracking of contacts, Risk communication, Social Distancing, Quarantine, and Isolation to avoid the spread of COVID-19 (National institute of health (NIH), 2020).

The Government of Pakistan has established a COVID-19 Relief Fund to receive donations for the welfare of the public. Social network helplines were launched by the Government in seven (07) local languages. The materials will be distributed in all villages with refugees in Baluchistan. The Government of Khyber PAKHTUNKHWA has issued directives for the closure of OPDs and elective surgical services from 1-13 April 2020 in all the Tertiary Care Hospitals, District Headquarters Hospitals, and Private Clinics throughout the province. The Central Emergency Relief Fund (CERF) has allocated $ 60 million to the Global Response plan for COVID-19. Sindh Government has established the first drive through the COVID-19 Testing facility in Karachi (Bhattacharya.,.2020).

1.4 National Action Plan- Policy

By “Ministry of National Health Services, Regulations and Coordination” the National action plan for Coronavirus disease (COVID-19) Pakistan will serve as a policy document for ensuring that all guiding principles for outbreak preparedness, containment, and mitigation. The first vision of the” National action plan for Coronavirus disease (COVID-19) Pakistan is a National effort for a response to the COVID-2019 Emergency in Pakistan while ensuring continual maximum preparedness and optimal and effective response capacity to the current and future outbreaks of respiratory pathogens with pandemic potential including COVID-2019. And the second vision is “Minimal national Morbidity and Mortality, thereby decreasing the burden of disease on the economy of the country”. It came up with two aims first is to “Develop National Preparedness & Response Plan for COVID-2019 “. and the second one is to “Provide policy framework for federal, provincial and regional stakeholders for building capacity to prevent, detect and respond to any events due to COVID2019 or other novel pathogens with pandemic potential in Pakistan”.

Thus the geographical location of Pakistan, with the continuous increases in the number of CVOID-19 positive cases, needs a high level of action, plans, and management. On 12th of February, the Ministry of National Health Services, Regulation & Coordination Pakistan presented a plane “National Action Plan for Preparedness & Response to Corona Virus Disease (COVID-19) Pakistan”, the aims to control the spreading of the virus and to strengthen the country and community emergency preparedness to ensure a timely, efficient and effective response to potential events due to COVID-19 including. The local, regional, and national outbreaks can have a significant impact on the health of the Pakistani population and society (Sherin, (2020). To date, different steps have been taken by the government of Pakistan against the COVID-19 outbreak. In this review, we highlighted the different steps taken by the government of Pakistan against COVID-19, such as designated hospitals, quarantine centers, testing facilities, treatments, public awareness, and the response of the local community against the COVID-19 outbreak.

1.5 Statement of the Problem

Global pandemic Coronavirus is spread everywhere in the world and the countries bordering Pakistan as there is a huge increase in trends of COVID -19 patients and deaths, so that every

country is looking for policies to follow to reduce the spread of this virus as much as possible. Since Pakistan is lacking in a research study regarding the effectiveness of the implementation of policies and plans so it becomes imperative to give an account on temporal and spatial variation in COVID-19 spread and mortalities, analysis of policies and to investigate how much these policies are effective in controlling the spread of the pandemic from the local perception. Present research with mixed research design, therefore, focuses on filling that gap in the literature and help policymakers to devise effective policies for future pandemics.

1.6 Objectives

1- To analyze the spatial and temporal evolution in the COVID-19 outbreak in Pakistan.

2- To assess the policy implications, responsibilities of federal and provincial governments and general knowledge about COVID-19 outbreak through the local perception of people in District Abbottabad.

CHAPTER 2
LITERATURE REVIEW

2 Background

In December 2019, an outbreak of pneumonia of unknown origin developed in Wuhan of Hubei Province, China. (Huang C et al., 2020) By January 7, 2020, Chinese scientists confirmed that the outbreak was caused by a novel coronavirus, initially referred to as the 2019-nCoV, and recently renamed as severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), and the disease is now termed coronavirus disease 2019 (COVID-19) by the WHO.(Zhu N et al., 2019) As of February 20, 2020, more than 75,748 confirmed cases of COVID-19 have been reported in 28 countries (including China) and international conveyance (cruise ship in the Japanese territorial waters), with approximately 99% of cases occurring in mainland China. The WHO declared a public health emergency of international concern (PHEIC) on January 30, 2020, in response to the rapid growth of the outbreak and reports of human-to-human transmission in several countries. (WHO, 2020)

Infectious disease modeling in the current COVID-19 pandemic has had more attention from the government and media (both social and traditional) than for any previous pandemic. This can be attributed to the huge impact of the pandemic, changes in global communication, and technical advances in modeling. These advances encompass new methods, improved computational tools, public data sharing, improved code availability, and better visualization methods, which have all advanced markedly in the decade since the H1N1 influenza pandemic in 2009 (D.B. George et al., 2019) Policymakers have placed greater trust in models than ever before, although models have also received considerable criticism, and their limitations need to be acknowledged.

In this paper, we describe ways in which models have influenced policy, from the early stages of the outbreak to the current date – and anticipate the future value of models in informing suppression efforts, vaccination programs, and economic interventions.

2.1 Travel Restrictions

Policy on border closures followed early estimates of the trans-national spread of COVID-19 and was strongly influenced by modeling. In January 2020, modeling based on travelers from Wuhan found that early COVID-19 case rates were significantly under-reported both in China and overseas, and border closure policies promptly followed. China imposed an internal travel lock-down on Wuhan on 23rd January and most countries enacted limited restrictions through

February and comprehensive restrictions through March; many governments using travel risk models to anticipate case numbers with and without border closures. (Shearer et al. 2020)

Fully connected meta-population travel models have provided additional insights. Retrospective analyses have shown that the Wuhan lockdown imposed by China did little to delay the outbreak within China, but had a greater impact on other countries. (Adekunle et al., 2020). Models have also predicted the shifting of epicenters from Asia to Europe and from the USA to South America and Africa, based on the connectedness of these regions, enabling enhanced surveillance in vulnerable destination countries. Currently, almost every country in the world has experienced local transmission, such that border restrictions are of lesser importance. However, as countries begin to move out of lockdown and seek to reignite their economies, travel modeling will again become helpful for anticipating the risk of reintroduction of cases to jurisdictions that have successfully reduced transmission. (Adegboye et al., 2020).

2.2 Estimates of the Epidemic Potential of COVID- 19

Many early models estimated a high reproduction number – the average number of secondary cases per infected case. Although precise values differed, in China before interventions, these mostly fell between a value of two and three (Liu et al., 2020), heralding the seriousness of the pandemic. Based on these estimates, model projections were consistent in predicting that an unmitigated epidemic would overwhelm health systems and lead to an unacceptable loss of life. A prominent example was the report by Imperial College London on the potential of COVID-19 to cause widespread infection across the UK and the US if a mitigation (reproduction number greater than one) rather than suppression (reproduction number less than one) strategy was pursued. (Ferguson NM et al., 2020)

Consistent model findings of high infection rates and mortality collectively resulted in many countries grasping the seriousness of the epidemic. Consequently, public health interventions and government-imposed restrictions on human movement were initiated to reduce transmission. Models showing changes in transmission rates over time have been powerful tools for enabling policy-makers to demonstrate gains in epidemic control through public health policy and action. Many media outlets and public health officials around the world have provided explanations about the effective reproduction number and its critical threshold of one, which is the key to escaping from lockdown. Political leaders of New Zealand, Australia, the UK, Indonesia, and

Germany have all used this terminology in communicating decision making for easing lockdowns, demonstrating the marked increase in the public's understanding of infectious disease modeling. (McBryde et al., 2020)

2.3 Exiting Lockdown using Mixing Models

As countries see their epidemic incidence curves decline in response to changes in behavior and policy, developing a strategy to exit lockdown is vital. The aim is to do so gradually, without pushing the effective reproduction number above one and risking a second pandemic wave. Models can predict the impact of resuming different activities if the impact of each behavioral intervention is well quantified. Since most interventions were applied simultaneously, their contributions are unknown, and an alternative approach is required.

One approach is to examine contact patterns and thereby infer infection risk using age-specific mixing models. In 2008, age-specific contact patterns were estimated in several European countries (Mossong et al., 2008), and synthetic matrices were later developed for 152 countries (Prem et al., 2017). Changes in contact rates resulting from COVID-19 policy can be estimated using several sources: google mobility data provides the amount of time spent in locations, City-mapper provides regularly updated data on direction requests, and nation-wide behavior surveys provide information on the impact of policies for both the number and duration of contacts in some countries. Mixing models synthesize these results to identify age-specific contact rates and use relative infectiousness and susceptibility to infer age-specific infection rates.

The findings that children are probably less likely to acquire infection and are much less likely to show symptoms when infected have been incorporated into these models to assist with policy development. In particular, mixing models have shown that school closure has a modest impact on disease transmission at most, which has encouraged several jurisdictions to accelerate school re-openings, or avoid school closure. (McBryde et al., 2020)

2.4 Low and Middle Income Countries (LMICS)

Models designed to inform policy in low- and middle- income countries [LMICs] need to capture variation in transmissibility of COVID-19 with socio-demographic features. Models forecasting the COVID-19 epidemic in LMICs indicate that transmission is likely to be delayed by the

relatively low travel numbers and the higher proportion of children in these countries. (Davies et al., 2020)

This delay has given countries critical time to prepare and strengthen their often limited health infrastructure and diagnostic and surveillance capacity. For example, there are only 0.23 ventilators per 100,000 of the population in Uganda, compared with nine in Australia and eleven in Europe. Despite the delay, models predict that any natural protection offered by a younger population is likely to be offset by weaker health systems, overcrowding, and comorbidities; hence LMICs have been advised to prepare for a "slow burn" COVID-19 epidemic.

Brazil has been one of the LMICs most severely affected by COVID-19 (thus far), and its epidemic trajectory provides some insight into the different pandemic trajectories of LMICs compared to higher-income settings. The first case of COVID-19 occurred in Brazil on 25th February 2020 and by early May there were over 100,000 reported cases and 7000 deaths, an estimated epidemic doubling rate for deaths of five days (the highest of 48 countries analyzed). The rapid transmission in Brazil is attributed to a combination of inadequate policy response, high population density, close living quarters, limited access to clean water, informal employment, and transmission to indigenous populations through encounters with illegal miners and loggers in the Amazon rainforest. (Mcbryde et al., 2020)

On top of the direct COVID-19-related morbidity and mortality, indirect effects associated with disruptions to other critical medical services are anticipated. In some LMICs, health care systems will be faced with concurrent outbreaks, such as dengue in Ecuador, Brazil, and other Latin American countries (Navarro et al., 2020). Models can also help estimate the indirect effects of COVID-19, such as through interruptions to the supply of antiretroviral therapy (HIV treatment) in South Africa due to COVID-19. It has been estimated that this disruption could cause a death toll on the same order of magnitude as the deaths that would be averted by physical distancing interventions for COVID-19 itself (Jewell et al., 2020). Similarly, disruptions to vaccine delivery in LMICs could lead to major outbreaks of vaccine-preventable diseases, such as measles, for many years to come. (R. Nelson, 2020)

Policies that have been effective in developed countries may not translate to impact in LMICs. This has been attributed to physical distancing often being impractical due to large household sizes, overcrowded settlements, and informal economies. Lockdowns that severely restrict

movement outside the home are less feasible and more harmful in countries where work is essential for survival. (Zandvoort et al., 2020)

2.5 Modeling the Potential Impact of Vaccination

It seems almost certain that a vaccine will be needed if COVID-19 is to be eliminated globally. As of 2nd June 2020, there are ten clinical trials for COVID-19 vaccines in different stages of development and 123 molecules in preclinical evaluations. Modeling can be useful in evaluating the efficacy of vaccines during clinical trials and diminishing biases. (McBryde et al., 2020)

Models have already shown that immunity of 60% is desirable to protect those who cannot or choose not to become vaccinated. However, once a vaccine becomes available, an implementation strategy will be required as supply scales up. Should we vaccinate the most vulnerable groups, those at the front-line of control or those contributing the most to transmission first? While ethical and equity considerations will appropriately drive much of this debate, modeling has a role to play. Modeling can help to assess the potential effectiveness of different vaccination strategies, such as location-specific ring-vaccination for Ebola, age-specific vaccination for influenza, and assessing long-term risks and benefits of dengue vaccination (Ferguson et al., 2016). For COVID-19, strategies may differ between countries depending on the acuity of the epidemic, the age groups driving the infection or at higher risk for severe disease, and the age structure of the population. (McBryde et al., 2020)

2.6 Economic Models for COVID-19

The containment and mitigation measures implemented by countries around the world to slow the spread and reduce mortality due to COVID-19 have resulted in a worldwide economic crisis, with the cost likely to exceed the damage from the Global Financial Crisis of 2007–2008. Unlike previous such crises, the COVID-19 pandemic has simultaneously created major downturns in both supply and demand across the world (Loayza et al., 2020). This creates significant policy challenges for governments to design strategies that take into account both the effectiveness of public health intervention measures and their negative socioeconomic consequence (C, Neumeyer ., 2020).

Containment and mitigation efforts, which are aimed at saving lives, avoiding human capital losses, and flattening the epidemic curve, also reduce economic activity (Mcbryde et al., 2020). This intentional reduction of economic transactions has been undertaken by many governments

as a necessary public health measure, at least in the early stages of the epidemic. Apart from the humanitarian perspective, there are economic benefits to counter some of the losses of these policies, such as avoiding loss in income due to premature deaths, workplace absenteeism, and reduction in productivity. Contractions in supply and demand also come from physical distancing, travel restrictions, non-essential business closures, and other measures, as people work and consume less. (Qiu et al., 2020)

Some studies have used early estimates of infection rates and case fatality ratios to assess healthcare costs due to the pandemic and provide a cost-benefit analysis of non-pharmaceutical interventions. (Bartsch et al., 2020) Others have used simulations to model epidemiological scenarios in inter-temporal general equilibrium models. (Thunström et al., 2020) For example, a dynamic stochastic general equilibrium model is used to model global economic outcomes under different scenarios of the pandemic's evolution over the remainder of this year. (McKibbin WJ., 2020) A limitation of this modeling approach is that it requires a large number of inputs and assumptions on economic relationships and epidemiological characteristics. As economic consequences from the COVID-19 pandemic originated from epidemiological factors and these factors will continue to play a role in the dynamics of control, the economic trade-offs between public health and economics should be considered and analyses that combine epidemiological and economic modeling will be valuable.

2.7. Challenges in Developing Modeling for Policy

Much of the value of models in the COVID-19 pandemic is in informing immediate policy decisions. A collaborative relationship between modelers and policy-makers ensures that models focus on priority questions. Providing modelers with a clear view of the policy environment allows them to propose and develop models that support decision making. This may go beyond policy-makers outlining the policy questions of interest and the interventions under consideration, and should ideally create an environment where modelers and policymakers work in partnership.

Modeling analyses may also play a role in broadening the scope of options under consideration. For example, modelers advising the UK health authorities did not initially explore a strategy that involved increased testing because they had been advised that there were limits on the extent to which testing capacity could be scaled up. (D. Adam., 2020) However, modeling more ambitious

scenarios can provide high benefits at low cost, even if the strategies simulated are not immediately able to be enacted – if models had shown that increasing testing, tracing, and isolation would result in dramatically better outcomes, these activities may have been prioritized sooner in the UK. Similarly, in Australia, models presented to the Australian Government in March 2020 examined only mitigation strategies (R. Moss., 2020). Had these early models shown the enormous impact potential for suppression, earlier and shorter lockdowns may have been planned. The current pandemic crisis has led to a resurgence of interest in modeling, and an increase in its use for guiding policy. Modeling advice should always be developed and considered in context, allowing for setting-specific limitations in capacity. Early analyses have been biased towards high-income settings where both modeling expertise and reported cases have been concentrated. However, as the pandemic now shifts towards highly-vulnerable LMICs, a concerted effort is required to provide international modeling support to local containment efforts. (Mcbryde et al., 2020)

2.8 Spatial Temporal Analysis for the Case of Pakistan

The deadly coronavirus 2019–20 was declared as a global pandemic and the first case is reported in Pakistan in February 2020. The number of confirmed cases is over 5000 including 1026 recovered and 86 died up till April 2020. Punjab is the biggest province of Pakistan and has the highest number of cases with a confirmed 2400. To restrict unnecessary movements across the cities, the government has ordered rigorous instructions for the coming two weeks that will slow the spread of coronavirus. As the COVID-19 cases are reported in Karachi and Islamabad, the Punjab government started imposing restrictions all across the province as a precautionary measure. Similarly, after reporting two new cases in Karachi, the provincial government has also taken all the necessary action. Five advanced hi-tech scanners have been fitted at airports and import tax on items related to the disease treatment. Regardless of all the high-level and extensive actions being implemented by the administrative bodies, the virus is now becoming a high-risk situation for old age persons. Thus, mass education through print and electronic media has become extremely significant to alert the nation about the current and anticipated issues related to the coronavirus and other sufferings. However, the number of cases, linear trend, and deaths are increasing, which is an alarming situation for a developing country, like Pakistan. (Sarwar, S et al., 2020)

Chapter 3
Research Methodology

3 Methodology

The purpose of the research methodology chapter is to introduce the research instruments that we have developed and utilized in the pursuit of our research goals. This chapter presents in detail how evidence in this study was collected and analyzed, as well as to introduce the research strategy and the empirical techniques applied in this research. Describing the advantages and disadvantages of each approach and design considering their practical applicability to our research (Mohajan, 2017).

3.1 Research Methodology

The research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining, and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. It aims to give the work plan of research. (Rajasekar)

3.2 Research Approach

A research approach is a plan of action that gives direction to conduct research systematically and efficiently. An approach means plans and the procedure for research that encompass the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. The overall decision involves which approach should be used to study a topic. Reaching this decision is guided by philosophical assumptions an approach brings to the study; procedures of inquiry (research designs) the chosen approach it necessitates; and specific research methods of data collection, analysis, and interpretation as guided by the design (Moen, 2006).

3.2.1 Paradigms of Research Approaches

There are three main research approaches as i) quantitative (structured) approach, ii) qualitative (unstructured) approach, and iii) mixed methods research (Creswell, 2017). All researches must involve an explicit, disciplined, and systematic approach to find out the most appropriate results. The mixed-methods approach for research questions wants both numerical and textual data. To obtain the numerical data quantitative method is considered and for the textural data, the qualitative method is carried out.

3.2.1.1 Qualitative Research Paradigm

The qualitative research design is also known as the socio-Anthropological research paradigm. It is interpretative and ethnographic. The underlying approach requires detailed observation, explanation, and assumes that it is impossible to define exactly what elements are important and crucial and should be considered to the exclusion of others. It argues that validity is important than attempting rigorously to define what is being observed and by so doing study the whole situation. It attempts to study the whole situation to evaluate the complexity and ensure that their conclusion takes account of both unique and general factors (Ochieng, 2009).

3.2.1.2 Quantitative Research Paradigm

The quantitative research paradigm on the other hand is empirical; it is also known as the scientific research paradigm. The paradigm ensures validity by the process of rigorous clarification, definition, or use of pilot experiments. That is trying out the instruments beforehand and checking their relevance with experts and assessing their reliability by use of statistical tests. (Ochieng, 2009). This approach can be further sub-classified into inferential, experimental, and simulation approaches to research.

3.2.1.3 Mixed Research Paradigm

Qualitative data typically consists of words while quantitative data consists of numbers. The two can be synchronized for better results. The point is that the line between qualitative and quantitative is less distinct. All qualitative data can be quantitatively coded in an almost infinite variety of ways. This doesn't detract from the qualitative information. Recognizing the similarities between qualitative and quantitative information opens new possibilities for interpretation that might otherwise go unutilized. All quantitative data is based on qualitative judgment. Numbers in and of themselves can't be interpreted without understanding the assumptions which underlie them to do good research we need to use both the qualitative and the quantitative (Ochieng, 2009).

3.3 Research Design

The purpose of this research was to analyze the spatial and temporal evolution in the COVID-19 outbreak in Pakistan. And to assess the policy implications and responsibilities of federal and provincial governments to the COVID-19 outbreak with the local perception of people in District

Abbottabad regarding the COVID-19 outbreak. This study used a mixed approach. The research will use both qualitative and quantitative methodologies. To help one achieve greater insight into the meaning of the data and to help examine specific hypotheses. This would include a pre-designed and pre-constructed comprehensive questionnaire for the collection of quantitative data and some face to face interviews with structured question guides for qualitative data.

3.4 Data Collection Instruments

The research is based on primary data as well as secondary data. All the data collected via questionnaires and interviews are primary. And all the data (daily data for cases, deaths for all cities starting from the first case till now) for other countries including Pakistan which is collected through online available data regarding this is known as secondary data.

And the major instruments used for the collection of data are both qualitative and quantitative methodologies. This would include pre-designed and pre-constructed comprehensive questionnaires for the collection of quantitative data and some face to face interviews with structured question guides for qualitative data from the people who cannot read or write.

As in-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation. (Boyce, C., & Neale, P. 2006)

Whereas for the quantitative survey the method of questionnaires was used because closed-ended questions can form a major part of these surveys as they are more effective in collecting quantitative data. The survey included questions and can be answered through options that they thought were the most appropriate for a particular question. Surveys are the most appropriate integral in collecting feedback from a huge audience that is larger than the conventional size and hard to handle. A negative factor about surveys is that the responses collected from people should base on discrepancies.

3.4.1 Confidentiality

According to the norms it has to be protected and have to be made confidential as several informants claim that confidentiality is a way to prevent stigma and discrimination among

people. So confidentiality is an important way to protect the privacy of people affected by these circumstances so that this study did not contain the names and institutions of the students.

3.4.2 Validity of Questionnaire

To check the validity of the questionnaire used for collecting data. A pilot test was conducted in which 12 randomly selected respondents were used and were asked to give their opinions, perspectives, and suggestions in the end. This helped the researcher remove irrelevant questions and add more appropriate questions to support the research hypothesis. And it also helped to verify the obtained data.

3.5 Target Population

The target population in this research was the whole population of Abbottabad. Respondents may include workers, teachers, students, health workers, government officials, shopkeepers, etc. The variation in the targeted population helped the research show the diverse challenges faced by the general public during this course of time.

3.6 Sampling Technique and Size

A random sampling technique is used for this study. The total sample size will be 60 which includes respondents from all the age groups of local people of Abbottabad and includes participants ranging from workers, students, health workers, Government officials, health officers, etc. Respondents would be chosen randomly through the application of the mentioned technique for data collection.

3.7 Study Area

Abbottabad is a district of the province Khyber Pakhtunkhwa. It is a military garrison town as part of the Hazara Division and covers an area of 1,969 km^2, with the city of Abbottabad being the principal town. Abbottabad is the most affected city of Khyber Pakhtunkhwa.

The study was conducted in Abbottabad. This district consists of people from diverse backgrounds and they also serve private as well as governmental firms. The reason behind choosing this region is that according to the statistics provided KP has the third-highest rate of corona cases after the Sindh and Punjab province of Pakistan and it was ranked as the city containing the highest rate of COVID-19 patients in the second wave of COVID-19 which is

denoted as the most chronic and lethal wave. As it consists of a government hospital named AYUB Medical Complex which is the most efficient and the only hospital in the area dealing with corona patients with its isolation wards and testing kits. As well as in areas of Abbottabad district the Staff House Officer (SHO) of police quite successfully ensured lockdown by involving the local community. In recent years Abbottabad has become the most expensive city in Pakistan and because of the lockdown situation and closed businesses poverty has been increased which affects the socioeconomic status of the households and directly affects the life of the local community.

3.8 Data Analysis

The data of the study was gathered from the questionnaire and the interviews. To analyze the data from the questionnaires descriptive study was used. Once the sample size was attained the data was put to the Microsoft office excel spreadsheet in graphical and tabulation form. It had been presented in a manner that would be understood by research users. The qualitative data from the interviews were analyzed using thematic analysis. The findings obtained were incorporated into themes.

Chapter 4
Results and Discussion

4 Results and Discussions

This study is carried out in the District Abbottabad to assess the perception of people regarding the COVID-19 outbreak, and analysis of its policies and implications through local people's perception that how much they know about this virus, how much it affected their day to day lifestyle, and how the government responded to this pandemic situation and introduced effective policies to combat this pandemic. The aim of this analysis is going to prove whether my study has achieved its objectives or not.

The collected data includes the biography of the respondents. It includes people's awareness regarding the COVID-19 outbreak, their opinions, and views about the attitudes and practices of government in the defined circumstances, the effectiveness of their policies, plans, and decisions, and how this impacts their economic conditions and their daily lifestyle. Furthermore, it also includes the local perceptions of how other people and communities behave and follow the rules and defined SOPs in this pandemic situation.

This chapter is subdivided into two sections. The first section will be showing the analysis of data collected through structured questionnaires from the local people who can fill and respond to the written questionnaires and are randomly selected from the whole local people of District Abbottabad. In the second section, the analysis of data collected through semi-structured interviews from people who are unable to read and write and for getting better insight and focusing on the problems and challenges they face during this pandemic, the policies made by the government officials to tackle down and combat these disastrous situations, and the availability of resources and facilities and governments initiatives to facilitate local people. For analysis the data was divided into two themes:

1. The spatial and temporal evolution in the COVID-19 outbreak in Pakistan.
2. To check the perceived effectiveness of social mitigation strategies and ability to adopt practices.
3. The policy implications and responsibilities of federal and provincial governments to the COVID-19 outbreak with the local perception of people in District Abbottabad.

4.1 Spatiotemporal Analysis

One of the most important properties of epidemics is their spatial spread, "a characteristic which mainly depends on the epidemic mechanism, human mobility, and control strategy" (Gross et al., 2020: 2). We can use GIS and spatial statistics to respond to this, and also to help mitigate the epidemic through scientific information, find spatial correlations with other variables, and identify transmission dynamics (Xiong et al., 2020).

Our study focuses on investigating the trend of COVID-19 and the use of spatial-temporal analysis for the case of Pakistan, which is a developing economy with limited resources to fight against COVID-19. The deadly coronavirus 2019–20 was declared as a global pandemic and the first case is reported in Pakistan in February 2020. The number of confirmed cases is over 5000 including 1026 recovered and 86 died up till April 2020. Punjab is the biggest province of Pakistan and has the highest number of cases with confirmed 2400 (Tribune.com.pk, 2020a).To restrict unnecessary movements across the cities, the government has ordered rigorous instructions for the coming two weeks that will slow the spread of coronavirus. As the COVID-19 cases are reported in Karachi and Islamabad, the Punjab government started imposing restrictions all across the province as a precautionary measure. Similarly, after reporting two new cases in Karachi, the provincial government has also taken all the necessary action. Five advanced hi-tech scanners have been fitted at airports and import tax on items related to the disease treatment. Regardless of all the high-level and extensive actions being implemented by the administrative bodies, the virus is now becoming a high-risk situation for old age persons. Thus, mass education through print and electronic media has become extremely significant to alert the nation about the current and anticipated issues related to the coronavirus and other sufferings (Tribune.com.pk, 2020a, Tribune.com.pk, 2020b). However, the number of cases, linear trend, and deaths are increasing, which is an alarming situation for a developing country, like Pakistan. Globally, on 23 November 2020, there have been 58,425,681 confirmed cases of COVID-19, including 1,385,218 deaths, reported to WHO.

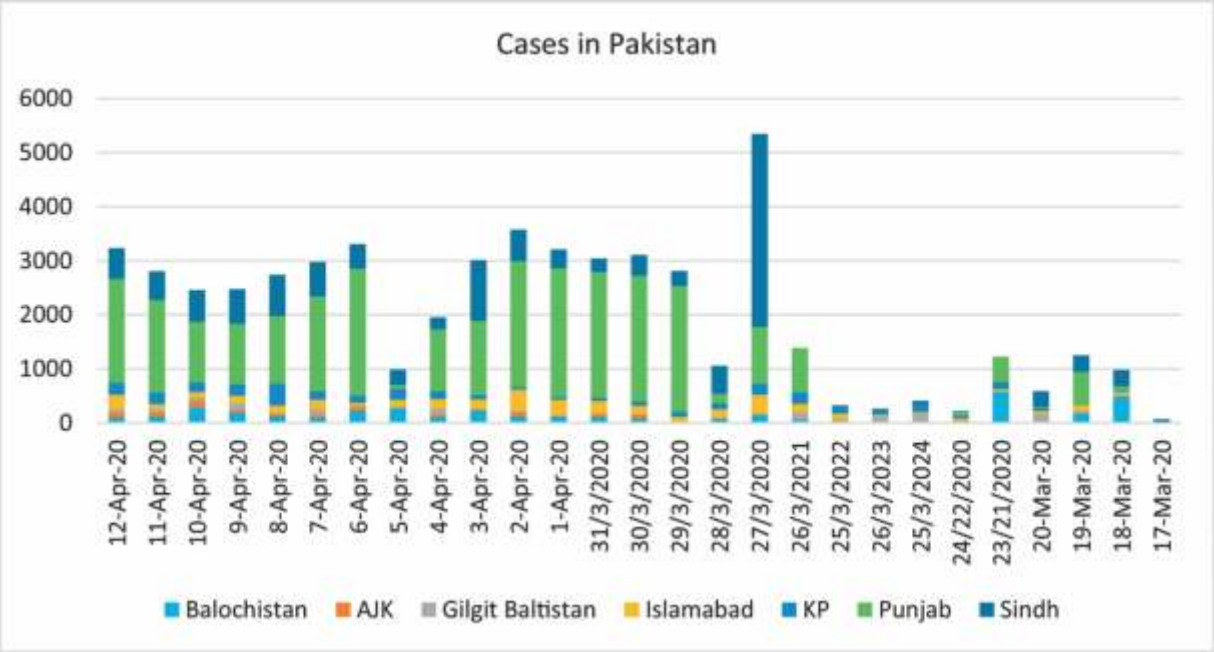
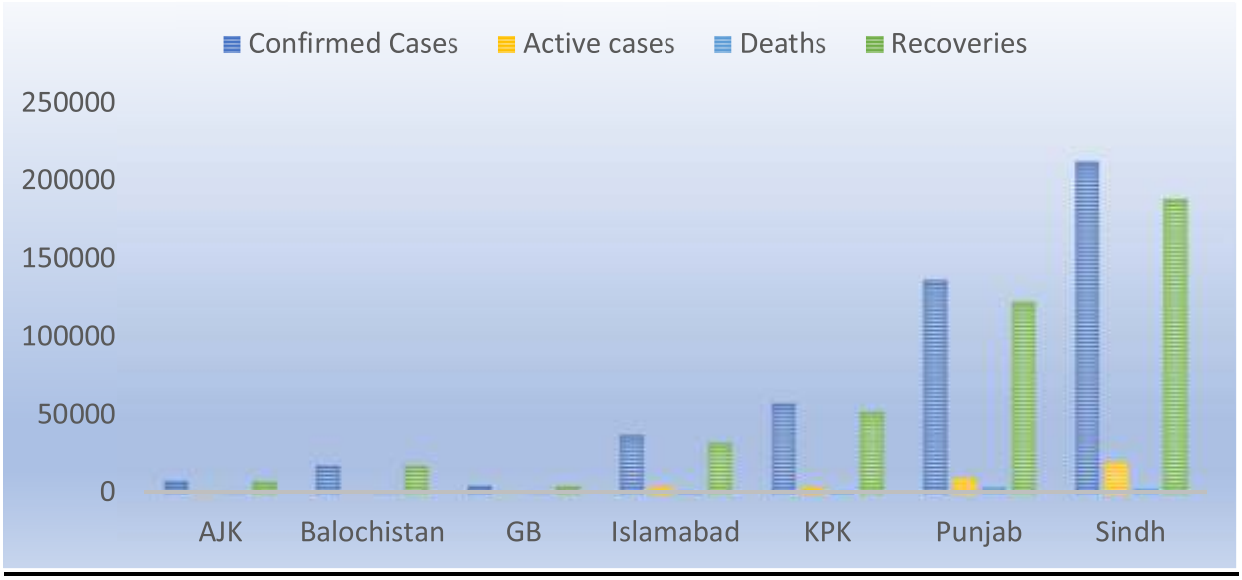


Fig.4.1: Daily cases of COVID-19 in Pakistan (2020/03/17–2020/04/12 NCOC Pakistan).



The trend of COVID-19 in Pakistan (COVID.gov.t.pk. 29/12/2020)

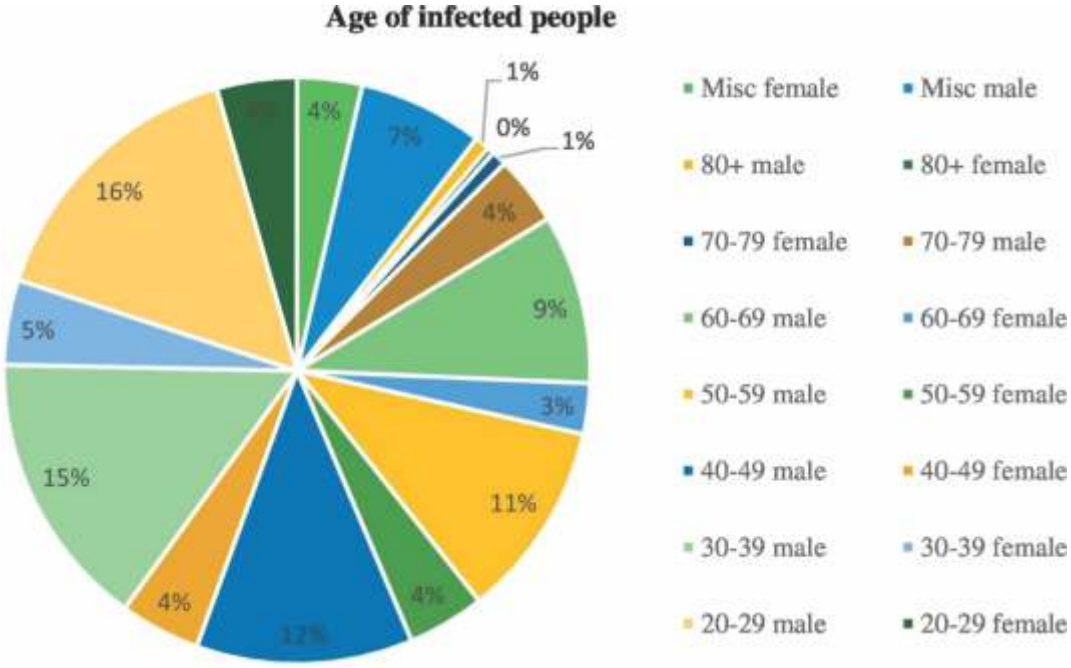


Fig.4.2: Gender distribution w.r.t to age infected by COVID-19 in Pakistan (NCOC)

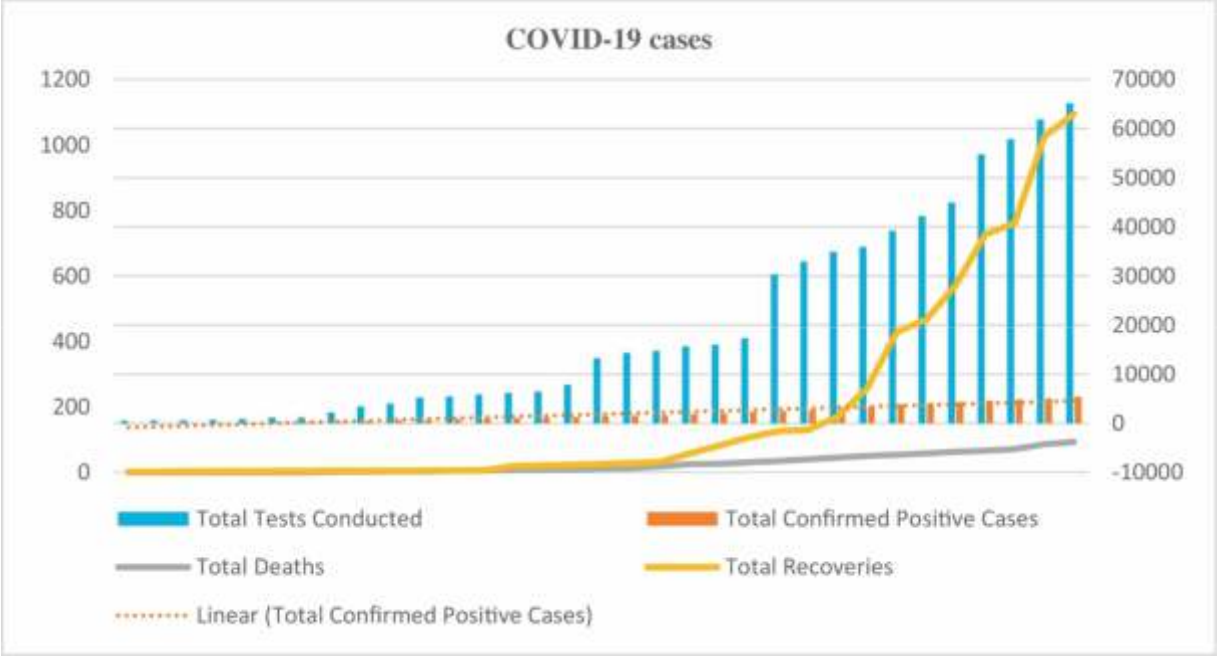


Fig. 4.3. The trend of COVID-19 in Pakistan (2020/03/15–2020/04/14).

4.2 Demographic Characteristics of Respondents

The subjects of the study were taken from district Abbottabad. The respondents comprised local people along with the age, gender, years of study, profession, number of infected patients, their

living area, financial conditions during the past three months of the people were considered. . It also gave an insight into the socio-economic status of the respondents.

4.2.1 Age of Respondents

The table given below shows the age groups of the people. It shows that the maximum of the respondents, fall between the age group of 33 -53 years, which shows that most of the respondents are old and are workers and shopkeepers who suffered the most during the pandemic. The graph given below shows the age group of people, which includes mostly workers and shopkeepers and students. It is evident from the table that 73% of the people, which is a majority, lies in the age group of 33 to 53 years. This is generally the age in which people are in the phase to earn their livelihood and have to feed and support their families. So the whole family is dependent on the breadwinner for their livelihood, education, and fulfilling other necessities of their life.

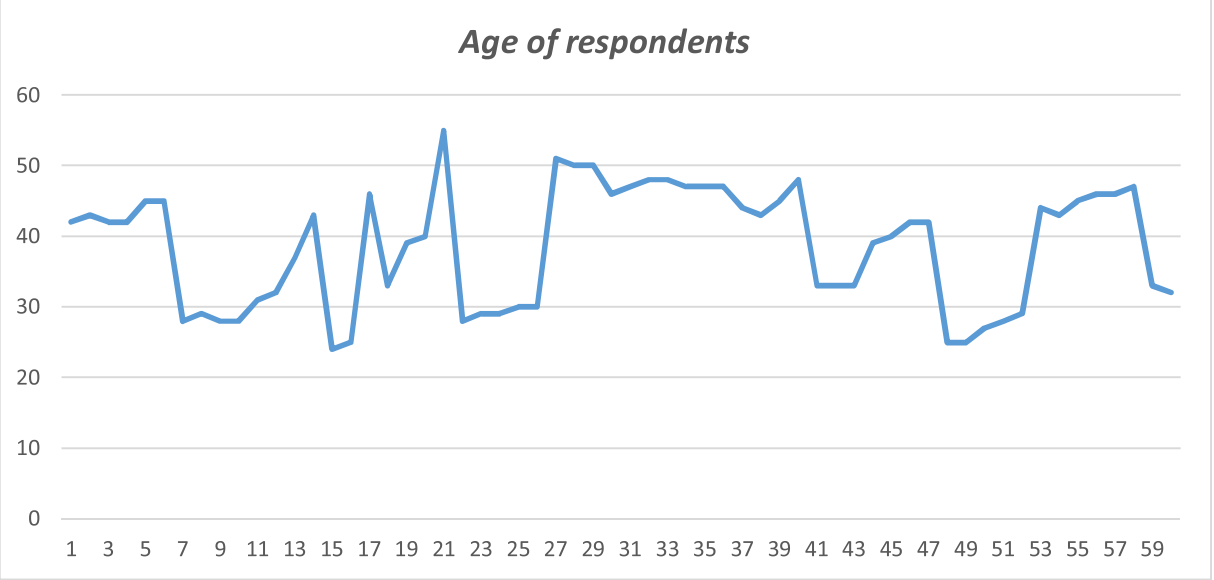


Figure: 4.4

4.2.2 Gender of Respondents

The table shows the gender distribution of the people, it revealed that 28.4% were all females, 71.6% were all males. On the other hand, the majority of male local respondents from Abbottabad which are far away from their local areas or their houses shows that they prefer to move from their home to other areas or work in other areas only because of better earning and

for better livelihood which shows that majority of the people are from lower-middle families so they have to earn for supporting their families. Whereas the female ratio of respondents is health workers and medical officers who are on duty in COVID-19 ward in the hospitals due to the pandemic situation.

Gender of Respondents	Frequency	Percentage
Male	43	71.6%
Female	17	28.4%
Total	**60**	**100%**

Table 4.1 Gender of Respondents

4.2.3 Year of Education

Table 4.6 shows the year of education of respondents. The maximum number of respondents 53% have completed their 10-12 years of education. Following that respondents with 0-9 years of education that make up 26% of the data are mainly secondary level education holders. But most of the respondents belong to high-level education criteria i-e 21%. These are the people who are highly educated and serve as medical health workers and government employees. The data in the table shows that the subjects were taken from all the local population to show how they may have different issues at the beginning of the pandemic and lockdown when they are unemployed and have nothing to earn from and how the extent of problems changes with time and during 1st and second wave of COVID-19.

Year of studies	Frequency	Percentage
0-9	16	26%
10-12 years	32	53%
More than 12	12	21%
Total	**60**	**100%**

Table 4.2: Year of education

4.2.4 Occupation of Respondents

The collected data represented below in the table indicates the percentage of respondents according to their occupation and services which they are serving before and during the pandemic. It is clear from the figures that 7% of the respondents are students and 5% of the

respondents are government employees and 16% of the respondents are serving health departments. Whereas 60 to 65% of the respondents do have a variety of respondents from different occupations from workers to shopkeepers of different departmental stores, superstores, plumbers, electricians, etc. The results explain that most of the respondents are from middle-income families and are out from their homes during pandemic only to earn their livelihood. Although some of the students do choose other occupations during the time of pandemic because of loss of jobs and earning due to closed shops and businesses during the lockdown as they want to explore more earning opportunities and have further earning to aid their family.

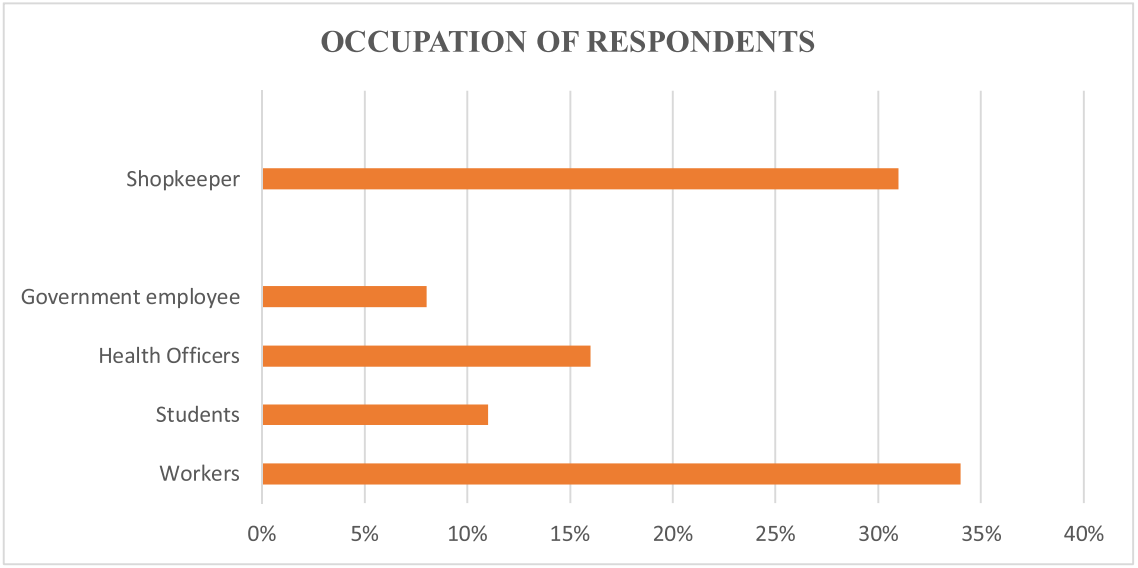


Figure 4.5: Occupation of respondents

4.3 Rating of Level of Effectiveness of Policies to Control COVID-19 Outbreak

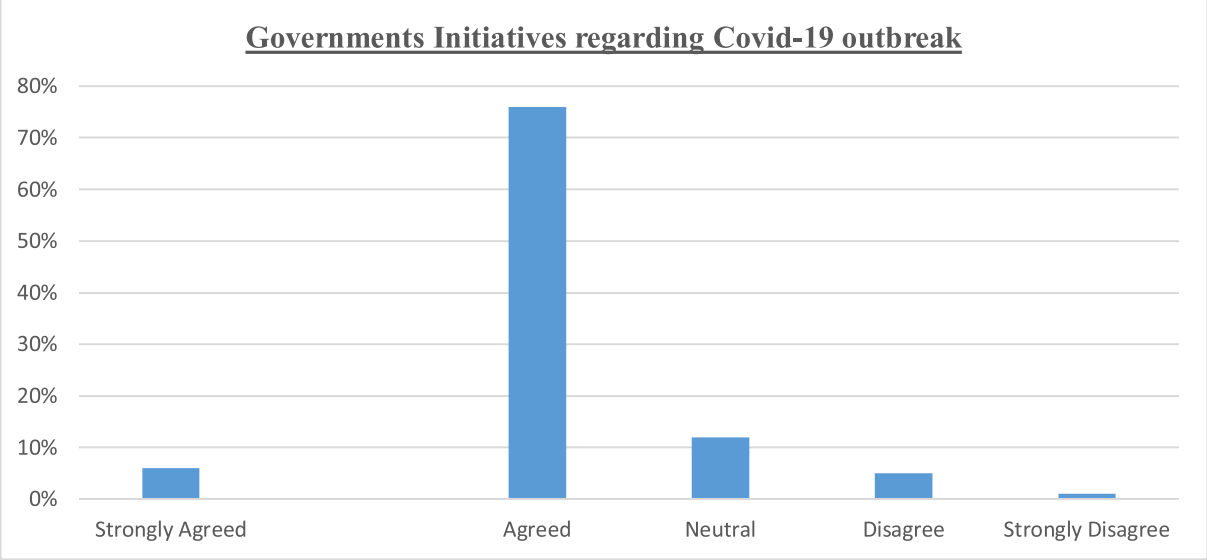


Figure 4.6

4.3.1 Smart Lockdowns

According to the graph in the figure, it is visible that almost the majority of the participants that are 82% agree that our federal and provincial governments are taking steps regarding the COVID-19 outbreak. And devised all necessary steps regarding smart lockdown for students, traders, and workers. Whereas 12% of the population answered neutrally that the government is not taking initiatives and are not giving relief to its local peoples and only 6% disagreed with the statements. Through interviews and questionnaires, it is revealed that people are aware of the government's policies regarding lockdown and other social distancing plans. As smart lockdowns are aimed at restricting people to stop the spread and break the transmission cycle of disease of COVID-19 to others. Citywide lockdowns, though administratively convenient, are economically/ socio-economically unsustainable and therefore not practicable. Differentiated approaches have been used by the government within a city due to identified variability in disease prevalence in various areas. And proper awareness campaigns were raised through media and other sources to control the pandemic by the government of Pakistan. Whereas smart lockdowns, therefore, offer a balanced approach to limit the spread under the circumstances. Thus data of the study revealed that wearing a mask, sanitizing, and social distancing related policies are forced by the federal and provincial government of Pakistan and are observed by the

majority of people and Demographic factors don't influence peoples regarding following rules and SOPs (standard operating procedure).

4.3.2 The Behavior of Shopkeepers Towards COVID-19

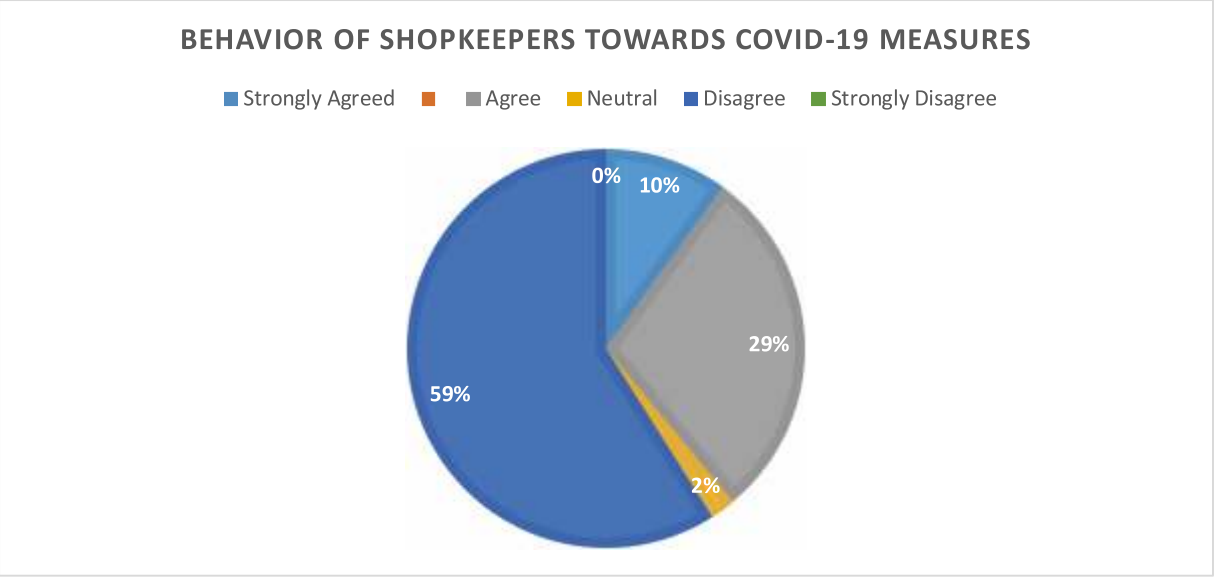


Figure 4.7

As seen from the data represented in the graph it is evident that many shopkeepers were reluctant in following the SOPs to help reduce the spread of COVID-19. It is evident from the percentages that for a majority of the people 61% disagreed whereas 29% agreed and 10% strongly agreed with the statement when asked through questionnaire guide and interview guide from local people.

It was observed from the answers that shopkeepers demonstrated leniency towards their customers because they didn't want to drive the customers away by being too strict. Few of the shopkeepers were also not well equipped to follow the SOPs as they were of the view that spending extra on providing masks or sanitizing the place was just an added expense they could not afford in the wake of a pandemic. The small shop owners were more reluctant in following SOPs as compare to the other brand shops as they had more space to ensure safety protocols are being met and also more disposable income to provide masks and sanitizers. On the other hand, the small shops were already dealing with the negative impacts of the pandemic so they could not afford to slash their sales more by following strict protocols.

4.3.3 Relaxation Programs for Frontline Health Workers

According to the collected data through questionnaires and interviews from health officers and medical staff and local respondents also who survived their disease in hospitals they reported that despite the government claiming adequate policies to overcome the COVID-19 situation the serving medical staff didn't get enough strategies to overcome the challenges they faced. Only 50% of the nursing staff was equipped with enough PPE's while treating the patients and 35% were satisfied with the condition. Apart from that only 40% of frontline doctors were had adequate PPE's and from them, only 30% were satisfied with the situation. Moreover, only 100 specific quarantine centers were present with limited diagnostics and treatment facilities until the government received primers, testing kits, and equipment from other countries. After receiving primary test kits only 13% of medical staff got to test themselves from which 6% were doctors and 7% were the nursing staff. The above statistics show that the lack of facilities and policies for medical staff have made them more vulnerable to pandemics according to them.

4.4 Implementation of Prevention Policies

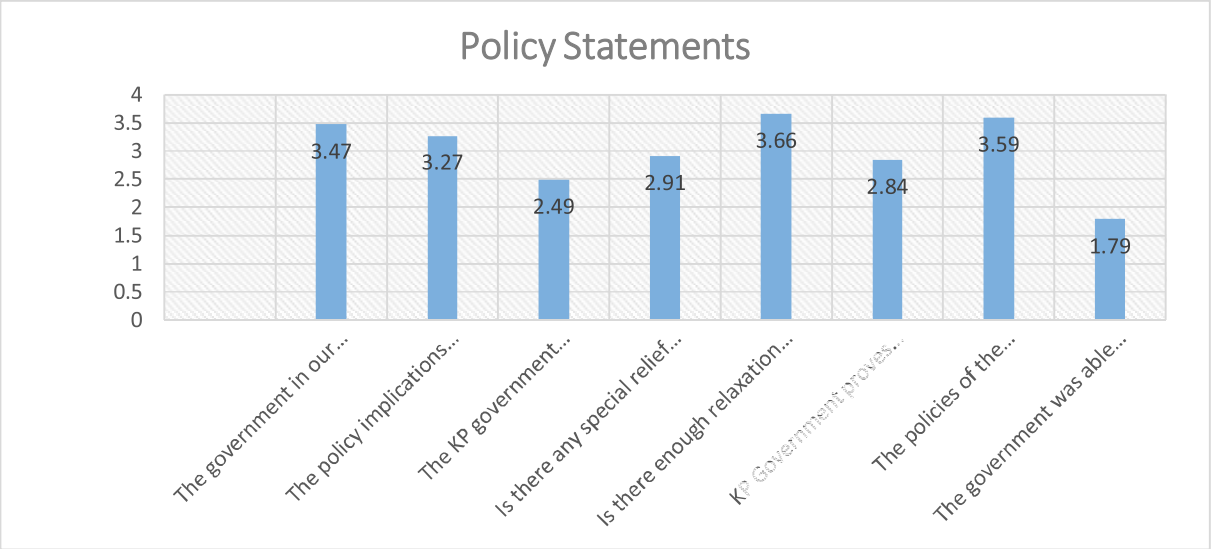


Figure 4.8: Average response of Policy Statements

The results of the survey respondents show that policies regarding the COVID-19 were quite good according to the local perception of Abbottabad. Although the first 2 weeks of lockdown severely affected the economic conditions of people but being able to control the spread is

appreciated. Awareness through media cannot be questioned as it played an important role to provide information about the pandemic and the instruction to minimize the effects but few individuals assume that continuous and nonstop news about COVID-19 also contributed to the psychological pressure. Effects were more decreased if the implementation were as good as policies, according to the local perception the implementation of policies was not so good as compared to the policies itself. Like many stores especially general stores were not completely closed and demonstrated leniency towards their customers because they didn't want to drive the customers away by being too strict and lose their sales.

Whereas on the other hand Ehsaas Emergency Cash program has been introduced in the context of the economic hardship being experienced by the vulnerable due to the ongoing coronavirus crisis. The financial assistance under the program is meant to help the needy and poor people of Pakistan who faced difficulties in earning during the lockdown. According to respondents, Ehsaas relief funds were good initiatives during the first wave of COVID-19 but somehow the government lacks in fully accommodating all economic classes in the society because of its own financial limitations.

4.5 Perception of Survey Respondents

4.5.1 Knowledge

Most respondents had satisfactory knowledge of the disease, and the internet was the main source of information for most of the respondents. Moreover, most 78% of the respondents knew that COVID-19 was different from the common cough and flu. The majority of the respondents knew that it is possible to have asymptomatic COVID-19 positive patients. And the participants also knew that most symptoms appear between 1–14 days which are the most crucial days during COVID-19. Whereas the majority of people also correctly identified several symptoms of COVID-19, and recognized the importance of hand wash, wearing masks, maintain social distancing, and reducing the chances of contracting the disease. And it was also seen from the research data that all of the age, gender, and level of education, background, occupation, and living area were not significantly associated with the knowledge of respondents about COVID-19.

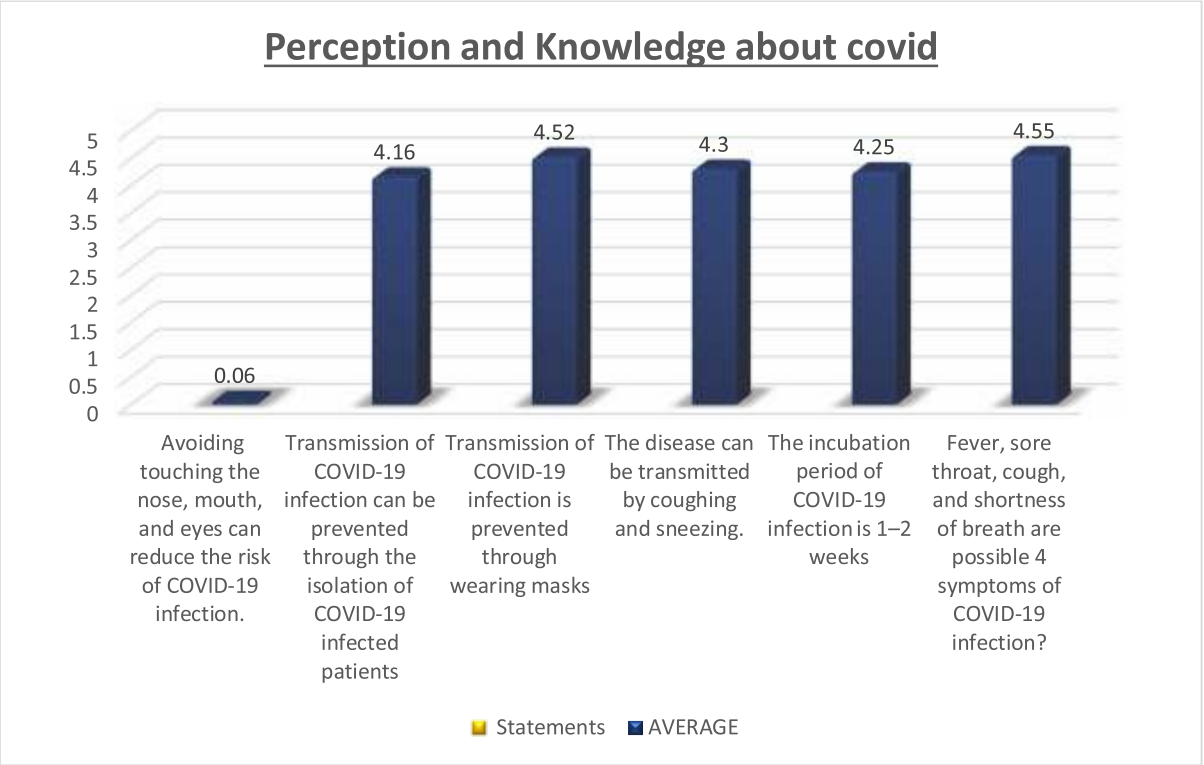


Figure 4.9: Perception and knowledge about COVID-19

4.5.2 Perception

Data of the study revealed and the below figure shows that the respondents had a very clear and positive perception which is 66% about global efforts to control the pandemic. As most of the participants agreed with the lockdown and smart lockdown policy to prevent the further spread of the disease and to combat this disastrous situation, but only a small amount of people in Abbottabad believe that the government had done enough to protect its citizens by introducing its best possible policies and plans. But on the other hand, most respondents rated their people's response rate towards preventing this disease below average. Through interviews and questionnaires, it is revealed that improved personal hygiene which includes wearing masks and washing and sanitizing hands, reducing social contacts, and maintaining social distancing, and following their countries' health recommendations in the form of SOPs are important for people to reduce this lethal chronic disease from transmitting to others. The majority of the study respondents agreed that transmission of the disease can be reduced by restricting the travel of COVID-19 infected people to other areas of the world and of people in other areas moving to

affected areas can be beneficial to prevent the spread of the infection. And they also believed that if a vaccine is developed against the novel coronavirus, it can significantly reduce the epidemic spread in the future.

4.5.3 Attitude

According to the data collected as shown in the table most of the respondents had a positive attitude towards protective measures which are advised by the health departments and government policies. Most respondents 68.9% valued the importance of proper hygiene, self - isolation, the use of a face mask when going out, washing hands properly, and maintaining social distancing. The results also show that age, gender, occupation, and level of income nothing affects people's attitude towards COVID-19 and its prescribed precautions.

Perception of the survey respondents	FREQUENCY OF RESPONDENTS	PERCENTAGE
Knowledge.	**60**	**78%**
Attitude.	**60**	**68.9%**
Perception.	**60**	**66%**
TOTAL		**100%**

Table 4.3

4.6 Perceived Effectiveness of Social Mitigation Strategies and Ability to Adopt Practices

The results show that people faced various adjustment challenges in lockdown. They had to deal with problems in pandemic while assuring that all the precautionary measures must be followed. The results of the research will be cataloged in terms of difficulties faced in global pandemic

time due to their financial issues, personal, social, economic, and living aspects. When asked this from respondents through an interview from local shop keepers of middle age group according to them the most common hygiene-related behavior adopted was washing hands with soap and water. Whereas maintaining social distancing and keeping away from crowded places was the most common behavior which is adopted by people in Abbottabad.

Chapter 5
Conclusion

5.1 Conclusion

Global pandemic Coronavirus is spread everywhere in the world and the countries bordering Pakistan as there is a huge increase in trends of COVID -19 patients and deaths, so that every country is looking for policies and SOP'S to follow to reduce the spread of this virus as much as possible. The concept of relative effect and implementation of policies regarding COVID-19 is still not well understood in Pakistan as compared to its suffering concerning other countries.

Our study includes a large, representative cross-section of the population of district Abbottabad which is a highly pandemic affected city of Khyber Pakhtunkhwa and determined peoples' attitudes and perceptions regarding the spread of the acute coronavirus and analysis of the policies which are implemented to control the spread of the lethal pandemic.

People who could not communicate in English were asked questions through a semi-structured interview guide which may have helped to gather more information from people living in rural areas and have been ignored due to their communication barrier.

Our results suggest that a large proportion of respondents have adopted one or more of either the hygiene-related and avoidance-related behaviors that had been recommended by the Government considering the intense media coverage and government information, it is not surprising that there was somehow willingness towards actual adoption of hygiene strategies including hand washing, sanitizing, wearing the mask and social distancing. While anxiety levels were noticed on a moderate level, whereas concerns were raised about accessing food and medical supplies if placed into self-isolation based on the available data. On the other hand, it appears that older individuals aged above 60 years and people with chronic underlying health conditions are particularly susceptible to severe disease. Thus the findings of the study show that policies by federal and provincial governments regarding the COVID-19 were quite good according to the local perception of Abbottabad. Although the first 2 weeks of lockdown severely affected the economic conditions of people but being able to control the spread is appreciated. Awareness through media cannot be questioned as it played an important role to provide information about the pandemic and the instruction to minimize the effects but few individuals assume that continuous and nonstop news about COVID-19 also contributed to the psychological pressure. Effects were more decreased if the

implementation were as good as policies, according to the local perception the implementation of policies was not so good as compared to the policy itself. Like many stores especially general stores were not completely closed and demonstrated leniency towards their customers because they didn't want to drive the customers away by being too strict and lose their sales.

Whereas on the other hand Ehsaas Emergency Cash program has been introduced in the context of the economic hardship being experienced by the vulnerable due to the ongoing coronavirus crisis. The financial assistance under the program is meant to help the needy and poor people of Pakistan who faced difficulties in earning during the lockdown. According to respondents, Ehsaas relief funds were good initiatives during the first wave of COVID-19 but somehow the government lacks in fully accommodating all economic classes in the society because of its own financial limitations. As it is found through the research study that the last and most importantly governments must ensure that resources, legalization, and support measures are in place to facilitate community participation in following the defined SOP and other community mitigation strategies and should work more and pay attention towards policy enforcement authorities so that every single individual from each economic class can get benefit from the government policies and plans because this global pandemic has affected each and every individual of the world.

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Disaster Risk Financing: Policy and Practices at Provincial level.

By

Adil Haroon Afridi

Bachelors Thesis

DEDICATION

My Loving Family and Friends

ACKNOWLEDGEMENTS

First of all, I am thankful to ALLAH Almighty, the most gracious the most merciful for His help and guidance throughout this journey and I am totally sure that this work would have never came into reality without His guidance. I would like to thank my friend whose encouragement and support always remained a source of motivation for me to complete my study successfully.

I owe a deep debt of gratitude to the university for giving me and opportunity to complete my research thesis. I would like to pay thanks and gratitude to my supervisor Dr. Ikram Shah for his guidance, efforts throughout this study and especially his confidence in me. His immense knowledge, motivation, enthusiasm always encouraged me to work hard, and this work would have not been possible without his support.

I am also thankful to my family who remained a source of help for me and also a source of assistance during the year of research. I am also thankful to COMSATS University Islamabad, Abbottabad campus and HEC for providing me opportunity to conduct this research thesis and granting me scholarship for my study program.

Adil Haroon Afridi

ABSTRACT

Disasters set back development, directly damaging and destroying infrastructure and disrupting related economic activities and the provision of services. Disaster risk financing is about having plans, systems and finance in place before an event to ensure that adequate finance can flow rapidly and effectively in an emergency while reducing the impacts and speeding recovery. Throughout the globe both developed and developing countries are focusing on the risk financing side of disaster management to effectively mitigate the effects of disaster. Like other developing countries, Pakistan has also enacted the legal instrument in 2007 to effectively manage the overall spectrum of disaster. The country ranks seventh on the list of countries most affected by extreme weather events from 1997 to 2016, implying a particularly urgent need for the country both to reduce disaster risk and to strengthen financial arrangements for post-disaster response. The current aims to identify the gapes in theory and practice in disaster risk financing at provincial level in Khyber Pakhtunkhwa and to explore that to what extent the disaster risk financing has been effectively implemented in KP. The findings of the study were the outcome of the in-depth interviews conducted with 15 respondents from National Disaster Risk Financing Management, National Disaster Management Authority, and related departments. All the interviews were conducted in their respective offices. The findings of the study indicate that there is scanty data available in Pakistan. However, quantifying overall Disaster Risk Reduction (DRR) and risk financing is a challenging task for the Government of Pakistan. The NDRMF has the mandate to finance up to 70% of the cost of eligible projects. There is still a big vacuum in risk financing in the country however, a comprehensive risk financing strategy with a range of instruments can be instrumental in this regard. Overall, an effective country DRF strategy should be developed based on detailed knowledge of the country's disaster risk.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
DDMU	District Disaster Management Unit
DRF	Disaster Risk Finance
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FIP	Field Implementing Partners
GDP	Gross Domestic Product
GOP	Government of Pakistan
KPK	Khyber Pakhtunkhwa
NatCat	National Catastrophe
NDMA	National Disaster Management Authority
NDMF	National Disaster Management Fund
NDMO	National Disaster Management Ordinance
NDMP	National Disaster Management Plan
NDRMF	National Disaster Risk Management Fund
NFPP	National Flood Protection Plan
NGO	Non-Government Organization
PDMA	Provincial Disaster Management Authority
PDMC	Provincial Disaster Management Commission
PKR	Pakistani Rupee
PML	Probable Maximum Loss
UN	United Nations
USD	United States Dollar

Chapter 1

Introduction

1.1 Introduction

Disasters set back development, directly damaging and destroying infrastructure and disrupting related economic activities and the provision of services. They place countries on lower long-term growth trajectories, push vulnerable communities deeper into poverty, and force adjustments in both short- and longer-term development targets and goals. They can place significant fiscal strain on governments, businesses, and individual households, particularly if financial preparedness arrangements are limited. Delays and shortages in the availability of funding can significantly exacerbate the consequences of direct physical losses, extending the time to rebuild. Government officials, policymakers, and insurance regulators from developing Asian countries have therefore expressed the need to strengthen their financial preparedness for disasters, smoothing the cost of disasters over time and ensuring timely availability of post-disaster funding (ADB, 2014). Disaster risk finance can help to shift the incentive to act. In doing so, DRF can, over time, drive the transition to a more proactive approach to risk management.

1.2 Disaster Risk Financing

Disaster risk finance can be defined as 'ex-ante' or 'pre-arranged' finance; that is, finance that is arranged in advance of a disaster, to cover the future costs of preparation, response, recovery and/or reconstruction. It could include insurance or catastrophe bonds but also budgetary instruments such as contingency budgets or contingent loans. Ex ante risk financing builds resilience in a business, organization or government, all of which operate more effectively and efficiently when budgets and capital flow are not disrupted by external shocks beyond the control of the enterprise.

Disaster risk financing is about having plans, systems and finance in place before an event to ensure that adequate finance can flow rapidly and effectively in an emergency, reducing impacts and speeding recovery. The approach involves quantifying risks in advance of disasters, pre-positioning funds, and releasing them according to pre-agreed plans. This ex-ante approach can complement more traditional ex-post aid by providing a predictable, well-defined tranche of funding much earlier and faster, based on pre-agreed indicators and protocols. This finance can flow directly through pre-planned channels (such as shock-responsive systems or local NGOs), ensuring that the right assistance reaches the right people, at the right time. Through creating greater certainty about what finance will be available, and by linking finance to national and local systems, risk financing can

enable better preparedness, empower government and local actors, and facilitate coordination. This leads to national systems that are more resilient to climate, disasters and other crises (Bank, 2018).

In other words, Disaster Risk Finance (DRF) is a growing discipline that addresses the fiscal impacts and economic losses caused by natural hazards (e.g., cyclones, droughts, earthquakes, floods) and supports countries to increase their financial resilience to natural disasters.

1.3 Disaster Risk Financing Practices in the World

Recent years have witnessed a concentration of disaster events causing major human, social, economic and financial impacts. Seven of the ten costliest disasters since 1980 have occurred in the last decade including: The Great East Japan Earthquake in 2011 which caused USD (US dollar) 210 billion in overall losses and close to 16 000 fatalities; Hurricane Katrina in 2005 which caused USD 125 billion in losses and over 1 300 fatalities in the United States; and the 2008 Sichuan earthquake in the People's Republic of China which caused USD 85 billion in damages and an estimated 84 000 fatalities (Munich, 2015). Many of the economies in Asia and the Pacific are vulnerable to the impacts of natural disasters, which have caused fatalities as well as economic losses to the impacted economies. Uncovered or unfunded catastrophe losses do not simply dissipate after a catastrophe, but instead are paid by domestic taxpayers or international donors in the form of ex post (after the fact) relief, recovery, and reconstruction expenses. Closing the gap between funded and unfunded catastrophe losses using the combination of appropriately designed disaster risk financing mechanisms is crucial for robust disaster risk management and, in many disaster-prone countries, sustainable development itself.

There has been a paradigm shift in the global approach to disaster response. In both Pakistan and at a global level, there has been a shift in approach to disaster response in recent years as losses have escalated. Attention has shifted from securing disaster response after a disaster to a revised approach stressing financial preparedness. Pakistan ranks seventh on the list of countries most affected by extreme weather events from 1997 to 2016, implying a particularly urgent need for the country both to reduce disaster risk and to strengthen financial arrangements for post-disaster response. A coordinated effort is essential in securing strong progress, bringing all key stakeholders together to pool their respective expertise and capabilities and collectively leverage their individual actions (David, Vera, & Laura, 2018).

Since 2008, there have been several major natural disasters that occurred throughout the region. Due to the significant economic losses that were suffered by many countries in Asia and the Pacific caused by the impact of disasters in the past, as well as the increasing risk exposure to disasters in the future, the governments in the region need to possess a good understanding of assessing the economic impact of disasters, since it will be crucial for ensuring the availability of resources for disaster response, recovery, and reconstruction, which can ultimately prevent financial distress (Mahul & Signer, 2014). With respect to financial management of disaster risks, the governments have a key role in developing and designing schemes that will enable post disaster assistance, disaster insurance, and the provision of financial guarantees. Furthermore, the governments should ensure that the finance sector in their respective countries provides coverage against the risk of disaster, and they also have the responsibility to manage the contingent liabilities of disaster within the fiscal framework. The governments' role becomes critical where the disaster risk of their respective countries is significantly high and the insurance market is not available or does not have the capability to cover such risks, which leaves the country with potentially enormous economic losses (OECD, 2015).

1.4 Sendai Framework and Disaster Risk Financing

The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines four priorities for action to prevent new and reduce existing disaster risks:

(i) Understanding disaster risk.

(ii) Strengthening disaster risk governance to manage disaster risk.

(iii) Investing in disaster reduction for resilience.

(iv) Enhancing disaster preparedness for effective response, and to "Build Back Better" in Recovery, rehabilitation, and reconstruction (Sendai).

It aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years. The Framework was adopted at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan, on March 18, 2015.

1.5 The Need for Disaster Risk Financing

Disasters set back development, directly damaging, and destroying infrastructure and disrupting related economic activities and the provision of services. They place countries on lower long-term growth trajectories, push vulnerable communities deeper into poverty, and force adjustments in both short- and longer-term development targets and goals. They can place significant fiscal strain on governments, businesses, and individual households, particularly if financial preparedness arrangements are limited. Delays and shortages in the availability of funding can significantly exacerbate the consequences of direct physical losses, extending the time to rebuild. Government officials, policymakers, and insurance regulators from developing Asian countries have therefore expressed the need to strengthen their financial preparedness for disasters, smoothing the cost of disasters over time and ensuring timely availability of post-disaster funding (ADB, 2008).

1.5.1 Importance of DRF in DRM

DRF is a very useful method that can be utilized by a country with significant exposure to disaster risks to manage the economic impacts of such risks. Effective DRF is crucial to promoting financial resilience against disasters in order to safeguard economic growth and development (OECD, 2015). DRF should cover the financial aspects of all measures of a comprehensive disaster risk management (DRM) system, which comprises predicate and post disaster measures (Mita, 2016). A comprehensive DRM system helps the development of effective, sustainable, and widely utilized DRF tools. As part of the pre disaster measures, increasing the risk awareness can lead to a clear recognition of demand for DRF as well as acceptance of the financial burden that might be caused by disasters. By carrying out a disaster risk assessment, which consists of hazard identification and impact assessment using relevant and accurate data, a country can develop the right measures to reduce financial vulnerabilities to disaster risks and also develop risk financing evaluation tools. Risk prevention measures and preparedness can reduce the risks of the disasters and also decrease the costs of the DRF. Furthermore, the availability of DRF will support the implementation of post disaster measures such as emergency response, recovery, and reconstruction.

1.6 Disaster Risk Financing in Pakistan, Khyber Pakhtunkhwa

Natural disasters are an important challenge for fiscal sustainability and economic development of Pakistan. Pakistan faces substantial disaster risk. The country is increasingly exposed and vulnerable to various natural hazards, particularly floods, cyclones, droughts, and earthquakes. Increasing

natural hazard events over the last 15 years have caused significant loss of life, economic damage, and reversal of development gains. Floods have caused most physical damage, with the most significant floods in history occurring in 1950, 1992, 1998, 2010, 2011, and 2014. Just the latter three events affected more than 30 million people, with damage and losses exceeding $14 billion. Parts of the country also face significant seismic risk. A major earthquake in 2005 caused more than 73,000 deaths and $5 billion in losses. In addition, the country faces tropical cyclone risk, with a major cyclone event in 2007 affecting 2.5 million people, and droughts, including a drought in 2014–2015 that affected more than 3 million people, severely impacting the livelihoods of poor and vulnerable populations, and resulting in mass migration. The country is among the 10 most vulnerable to the impacts of extreme weather events (Germanwatch, 2015).

Over the past decade, the damage and loss from major disasters in Pakistan has exceeded PKR 2,548.0 billion or US$18 billion (ADB & WB, 2005) Disaster's impact on average approximately 3 million people each year or 1.6 percent of the total population of over 200 million (Bank, 2015). Floods affected an overwhelming majority of the population over the past 42 years. According to historical disaster data since 1973, approximately 77 percent of the population affected by disasters has been impacted by floods and 13.5 percent – by drought. A study conducted by the World Bank in 2015 reveals that floods in Pakistan cause an estimated annual economic impact of PKR 167 billion to PKR 255 billion (US$1.2 billion to US$1.8 billion) – equal to about 3–4 percent of the federal budget or 0.5–0.8 percent of national gross domestic product (GDP) (NDMA & Bank, 2015).

1.7 National Disaster Management Authority Pakistan (NDMA)

NDMA is an autonomous and constitutionally established federal authority mandated to deal with whole spectrum of disasters and their management in Pakistan.

1.7.1 The National Disaster Risk Management Fund (NDRMF)

The Government of Pakistan has set up the National Disaster Risk Management Fund (NDRMF) to respond to the significant challenges posed by disaster risk. The NDRMF is a government owned not-for-profit, non-bank financial intermediary with a corporate structure. It will provide grants for subprojects that contribute to enhanced resilience to extreme weather and geophysical hazards and strengthen the government's ability to quickly respond to disasters triggered by natural hazards. The NDRMF will finance up to 70% of the cost of eligible subprojects. NDRMF is a government-owned

not-for-profit institution registered with the Securities & Exchange Commission of Pakistan under Section 42. The Fund is established as a non-banking financial intermediary with a corporate structure whose aim is to provide funding through matching grants of up to 70% for a range of structural and non-structural interventions to be carried out by United Nation Agencies, International and/or National Non-Governmental Organizations as well as Public Sector Entities. The Fund is in line with existing policies and strategies of the GOP to address disasters, including:

1) The Disaster Risk Reduction Policy (2013)
2) Climate Change Policy (2013)
3) GOP Vision 2025
4) National Disaster Management Plan 2013-2022 (NDMP)
5) National Flood Protection Plan IV (NFPP) (2016-2025)
6) Sendai Framework for Disaster Risk Reduction, 2015-2030 (NDRMF).

1.8 Problem Statement

Disaster records in Pakistan during the last few years show severe impact both on the citizens as well as the Government. The losses incurred during the floods of 2010 and 2011 resulted in damages amounting to US$10 billion and US$ 3.7 billion, respectively. Likewise, the earthquake of 2005 caused a loss of US$5.2 billion, which is enormous when compared to the national budget of US$25 billion for the year following the quake. The financial pressure generated by these and other disaster events had short-term severe fiscal impact as well as long-term developmental implications, and therefore, need effective remedial measures. With the scanty data available in Pakistan, quantifying overall Disaster Risk Reduction (DRR) and recovery investments is a challenging task. Financing disasters is a challenge for the Government of Pakistan. The government estimates the economic impact due to flooding alone is between 3%–4% of GDP annually.6 from 2005 to 2015, the financial losses due to disasters triggered by natural hazards amounted to $18 billion (Bank, 2015c). World Bank simulations predict that a major flood event, occurring on average once every 100 years, could cause losses in excess of $15.5 billion, around 7% of national GDP or almost 40% of the federal budget in annual probability. There is a 1% chance in any year that a major event of this size will occur (Bank, 2015c). A review of data shows that investments in DRR have been scarce and spending on disaster preparedness has not been given priority in the national development plans. There is still a big vacuum which can be filled only by the development of a comprehensive risk

financing strategy with a range of instruments. A sustainable plan is needed to ensure the National Disaster Management Fund and Provincial funds are adequately provisioned for disaster response. An effective country DRF strategy should be developed based on detailed knowledge of the country's disaster risk.

1.9 Objectives

1. To identify the gaps between the policies and practices of Disaster Risk Financing (DRF) at provincial level.
2. To explore that to what extent DRF has been effectively being implemented at provincial level.

Chapter 2

Review of Literature

2.1 Background:

'The literature' is a collection of all of the relevant written sources on a topic. It will include both theoretical and empirical works. Both types provide scope and depth to a literature review. Literature refers to a collection of published information/materials on a particular area of research or topic, such as books and journal articles of academic value. However, your literature review does not need to be inclusive of every article and book that has been written on your topic because that will be too broad. Rather, it should include the key sources related to the main debates, trends and gaps in your research area.

Information does not exist in the environment like some kind of raw material. It is produced by individuals working within a particular field of knowledge who use specific methods for generating new information. Disciplines are knowledge-producing and -disseminating systems which consume, produce and disseminate knowledge. Looking through a course catalog of a post-secondary educational institution gives clues to the structure of a discipline structure. Fields such as political science, biology, history and mathematics are unique disciplines, as are education and nursing, with their own logic for how and where new knowledge is introduced and made accessible. This chapter contains literature and relevant information which is obtained from different research articles, magazines, newspapers, books and websites related to the subject.

Asian Development Bank (2014) states that the calamities set back improvement, straightforwardly harming and annihilating framework and upsetting related financial exercises and the arrangement of administrations. They place nations on lower long haul development directions, push weak networks further into destitution, and power changes in both short-and longer-term advancement targets and objectives. They can put huge monetary strain on governments, organizations, and individual families, especially if monetary readiness courses of action are restricted. Deferrals and deficiencies in the accessibility of subsidizing can altogether intensify the outcomes of direct actual misfortunes, stretching out an opportunity to modify. Government authorities, policymakers, and protection controllers from creating Asian nations have hence communicated the need to reinforce their monetary readiness for fiascos, streamlining the expense of calamities time and guaranteeing ideal accessibility of post-debacle financing. Disaster risk finance can help to shift the incentive to act. In doing so, DRF can, over time, drive the transition to a more proactive approach to risk management.

Fiasco hazard account can be characterized as ‘ex-bet’ or ‘set up’ money; that is, account that is orchestrated ahead of a calamity, to take care of things to come expenses of arrangement, reaction, recuperation or potentially reproduction. It could incorporate protection or fiasco securities yet in addition budgetary instruments, for example, possibility spending plans or unforeseen credits. Ex bet hazard financing assembles strength in a business, association or government, all of which work all the more successfully and productively when spending plans and capital stream are not disturbed by outside stuns outside the ability to control of the venture.

World Bank (2018) reports that, Calamity hazard financing is tied in with having plans, frameworks and money set up before an occasion to guarantee that satisfactory account can stream quickly and adequately in a crisis, diminishing effects and speeding recuperation. The methodology implies evaluating hazards ahead of calamities, pre-situating reserves, and delivering them as per pre-concurred plans. This ex-bet approach can supplement more customary ex-post guide by giving an anticipated, all around characterized tranche of subsidizing significantly sooner and quicker, in view of pre-concurred markers and conventions. This account can stream straightforwardly through pre-arranged channels, (for example, stun responsive frameworks or nearby NGOs), guaranteeing that the correct help contacts the ideal individuals, at the ideal time. Through making more prominent conviction about what account will be accessible, and by connecting money to public and nearby frameworks, hazard financing can empower better readiness, engage government and neighborhood entertainers, and encourage coordination. This prompts public frameworks that are stronger to environment, fiascos and different emergencies.

Munich (2015) argues that, late years have seen a centralization of calamity occasions causing significant human, social, monetary and monetary effects. Seven of the ten most exorbitant fiascos since 1980 have happened somewhat recently including: the Great East Japan Earthquake in 2011 which caused USD (US dollar) 210 billion in by and large misfortunes and near 16 000 fatalities; Hurricane Katrina in 2005 which caused USD 125 billion in misfortunes and more than 1 300 fatalities in the United States; and the 2008 Sichuan seismic tremor in the People’s Republic of China which caused USD 85 billion in harms and an expected 84 000 fatalities.

Large numbers of the economies in Asia and the Pacific are helpless against the effects of cataclysmic events, which have made fatalities just as monetary misfortunes the affected economies.

Uncovered or unfunded fiasco misfortunes do not just disperse after a calamity, yet rather are paid by homegrown citizens or global givers as ex post (afterward) alleviation, recuperation, and recreation costs. Shutting the hole among supported and unfunded calamity misfortunes utilizing the mix of suitably planned catastrophe hazard financing components is critical for strong fiasco hazard the executives and, in numerous debacle inclined nations, reasonable advancement itself.

Eckstein, Künzel and Schäfer (2018) documented that, there has been a change in outlook in the worldwide way to deal with catastrophe reaction. In both Pakistan and at a worldwide level, there has been a move in way to deal with calamity reaction lately as misfortunes have heightened. Consideration has moved from getting calamity reaction after a catastrophe to an overhauled approach focusing monetary readiness. Pakistan positions seventh on the rundown of nations generally influenced by outrageous climate occasions from 1997 to 2016, suggesting an especially earnest requirement for the country both to diminish catastrophe hazard and to reinforce monetary game plans for post-fiasco reaction. An organized exertion is fundamental in getting solid advancement, uniting all critical partners to pool their separate ability and capacities and aggregately influence their individual activities.

Olivier and Signer (2014) described that since 2008, there have been a few significant cataclysmic events that happened all through the locale. Because of the huge monetary misfortunes that were endured by numerous nations in Asia and the Pacific brought about by the effect of catastrophes previously, just as the expanding hazard openness to calamities later on, the legislatures in the area need to have a decent comprehension of evaluating the financial effect of debacles, since it will be vital for guaranteeing the accessibility of assets for calamity reaction, recuperation, and remaking, which can at last forestall monetary pain.

OECD (2015) stated that, as for monetary administration of calamity hazards, the legislatures have a vital job in creating and planning plans that will empower post fiasco help, debacle protection, and the arrangement of monetary certifications. Besides, the administrations ought to guarantee that the money area in their separate nations gives inclusion against the danger of calamity, and they additionally have the duty to deal with the unexpected liabilities of catastrophe inside the monetary structure. The administrations' job becomes basic where the calamity hazard of their separate nations

is altogether high and the protection market is not accessible or does not have the capacity to cover such dangers, which leaves the country with conceivably gigantic financial misfortunes.

Asian Development Bank (2008) described that, the debacles set back improvement, straightforwardly harming, and annihilating foundation and upsetting related financial exercises and the arrangement of administrations. They place nations on lower long haul development directions, push weak networks further into neediness, and power changes in both short-and longer-term improvement targets and objectives. They can put huge monetary strain on governments, organizations, and individual families, especially if monetary readiness plans are restricted. Postponements and deficiencies in the accessibility of subsidizing can essentially fuel the outcomes of direct actual misfortunes, stretching out an opportunity to remake. Government authorities, policymakers, and protection controllers from creating Asian nations have thusly communicated the need to fortify their monetary readiness for fiascos, streamlining the expense of calamities time and guaranteeing opportune accessibility of post-catastrophe subsidizing.

OECD (2015) highlighted that, DRF is an extremely valuable technique that can be used by a country with critical openness to calamity dangers to deal with the monetary effects of such dangers. Compelling DRF is urgent to advancing monetary versatility against debacles to defend financial development and improvement. Via doing a fiasco hazard appraisal, which comprises of danger ID and effect appraisal utilizing applicable and exact information, a nation can build up the correct measures to lessen monetary weaknesses to calamity chances and furthermore create hazard financing assessment instruments. Hazard anticipation measures and readiness can diminish the dangers of the debacles and furthermore decline the expenses of the DRF. Besides, the accessibility of DRF will uphold the execution of post debacle estimates like crisis reaction, recuperation, and reproduction.

Noriyuki (2016) discusses that, DRF should cover the monetary parts of all proportions of an extensive catastrophe hazard the executives (DRM) framework, which includes predicate and post fiasco measures. A far-reaching DRM framework helps the improvement of viable, practical, and generally used DRF apparatuses. As a feature of the pre catastrophe measures, expanding the danger mindfulness can prompt a reasonable acknowledgment of interest for DRF just as acknowledgment of the monetary weight that may be brought about by fiascos.

Germanwatch (2015) argues that the cataclysmic events are a significant test for monetary supportability and financial improvement of Pakistan. Pakistan faces considerable debacle hazard. The nation is progressively presented and defenseless against different normal risks, especially floods, tornadoes, dry seasons, and seismic tremors. Expanding characteristic danger occasions throughout the most recent 15 years have caused critical death toll, financial harm, and inversion of improvement gains. Floods have caused most actual harm, with the main floods in history happening in 1950, 1992, 1998, 2010, 2011, and 2014. Simply the last three occasions influenced in excess of 30 million individuals, with harm and misfortunes surpassing $14 billion. Portions of the nation additionally face critical seismic danger. A significant quake in 2005 caused in excess of 73,000 passing and $5 billion in misfortunes. What is more, the nation faces hurricane hazard, with a significant typhoon occasion in 2007 influencing 2.5 million individuals, and dry spells, remembering a dry season for 2014–2015 that influenced in excess of 3 million individuals, seriously affecting the vocations of poor and weak populaces, and bringing about mass relocation. The nation is among the 10 generally helpless against the effects of outrageous climate occasions.

Asian Development Bank and World Bank (2005) state that, over the past decade, the damage and loss from major disasters in Pakistan has exceeded PKR 2,548.0 billion or US$18 billion. While World Bank in (2015) gives statistics that the disaster's impact on average approximately 3 million people each year or 1.6 percent of the total population of over 200 million.

National Disaster Management Authority and the World Bank (2015) gave report that floods influenced a greater part of the populace in the course of recent years. As indicated by authentic debacle information since 1973, around 77 percent of the populace influenced by fiascos has been affected by floods and 13.5 percent – by dry season. An examination led by the World Bank in 2015 uncovers that floods in Pakistan cause an expected yearly financial effect of PKR 167 billion to PKR 255 billion (US$1.2 billion to US$1.8 billion) – equivalent to around 3–4 percent of the government spending plan or 0.5–0.8 percent of public total national output (GDP).

According to National Disaster Risk Management Fund (NDRMF) states that The Government of Pakistan has set up the National Disaster Risk Management Fund (NDRMF) to react to the critical difficulties presented by calamity hazard. The NDRMF is an administration possessed not-for-benefit, non-bank monetary go-between with a corporate design. It will give awards to subprojects

that add to improved flexibility to outrageous climate and geophysical risks and fortify the public authority's capacity to rapidly react to calamities set off by characteristic dangers. The NDRMF will fund up to 70% of the expense of qualified subprojects. NDRMF is an administration possessed not-revenue driven organization enrolled with the Securities and Exchange Commission of Pakistan under Section 42. The Fund is set up as a non-banking monetary middle person with a corporate construction whose point is to give subsidizing through coordinating with awards of up to 70% for a scope of primary and non-underlying mediations to be done by United Nation Agencies, International and additionally National Non-Governmental Organizations just as Public Sector Entities.

Chapter 3

Materials & Methods

3.1 Research Methodology

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques (Irny & Rose, 2005). Research Methodology is science of studying how research is done scientifically. A way to systematically solve the research problem by logically adopting various steps. Methodology helps to understand not only the products of scientific inquiry but the process itself. Research Methodology aims to describe and analyze methods, throw light on their limitations and resources, clarify their limitations and resources, clarify their presuppositions and consequences, relating their potentialities to the twilight zone at the "frontiers of knowledge" (Kothari, 2004).

Research can be defined as "an activity that involves finding out, in a more or less systematic way, things you did not know" (Walliman & Walliman, 2011). "Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based" (Brown, 2006). Research Methodology chapter of a research describes research methods, approaches and designs in detail highlighting those used throughout the study, justifying my choice through describing advantages and disadvantages of each approach and design taking into account their practical applicability to our research.

Methodology is described as the framework which is associated with a particular set of paradigmatic assumptions that we will use to conduct our research (O'Leary, 2004). When conducting a research methodology should meet the following two criteria:

- Firstly, the methodology should be the most appropriate to achieve objectives of the research.
- Secondly, it should be made possible to replicate the methodology used in other research of the same nature. (Allan & Randy, 2005).

3.2 Research Method

This study is based on qualitative as well as quantitative approaches. Mixed method will be used to collect data for this study which includes both quantitative and qualitative. In general, mixed methods research represents research that involves collecting, analyzing, and interpreting quantitative and

qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon. It is a research design with philosophical assumptions which guide the direction of the collection and analysis of data as well as methods of inquiry. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems that either approach alone. Qualitative data refers to non-numeric information such as interview transcripts, notes, video, and audio recordings, images, and text documents. Qualitative case study methodology provides tools for researchers to study complex phenomena within their contexts (Baxter & Jack, 2008).

Qualitative method is used to understand people's beliefs, experiences, attitudes, behavior, and interactions. It generates non-numerical data. The integration of qualitative research into intervention studies is a research strategy that is gaining increased attention across disciplines (Pathak, Jena, & Kalra, 2013). Qualitative researchers engage in naturalistic inquiry, studying real- world settings inductively to generate rich narrative descriptions and construct case studies. Inductive analysis across cases yields patterns and themes, the fruit of qualitative research (Patton, 2005). In qualitative methodology the researcher looks at settings and people holistically; people, settings, or groups are not reduced to variables but are viewed as a whole. The qualitative researcher studies people in the context of their pasts and the situations in which they find themselves, (Rossman, 2011).

3.3 Study Area

The area chosen for my research is Provincial Disaster Management Authority (PDMA) and District Disaster Management Unit (DDMU). PDMA is a Federal Government organization, which deals with natural or man-made disasters in Khyber Pakhtunkhwa of Pakistan. PDMA's mandate is to engage in activities concerning to all four stages of Disaster Management Spectrum. The Government of Khyber Pakhtunkhwa has established a Provincial Disaster Management Commission (PDMC) as well as a Provincial Disaster Management Authority (PDMA) to promote enhanced disaster preparedness and management within the province. The establishment of PMDC and PDMA is based on the National Disaster Management Ordinance (NDMO) which forms the legal basis for the implementation of the National Disaster Management Framework (NDMF) provided by the National Disaster Management Authority (NDMA). With the establishment of PDMA, the functions of the Relief Commissionerate have been incorporated into the new Organization. The DDMU acts as the

district planning, coordinating, and implementing body for disaster management and takes all measures for the purposes of disaster management in the districts in accordance with the guidelines provided by the National Authority and the Provincial Authority.

3.4 Population of the Study

The target population in this research was representatives of the financial institutions of Khyber Pakhtunkhwa and Federal Capital. According to the pattern majority of the representatives belong to Provincial Disaster Management Authority (PDMA), followed by the representatives of the financial institution NDRMF. The variation in representatives helped the research show the diverse challenges Pakistan face. But mostly focus was on the policies and practices implementation by the respective institutions who are working and assessing through different programs.

3.5 Sampling Techniques

The strategy used for this study is purposive sampling. Purposive sampling is intentional selection of informants based on their ability to elucidate a specific theme, concept, or phenomenon. As utilized in qualitative and mixed methods research, purposive sampling involves an iterative process of selecting research subjects rather than starting with a predetermined sampling frame. Purposive sampling technique was used for the purpose of this study. Purposive sampling represents a group of different non-probability sampling techniques. Also known as judgmental, selective or subjective sampling, it relies on the judgement of the researcher when it comes to selecting the units (e.g., people, cases/organizations, events, pieces of data) that are to be studied. Usually, the sample being investigated is quite small, especially when compared with probability sampling techniques, this research focused on collecting data from people who meet the required criteria.

3.6 Sample Size

The total sample size of this research is around 5 respondents from the Provincial Disaster Management Authority (PDMA) and National Disaster Risk Management Authority (NDRMF) and 5 from other relative organizations. The purposive sampling technique was used and the reason for selecting purposive sampling was to target the exact respondents from the population selected.

3.7 Tools of Data Collection

In order to provide greater depth of understanding of the present study, it was necessary that various techniques should be utilized. The data collection will be through the semi-structured interviews from the government officials. To check the validity of the interviews used for collecting data a pilot test was conducted. Semi-structured interviews are an effective method for data collection when the researcher wants to collect qualitative, open-ended data; to explore participant thoughts, and beliefs about a particular topic; and to delve deeply into personal and sometimes sensitive issues. The respondents were asked to give their opinions, perspectives, and suggestions in the end. This helped the researcher remove irrelevant questions and add more appropriate questions to support the research hypothesis. And it also helped to verify the obtained data.

3.8 Data Analysis

The data was analyzed using the descriptive statistics. The analysis was based on the scrutiny of the questions and responses obtained from the interviews. Descriptive statistics is a statistical computation describing either the characteristics of the sample or the relationship among variables in a sample. In descriptive statistics, the data can be categorized by a number of variables involved. The collected data was then analyzed through MS Excel spreadsheet and it was further analyzing in figures and tables.

Chapter 4

Results and Discussions

4.1 Demographic Profile of Respondents

The primary data was collected through semi-structured interviews. The respondents were mostly the officials and team of PDMA, KPK, NGOs and NDRMF official, respectively. The Respondents were belonging to different cities in KPK, age groups and designations. The demographic profile of respondent shows that the age group of the respondents started from almost the age of 30 years to 50 and above. All the respondents were Male members. The table given below discusses the demographic profile including the occupation and designation of the respondents.

Respondent Code	Gender	Organization	Designation	Age Group
R1	Male	PDMA	DRM Specialist	38
R2	Male	PDMA	PEOC Incharge	33
R3	Male	PDMA	Asst. Director Rehabilitation	48
R4	Male	PDMA	Asst. Director Budgeting	35
R5	Male	NDRMF	Projects & Operations Mgt.	50
R6	Male	PDMA	GIS Specialist	34
R7	Male	NDRMF	DRF Head	38
R8	Male	Water Shed Management	Conservator	55
R9	Male	NDRMF	General Manager	53
R10	Male	NDRMF	Project Appraisal & Mgt.	45
R11	Male	NDRMF	Procurement	38
R12	Male	Pakistan Red Crescen	Program Manager	32
R13	Male	Pakistan Red Crescen	Program Officer CBDRR	40
R14	Male	Rescue 1122	Head Planning & Developm	45
R15	Male	Pakistan Poverty alleviation fund	MIS/GIS Information & Technology	40

Table 4.1: Demographic Profile of Respondents

4.2 Identification of DRF Gaps at Provincial Level

4.2.1 Policies regarding Disaster Risk Financing

The Disaster Risk Reduction Policy (2013) provides a broad view and mechanism for DRF and financial protection. This policy also provides an overview of Insurance strategies leading to Risk Minimization. The DRR Policy acknowledges the need for a DRF strategy to increase the financial response capacity of the Pakistani Government. The Sendai Framework for Disaster Risk Reduction (2015-2030) provide a broad set of actions as well as guiding principles mentioning Risk Governance as a tool to manage Disasters. The Sendai Framework prioritizes investing in DRR for risk reduction by public-private investment to promote mechanisms for disaster risk transfer and insurance, risk-sharing and retention and financial protection, as appropriate to reduce the financial impact of disasters on Governments.

Pakistan has comprehensive frameworks for disaster risk management but lacks a disaster risk financing. The NDRMF Policy provides strategic, comprehensive and coordinating guidance for achieving "national resilience towards disasters". The Fund is in line with existing policies and strategies of the GOP to address disasters, including The Disaster Risk Reduction Policy (2013), Climate Change Policy (2013), GOP Vision 2025, National Disaster Management Plan 2013-2022 (NDMP), National Flood Protection Plan IV (NFPP) (2016-2025) and Sendai Framework for Disaster Risk Reduction, 2015-2030. Government policy regarding DRF includes the introduction of mandatory insurance protection, risk-pooling structures, relevant regulations, and the creation of a level playing field for insurance, reinsurance, and capital market activities.

The GoP has implemented strategic and practical steps towards greater financial resilience to disasters. This includes, for instance, introduction of the National Disaster Risk Reduction policy, which places disaster risk financing among the government priorities. It also includes efforts towards, for example, strengthening social safety nets to protect the most vulnerable and introduction of designated reserve funds at federal and provincial levels – among many others. However, most outcomes in these policy frameworks remain unmet largely because of inadequate and untimely financing. Until now, Pakistan has no policy document which addresses disaster risk financing. This DRF Strategy, therefore, is developed to fill this gap.

4.2.2 Practices Regarding Disaster Risk Financing in KP

At the national and provincial level, the current financial protection practice is largely reliant on post-disaster financial instruments (budget reallocations and tax increases) as well as donor assistance. Such ex-post instruments have been insufficient to cover recovery and reconstruction needs and have also led to liquidity shortfalls in the immediate aftermath of disasters. For this purpose, the Government officials were interviewed where a broad understanding of DRR was observed. The set of practices in managing Disaster revolved around the DRR theme whereas the DRF was not observed up to any extent. Majorly DRR is streamlined in KPK. (R1, R2, R4, R6, R10)

On the contrary, the respondents had a good understanding about DRF and also felt the need for, but the challenges faced by the KPK region for the inadaptability of DRF in action were also acknowledged. The primary focus of the DRR team was on Disaster Response and Relief. Majority of the set of actions were focused on post-disaster areas. (R1, R2, R3, R8, R11)

4.2.3 Processes for Execution of DRF

NDRMF mandate is basically about funding projects which are in lined with the National Disaster Management Plan (NDMP), NFPP (IV). The FIP approaches NDRMF with the projects which later on are funded by NDRMF to carry out its activities. This all process comes under the umbrella of Disaster Risk Reduction (DRR). At present post-disaster expenditures are financed from contingent and supplementary budgets during the relief and recovery phases and from the annual Public Sector Development Program during the reconstruction phase. The inaccessibility of data on the natural hazards and their past and possible future financial implications is one barrier to the process of informed ex ante provisioning of funds. For the adaptation of DRF a development of technical capacity and necessary tools to for disaster related expenditure would help the government to both; determine appropriate allocations through the budget and also to explore and make informed proposals for possible sources of financing outside of the budget. (R7, R9, R10)

Disaster risk information is essential in order to make appropriate decisions regarding disaster risk financing. Robust data and analytics are key in providing information on the disaster risks faced in Pakistan, potential impacts, and associated costs and liabilities as a basis for identifying appropriate, cost-efficient disaster risk financing instruments for different layers of risk. A forward-looking approach is imperative, understanding not only current risks but also potential future changes due to

climate change and shifts in vulnerability and exposure. As the DRF is new concept and till now there is no project regarding DRF but on the national side a strategy is being constructed for Pakistan i.e., DRF Strategy and on parallel a model called as National Risk Catastrophe Model is also under process. (R7)

4.2.4 DRF Part in Minimizing the Burden of Government

The DRF needs to deal with the fiscal crunch/ liquidity crunch that the Government faces. The Government is not ready to bear the burden because the DRR and the natural hazards are not streamlined into policy making and planning process which is why there is need for the DRF. By highlighting the contingent liabilities (explicit/implicit) the ice with the Government is being broken e.g., Contingent Plans of Mega Projects i.e., Airports etc. The implicit contingent liabilities need to be quantified if there is the need of efficient DRF regime. Mapping key institutions and existing financing arrangements (and their financial and technical capacity) through a collaborative process helps in building the understanding among the key stakeholders about the relevant challenges and how to address them. The mapping could only be built on the information collected by such stakeholders as the NDMA, NDRMF, ADB and World Bank.

Financing disasters is a challenge for the Government of Pakistan. The Government of Pakistan has taken significant steps to improve the management of disaster risk over the past 10 to 15 years, both to tackle underlying disaster risk and improve post-disaster response. However, the country continues to face funding challenges for disaster risk reduction and disaster response, and the heavily decentralized approach to DRF complicates challenges in enhancing DRM. The institutions are trying their best to reduce the existing risk through DRR activities, it is evident that preventing and mitigating the entire risk set remains unfeasible and some of the risks will prevail anyway. This remaining risk needs either to be retained in a more informed way or transferred to reduce the financial vulnerability of the Government, using appropriate risk financing instruments (ranging from contingent financing, risk insurance, risk pooling, and cat bonds, etc.

4.3 Exploration of Effective Implementation of DRF

4.3.1 Implementation of DRF in KP

The need for DRF in KPK is growing but due to some challenges the DRF is not implemented in KPK. The NDRMF with collaboration and coordination with Government of Pakistan has taken initiatives primarily by conducting risk assessment. According to the respondent, a Disaster Risk Financing Strategy is being formulated with the coaction of the Government of Pakistan. (R7)

In recent past years, Pakistan has experienced severe disasters which have resulted in fiscal pressure and macroeconomic instability. It is in this context that this Disaster Risk Financing (DRF) need to be implemented, which outlines strategic priorities and financial instruments to be adapted. The implementation of DRF strategy will enhance Khyber Pakhtunkhwa, Pakistan's financial resilience to disasters through sound risk assessments; a portfolio of adequate disaster risk finance instruments; mechanisms and clear rules which ensure that resources are channeled efficiently to intended beneficiaries; and continued disaster risk reduction efforts.

It is important to provide a capacity building to the stakeholders in disaster risk financing according to the identified priorities to sustain their implementation. Such capacity building should be programmatic at both policy and technical level, it also should support better coordination between the federal, provincial and district governments specifically on disaster risk financing. Capacity-building should also target improved inter-agency coordination at all levels of the GoP, as well as capacity of different agencies to manage existing and newly introduced risk financing instruments.

4.3.2 Role of NDRMF in Implementation of DRF

DRF is a new subject so the National Disaster Risk Management Fund (NDRMF) is itself executing this portfolio. There is a model called as NatCat model which will provide quantitative information on the expected levels of loss for hazard events of varying types, intensities, and return periods, including Probable Maximum Loss (PML) curves. This model is designed to focus on 4 disasters i.e., Earthquake, Droughts, Tropical Cyclones and Floods. The model will eventually be positioned on an accessible open-source platform and will include the following components: Hazard Module Assessment, Vulnerability Module Assessment, Exposure Module Assessment. Integrating all of these assessment modules NDRMF is planning on performing loss estimation.

Loss estimation will basically help the national, sub-national Government to perform scenario-based loss estimation. This model is also going to be helping in convincing the Government about the need of DRF. The basic purpose of NDRMF is to focus only on Risk Mitigation projects. NDRMF established the DRF Synergy Group, in order to help achieve an enhanced level of coordination amongst key stakeholders and a great synergy for disaster risk financing in Pakistan.

The DRF Unit is established by NDRMF and is mandated to develop a National DRF Strategy, which is to steer the country in the right direction in the context of Disaster Risk Financing. The NatCat model will provide a firm basis to develop a national DRF strategy for Pakistan and pilot prospective DRF solutions in the country. The national DRF strategy would identify appropriate tools for each layer of risk, based on multi-hazard loss curves and taking into account the scale of funding required for each layer of risk, the speed with which disbursement of funding is required, and the relative cost-effectiveness of alternative instruments for specific layers of loss.

S. No	Project	Duration	FIP	Budget (PKR)	Project Area	NDRMF Share (PKR)	FIP Share (PKR)
1	Multi Hazard Risk Vulnerability Assessment	20 months	NDMA	277.7 million	KP, Baluchistan	189.8 million	87.9 million
2	Vulnerability to Resilience	18 months	Pakistan Red Crescent	228.10 million	KP, Balochistan	159.5 million	68.6 million
3	Resilient and Adoptive Population In Disaster	18 months	Islamic Relief Pakistan	192.6 million	Balochistan	127.6 million	64.9 million
4	Promoting Integrated Mountain Safety in Northern Pakistan	18 months	Aga Khan Foundation	834.6 million	KP, other districts	579.6 million	254.9 million
5	Rehabilitation of Old Deg Nullah from Deg Diversion Channel to Q.B Link Canal	19 months	Punjab Irrigation Department	385.44 million	Punjab	269.813 million	115.634 million

6	Building Resilience by Strengthening the Community through Inclusive DRM	18 months	Muslim Aid	400.85 million	Balochistan	264.353 million	136.504 million
7	Building Resilience to Disasters and Climate Change	18 months	PPAF	823.98 million	KP, Sindh, Balochistan, Punjab	575.112 million	248.871 million
8	Disaster Preparedness Support Plan for Emergency Rescue Service	18 months	Rescue 1122 KP	613.850 million	KP	429.695 million	184.155 million
9	Providing Stone Apron, Stone Pitching and Earth Work	18 months	IRR Sindh	300.766 million	Sindh	200.536 million	90.229 million
10	Strengthening Tsunami and Earthquake Preparedness in Coastal Area of Sindh Province	18 months	PDMA Sindh	180.00 million	Sindh	126.00 million	54.00 million

Table 4.2: Projects of NDRMF

One of the priority thematic areas of the NDRMF is the development of a national disaster risk financing strategy to guide the government's efforts to manage significant financial implications of disasters. Its development will be based on national disaster risk modelling work also supported by the NDRMF to quantify disaster risk. The NDRMF will finance the design and piloting of several specific disaster risk financing instruments as well.

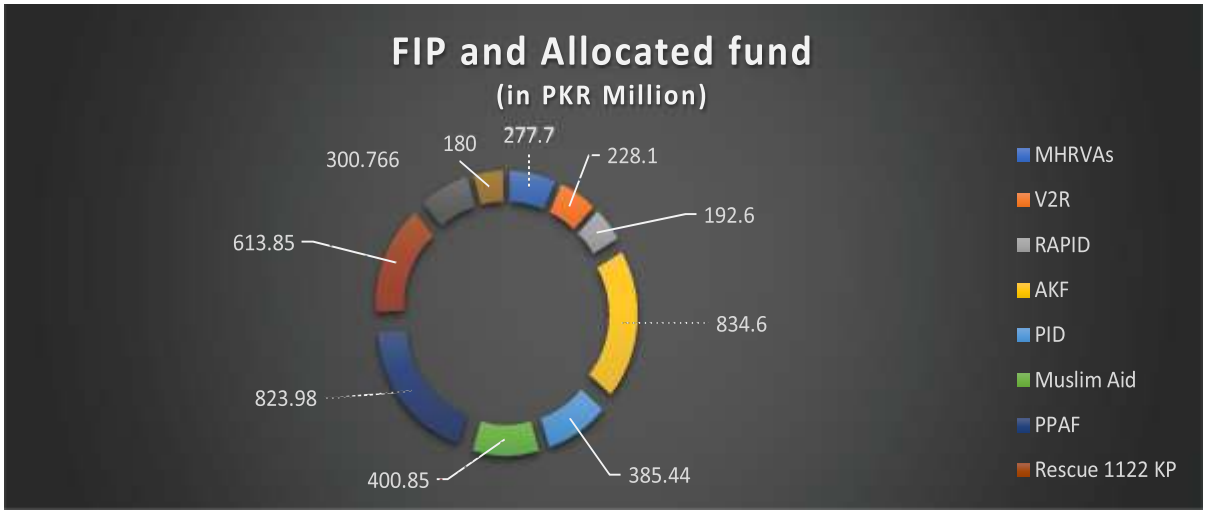

Figure 4.1: Projects and Allocated Funds

4.3.3 PDMA and NDMA Role in Effective Implementation of DRF

As the PDMA and NDMA are stuck in response phase and do not pay much heed attention towards mitigation. PDMF's are utilized in emergency assistances. The NDRMF keep receiving proposals and then these proposals are filtered through the checklist provided on the website. Its partners are as shown in the figure 2 below who provide funds, loans and grants to fulfill the needs of disaster risk.

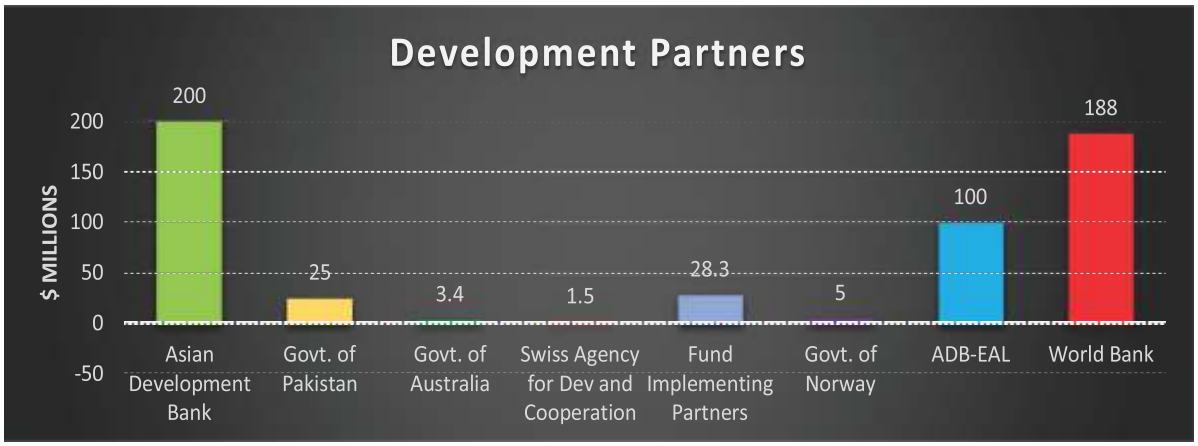

Figure 4.2: Development Partners

If they cover all the points available in the checklist than that proposal is accepted if it is in line with NDMP and NFPP (IV). Planning department and PDMA assess the projects priority and then allocate to the deserving province.

Provincial Disaster Risk Management Authorities (PDMAs) are establishing provincial disaster management funds (PDMFs) in provinces/regions across Pakistan, in accordance with the National Disaster Management Act of 2010. For instance, Punjab PDMA will soon establish its PDMF and has already allocated PKR 8 billion for this purpose, with a plan to contribute an additional PKR 1.5 billion annually. Experiences from Punjab Province indicates that compensation after a disaster can be 14 to 15 times more than the cost of ex-ante approaches to disaster risk financing. Through better considered disaster risk financing instruments, the disaster burden on government can be reduced.

NDMA has advanced its disaster risk financing and response capacity, for example establishing a relief inventory of emergency supplies for up to 300,000 people at any given time. NDMA is aware that sovereign disaster risk financing could strengthen government's capacity to deliver more timely and effective disaster response. NDMA is also considering mechanisms to enhance financial preparedness of other stakeholders, looking towards creating policy frameworks and guidelines based on which, the private sector and other stakeholders could start developing alternative disaster risk financing solutions.

4.3.4 Approaches to make DRF Effective

NDRMF has Disaster Coordination Committee. Insurance is one approach but focusing completely on it is totally wrong approach. There should be improvement in Contingent Reserve, Catastrophy bonds, Contingent line of Credits, Emergency funds to be strengthened. The focus on Risk Mitigation projects should be improved.

The most cost-effective way of financing disaster response is through a range of tools in a common framework to address different layers of current and proposed risk as shown in the figure 3(a) and 3(b) below, as no single instrument is optimal for responding to all disaster events, which range from frequent small-scale events to rare catastrophic events. As in most Pacific countries, there is a gap for medium-layer risks.

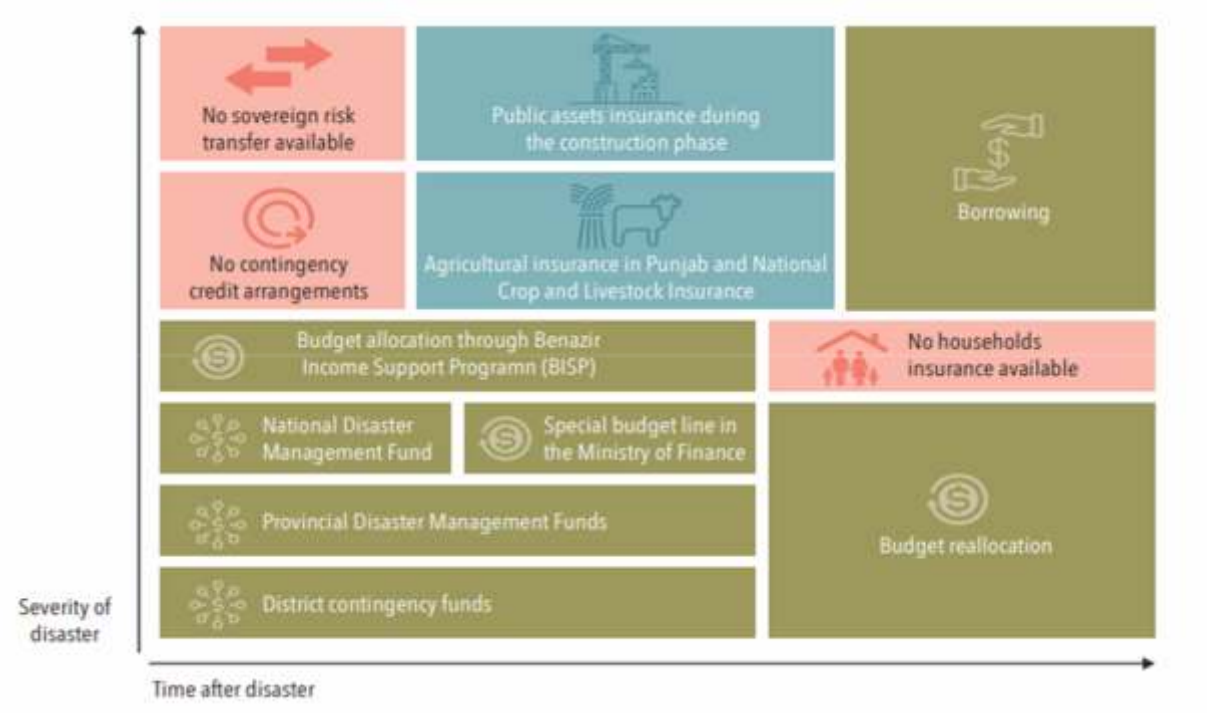

Figure 4.3(a): Current Approach to DRF in Pakistan

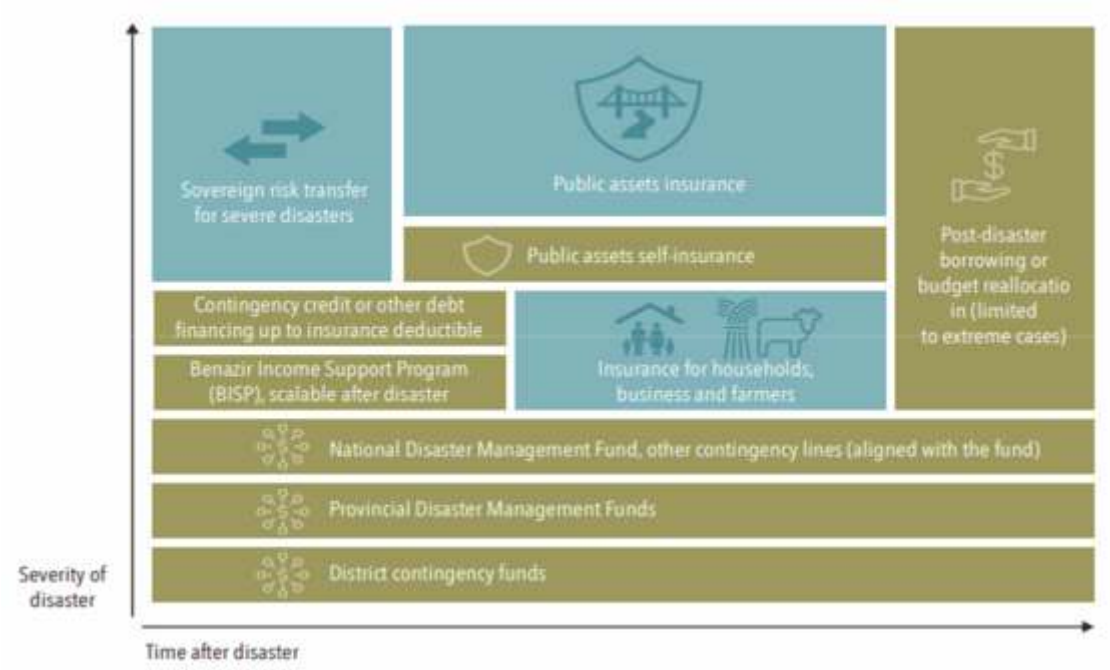

Figure 3(b): Proposed Approach to DRF in Pakistan

There is strong demand for additional instruments to strengthen financial preparedness for disasters, and a clear need for this, given the rising incidence of disaster events. Ideally, a comprehensive disaster risk financing strategy would combine both ex-ante mechanisms (arranged ahead of a

disaster occurring, such as disaster reserves, contingency budgets, contingent credit, and insurance) and ex post mechanisms (post-disaster budget reallocations, borrowing, and international assistance). The precise mix would depend on the relative cost-effectiveness of alternative instruments for specific layers of risk in Pakistan.

Chapter 5

Conclusion

Conclusion:

The Disaster Risk Reduction Policy (2013) provides a broad view and mechanism for DRF and financial protection. This policy also provides an overview of Insurance strategies leading to Risk Minimization. The DRR Policy acknowledges the need for a DRF strategy to increase the financial response capacity of the Pakistani Government. The Sendai Framework for Disaster Risk Reduction (2015-2030) provide a broad set of actions as well as guiding principles mentioning Risk Governance as a tool to manage Disasters. The Sendai Framework prioritizes investing in DRR for risk reduction by public-private investment to promote mechanisms for disaster risk transfer and insurance, risk-sharing and retention and financial protection, as appropriate to reduce the financial impact of disasters on Governments. Semi-structured interviews are an effective method for data collection when the researcher wants to collect qualitative, open-ended data; to explore participant thoughts, and beliefs about a particular topic; and to delve deeply into personal and sometimes sensitive issues. Pakistan has comprehensive frameworks for disaster risk management but lacks a disaster risk financing. The NDRMF Policy provides strategic, comprehensive and coordinating guidance for achieving "national resilience towards disasters". The Fund is in line with existing policies and strategies of the GOP to address disasters, including The Disaster Risk Reduction Policy (2013), Climate Change Policy (2013), GOP Vision 2025, National Disaster Management Plan 2013-2022 (NDMP), National Flood Protection Plan IV (NFPP) (2016-2025) and Sendai Framework for Disaster Risk Reduction, 2015-2030.

The respondents had a good understanding about DRF and also felt the need for, but the challenges faced by the KPK region for the inadaptability of DRF in action were also acknowledged. The primary focus of the DRR team was on Disaster Response and Relief. Majority of the set of actions were focused on post-disaster areas. Disaster risk information is essential in order to make appropriate decisions regarding disaster risk financing. Robust data and analytics are key in providing information on the disaster risks faced in Pakistan, potential impacts, and associated costs and liabilities as a basis for identifying appropriate, cost-efficient disaster risk financing instruments for different layers of risk. By highlighting the contingent liabilities (explicit/implicit) the ice with the Government is being broken e.g., Contingent Plans of Mega Projects i.e., Airports etc. The implicit contingent liabilities need to be quantified if there is the need of efficient DRF regime.

The NDRMF with collaboration and coordination with Government of Pakistan has taken initiatives primarily by conducting risk assessment. According to the respondent, a Disaster Risk Financing Strategy is being formulated with the coaction of the Government of Pakistan. Capacity-building should also target improved inter-agency coordination at all levels of the GoP, as well as capacity of different agencies to manage existing and newly introduced risk financing instruments. There is a model called as Nat Cat model which will provide quantitative information on the expected levels of loss for hazard events of varying types, intensities, and return periods, including Probable Maximum Loss (PML) curves. This model is designed to focus on 4 disasters i.e., Earthquake, Droughts, Tropical Cyclones and Floods. The model will eventually be positioned on an accessible open-source platform and will include the following components: Hazard Module Assessment, Vulnerability Module Assessment, Exposure Module Assessment. Integrating all of these assessment modules NDRMF is planning on performing loss estimation.

One of the priority thematic areas of the NDRMF is the development of a national disaster risk financing strategy to guide the government's efforts to manage significant financial implications of disasters. Its development will be based on national disaster risk modelling work also supported by the NDRMF to quantify disaster risk. The NDRMF will finance the design and piloting of several specific disaster risk financing instruments as well. NDMA is aware that sovereign disaster risk financing could strengthen government's capacity to deliver more timely and effective disaster response. NDMA is also considering mechanisms to enhance financial preparedness of other stakeholders, looking towards creating policy frameworks and guidelines based on which, the private sector and other stakeholders could start developing alternative disaster risk financing solutions. The most cost-effective way of financing disaster response is through a range of tools in a common framework to address different layers of current and proposed risk as no single instrument is optimal for responding to all disaster events, which range from frequent small-scale events to rare catastrophic events. As in most Pacific countries, there is a gap for medium-layer risks. The precise mix would depend on the relative cost-effectiveness of alternative instruments for specific layers of risk in Pakistan.

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Deciphering the Impacts of COVID19 on Livelihood Generation of Marginalized People of Abbottabad City Pakistan

By

Khuzaifa Ishtiaq

Bachelors Thesis

DEDICATION

This study is wholeheartedly dedicated to my parents who have been my source of inspiration and gave me strength when I thought of giving up, who continually provide their moral spiritual emotional and financial support. To my teachers, friends, brothers, sisters, mentors, relatives and classmates who shared their words of advice and encouragement to finish this study. And lastly I dedicate this study to Almighty Allah, thank you for giving me strength, hope, skills and strength to complete this study.

ACKNOWLEDGEMENTS

First and foremost, my acknowledgment is for Almighty Allah, who is most gracious and merciful, who gave me the strength, patience and consistency over the compilation and writing of the study. Alhamdulillah. I am deeply obliged to my supervisor, Dr, Asam Shad. His copious wisdom, valuable comments and beneficial suggestions made this research. This thesis would not have been possible without his mentorship. I thank profusely all the staff of Department of Development studies Comsats University Islamabad, Abbottabad Campus Pakistan for their kind help and co-operation throughout my study period. I would also like to extend my appreciation to Mahnoor Rizwan. Thank you for guiding me and providing me with all the useful suggestions. Lastly, I am fortunate enough to this chance to thank my all friends for their constant support encouragement and prayers. Without them this would not have been possible.

Khuzaif Ishtiaq

ABSTRACT

The COVID-19 pandemic has affected about 210 countries with more than 67 million confirmed cases and over 1.5 million deaths across the globe including Pakistan. COVID-19 now spreading in developing countries, massive consequences on health and livelihoods are feared. Livelihood generation is the most important and crucial aspect of sustainable development, which is severely facing negative impacts of ongoing pandemic. The middle and lower classes form the backbone of the economy and provides livelihood to a large section in developing countries. Therefore, the disruption in economic activities and the trade and industry sector will have far-reaching impacts on these countries. Owing to the importance of these sectors, this research performs a comprehensive assessment of the effect of COVID-19 on livelihood generation of marginalized groups in district Abbottabad. The research suggests coping and mitigation mechanisms that can be adopted to sustain livelihoods. The methodology of deciphering the impacts of COVID19 on livelihood generation of marginalized people of Abbottabad city Pakistan was designed to make sure the collection of data in the most dependable way. Data on prevailing different forms of Shopkeepers, Salesman, Philanthropists. This chapter present in depth study of how data in this study was collected and analyzed, as well as to introduce the research strategy and the empirical techniques applied in this research. The purpose of this research is to study the Impact of cOVID19 on livelihood generation of marginalized people. The research design was composed using a mixed method approach. Data was collected by using both qualitative and quantitative method for the present study Mandian area in district Abbottabad will be selected as study area. District Abbottabad is a district of the Pakistani province of Khyber Pakhtunkhwa, Pakistan.

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Chapter 1
Introduction

1 Introduction

Throughout history, the planet has seen many difficult circumstances. From time to time, these problems came in the form of wars or revolutions that completely changed the socio-political landscape. Infectious diseases have posed yet another threat. Many epidemics have occurred around the world. The plagues of the middle Ages and their variants, as well as the Great Influenza of 1918–1920, were the most terrifying. Even if there have been some new experiences in the last 20 years, infectious diseases with global consequences have existed for a long time. SARSCOV of 2002–2003, avian influenza (H5N1) of 2004–2006, and MERS-COV of 2012 were the next outbreak reports. Epidemics, on the other hand, resurfaced in the third decade of the twenty-first century. With the announcement of the first case in the Wuhan district of China on December 1, 2019, the world was confronted with a virus known as COVID-19, a new alteration of the corona virus family. COVID-19 or SARSCOV2 differs from previous outbreaks in terms of regional distribution of infection and causalities. However, its apparent magnitude and global impact were initially underestimated. To distinguish COVID-19, it's a good idea to note the extent of previous epidemics. SARS-COV (severe acute respiratory syndrome) began in China and spread to Taiwan, Singapore, the United States of America, and Canada. Around 8,000 cases were registered during its influential era, with an 11 percent fatality rate (Siu, A.et al 2004). In 2008, avian influenza H5N1 that spread from poultry to humans resulted in 400 deaths (Siu, A.et al 2004). In 2012, the most recent MERS-COV (Middle East respiratory syndrome) outbreak mostly affected the Middle East, with over 400 deaths. South Korea was the only out-of-region event, with 150 deaths recorded in 2015. What's more shocking about COVID-19 is how quickly it spread through Europe and the Americas, despite its origins in East Asia. By the end of April, the number of confirmed cases and deaths had risen to over 3 million and 200.000, respectively, all over the world. This global epidemic was declared a pandemic by the WHO on March 11th, 2020, due to its 7% fatality rate.

1.COVID-19 and Economics

Recent research has focused on assessing the pandemic's initial impact on consumption, utilities, finance and investments, and industries in part. The services sector, including transport, tourism, food preparation, and leisure, has been severely harmed as a result of lockdown enforcements and voluntary social distancing. Luxury travel agencies forecasted a 75 percent loss in tourism revenue in China, where the novel virus first appeared, amounting to nearly $ 95 billion in 2020, based on 2019 results. (Hoque, An, and others, 2020) For 214

Chinese cities, the shift in offline consumption expenses was assessed (Chen, H et.al2020). Transaction and service expenses were estimated to have decreased by 32%. The rate in Wuhan district was reported to be higher than 70%. As a result of the drop in demand, the researchers predicted a 1.2 percent drop in total GDP in 2020. Kasare calculated the effect on India's retail and service sectors. These results pointed to a drop in national income and an increase in the budget deficit in 2020. R. F. 820 (Ceylan et al). Consumer spending for goods increased by 56 percent due to stockpiling from the end of February to the middle of March, according to bank transactions analyzed to estimate expenditure and saving attitudes in the United States. Furthermore, between the 16th of February and the 22nd of March 2020 in the United States, expenses in grocery stores and supermarkets increased by 39%, relative to 2019 records (Lusk, J et.al 2020). Risk expectations are rising, as is social and economic fear. However, attitudes toward consumption and buying had shifted in the interim. Following the stockpiling process and during temporary and permanent lockdowns, the majority of spending began to occur online. Also in countries with moderate or lower per capita income, internet users have begun to migrate to online shopping, which includes both basic industry items such as textiles and leisure tools as well as consumer goods (Baldwin, R.et.al 2020)

This shifting consumption demand was observed in Japan as well at the beginning of the pandemic. Yet, as most of the consumption spending has already been maintained online in Japan, higher devastation has been awaited for services demand due to COVID-19. If the mortality rate appears as 0.8 percent, around 37 percent of consumption's share in national income will be lost in 2020. If the average rate reduces to 0.3 percent, the expected loss of consumption will be 18 percent. On the other hand, the loss in public resilience and rising security concerns are and will be the major distracters of demand oriented industries even after the pandemic. While people focused on their daily consumption, manufacturing industries got affected negatively even in these few months. Demand loss accompanied by excess supply led to lower prices as an instance in household appliances, all sort of vehicles, textiles, etc. Therefore, as awaited, the lockdown enforcements and declining demand are apparently leading to downsizing in all these industries and this lead to lower the demand in shops also. (Ceylan et al., 2020)

In the least developed nation, the lockdown has resulted in the collapse and closure of small and medium-sized enterprises. Pakistan is a developing country with an unexpected increase in COVID-19 in its urban areas, where tens of thousands of SMEs operate. The rapid

lockdown had a significant negative effect on businesses in urban areas. The spread of COVID-19 has recently highlighted its negative effects on global economies, large companies, and SMEs. It has not only affected people's lives, but it has also put their economic activities in jeopardy (World Bank, 2020). The negative effects of COVID-19 for Pakistani SMEs make it an important field for study. The consequences of a pandemic outbreak must be known in the country so that measures can be implemented in a timely manner. In light of this central point, as well as the significant effect of COVID-19 on SMEs in Pakistan, as stated by the World Bank (2020) and other economic watchdogs, it is critical to recognize the negative implications for the implementation of policies and revival strategies in the future. Through investigative and descriptive research, this paper aims to determine the implications of COVID-19 on Pakistan's SMEs market. It also aims to propose policies for better managing the economy's downturn, as well as turnaround measures for the country's victimized SMEs. Organizations rely on the outside world for their activities because they need resources such as manpower, raw materials, and money. Pfeffer and Salancik (2003) propose that the environment's configuration has a strong impact on organizational structure and strategy, and that this hypothesis also provides ways to mitigate some of the negative influences (Cuervo-Cazurra et al., 2019). If a company's vital resource is linked to the supply chain, which was disrupted by the recent pandemic, the company would have suffered significant losses as a result of non-operationalization. The resource dependency theory is a foundation for understanding the SMEs and their problems in the external world, such as a pandemic. As a result, this paper examines its point of view. Since the pandemic is still underway and little study has been done so far, the contributions of this paper are substantial and unique. This paper makes a major contribution by recognizing the effect of COVID-19 on SMEs in Pakistan by reviewing the available body of information, studies, and other documents from key government authorities. The other donation is a descriptive study of responses from owners of SMEs in Pakistan who have been hit hard recently. A questionnaire created by the Bureau of Labor Statistics in the United States is modified and used to conduct a survey for descriptive study. The final donation is a collection of fair guidelines for government officials and SME owners about how to deal with the negative effects of COVID-19 and resurrect their businesses. The consequences of this research are both realistic and scholarly. It adds to the body of knowledge about the effect of doubts like epidemics and pandemics on the SMEs market. To add to the SMEs literature, researchers should try to clarify the descriptive characteristics of the implications discussed in

this paper. The findings of this study are relevant for state authorities to consider in assisting the process of SMEs revival in the country for the COVID-19 implications for SMEs 75 the overall economy. Since the improvement of SMEs is a component of economic development, recommendations will aid state authorities and SMEs in formulating strategies.

Since the pandemic is still underway and only limited research has been conducted so far, the contributions of this paper are important and unique. This paper makes a major contribution by identifying the effect of COVID-19 on SMEs in Pakistan based on a study of the current body of information, studies, and other documents from key government agencies. The other contribution is a descriptive study of responses from owners of SMEs in Pakistan who have been hit hard in recent months. The US Bureau of Labor Statistics' questionnaire is modified and used to conduct a survey for subsequent descriptive study. The final contribution is a collection of reasonable guidelines for authorities and SME owners to address the negative effects of COVID-19 and resurrect their economic activities. The consequences of this research are both realistic and scholarly. It adds to the body of knowledge on the effect of uncertainties on SMEs, such as epidemics and pandemics. To add to the SMEs literature, researchers should try to clarify the descriptive characteristics of the implications discussed in this paper. The findings of this study have important consequences for state authorities in assisting the revival of SMEs in the country for the COVID-19 betterment of the entire economy. Since the improvement of SMEs is a component of economic development, recommendations will aid state authorities and SMEs in formulating strategies.

1.2 Impact of COVID-19 on Global Small and Medium Scale Enterprises

For companies all over the world, COVID-19 is a live problem. With its rapid and widespread scope, it has hindered global economic development. According to a World Bank study (2020), the abrupt arrival of COVID-19 has caused a recessionary trend in the global economy, with no single country surviving its negative consequences. According to the World Bank, the global economy will contract by 5.2 percent by 2020. It also identifies small and medium-sized companies as victims of the epidemic, which has long-term consequences for businesses. These figures demonstrate the effect of COVID-19 on small and medium-sized businesses. The proof for this effect is substantiated in the following parts. The latest COVID-19 pandemic has had an impact on the SMEs in affected areas. Lu et al. (2020) investigated the effect of COVID-19 on over 4,800 Chinese SMEs. They discovered that small and medium businesses are in a worsened situation as a result of the pandemic

outbreak, according to JCEFTS 14, 1 76. Businesses are confronted with problems such as a lack of supply, a drop in demand, and a reduction in the labor force. Another research looked at over 5,800 companies connected to the network and discovered that the COVID-19 outbreak has affected the businesses of sole proprietors and small partners. The pandemic epidemic has resulted in the closing of businesses due to a lack of funding (Bartik et al., 2020). The detrimental effects of COVID-19 on the corporate climate are also evident in Seetharaman's (2020) study of business organizations. Small and medium-sized businesses suffer as a result of forcible and mandatory market closures and operational constraints. In a similar way to the COVID-19 effect on SMEs, Fairlie (2020) concluded that many small businesses were closed in the first month of restrictions, and many more were closed in the second month of expanded restrictions. All of these events caused problems for both male and female small business owners.

1.3 Impact of COVID-19 on Small and Medium Scale Enterprises in Pakistan

The effect of COVID-19 on Pakistan's SMEs is important, as SMEs account for 90% of the country's total businesses. In addition, SMEs contribute 40% of the national GDP (SMEDA, 2020). As a result, the ongoing pandemic has a negative effect on the country's economy, especially small and medium businesses. COVID-19 has had a negative impact on Pakistan's economy; according to the Asian Development Bank (ADB) (2020), Pakistan's economy has grown at a negative rate of 0.4 percent as a result of the outbreak. COVID-19 has badly hit Pakistan's SMEs economy, according to the UNDP's (2020) study and response plan, which has short-term proposals for dealing with the ongoing pandemic with government involvement in the form of financial support for SMEs. Thanks to the country's lockdown, companies have lost jobs and clients. Owing to the epidemic, much sole proprietorship has had to close their doors. According to a UNDP survey, women-led businesses were more vulnerable to the shock (2020). The Sustainable Development Policy Institute (SDPI) released its findings on COVID-19's effect on Pakistan's SMEs market. According to their findings, approximately half of the 3.8 million SMEs will experience a drop in revenue and earnings. According to SDPI, approximately 0.95 million SMEs are not capable of surviving even a one-month lockdown. In addition, approximately 2 to 3 million SMEs would undoubtedly need financial assistance in order to reopen their doors following the lockdown. The current situation will not only have an effect on financial viability, but it will also disrupt the SMEs sector's supply chain (Javed and Ayaz, 2020). After analyzing the situation of

micro, small, and medium scale enterprises (MSMEs) in Pakistan following a COVID-19 boom, Shafi et al. (2020) discovered that MSMEs in Pakistan faced serious problems in terms of decreased demand for goods and services, supply shortages, supply chain instability, and profit and revenue reduction. According to the report, 83 percent of companies were vulnerable and unable to deal with the shock. Furthermore, the majority of companies in the country would not be able to survive a prolonged period of lockout. SMEDA is a recognized institute in Pakistan that regulates small and medium-sized businesses. It recently conducted a survey of 920 companies, demonstrating that businesses are vulnerable to the COVID-19 outbreak (Naqvi, 2020). According to the study, 95 percent of SME activities were decreased as a result of the outbreak. In total, 92 percent of SMEs experienced supply shortages as a result of supply chain disruptions. Furthermore, 23 percent of SMEs have registered a total loss as a result of 100 percent cancellation of export orders. Following the COVID-19 consequences for SMEs 77 lockout situation, approximately 46% of companies have decreased their workforce in the last few months. Finally, after the spread of COVID-19, 89 percent of companies are in financial distress (Naqvi, 2020) 1st Figure Sareen (2020) examined and published on the devastating consequences of COVID-19 for Pakistan's small and medium businesses as a result of the country's economic downturn. The slowing growth of the national economy, combined with a sales deficit, creates unfavorable market conditions for SMEs. Due to the closing of business sites following COVID-19, unemployment increases. The government was concerned about company failures because the unemployment rate skyrocketed after the outbreak. The government directed the State Bank of Pakistan to introduce a financing scheme for small and medium enterprises to pay salaries and wages at reduced rates. This measure was taken to help companies and reduce unemployment during the current economic downturn (State Bank of Pakistan, 2020).

1.4 Problem statement

- The priority should be to save marginalized people first and economy later (PSDP, 2020).
- Government planned to help by dividing affectees in two groups during lockdown

  1) Marginalized people

  2) Small businesses owners

- The government launched its own initiatives, including the Ehsass Program, which has provided cash assistance of 12,000 rupees (approximately $75) to low-income families. Within a few weeks, the government managed to disburse 55 billion rupees (about $344 million) to 4.6 million families that registered for the program through a text-message service.

1.5 Objectives

- To study the effectiveness of the Ehsass program for fulfilling the needs of marginalized people during the lockdown of pandemics.
- To get the feedback of the marginalized people about the Ehsass program initiative taken by the government of Pakistan during COVID 19 pandemic.

Chapter 2
Literature Review

2 Literature Review

The way we work and earn a living has changed as a result of globalization. As a consequence, trade and travel have been identified as key determinants of disease spread. Global interconnectedness has also been encouraged by increased urbanization and the deeper integration of the world economy. As a result, globalization has emerged as an important mechanism for disease transmission. This paper examines COVID-19's potential effect on globalization and global health in terms of migration, trade, travel, and the country's most affected. Globalization's implications were quantified in terms of mobility, environment, and healthcare systems. Using airline and seaport trade data and travel statistics, the magnitude of human mobility was determined. The workers, event cancellations, food and agriculture, research institutions, and supply chain were all used to calculate the economic effects. The healthcare capability was evaluated using healthcare system metrics and country attentiveness. We designed a pandemic risk index (PVI) by developing a quantitative measure of the future global health using a technique for order of partiality by resemblance to ideal solution (TOPSIS). From side-to-side travel, event cancellation, job workforce, food chain, academia, and healthcare capability, the pandemic has wreaked havoc on the global economy, healthcare, and globalization. Certain countries were found to be more defenseless than others based on PVI findings. South Africa and Egypt were among the weakest countries in Africa; Russia, Germany, and Italy were among the weakest in Europe; India, Iran, Pakistan, Saudi Arabia, and Turkey were among the weakest in Asia and Oceania; and Brazil, the United States, Chile, Mexico, and Peru were among the weakest in the Americas. The effects on mobility, the economy, and healthcare systems have only recently begun to emerge. The results of this study could aid in the development and implementation of strategies at the national level to alleviate this growing burden. (Shrestha et al., 2020)

Due to work loss and other shocks to income and reduced livelihoods, the global effect of the corona virus disease (COVID-19) pandemic is rising daily on the poor. Poorer households and those who rely on informal work are the most vulnerable members of society. It includes casual day labourers, small-scale farmers, and many others who, in both urban and rural environments, have fewer access to social protection due to a lack of savings or restricted income options. Poor people in rural areas are at risk of losing their primary source of income because they are unable to sell their agricultural goods, store their produce, or face difficulties

in the process of developing new products. Poor people in cities, on the other hand, are fully reliant on labor or self-employment jobs. The shocks and stresses of the COVID-19 pandemic are causing devastating social disturbances around the world, putting people's lives and livelihoods in jeopardy. As a direct result of the global downturn, tens of thousands of people are losing their jobs and falling into the pit of imminent poverty. (Paul et al., 2020)

According to recent estimates from the International Labor Organization, 50 percent of the global workforce may lose their jobs as a result of the corona virus pandemic, with 1.6 billion employees in the informal economy at imminent risk of losing their source of income. Furthermore, for every percentage point of global economic recession, the number of people living in poverty will rise by 2%. COVID-19, according to Sumner et al, could result in the first rise in global poverty since 1990. Overall, the socioeconomic circumstances of the majority of citizens in developing countries, forced lockdowns that fail to meet basic human needs, and poor governance, connectivity, infrastructure, and health-care facilities will cause public anxiety and disruption. This outbreak has had a significant impact on the mental wellbeing and well-being of all populations, and many people are distraught as a result of the virus's immediate health effects and the repercussions of physical isolation, fear of losing loved ones, and fear of death from hunger. (Paul et al., 2020)

According to the “World Health Organization,” viral infections have continued to arise and pose a major challenge to public health (WHO). Low Wuhan, China's largest metropolitan city, confirmed clusters of cases of unidentified respiratory infections to the WHO country office for the first time on December 31, 2019. It can be traced back to the beginning of these symptomatic individuals. (Rasheed et al., 2021)

According to a review of published literature, the start of December 2019 is expected (Cascella et al. 2020; Sahin et al. 2020). Since the causative agent could not be identified, the first cases were labeled "pneumonia of uncertain etiology." The etiology of the illness was identified as pneumonia caused by a novel virus after a detailed investigation by the "Chinese Centre for Disease Control and Prevention" (CDC). The virus, which belongs to the corona virus family, has been dubbed 2019-nCov by Chinese researchers and is known as the novel corona virus pneumonia (Zhu et al. 2020). The “International Committee on Virus Taxonomy” later dubbed it “severe acute respiratory syndrome coronavirus-2” (Zu et al. 2020). The WHO designated pneumonia as corona virus disease-19, or COVID-19, on February 11, 2020. (Li et al. 2020; Waris et al. 2020).

The outbreak of corona virus disease was declared the sixth public health emergency by the WHO on January 30, 2020. This is not the first corona virus outbreak; prior outbreaks have occurred. (Rasheed and colleagues, 2021) The extreme acute respiratory syndrome corona virus (SARS-CoV) was discovered in 2002–2003, and the Middle East respiratory syndrome corona virus (MERS-CoV) was discovered for the first time in Saudi Arabia in 2012. As a result, COVID-19 is being referred to as the third corona virus outbreak, affecting over 200 countries worldwide, including Pakistan (Waris et al. 2020; Zhou et al.2020). COVID-19 was declared a pandemic by the WHO on March 11, 2020, because the number of cases reported outside China is 13 times higher than those reported in China, with 118,000 cases reported in 114 countries and over 4000 deaths (Cascella et al. 2020; Di Gennaro et al. 2020). According to the latest WHO estimates, there are 67,618,431 confirmed cases of COVID-19 worldwide, with 1,544,985 deaths recorded (WHO 2020b). The United States has recorded the largest number of positive cases so far, followed by India, Brazil, Russia, France, and Italy. (GoP2020). When compared to developed countries with state-of-the-art health care and testing facilities, Pakistan's success in flattening the COVID-19 curve during the first wave has been nothing short of remarkable. COVID-19 cases worldwide exceeded 23 million in mid-August, with more than 810,000 deaths, but in Pakistan, about 292,000 infected cases were recorded, with 6200 deaths. This has been attributed to the government's smart lockdown initiative, which involved identifying COVID hotspots across Pakistan and isolating those regions. The second element is Pakistan's large youth population. The countries that were hardest hit had a population that was 35–45 years old on average. Furthermore, numerous surveys have revealed that only a few towns, not the entire country, are showing signs of widespread herd immunity (Rasheed et al., 2021). This occurrence aids the population's ability to cope with the novel corona virus (Kermani 2020).

The corona virus pandemic (COVID-19) has wreaked havoc on global economies and thrown many value networks into disarray. A significant application aspect of data analytics, especially in the field of retail supply chain management, is analyzing the implications and effects of such disruptions on businesses (SCM). Education, healthcare, tourism, retail, manufacturing, logistics, and other corporate and organizational sectors are all affected by the COVID-19 outbreak. Several studies have been performed to examine the effect of COVID-19 in the retail sector. The findings of these studies differ by country: in Germany, the study (Brandtner et al., 2021) found that most retailers have switched to online grocery delivery services. According to the study's findings, household grocery spending increased by 30%

Another study found that food hoarding has increased significantly in China, while a third study found that consumers in Qatar have little concern about overstocking or panic buying (Brandtner et al., 2021).

The evaluation of the growth of customer or consumer satisfaction in pandemic times is a field of great interest for COVID-19 research. This topic was the subject of many publications. Using standardized questionnaires, one study looked at the effect of COVID-19 readiness techniques on customer satisfaction and the implications for consumer behavioral intentions. During the pandemic, sanitized supermarket exits, counters, and shelves had a statistically significant impact on consumer satisfaction, while social distance and senior citizens shopping hours had no effect. In a similar vein, conducted research on how consumer decision-making habits shifted before and after the pandemic was declared by gathering and analyzing survey data pre- and post-declaration. The findings show that the pandemic has changed consumers' commodity needs, shopping and buying habits, as well as their levels of post-purchase satisfaction. By focusing on customer satisfaction, researchers were able to gain a better understanding of retail activities during the pandemic and develop a strategy for preserving satisfaction, confidence, and loyalty during COVID-19. The findings show that keeping in contact with customers through digital channels and enforcing government-issued safety and hygienic regulations are critical activities. However, the research did not look at specific levels of customer satisfaction and how they changed over time as the pandemic progressed. During COVID-19, another paper discussed the issue of online customer retention and identified consumer loyalty as a key moderating factor. Again, the satisfaction rate before and after the pandemic were not examined in this report. COVID-19's effect on customer satisfaction in airline travel was investigated. They identified customer satisfaction for eight airlines using Twitter data and discovered that each airline's activities had an effect on consumer satisfaction. The current research on customer satisfaction in COVID-19 have one thing in common: they all used traditional approaches like survey questionnaires to assess consumer satisfaction, with the exception of one that didn't concentrate on retail but on the airline industry (Brandtner et al., 2021)

This is in line with the assertion of, who claims that traditional approaches such as focus groups or questionnaire surveys are commonly used by researchers and practitioners to evaluate customer satisfaction or consumer attitudes and behavior. Due to skewed assumptions, small sample sizes, or contradictory queries, these approaches are often time-

consuming and inaccurate. When looking at the literature on consumer satisfaction levels, using big data from the open platform in the form of online customer review (OCR) data or user-generated content (UCG) provides a promising alternative. (Brandtner and colleagues, 2021) While conventional surveys concentrate on samples of a thousand to a few thousand people, OCR and UCG-based feedback will evaluate hundreds of thousands of comments and evaluations from a large number of people: In the sense of measuring satisfaction with electronic goods, more than 127,000 textual reviews were reviewed, with more than 266,000 customer satisfaction scores and more than 7.8 million reviews received. Another advantage is that open-source consumer reviews are commonly available online and can be accessed for free or at a low cost. Despite the advantages and benefits of OCR and UCG-based customer satisfaction research, none of the consumer satisfaction papers reviewed at COVID-19 used this method. (Brandtner and colleagues, 2021)

The current research aims to fill this knowledge gap by examining the effect of COVID-19 on the consumer end of retail supply chains (SC) in physical grocery shopping in Austria (AT). The effect of COVID-19 on customer loyalty and expectations at the point-of-sale (PoS) is assessed by collecting and analyzing consumer data and sentiments available on the open web. The point of sale (PoS) is where customers actually buy groceries, and thus reflects the customer's end of retail SCs. The end of a SC is particularly important for the overall performance of SCM from the standpoint of SCM. In SCM study, particularly in retail contexts, the vision of creating a truly demand-driven SC is a hot topic. Missing or insufficient demand information from the very last stage of a retail SC has ramifications for all previous stages, such as too many items purchased that cannot be sold or incorrect products supplied that must be returned to stores. In both cases, the return logistics effort and costs incurred as a result of it are important, lowering overall profitability. The PoS is the final stage of a physical grocery retail SC and the only part of the SC that has direct physical interaction with the end user. (Brandtner et al., 2021)

Integrating PoS data from the open platform as Big Data has enormous potential for SCM in both standard and pandemic situations. Analyzing customer satisfaction and feelings based on data collected at the PoS during COVID-19 allows researchers to gain a better understanding of the epidemic's effects. Google reviews have a high potential for providing customer satisfaction data, particularly for physical retail businesses, according to a recent study that analyzed review websites for gathering consumer sentiment data (Brandtner et al., 2021)

In conclusion, the use of big data in the context of UCG and ORC opens up a lot of possibilities for measuring customer satisfaction. At the same time, COVID-19 has been shown to have significant effects on a variety of facets of the retail industry, one of which is customer satisfaction. However, none of the existing papers focusing on measuring customer satisfaction during pandemics used big data, instead relying on traditional methods such as questionnaire surveys. Given the influence of COVID-19 and the previously mentioned consequences such as panic buying, store closures, and commodity shortages, retail SCM is one of the domains directly affected by the crisis. Consumer satisfaction at the point of sale reflects the effects directly. Knowledge of these effects can be used to improve demand planning, such as determining which goods are perceived more negatively or positively as a result of COVID-19, or determining how retailers' actions influenced customer loyalty and could be used to direct sales (Brandtner et al., 2021)

The rapid spread of the corona virus disease 2019 (COVID-19) pandemic is causing major disruptions in people's lives around the world. If the pandemic progresses, it is critical to gain a better understanding of its epidemiology, define its possible effects, and develop mitigation strategies to prevent pandemic-related mortality. A tool or algorithm is required to assess the effectiveness of public health policy and/or economic preparedness interventions in preventing COVID-19-related mortality. We present the Pandemic Efficiency Index (PEI), a basic yet useful epidemiological method that can be used around the world to assess the relative effectiveness of COVID-19 infection-prevention steps. Using the PEI and current COVID-19-related mortality, we found that Germany has the highest PEI (5.1) among countries with more than 5,000 confirmed cases of the infection, suggesting that the country has implemented high-quality steps to avoid death during the pandemic. COVID-19-related PEIs are currently lowest in Italy and France. Epidemics and pandemics come and go, but determining the effectiveness of local, national, and global measures to prevent deaths is crucial. (Workie et al., 2020)

When the COVID-19 pandemic broke out in the United States, it caused an unprecedented drop in economic activity, with jobs and earnings plummeting. Around the same time, as part of the CARES Act and associated stimulus legislation, the federal government responded with tax rebates in the form of Economic Impact Payments, small business loans, and an unparalleled extension of unemployment insurance. It's uncertain if this response has been sufficient to compensate for the losses, and what effect it would have on income and poverty.

To ensure that the government can monitor changes in the income of the American population overall and by demographic group in order to plan and calibrate its fiscal response as efficiently as possible, timely data on income and poverty is needed. Unfortunately, official income and poverty figures for 2020 will not be available until September 2021. These official figures would be of little benefit to politicians at the federal, state, and local levels who must make swift decisions on how to distribute limited resources to mitigate COVID-19's effects on vulnerable communities. As a result, this crisis necessitates timely and reliable information on the effect of the current pandemic (as well as potential shocks) on individual and family economic well-being. We use high frequency data for a broad, representative sample of U.S. families and individuals to create new measures of the income distribution and income-based poverty with a lag of just a few weeks to resolve the gap in critical, real-time information. We use data from the Basic Monthly Current Population Survey (Monthly CPS), which includes an underutilized global query about annual family income. The fast release of these data helps us to consider the immediate effect of macroeconomic factors and government policies, which is a direct benefit of using the Monthly CPS to forecast shifts in income and poverty. Given the data release dates, income analyses from the Monthly CPS, for example, would have shown the negative effects of the Great Recession 14 months before official figures suggested a rise in poverty. Our method produces instantly useful estimates of income and poverty for the whole population, as well as how these rates differ by demographic groups and geography. We also compare estimates based on these data to estimates based on income data that have been used far more widely and have a long track record to validate this recent and timely measure of family income. (Han et al.2020)

Our validations will aid other researchers in gaining a better understanding of the benefits and drawbacks of using more timely income data to understand shifts in economic well-being. Our preliminary evidence suggests that government policy successfully countered the pandemic's impact on incomes at the outset, resulting in poverty falling and low percentile income increasing across a wide variety of demographic groups and geographies. Our data indicates that income poverty in the United States decreased shortly after the COVID-19 pandemic began. In fact, the poverty rate dropped by 1.5 percentage points from 10.9 percent in the months leading up to the pandemic (January and February) to 9.4 percent in the three most recent months, measured by comparing family incomes for the previous twelve months to official poverty levels (April, May, and June). Despite the fact that job rates dropped by

14% in April, the biggest one-month drop on record, poverty decreased. Poverty is declining among most demographic groups, although there is some evidence that it is declining most significantly among those who declare their race as neither white nor black, and those who have only a high school diploma. Our simulations, based on comprehensive and nationally representative CPS data, show that government services, such as standard unemployment insurance, extended UI programmers, and Economic Impact Payments, can account for more than half of the reduction in poverty, which would have risen by more than 2.5 percentage points if these programmers had not existed. These services have aided those at the higher end of the income scale, albeit to a lesser degree. The majority of qualifying households earned the Economic Impact Payment, and the extended coverage of unemployment insurance met the vast majority of those desiring to work but unable to do so, according to evidence based on real dollars spent on these services. However, states were reluctant to reach out to those who were unemployed, and some states were still unable to reach a significant portion of their population three months after the initial drop in jobs. This research provides some of the first data on how the COVID-19 pandemic is influencing individual and family economic well-being in the United States, as well as which groups are most affected. Big macroeconomic shocks, such as recessions (i.e. Grusky et al. 2011) or pandemics, have long been studied by economists (i.e. Almond 2006; Almond and Mazumder 2005).

However, because of the scarcity of data, it has been difficult to analyze significant shocks as they unfold in the past. As a result, previous analysis has tended to take place after the incidents have occurred. Our research serves as a model for potential research into major economic shocks as they occur. This paper also answers important survey methodology issues, such as whether the patterns of annual income from a monthly survey correspond with the patterns of income from annual surveys, which are the basis for official figures, and how responses to a single, global income question relate to estimates of total income from questions about multiple income sources. Given the prominent position that survey-measured income plays in economic analysis, it is vital to understand its validity. (Han et al.2020)

2.1 Impact of COVID 19 on Different Countries

As the COVID-19 virus spreads around the world, it causes economic stagnation and unemployment. However, the economic consequences of the pandemic are likely to be much greater in most emerging and developing economies than in China, Europe, or the United States. This is not the time to expect them to settle their debts to private or public creditors.

The emerging and developing world is on the verge of not only a humanitarian crisis, but also the most severe financial crisis since the 1930s, thanks to insufficient health-care systems, restricted capacity to provide fiscal or monetary support, and underdeveloped social-safety nets. Over the last few weeks, capital has been stampeding out of most of these economies, and a surge of new sovereign defaults seems imminent. We are living in exceptional times. When the epidemic progresses, more and more people's lives are thrown into disarray though it is difficult, we must understand the gravity of the situation we are in and do our utmost to respond to the necessary social distancing initiatives being implemented across the world, as well as the personal turbulence it is causing in all of our lives. The COVID-19 pandemic is causing high and increasing human costs around the world, and the requisite protective measures are wreaking havoc on the economy. The global economy is expected to contract by –3 percent in 2020 as a result of the pandemic, even worse than during the 2008–09 financial crises. In a base case scenario, in which the pandemic disappears in the second half of 2020 and containment measures can be steadily unwound, the global economy is expected to rise by 5.8% in 2021 as economic activity returns to normal, aided by policy support. Kumar (Kumar, 2020)

2.2 Impact of COVID-19 Pandemic on the Global Economy

A raging pandemic caused by the highly infectious COVID-19 virus has resulted in unprecedented restrictions on people's movement as well as a variety of economic activities, as well as the declaration of national emergencies in most European and North American countries. National healthcare services are being strained by increasing demand for emergency treatment and rising death tolls. Global supply chains and foreign trade are being disrupted by the pandemic. The movement of people and tourist flows has come to a halt as nearly 100 countries have closed their borders in the last month. Hundreds of millions of people in these countries are facing job loss. 5 Although it is impossible to predict the exact economic effects of the global COVID-19 novel corona virus pandemic, economists believe that it would have significant negative consequences for the global economy. Early projections predicted that if the virus spreads globally, most major economies will lose at least 2.4 percent of their GDP by 2020, prompting analysts to lower their 2020 global economic growth expectations from about 3.0 percent to 2.4 percent. To put this figure in context, global GDP in 2019 was projected to be around 86.6 trillion US dollars, implying that a 0.4 percent decrease in economic growth will result in nearly 3.5 trillion US dollars in lost economic production. However, these forecasts were made before COVID-19 became a

global pandemic and widespread limits on social interaction were implemented to avoid the virus's spread. Since then, the outbreak has caused dramatic drops in global stock markets, with the Dow Jones reporting its largest-ever single-day drop of nearly 3,000 points on March 16, 2020, shattering its previous record of 2,300 points set just four days earlier (Kumar, 2020)

The problem with current forecasts is that no one knows how long the virus will be active, how authorities around the world will be able to prevent new infections, or how much money they will have to spend to treat existing cases. Uncertainty is something that businesses despise, and uncertainty is all that exists when it comes to assumptions about the new virus's vitality, resilience, and durability. Kumar (Kumar, 2020)

2.2.1 Direct Impact on Production

The shutdown has also had a major impact on global output. As their governments implement similar policies, some other countries are beginning to feel the direct effect. Many countries' slowdowns or lockdowns have an effect on exporters to other countries. Even if there are no new outbreaks of the disease, the World Bank predicts that these areas will develop slowly in the first half of 2020.

2.2.2 Supply Chain and Market Disruption

Many manufacturing companies depend on imported intermediate inputs from China and other disease-stricken countries. Many businesses depend on sales in China to achieve their financial objectives. The slowdown in economic activity and transportation restrictions in affected countries would likely have an effect on specific global companies' production and profitability, especially in manufacturing and raw materials used in manufacturing.

2.2.3 Financial Impact on Firms and Financial Markets

Some businesses, particularly those with insufficient liquidity, can be stressed by temporary disruptions in inputs and/or output. Financial market traders may or may not be able to predict or understand which companies are vulnerable. The resulting increase in risk may indicate that one or more main financial market participants have taken investment positions that are unprofitable under current conditions, further eroding trust in financial instruments and markets. A major financial market disruption may occur if participants are worried about counterparty risk.

2.3 Impact of COVID-19 on China

The current COVID-19 pandemic is both a public health and economic emergency. Economic activities are severely disrupted by pandemics due to government-mandated shelter-in-place, lock-down orders, and self-protective social isolation responses. For example, in Wuhan, China's pandemic epicenter, draconian steps were introduced, effectively shutting down the entire city of 11 million people for more than two months. Despite mounting evidence of Wuhan-style lockdown's efficacy in containing the pandemic, the related economic costs are unknown to both scientists and policymakers. The key issue is that the impact of containment policies, even if limited to a single locality, can be measured using locality-specific economic statistics. Kumar (Kumar, 2020)

COVID shocks reduced China's sealing come by 19.4 percent in the first quarter of 2020, but increased by 3.1 percent in the second quarter, according to our appropriate statistics approach. The economic effect is highly variable across cities: real income declined in 272 of 315 cities in the first quarter, with Wuhan experiencing a 60.4 percent drop; on the other hand, real income increased in 43 cities. In both quarters, our estimates of real income losses at the provincial level have a close correlation with official GDP statistics. Kumar (Kumar, 2020)

In December of this year, a pneumonia outbreak erupted in Wuhan, China. The extreme acute respiratory syndrome corona virus (SARS-CoV-2) was identified as the etiologic agent of the pneumonia, and the disease was dubbed corona virus disease 2019 (COVID-19) on February 11, 2020. (Zhu N, et al., 2019; Huang C, et al., 2020; Zhang HT, et al., 2020; Xin S, et al., 2020; WHO a, 2020). The COVID-19 virus causes flu-like symptoms such as fever, cough, and extreme acute respiratory distress syndrome, as well as death in some cases (Li Y, et al., 2020). On March 11, 2020, the World Health Organization (WHO) declared the current outbreak a pandemic (WHO b, 2020). Globally, 44 888 869 cases and 1 178 475 deaths had been recorded as of 30 October 2020. (WHO c, 2020). The COVID-19 pandemic has become a major health concern worldwide. (2020, Arshad Ali S et al.) Unfortunately, there is still no treatment that is both effective and safe. For thousands of years, Chinese Medicine (CM) has been used to prevent and treat new outbreaks of infectious diseases (Li Y, et al., 2020). With Chinese Medicine's experience treating influenza and SARS (Li JH, et al., 2016; Wu L, et al., 2020; Leung PC, 2007; Ho TY, et al., 2007; Chen Z, et al., 2004; Jia W, et al., 2003; Lau JT, et al., 2005; Liu X, et al., 2012), CM was used to treat COVID-19 at On January 24, 2020, the State Administration of Traditional Chinese Medicine of the People's Republic of China

(SATCM) formed the China National Medical Task Force of Traditional Chinese Medicine (TCM) for COVID-19. This Task Force is made up of members of the CNMGTCM-COVID19 team, which includes medical staff from Guanganmen Hospital's emergency and respiratory departments, as well as Xiyuan Hospital's medical staff with SARS care experience. The National Health Commission (NHC) released the protocol on January 15, 2020, and it has since been updated and implemented in China. In Wuhan Jinyintan Hospital, the largest infectious disease hospital in Wuhan, CNMGTCM-COVID-19 from the China Academy of Chinese Medical Sciences took the lead in using CM to treat patients with serious COVID-19. CNMGTCM-COVID-19 performed a retrospective study to assess the effectiveness and safety of CM on COVID-19 at the time in order to critically represent the efficacy and safety of CM in comparison to WM therapy. The findings show that CM is an efficient and safe therapy for treating severe COVID-19 and reducing mortality in severe COVID-19 patients, with better effects in SARS-CoV-2 RNA clearance, lung lesion opacity absorption, and reduced inflammation. We also hope that the results of this study will provide healthcare providers an option for COVID-19 patients, as there are currently no successful western medicine drugs available worldwide.

2.3.1 Three Stages of the COVID-19 Epidemic in China and their Impact

In this section, I describe China’s COVID-19 epidemic, the Chinese government’s responses, and the combined impact on the economy, in three chronological stages.

2.3.2 Awakening to the Epidemic (December 2019 to January 20, 2020)

In December 2019, a cluster of pneumonia with an unknown etiology occurred in Wuhan, with many cases linked to proximity to a seafood market. After a few doctors in Wuhan sent social media messages warning their acquaintances about a "SARS-like" pneumonia, Wuhan health officials closed the market and confirmed the 27 cases on December 30, 2019. Three expert teams from the Chinese Center for Disease Control and Prevention (Chinese CDC) were sent to Wuhan to investigate. The first two, on January 1 and January 8, respectively, flew to Wuhan. They found no evidence of person-to-person transmission, that the outbreak was under control, and that no new cases had been identified. Meanwhile, the virus's genomic data was shared with the United States' GenBank. On January 11, the Chinese CDC and Fudan University launched the National Institutes of Health (NIH) and the Global Initiative on Sharing All Influenza Data (GISAID). Soon after, Japan and Thailand were able to connect their new COVID cases to Wuhan thanks to the original genetic data. On January 19,

a third central government expert team visited Wuhan and verified the person-to-person transmission. The Chinese government held a high-level political meeting on COVID-19 management on January 20, declared a national public health emergency, and added COVID-19 to the national Infectious Disease Information System (IDIS), ensuring mandatory case reporting under China's Health Emergency Regulations.9 (Bouey, 2020)

2.3.3 Impact on the Economy

Even before the lockout, NASA satellite images showed that pollution levels in Wuhan were lower in January 2020 than they were a year earlier, suggesting a decline in industrial development, either due to the recent, as yet unknown disease or undetermined causes linked to the overall economic climate. 11 China's consumer market and service sector now account for more than half of the country's GDP. However, several markets, including the automotive industry and smartphones, have experienced major demand weakness in the past year. 12 The Chinese government has also been attempting to reduce the country's high level of domestic debt, which has limited business borrowing capacity. In other words, prior to COVID-19, China's economy was facing numerous challenges and was slowing. Bouey (Bouey, 2020)

2.3.4 Quarantine and Shutdown (January 21, 2020, to February 21, 2020)

Epidemic: Wuhan Is the Epicenter of the Epidemic

The WHO declared the situation a public health emergency of international significance on January 30, 2020. COVID-19 cases were found in all 31 provinces of mainland China between January and February. On February 21, Wuhan was the epicenter of the outbreak, accounting for 83 percent of all cases and 95 percent of all deaths in China. 13 When compared to cases in other parts of China, Wuhan's COVID-19 cases had a 100-fold infection rate (per million population) and a four-fold higher CFR (4.2 percent). On February 21, 2020, the total number of Chinese cases registered increased from 309 on January 21, 2020 to 76,392. 14 The WHO had registered 170 cases of COVID-19 that had been identified outside of China and had a connection to China by February 13, 2020. The majority of these cases (89%) did not result in further virus transmission, but 19 of them were linked to at least four new infection clusters. The largest cluster included 20 people from six different countries. (Bouey, 2020)

China's Actions

On January 23, 2020, the government decided to close Wuhan three days after admitting that the outbreak was fueled by person-to-person transmission. Two days before the Chinese New Year, all public transportation in the region, including airports and railways, was shut down. On the 28th of January, 16 more cities in the same province (Hubei) were put under a similar curfew. All 31 provinces in China had declared emergency level 1 (the highest of four levels) by January 29, allowing local governments to use social policing mechanisms to impose self-quarantine, cancel public events, and ban crowd gatherings across the country. The majority of China's highways, railroads, and flights were shut down, and residents were encouraged to remain at home as much as possible. Many of the tour groups have been cancelled. In China's rural areas, most villages have shut down traffic and implemented entrance checks. Residential areas in cities were divided into small districts, with residents required to show identification and a daily quota for entering and exiting the area. During the extended Chinese New Year season, all businesses and leisure facilities were closed, with the exception of grocery stores. Outside, all residents were forced to wear face masks. Meanwhile, the Chinese government mobilized resources, medical personnel, public health teams, and testing kit production to support Wuhan due to the high number and severity of COVID19 cases. Travel to and from China has been restricted in various ways by countries around the world. As of February 19, 99 countries had imposed international restrictions on China in four different ways: border closures for partial or total closure of a land border with China, entry or exit bans that restrict the ability of nationals to leave their country for travel to China, and entry or exit bans that restrict the ability of foreign travelers and nationals to enter a country after travelling from or transiting through China (Bouey, 2020)

Impact on the Economy

Despite the lack of official data, most observers agree that the epidemic, mass quarantine, and international travel ban started to have a significant impact on China's economy at the end of January. During this time, the travel/tourism, hospitality, entertainment, and financial industries were the hardest hit. 17 During the Chinese New Year week, RMB 1 trillion ($142 billion) in revenue was lost in both retail and food services, as major chains shuttered stores across the region. 18 Purchases of real estate and automobiles have also slowed. 19 China is forecast to lose 1% of GDP growth in the first quarter of 2020 due to service sector losses during the Chinese New Year. 20 The retail industry as a whole did not suffer losses. Businesses that rely on physical space and shops, such as supermarkets, conventional food

markets, restaurants, car dealers, movie theatres, gyms, and bars, suffered losses, according to a Kantar (an international consulting firm) study, while local neighborhood markets (convenience stores) and online markets did especially well. Human-free markets and vending machines, as well as online retail shops with apps integrated into social media, were common (still relatively new to China). 21 The Data Insider Consulting study (based on Alipay Business counsel) on online sales for February showed rises in personal health–related product sales (e.g., sanitizer, personal security gear, and vitamins and supplements), while sales of meat/fruit/deli, snacks, luxury goods, and apparel dropped by more than 40%. 22 According to a survey of 761 business owners conducted by the University of International Business and Economics in mid-February, the global epidemic, mass quarantine, and travel ban had an effect on both domestic and international businesses' trust. 23 Half of the 761 businesses were private Chinese firms, 20% were foreign joint ventures, and 27% were State Owned Enterprises (SOEs), with 18% having an online presence. Thirty-five percent of businesses had more than 1,000 workers, 29 percent had 1,000 workers, 14 percent had 50–100 workers, and 21 percent had less than 50. In China, the majority of the businesses in the sample met the concept of a small or medium-sized enterprise (SME). 24 Thirty percent said their company's cash on hand could last no longer than three months, while another third said it could last six to twelve months. This year, half of the companies plan to lose 10–30 percent of their sales. The company's cash flow was cited as the most difficult problem. Between February 4 and 6, the American Chamber of Commerce in Shanghai conducted a survey of 127 American companies operating in China. Twenty of the 127 companies had revenues from China in excess of $500 million, and 27 had revenues from China in the range of $100 million to $500 million. Eighty-seven percent of respondents expected the corona virus to have a direct effect on 2020 sales, with 24 percent expecting a 16 percent or greater drop. Twenty-nine percent of respondents thought their corporate headquarters didn't realize the corona virus's possible economic effects. Sixty percent of businesses favored remote work, 84.5 percent cancelled meetings of more than 20 individuals, 14 percent expected to repatriate foreign employees and their families, and 33 percent were undecided. Eleven percent of businesses said they were rethinking their China plans, while forty percent said it was too early to say. Notably, 3.1 percent said they would return to the United States, 5.5 percent said they would relocate to another country, and 56.7 percent said they would not leave China. SMEs are the engines of the economy in China, as they are in most other nations. They make up more than 30 million individuals in China, accounting for 99.6% of

the country's businesses and 80% of national jobs. Patents held by SMEs account for more than 70% of all patents in the world. They contribute more than half of China's tax revenue and account for more than 60% of the country's GDP. They may also be the ones who suffer the most during the corona virus outbreak. According to a survey of 995 SMEs conducted by Tsinghai University researchers in February, 30% of the companies recorded a decrease in income of more than 50%, while another 28% reported a drop of 20% to 50%. With their current cash flow, more than one-third of the businesses in the study could only remain open for one month, 33% could only stay open for two months, and fewer than 10% could stay open for more than six months. The biggest source of financial stress (62.8 percent) is paying wages, employee benefits, and social security; rent and loan payments came in second and third. Bouey (Bouey, 2020)

2.4 Epidemic: COVID-19 is Spreading Globally

The WHO and the China Joint Program completed their COVID-19 investigation in China on February 24, 2020. 28 On the same day, a joint WHO-ECDPC mission arrived in Italy to assist Italian authorities with the COVID-19 situation, suggesting that the COVID-19 epidemic intervention emphasis has shifted from China to other countries where community-transmitted cases have begun to emerge: South Korea, Japan, Singapore, Italy, and Iran. Outside of China, new recorded cases rose faster than in China by the end of February (based on the data available). This does not, however, imply that the country's epidemic is over. COVID-19 is currently circulating in four major global concentrations: China, other East Asian countries (South Korea and Japan), the Middle East (Iran), and Europe (Italy, Germany, and France). Governments around the globe are preparing for the possibility of COVID-19 epidemics in their respective countries. Given the virus's high infectivity and the majority of cases' mild symptoms, the virus's continued dissemination across the world seems to be unavoidable. (Bouey, 2020)

2.4.1 Impact on the Economy

According to Luohan Academy, each ten-day delay in returning to work costs 0.39 to 0.46 percent of quarterly GDP growth. 31 The greater the effect on investor and customer trust, the longer the delay in returning to work. This could result in a large number of SMEs closing down. As a result of the higher unemployment rate, demand and expenditure will be further stifled. Exports would almost certainly suffer as a result of the factory's slow return to full capacity, further fracturing the global supply chain. The hope is that the economy will

recover quickly, as it did after SARS. 32 SARS cost China RMB 1 billion and the rest of the world $40 billion. 33 Although the ultimate effect of COVID-19 on China's and the world's economy is still unknown, many economists believe that the COVID-19 outbreak will likely outperform the SARS outbreak. There are six major distinctions. Dimensions: COVID-19 is a much bigger disease than SARS, affecting more countries and people around the world. COVID-19 interference in China is unprecedented, and the return to work will be incremental but more sustainable. We should expect a slower recovery than we saw after SARS. Naturally, the lives saved as a result of the major intervention would result in higher long-term economic growth. COVID-19 brought China's economy to a halt just before the Chinese New Year. Tourism (11 percent of GDP) and retail were the most affected industries (36 percent of GDP). Personal services and entertainment are two other high-value markets that have been impacted. As a result, the economy is more vulnerable to a decrease in domestic demand. China's contribution: China now accounts for 17% of the global economy, up from 4.3 percent in 2003, when the SARS epidemic was at its peak. China is a trade partner to over 100 countries and accounts for 30% of global GDP growth. The epicenter of COVID-19, Wuhan and Hubei Province, is a crossroads for a variety of industries. After a slowdown in China, the global economy is more likely to undergo a chain reaction. China's economic development: China's economic growth has declined over the last ten years, compared to 2003, when it was accelerating. On the plus side, the growth of the internet and electronics in China has made e-commerce, online education, and remote working more accessible while complying with quarantine requirements. This will help to mitigate some of the demand declines (e.g., many restaurant or supermarket sales converted to online orders). (Bouey, 2020)

2.5 Impact of COVID-19 on Pakistan

The new corona virus (COVID-19) epidemic in Pakistan continues to have an effect on people's lives. From the initial two cases on February 26th, 2020, to approximately 14,885 cases as of April 29th, 2020, with 327 deaths, the country has seen a substantial rise in confirmed cases. 6 The Case Fatality Rate has risen to 2.1, with a 22.2 percent recovery rate. Aside from the threat that the virus poses to human life, there is an immediate threat to people's social and economic lives. Due to its geography, the country is extremely vulnerable, as it shares borders with both China and Iran, both of which have experienced major outbreaks. Increased travel between Pakistan and its high-risk neighbors, as well as Saudi Arabia and European countries, as a result of trade, education, tourism, pilgrimage, conflict

displacement, and remittance movements, has worsened the situation. (Source: World Bank, 2018)

COVID-19's social and economic effects are being felt more strongly in least developed, developing, and emerging market economies, regardless of their income level. The majority of them would see a decrease in GDP, as well as job and income losses, leading to increased poverty, food insecurity, and malnutrition. At the same time, global capacities and tools for combating the pandemic and its intertwined health, social, and economic effects differ. (Source: World Bank, 2018)

COVID-19 is a novel corona virus disease that arose in Wuhan, Hubei, China (Zhong et al., 2020). Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2) is the virus that causes it (Dos Santos, 2020). On January 30, 2020, the World Health Organization (WHO) declared the highest degree of international public health emergency (Jahangir et al., 2020). On March 12, 2020, WHO declared it a pandemic and called for global efforts to stop it from spreading further. According to statistics, the COVID-19 pandemic spread rapidly around the world (Farooq et al., 2020). It has now spread to 218 countries and territories, resulting in more than 59.2 million confirmed cases and more than 1.4 million confirmed deaths worldwide (WHO, 2020) 1st Officials in Pakistan reported the existence of COVID-19 on February 27, 2020, and the virus's source was identified as Iran (Gul, 2020; Jahangir et al., 2020). In Pakistan, there are currently over 380 thousand confirmed COVID-19 cases, with 7744 confirmed deaths (Government of Pakistan, 2020). Each country has responded to the pandemic by implementing various control measures, such as complete lockdown, smart lockdown based on hotspot analysis, and/or strict movement restrictions on their citizens (Azlan et al., 2020). Pakistan's government has also taken a number of successful steps to combat COVID-19 transmission (Munawar & Choudhry, 2020). The initial closure of public spaces, educational facilities, business organizations, and tourism are among the steps. Smart lock-down is a unique policy initiative introduced by the new government, which has been praised by WHO officials (Farooq et al., 2020).

Chapter 3
Methodology

3. Methodology

The methodology of deciphering the impacts of COVID19 on livelihood generation of marginalized people of Abbottabad city Pakistan was designed to make sure the collection of data in the most dependable way. Data on prevailing different forms of Shopkeepers, Salesman, Philintrops.This chapter present in depth study of how data in this study was collected and analyzed, as well as to introduce the research strategy and the empirical techniques applied in this research.

3.1 Research Design

The purpose of this research is to study the Impact of COVID19 on livelihood generation of marginalized people. The research design was composed using a mixed method approach. Data was collected by using both qualitative and quantitative method

3.2 Significance of Mixed Research Designed

The reason for selecting a mixed approach for this study is to gain the in depth understanding of the impact of COVID19 on livelihood generation of marginalized people.

3.3 Study Area

For the present study Mandian area in district Abbottabad will be selected as study area. District Abbottabad is a district of the Pakistani province of Khyber Pakhtunkhwa, Pakistan. It is the 40th largest city in Pakistan and sixth largest in the province of Khyber Pakhtunkhwa by population. It is about 120 km (75 mi) north of Islamabad and Rawalpindi, and 150 km (93 mi) east of Peshawar, at an altitude of 1,256 m (4,121 ft.). Kashmir lies to the east. Abbottabad has a population of about 200,000 people (in 2019). The city is home to the Pakistan Military Academy which was established in October 1947 soon after the creation of Pakistan.

3.3.1 Subdivisions, Ethnic Group and Linguistics in District Abbottabad

Abbottabad district is divided into three tehsils, Abbottabad Tehsil, Havellian Tehsil and Sherwan Tehsil as well as one urban administration area – Nawanshahr. There are fifty-one Union Councils in the district, 38 in Abbottabad tehsil and 13 in Havellian.

The Hindko speaking belt in KP mainly comprises five districts, i.e Abbottabad, Haripur, Mansehra, Battagram and Kohistan, which were till 2000 administered as one of the divisions

of the province called Hazara, a name still used to indicate the peculiar cultural and linguistic identity of the region.

The highly Hindko is spoken even in predominantly Pushtun districts, also including Peshawar where it is called Khari, the language of the city. Hazara borders Punjab, Azad Kashmir and NWFP and has imbibed cultural influences from all the three sides. A number of castes and clans including Utmanzais, Tanolis, Swatis, Tareens, Jadoons, claim Pushtun origins.

There are others that have ties with the clans in adjoining Kashmir like Abbasis and Gujars. Awans are spread all over Punjab and Mughals and Qureshis, all over Pakistan. The one thing common between them all is that an overwhelming majority speaks Hindko and is averse to Pushtun domination. Statistics of language spoken in Abbottabad, the central city of Hazara, in the 1998 census report underline the reality. Hindko is spoken by 94.26 percent population, Punjabi by 2.30 percent, Pushtu by 2.22 percent and Urdu by 1.05 percent.

3.4 Target Population

The target population in this research was focused for the collection of data from shopkeepers, salesman, and philanthropists through different forms and interview so that to analyze and see the impact of COVID 19 on livelihood generation of marginalized people.

3.5 Sampling Technique

For the collection of data regarding the impact of COVID19 on livelihood generation of marginalized people from this selected area quantitative and qualitative data was collected with the help of questionnaires. Furthermore, the sampling technique which was used during this research was random and purposive sampling technique. The sample size was 150 out of which 50 questionnaires was distributed among Shopkeepers 50 in Salesman and 50 in philanthropists in district Abbottabad Mandian.

3.6 Sample Size

The focus was on urban area marginalized people. Particularly, those people who are working on shops as salesman and not having alternate for income generation to fulfilling the basic needs. And shopkeepers they don’t having alternated for income generation to fulfilling the basic needs the purposive and random sampling technique was used. Sampling size of 150 was selected randomly from targeted population which is effected in pandemic.

3.7 Research Tool

Both qualitative and quantitative research methods (mixed method research design) was used for investigation. For this purpose, questionnaire (open ended and close ended questionnaire), focus group discussion and secondary were gathered. In scientific research accurate and systematic data collection is critical to conduct. For the collection of information data collection instruments allow us to collect information needed for study objects. Main part of research is constructed on primary data why it is very important to choose instruments that satisfy the objectives as well as the study design of the research. That's why we use Quantitative and Qualitative data questionnaires to meet the research approach of research for collection of information from Shopkeepers, salesman, philanthropists and department of cantonment board Abbottabad.

3.7.1 Questionnaire

The data collection tool used to collect data from local community and concerned department was based on a well-designed pre tested questionnaire. The questionnaire's contained total 75 questions that were divided into three questionnaires. The first part of all three questionnaire's provided the demographic information of those who participated. The second part of first questionnaires were related to Shopkeepers having 25 questions. The second questionnaire consist of 25 questions related to Sales man. The third questionnaire consist of 25 questions related to philanthropists (owner of plazas) that how much they give relief shopkeepers during lockdown.

The quantitative questions were close ended and followed Yes or No and qualitative questions were open ended for more in depth understanding. The significance of using a questionnaire is the large group of people which are the effected of pandemic on livelihood generation.

3.8 Data Analysis

The data of the study was gathered from qualitative and quantitative questionnaire. To analyze the data from the questionnaire's descriptive study was used. Once the sample size was attained the data was put to Microsoft office excels spread sheet in graphical and tabulation form. It had been presented in manner that would be understood by research users. The data obtained from the qualitative questionnaires were observed and examined closely to see the impact of COVID 19 on livelihood generation of marginalized people and what government take the initiatives of those people.

Chapter 4
Results and discussions

4 Result and Discussions

This chapter consists of the quantitative and qualitative analysis of research findings with the aim to prove whether my study has achieved its objectives or not.

4.1 Demographic Charcteristics fRespondent

The subjects of study were taken from District Abbottabad .The respondents comprised of males and females of any age

4.1.1 Gender of Respondents

The graph below shows the gender distribution of the popoulation.The male representation from District Abbottabad Mandia is 95% and 5% female population.The gender of respondent is mostly male because field of shopkepers is mostly related to male.The gender of respondent is to ensure that opinions of both male and female respondents are taken into consideration

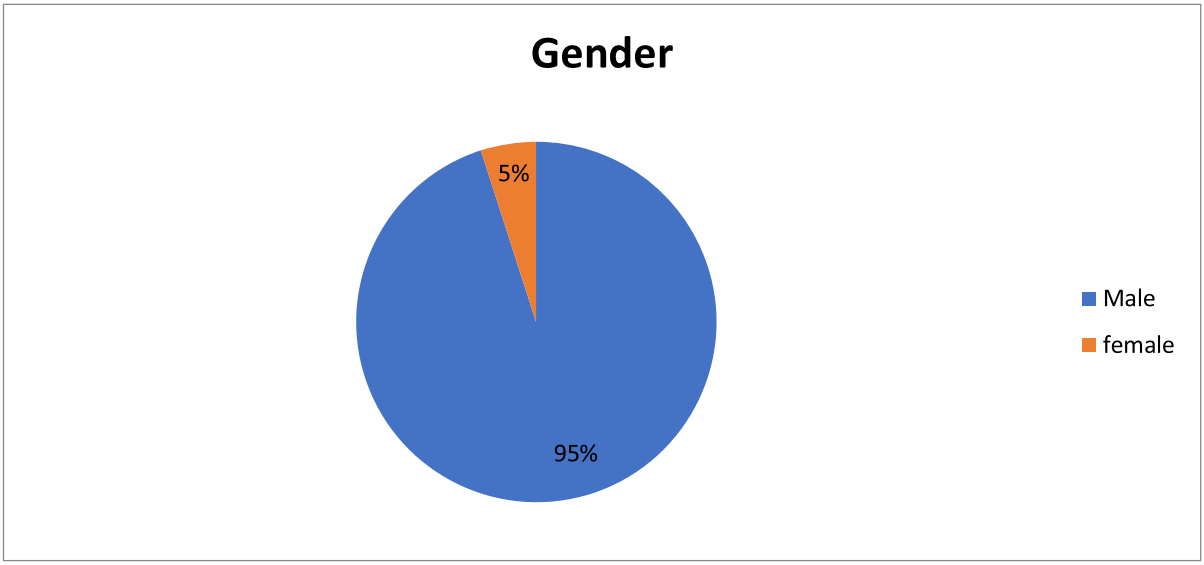

Figure 4.1.1

4.1.2 Age of Respondents

The graph below shows the age distribution of respondents.It shows that maximum respondents 40% fall between the age group of young The 30% fall between the age group of old, and30 % between age group of adult.

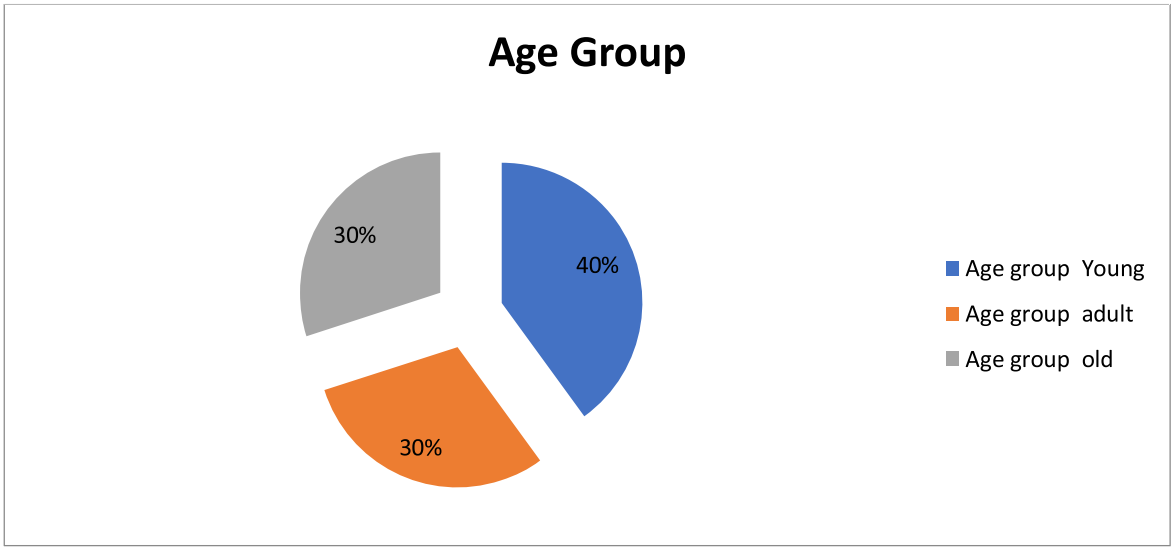

Figure 4.1.2

4.1.3 Source of income

The figure shows below the source of income of the respondents 70% respondents have one source of income. 20% respondents have alternate source of income. And 10% respondents are dependent

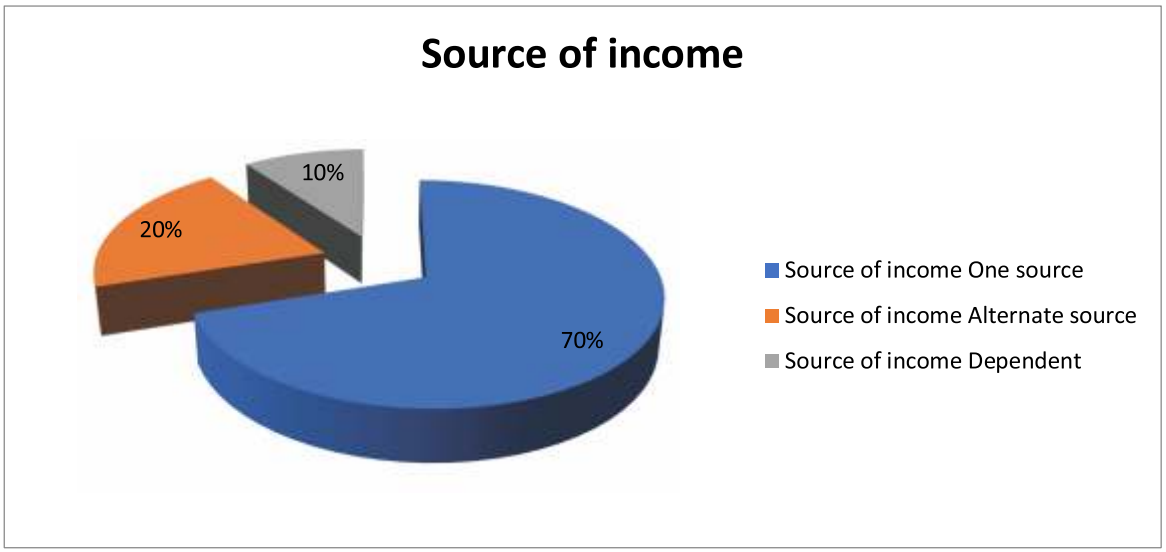

Figure 4.1.3

4.1.4 Information About Government Relief

The graph shows the below information about government relief 80% respondents have information about government relief. And 20% respondents do not have any information about government relief.

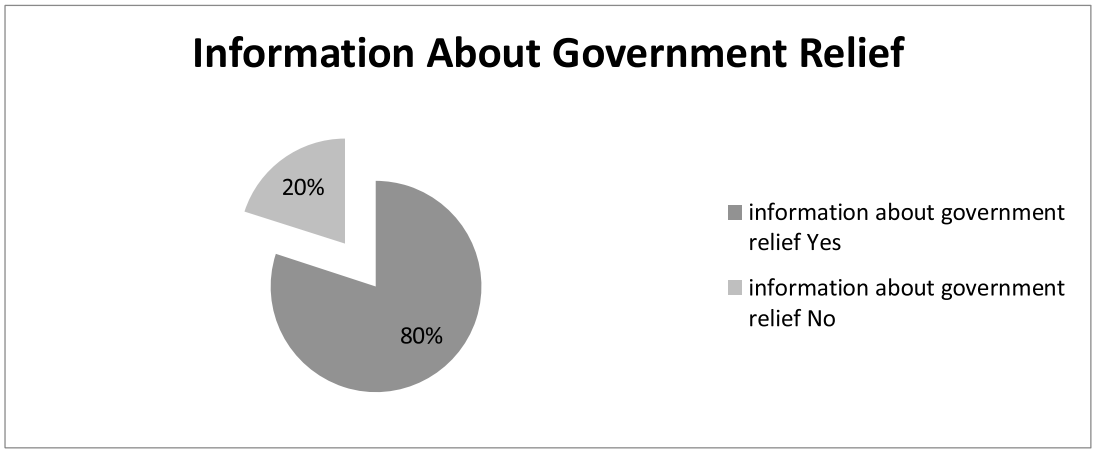

Figure 4.1.4

4.1.5 How Ehsass Program Helped You?

The figure shows below about how Ehsass program relief the respondents. 80% respondents have taking bill relief. 2% respondents have taking monthly package; 8% respondents have taking food items subsidy. 8% respondents have taking alternate income source. And there are 2% respondents who have no idea for Ehsass program relief.

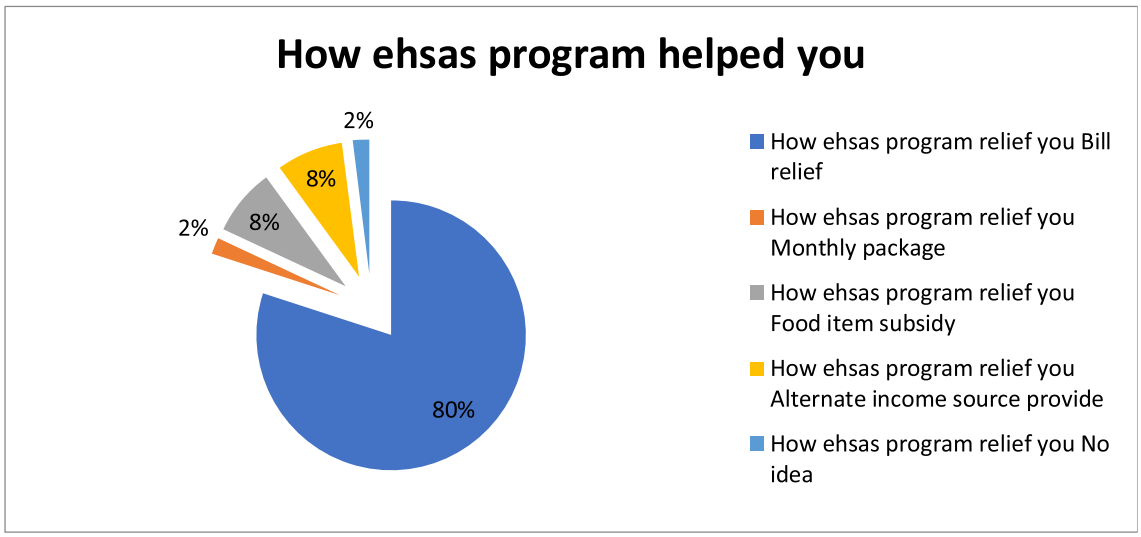

Figure 4.1.5

4.1.6 Opinion about Government Response in Pandemic

The Figure show below opinion about government response in pandemic, 75% respondents have bad opinion about government response in pandemic, 12% respondents have fair opinion about government response in pandemic, 10% respondents have good opinion, and 3% respondents have excellent opinion about government response in pandemic.

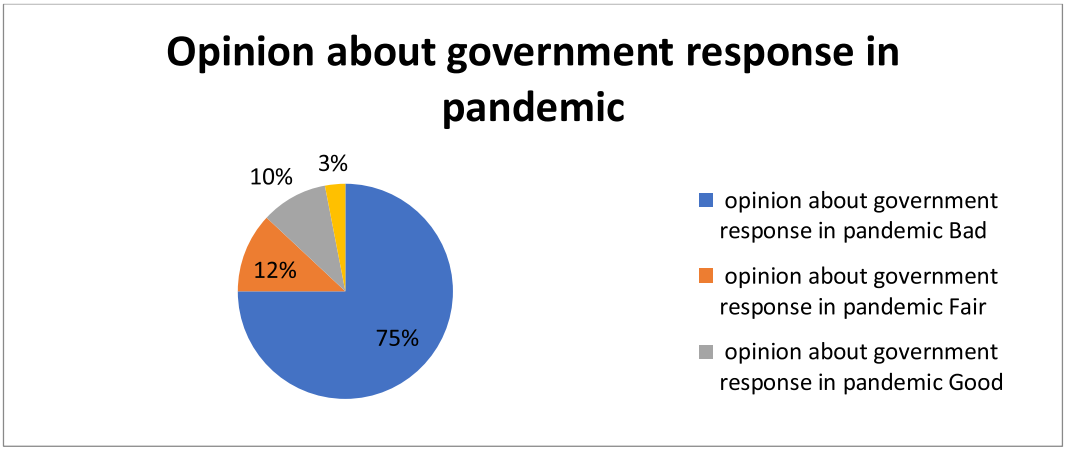

Figure 4.1.6

4.1.7 Philanthropy Relief

The figure shows below philanthropy relief, 50 respondents have bad opinion about philanthropy relief, 70 respondents have fair opinion about philanthropy relief, 50 respondents have good opinion, and 30 respondents have excellent opinion about philanthropy relief.

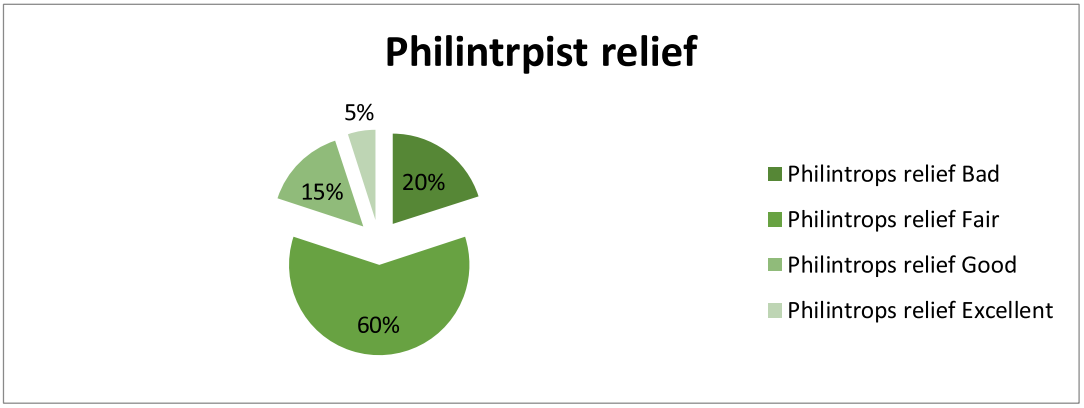

Figure 4.1.7

4.1.8 Philanthropists Can be Assisted by Government

The figure show below philanthropist can be assisted by government, 70% respondent's opinion providing the relief package to them, 30% respondent's opinion no relief to them.

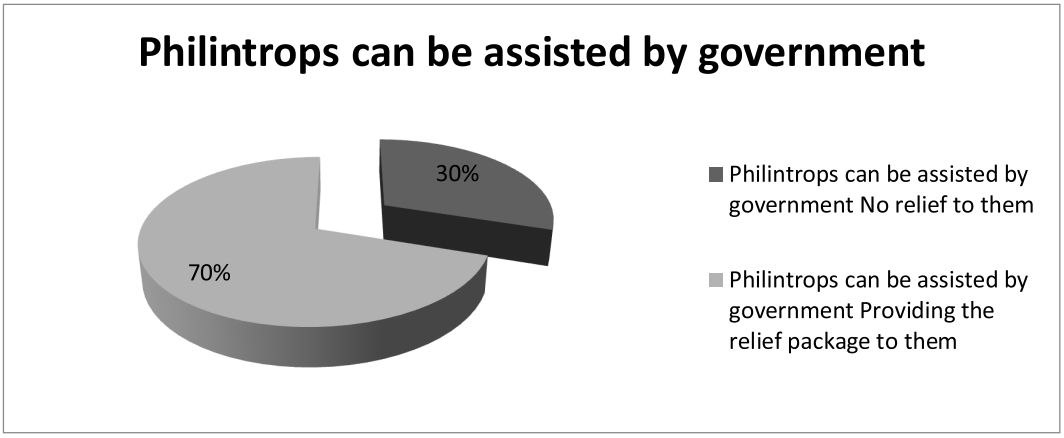

Figure 4.1.8

4.2 Salesman Results

4.2.1 Gender of Respondents

The graph below shows the gender distribution of the popoulation.The male representation from District Abbottabad in mandia 95% and 5% female population.200 male respondents and 0 female .The gender of respondent is mostly male because field of salesman is related to male .The gender of respondent is to ensure that opinions of both male and female respondents are taken into consideration

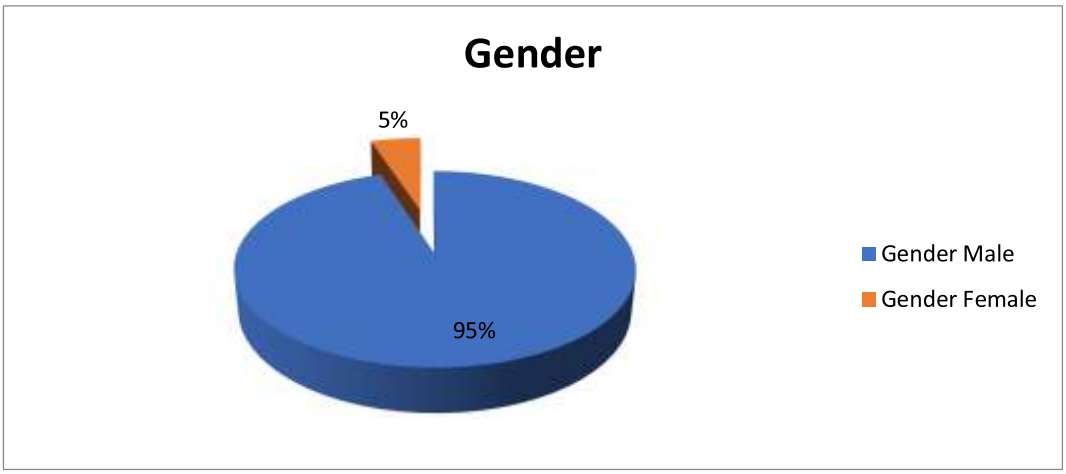

Figure 4.2.1

4.2.2 Age of Respondents

The graph below shows the age distribution of respondents.It shows that maximum respondents 50% fall between the age group of Young , The 20% respondents fall between the age group of Adult and 30% respondents fall between the age group of old.

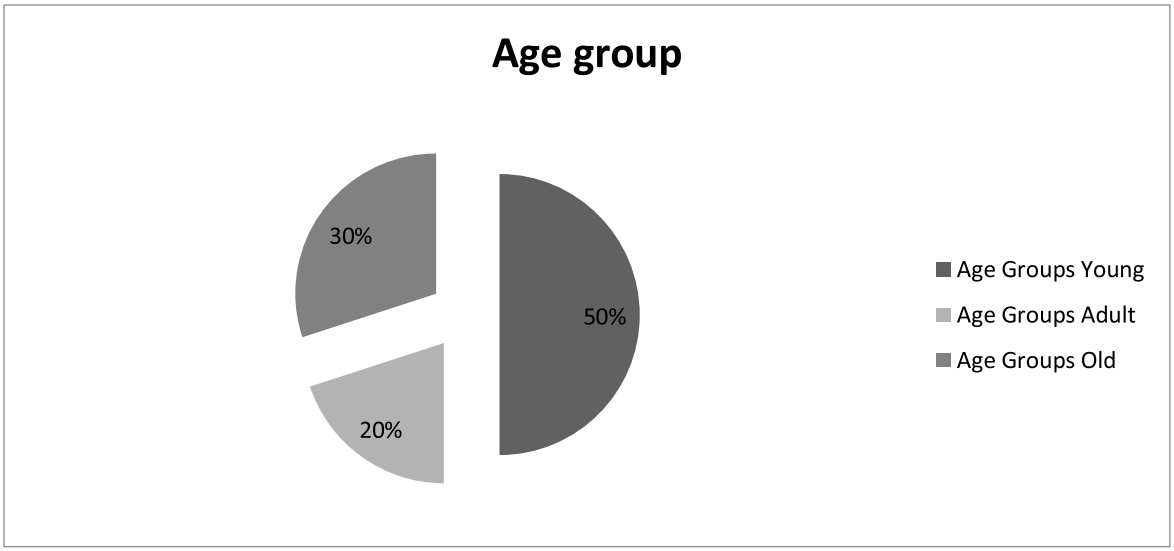

Figure 4.2.2

4.2.3 Information About Government Relief

The figure below shows the information about government relief.75% respondents have information about government relief. And 25% respondents have not any type of information about government relief.

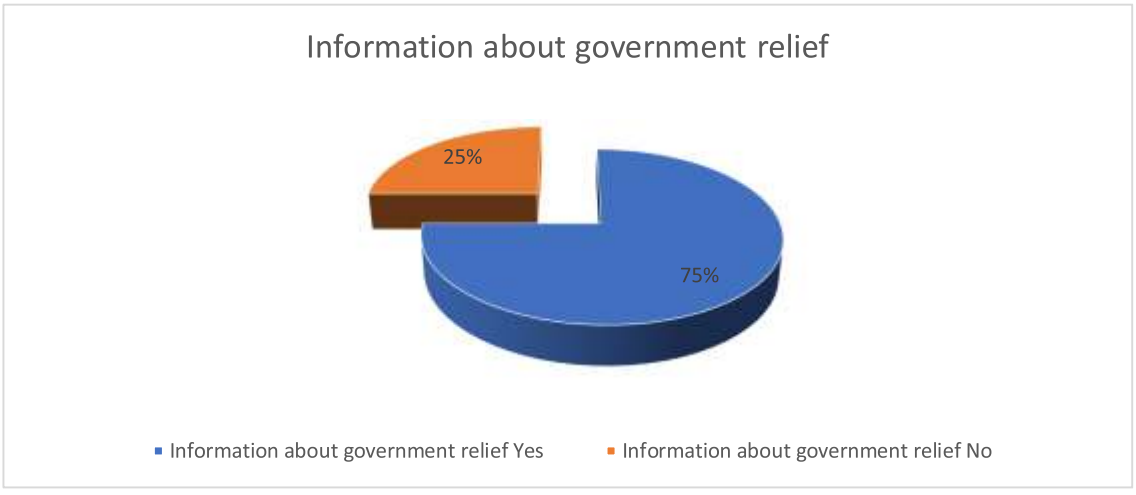

Figure 4.2.3

4.2.4 How Ehsass Program Relief You

The below figure shows about how Ehsass program relief the respondents. 60% respondents have taking bill relief. 10% respondents have taking monthly package; 10% respondents have taking food items subsidy. 5% respondents have taking alternate income source. And 15% respondents which have no idea for Ehsass program relief

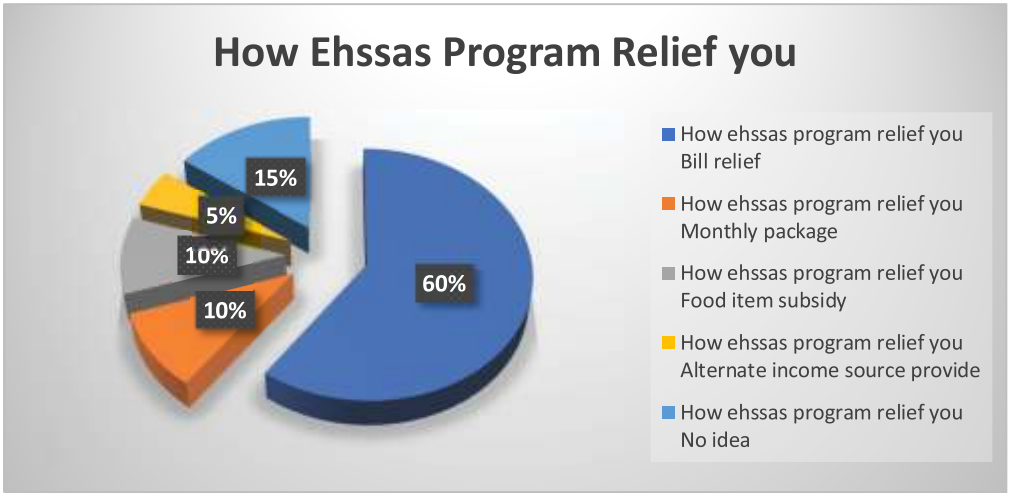

Figure 4.2.4

4.2.5 Opinion about Government Response in Pandemic

The below figure shows opinion about government response in pandemic, 50% respondents have bad opinion about government response in pandemic, 25% respondents have fair opinion about government response in pandemic, 20% respondents have good opinion, and 5% respondents have excellent opinion about government response in pandemic.

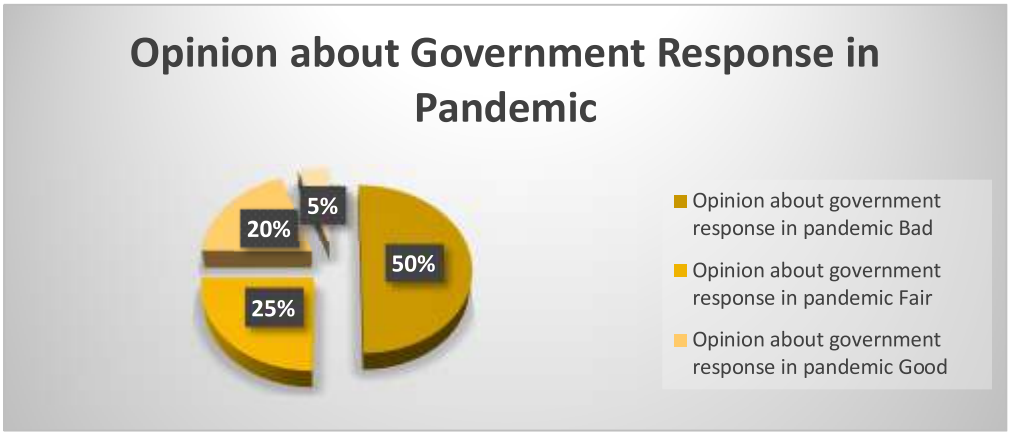

Figure 4.2.5

4.2.6 Philanthropy Relief

The below figure shows philanthropy relief, 30% respondents have bad opinion about philanthropy relief, 40% respondents have fair opinion about philanthropy relief, 15% respondents have good opinion, and 15% respondents have excellent opinion about philanthropy relief

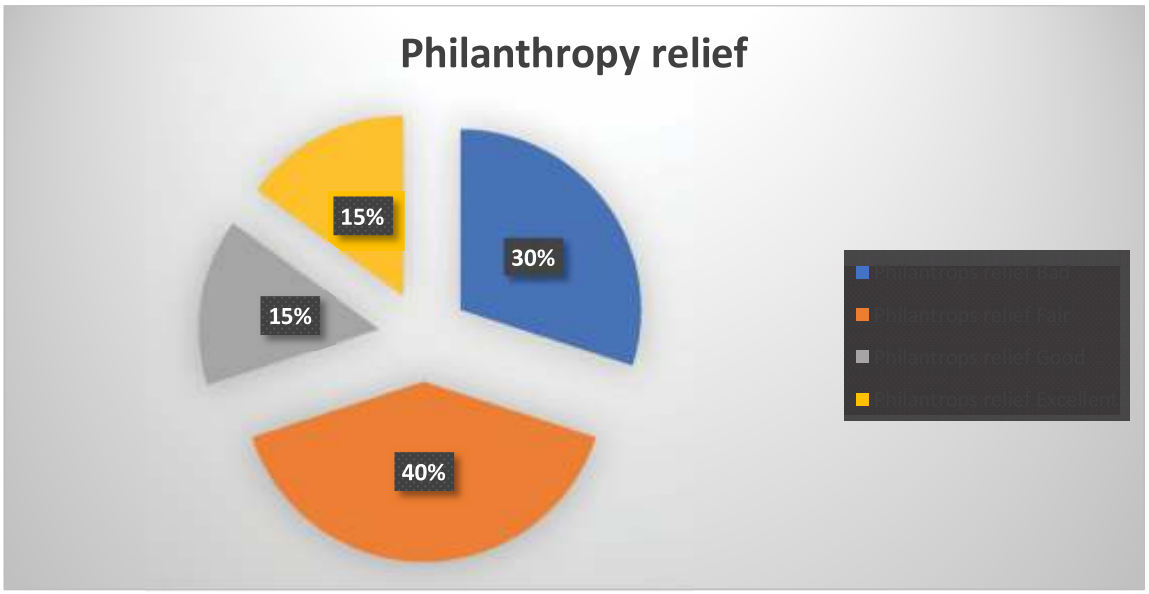

Figure 4.2 6

4.2.7 Philanthropists can be Assisted by Government

The figure show below philanthropist can be assisted by government, 75% respondent's opinion providing the relief package to them, 25% respondent's opinion no relief to them.

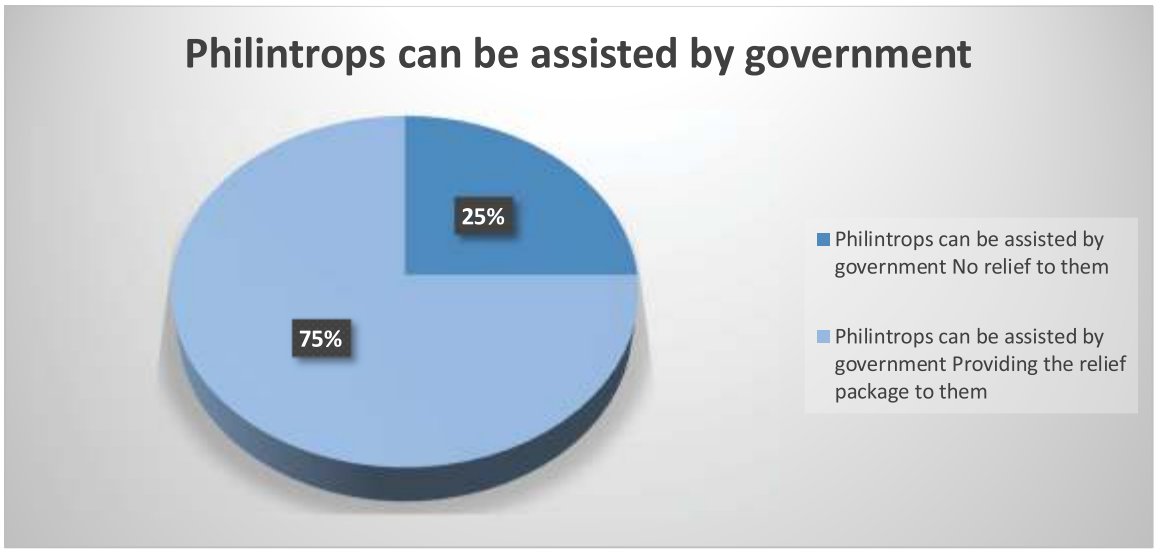

Figure 4.2 7

4.3 Philanthropist Results

4.3.1 Gender of Respondents

The figure below shows the gender distribution of the popoulation.The male representation from District Abbottabad in mandia 80% and 20% female population.150 male respondents and 50 female .The gender of respondent is to ensure that opinions of both male and female respondents are taken into consideration

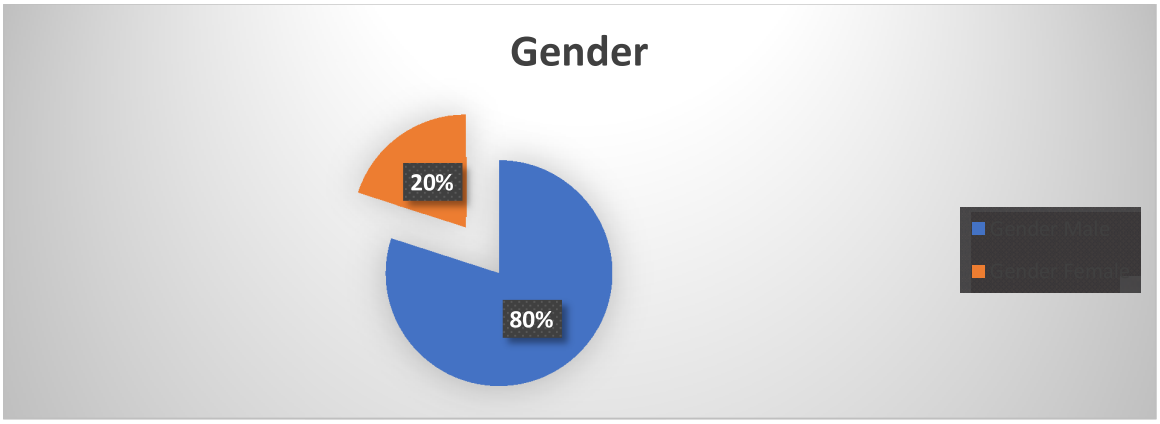

Figure 4.3 1

4.3.2 Age of Respondents

The graph below shows the age distribution of respondents.It shows that maximum respondents 50% fall between the age group of Old , The 5% respondents fall between the age group of Adult and 45% respondents fall between the age group of Young

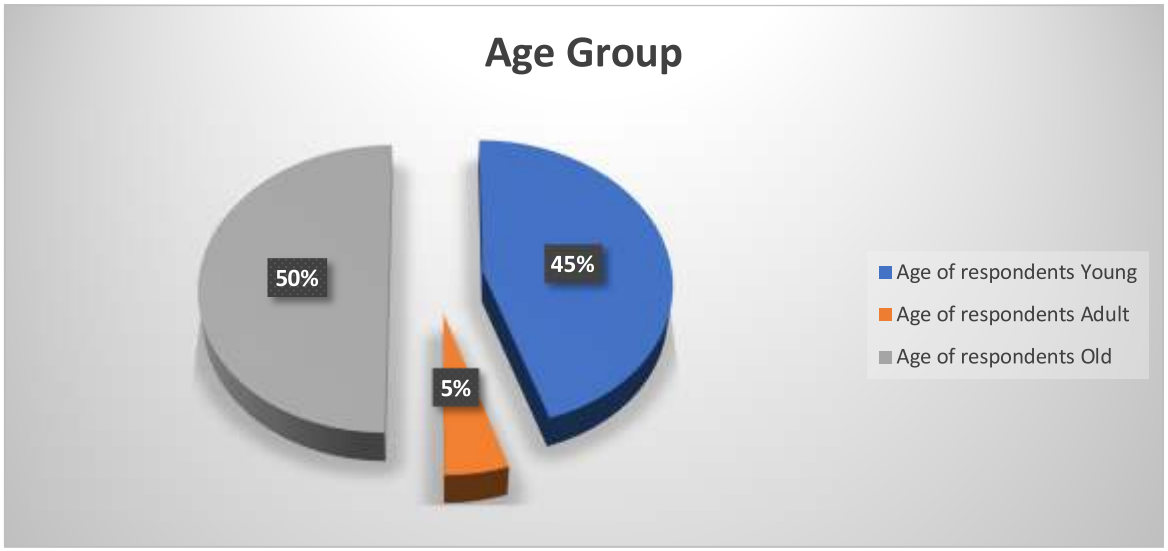

Figure 4.3 2

4.3.3 Source of Income

The figure shows below the source of income of the respondents 60% respondents have one source of income. 40% respondents have alternate source of income.

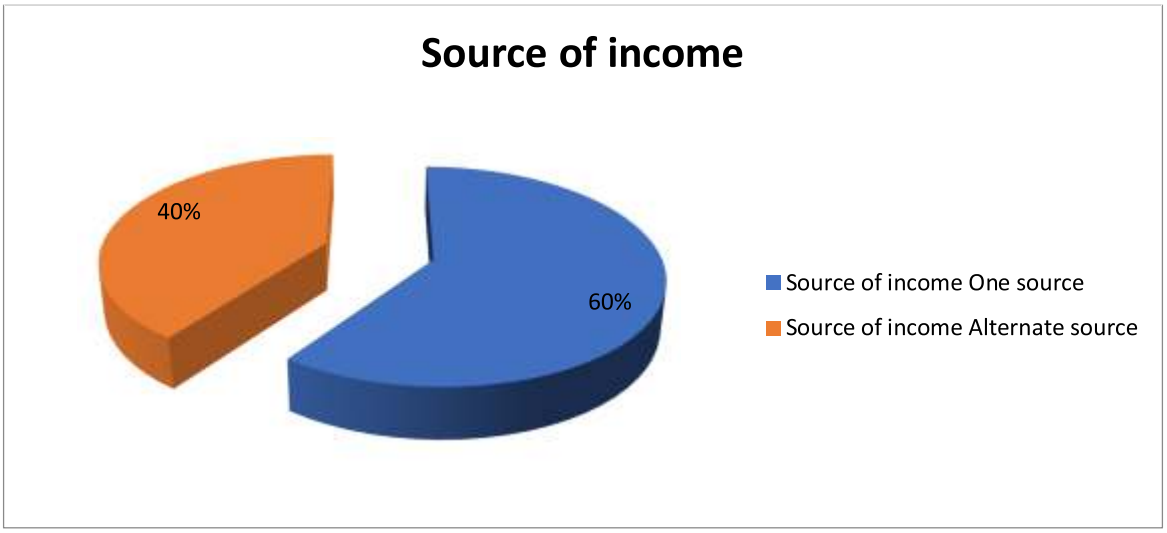

Figure 4.3.3

4.3.4 Did you give any Relief for Shopkeepers During Lock Down?

The figure shows below that philanthropist give any relief for shopkeepers during lock down. 70% respondents are giving relief for shopkeepers during lockdown. And 30% respondents are don't give any relief for shopkeepers

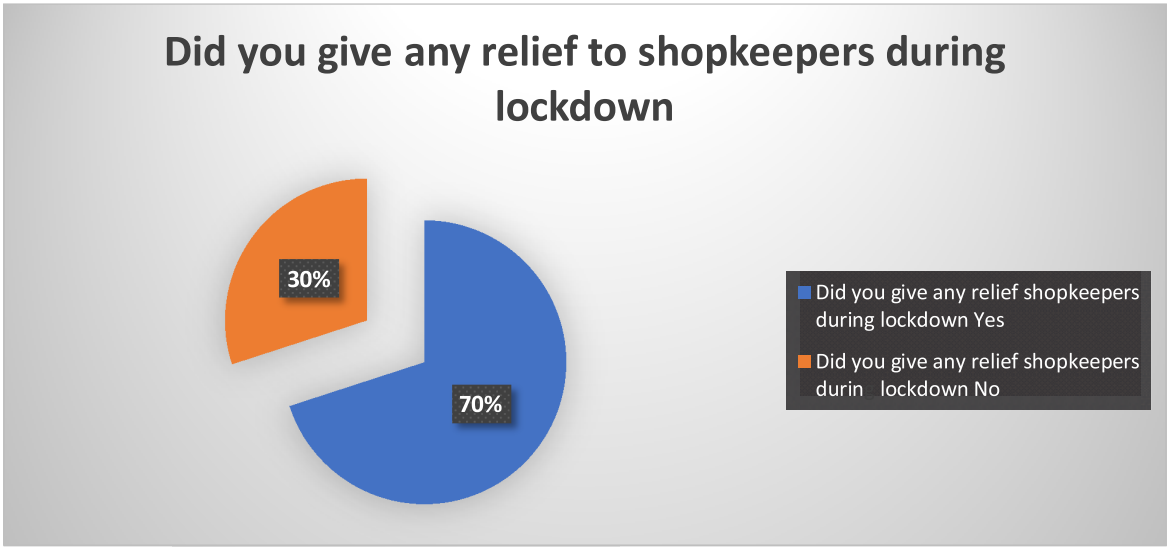

Figure 4.3.4

4.3.5 Did Government Asked to Take any Relief Initiative

The figure shows below did Government asked philanthropist to take any relief initiative.97% respondents says don't asked to take any relief initiative. And 3% respondents say government asked to take relief initiative.

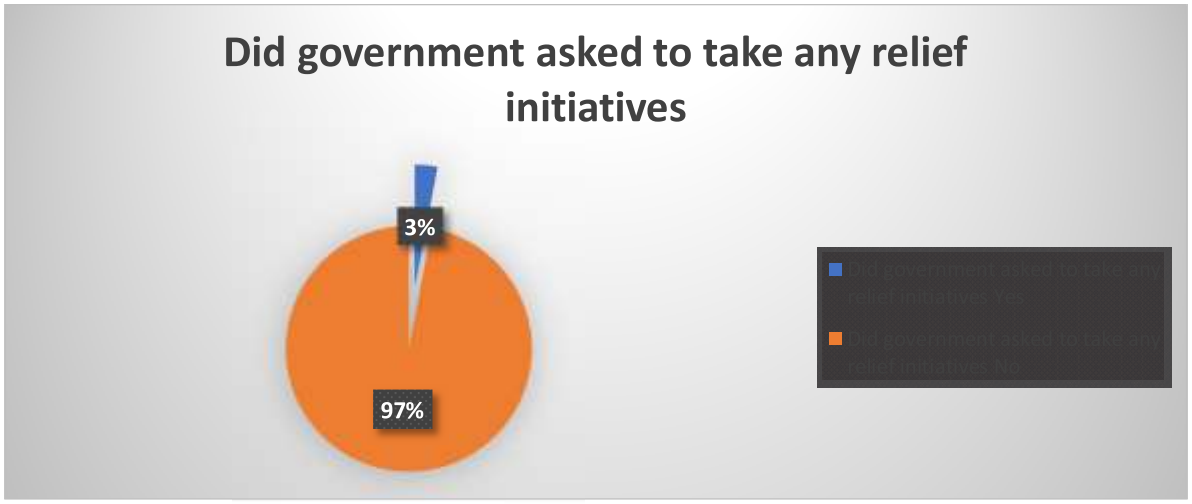

Figure 4.3.5

4.3.6 Did Government Cooperate with you in Giving the Relief

The figure shows below did government cooperate with philanthropist giving the relief 95%respondents says government don't have any cooperate with us to giving the relief and 5% says government cooperate with us to giving the relief.

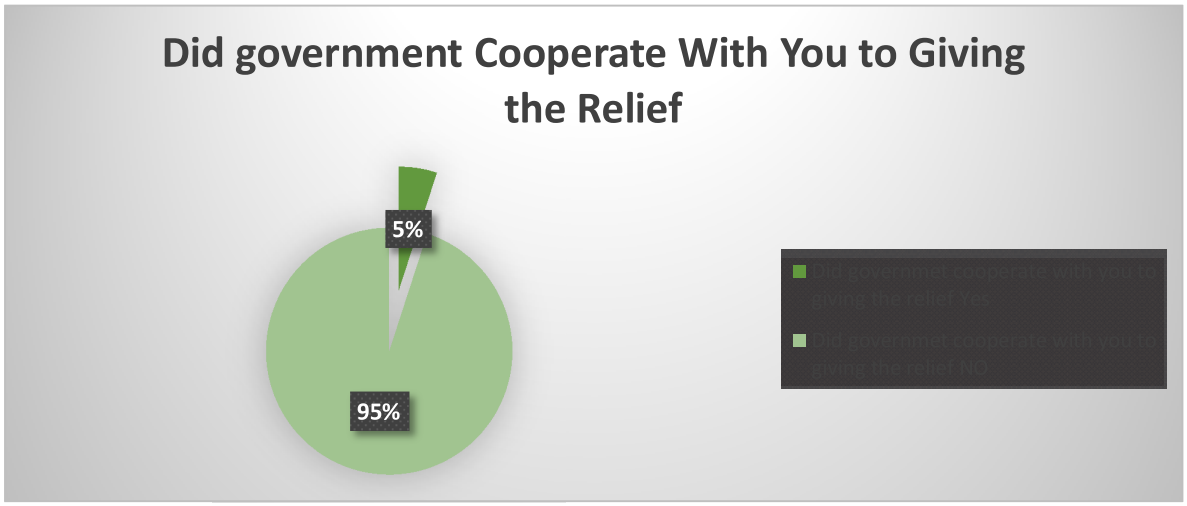

Figure 4.3.6

Chapter 5
Conclusion

5 Conclusion

This study was conducted to examine the impact of lockdown due to COVID-19 outbreak on marginalized people in Abbottabad in order to assist policymakers and practitioners in streamlining the strategies to ease the burden of the current crisis on local businesses. Our findings underline several issues faced by local people due to the current pandemic.

In our survey, we find that due to the COVID-19 outbreak and lockdowns in Abbottabad, many local entrepreneurs have been severely affected. Consequently, these businesses are facing a variety of issues such as financial, response of government, response of owners of local markets, reduction in sales and profit. Moreover, most of firms experienced a decline in sales since lockdown and the obligations by government to follow the SOPs.

Based on the findings of the study, the focus will be an urban area marginalized people. Particularly, those people who are working on shops as salesman and not having alternate for income generation to fulfilling the basic needs. And shopkeepers they don't having alternated for income generation to fulfilling the basic needs the purposive and random sampling technique was used. Sampling size of 150 was selected randomly from targeted population which is effected in pandemic. The study suggests that in order to minimize the impact on the survival of livelihood and to meet their basic needs, the government would have provided them with incentives. These incentives can be in the form of money or the earning opportunities for local shopkeepers and salesmen in demand and supply chain, following the Standardized Operating Procedures (SOPs).

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Analyzing The Domestic Violence Incidents during the COVID-19 Pandemic: A Case Study of District Abbottabad, KP

By

Mohiz Khan Jadoon

Bachelors Thesis

DEDICATION

This study is wholeheartedly dedicated to my parents who have been my source of inspiration and gave me strength when I thought of giving up, who continually provide their moral spiritual emotional and financial support. To my teachers, friends, brothers, sisters, mentors, relatives and classmates who shared their words of advice and encouragement to finish this study. And lastly I dedicate this study to Almighty Allah, thank you for giving me strength, hope, skills and strength to complete this study.

ACKNOWLEDGEMENTS

First and foremost, my acknowledgment is for Almighty Allah, who is most gracious and merciful, who gave me the strength, patience and consistency over the compilation and writing of the study. Alhamdulillah.

I am deeply obliged to my supervisor, Dr, Asam Shad. His copious wisdom, valuable comments and beneficial suggestions made this research. This thesis would not have been possible without his mentorship.

I thank profusely all the staff of Department of Development studies Comsats University Islamabad, Abbottabad Campus Pakistan for their kind help and co-operation throughout my study period.

I would also like to extend my appreciation to Alisha Manzoor. Thank you for guiding me and providing me with all the useful suggestions. I will forever be grateful to you.

Lastly, I am fortunate enough to this chance to thank my all friends for their constant support encouragement and prayers. Without them this would not have been possible.

Mohiz Khan Jadoon

ABSTRACT

This research study highlights the domestic violence incidence during the COVID-19 pandemic in the study area of district Abbottabad, Pakistan. The main purpose of this study is to understand the domestic violence incidence and prevailing of different forms of domestic violence in the communities of district Abbottabad. Purposive and Random sampling techniques were applied for selection of sample. Data was collected from DPO office, Social welfare Department, Darul aman and sampling size of 150 was selected. Primary data was collected through qualitative and quantitative questionnaires, whereas the secondary data was collected through previous relevant researches, published articles and reports. From the data analysis the increase in domestic violence incidents were observed in the study area. According to the result majority of population is unaware from domestic violence laws and regulation provided by the government. In cases of the cases, the females were found to be the victim of domestic violence. Number of unreported cases were found much higher than the reported ones. This study concluded that government need to enhance community support to overcome the hurdles leading to increase the cases of domestic violence.

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LIST OF ABBREVIATIONS

SARS-CoV-2	Severe acute respiratory syndrome coronavirus
WHO	World Health Organization
UNDP	United Nations Development Program
COVID-19	Corona Virus 2019
DV	Domestic Violence
IPV	Intera Personal Violence
NIOC	National Initiative against Organized Crime
PSCA	Punjab Safe City Authority
CDC	Central for Disease Control
PUCAR	Punjab Organized Touch and Response
UN	United Nation Agency
NWC	National Women's Commission

Chapter 1

Introduction

1.1 Introduction

Pandemics have played a role in modeling human history all through ages. Little people reading this at the moment will remember epidemics on this scale, but history shows us that although it is distressing, what we are experiencing now is nothing unfamiliar. The coronavirus COVID-19 pandemic is crucial global health crisis of our time and the greatest challenge we have faced since World War Two. Since its appearance in Asia in 2019, the virus has blowout to every continent except Antarctica (UNDP, 2020). The novel Coronavirus disease 2019 (COVID-19) is caused by SARS-CoV-2, which is the causative agent of a potentially fatal disease that is of great global public health concern since December 2019. As at 26 March 2020, four, 16,686 and 18,589 deaths worldwide were reported in the World Health Organization (WHO) (WHO, 2020a). The WHO has sought to interrupt human-human contact, isolate patients at an early stage, identify and reduce transmission from animal sources, tackle vital viral mysteries and speed up research, communicate the information properly to the public and minimize social and economic impact (Vellingiri et al., 2020).

As the Coronavirus (COVID-19) worldwide pandemic remains, more and more countries, cities, and communities are implementing devoted measures to gentle the spread of the virus. While activities are encouraging individuals to take on “social distancing”, mandating school and business closures, and commanding travel restrictions may reduce the transmission of the infectious disease, regrettably not all are finding safety in the resulting seclusion (Campbell, 2020). While these actions can be operational to control the spread of disease, they have a thoughtful impact on society resulting to social, financial and psychological outcomes. Isolation may expose vulnerabilities due to a absence of customary social support systems. The short-term shutdown of non-essential businesses has headed to unemployed and economic stress. Quarantine conditions are linked with alcohol abuse, despair, and post-traumatic anxiety symptoms. Stay-at-home orders may lead to a calamitous situation for individuals whose lives are beset by domestic violence (DV) (Boserup et al., 2020).

Home is not always a safe place to live; in fact, for adults and children living in situations of domestic and familial violence, home is often the space where physical, psychological and sexual abuse occurs (Bradbury-Jones & Isham, 2020). This is because home can be a place where dynamics of power can be distorted and subverted by those who abuse, often without scrutiny from anyone “outside” the couple, or the family unit. In the COVID-19 crisis, the

exhortation to “stay at home” therefore has major implications for those adults and children already living with someone who is abusive or controlling. Stringent restrictions on movement shut off avenues of escape, help-seeking and ways of coping for victim–survivors. Restrictive measures are also likely to play into the hands of people who abuse through tactics of control, surveillance and coercion (Bradbury-Jones & Isham, 2020). This is partly because what goes in within people's homes—and, critically, within their family and intimate relationships—take place “behind closed doors” and out of the view, in a literal sense, of other people (Bradbury-Jones & Isham, 2020).

1.2 Growing risk of family violence during pandemic

With shelter in-place actions and extensive organizational closures associated to COVID-19 likely to remain for a prolonged period of time, stress and allied risk factors for family violence such as job loss, reduced income, limited resources, and less social sustenance are likely to be further compounded. Furthermore, alcohol abuse, a generally reported risk factor for family violence, has been related to an addition of stressful events and a lack of social support (both likely occurring as a result of COVID-19). With public houses and restaurants being limited to take-out service only in many communities, family violence culprits who abuse alcohol may be even more likely to do so in the home, likely increasing risk for the intact household.

A snowballing risk of domestic violence-related stabbing is also a growing concern – reports linger to surface around the globe of intimate partner homicides with links to stress or other factors linked to the COVID-19 pandemic (Campbell, 2020). Reports of increasing gun and ammunition sales in the U.S. during the crisis are particularly concerning given the clear link between firearm access and fatal domestic violence incidents (Liem & Reichmann, 2014). Communities seeing the mass release of prisoners to decrease their risk of diffusion COVID-19 in confinement must weigh the potentially significant risk for victims and households if domestic violence or other violent offenders are among those released (Campbell, 2020).

1.2.1 In the Context of Pakistan

The first case of COVID-19 was reported on 26th February 2020(Saqlain et al., 2020). To contain and curb further spread of the disease, a provincial (Sindh) lockdown was instituted on 1ST April, 2020 (Chandir et al., 2020). According to the Global Initiative against Transnational Organized Crime, coronavirus disease 2019 (COVID-19) has resulted in a reduction in criminal activities globally. However, by contrast, Pakistan has experienced an

increased crime rate, with the National Initiative Against Organized Crime (NIOC) reporting that crimes in Pakistan have continued unabated during the pandemic (Wahid, 2020). One terrorist attack in a tribal district of North Waziristan and three different cases of large-scale drug trafficking were reported in May 2020. Further, incidents of kidnapping, rape, extortion, domestic violence, cyber-harassment and human trafficking have also been reported. Issues in governance and security during the pandemic and changing pattern of crimes necessitate novel strategies, training, infrastructure and preparedness to control COVID-19-related crimes. Criminologists have also confirmed that this pandemic is creating fresh opportunities for mafias and criminals to commit organized crimes (Wahid, 2020).

1.3 Domestic Violence

Domestic violence (DV), also known as "intimate partner violence," is a pattern of behavior used to gain or maintain control over a personal accomplice in any relationship. Misuse is defined as physical, sexual, passionate, financial, or mental activity, or the threat of such activity having an adverse effect on others. This includes any practice that terrifies, threatens, controls, injures, kills, harms, or wounds. Anyone of any race, age, sexual orientation, religion, or sex can be subjected to domestic violence. It can happen in a variety of relationships, including hit, live, and dating couples. Aggressive behavior at home has an impact on people of all economic backgrounds and educational levels (Usher et al., 2020).

When one person has control over another, aggressive behavior at home (DV) usually occurs in a homegrown space. DV is a broad term that typically encompasses intimate partner savagery (IPV) (e.g., occurs between current or former intimate partners and includes subsequent, mental, sexual, and physical viciousness), elder abuse (e.g., includes careless or intentional acts that cause harm), and youth abuse (e.g., incorporates disregard, actual mischief, sexual brutality, and enthusiastic mischief). However, in order to achieve the report's final goal, we will primarily refer to DV in accordance with IPV. IPV and other types of DV are tragically common. According to the CDC, one out of every four women and one out of every ten men are infected with some form of IPV each year (Boserup et al., 2020).

One in 4 females and one in 10 males experience IPV, and ferocity can take different forms: it can be physical, emotional, sexual, or psychological. People of all ethnic, cultures, genders, sexual placements, socioeconomic classes, and religions experience IPV. Though, such violence has uneven effect on populations of color and other banished groups. Economic uncertainty, unsafe housing, neighborhood violence, and absence of safe and stable child care

and social provision can get worse already fragile situations. IPV cannot be talked without also addressing social factors, particularly in the context of a pandemic that is causing substantial isolation. This pandemic has reinforced significant truths: discriminations related to social determinants of health are overblown during a crisis, and sheltering in place does not wreak equivalent hardship on all people (Evans et al., 2020).

Economic freedom is a serious factor in violence prevention. For numerous people who experience IPV, the financial entanglement with an abusive partner is moreover complicated to sever without substitute source of economic sustenance. The pandemic has worsened financial entanglement by causing increased job loss and unemployment, mainly among women of color, immigrants, and workers without a college education. The public health margins put in place to warfare the spread of the virus have also reduced contact to alternative sources of housing: shelters and hotels have lessened their capacity or shut down, and tourism restrictions have limited people's access to safe havens. Shelters have made courageous efforts to comfort crowding and to help inhabitants to move into hotels, extended-stay apartments, or the homes of family members and friends. Yet some restrictions have been lifted, many shelters remain closed or are working at reduced capacity, which creates dares for people who need alternative housing arrangements. (Evans et al., 2020)

1.3.1 Domestic Violence and Knowledge

There is sociological importance of Domestic violence, as ironic phenomenon, in its identifying and enclosing, in terms of details and responsibility, and as implanted in hegemonic social formations. More exactly, men's violence to renowned ladies has to understood the maximum amount over because the results of hegemonic masculinity, however rather through multifarious power analysis of the place of violence at intervals political system. In analyzing force there's endless temptation to undertake and justify domestic (usually men's) violence by regard to 'something else', different social divisions, primarily divisions of economic category, however additionally age, locality, religion, sexuality. This might appear obvious enough, however this doesn't quite capture the autonomy and self-reproducing nature of violence and systems of violence. Violence isn't invariably merely a set of another social division. This is often a modification of perspective from seeing violence as invariably 'caused' by one thing else, to at least one during which the follow of violence is itself a style of social difference, an unequal and un-equalizing social structural division and relation of its own. Violence is a social dissemination of who does what to whom. It is often a means to an end, in men's control of women and retaining

patriarchal institutions and power, and other intersectional arrangements, and, at times an end in itself, 'autotelic', for its own sake (Schinkel, 2010). Violence could be a suggests that of imposing power and management, and power and management in itself. Violence distinguishes individuals, singly and structurally, a sort of profound bodily discrimination. Violence entails each careful specificities of brutal and delicate everyday agentic management over time, and social, comparative and multinational processes. Men's violence to far-famed girls is structure, practice, method and outcome of domination. Violence is additionally a sort of information, itself suffering from previous violence, social and social. The expertise of being, even life, is suffering from what counts as valid information regarding violence. Violence constructs information, creates information for the profaned, and reduces voice, typically even entirely, if killed. These constructions give criteria for judgment reliability of additional information regarding violence or not. Social science and sociologists ought to request to be violence/violation-free, not simply in codes of ethics researching 'others', however as a discipline, establishment and in everyday practices outside public view. (Hearn, 2013).

1.3.2 Cost of Domestic Violence

Domestic violence has devastating consequences. There square measure consequences each for the individual victim and wider society. The whole price of violence, together with those for a variety of individuals and social establishments. Violence drains the resources of public and voluntary services and of employers and causes much pain and suffering to those that square measure abused. The value of violence establishes even a lot of firmly the big burden that it places on each victim and also the wider society. The presentation of the difficulty as a value facilitates the mainstreaming of policy to scale back and eradicate violence into injects policy analysis and priorities. The demonstration of the dimensions of the impact of violence on society by estimating its price might change a wider vary of each policy-makers and also the general public to know the extent of the matter and also the potential gains to any or all that might result from the reduction and elimination of violence. This can be in line with the move towards proof primarily based dogmas and also the development of clear, comparable measures of the prices and advantages that result policy action and inaction. It shows the value of inaction (Walby, 2004).

1.3.3 Social Causes of Domestic Violence in Developing Countries

The social roots of domestic violence in developing countries branch from economic backwardness, lacking defense by laws, low educational levels, a male-controlled society and

the low societal status of women. In most of developing countries men are generally considered superior and women seen as possessions who are expected to give duty to husbands and children, exclusively as they lack economic safety. Besides physical dangers, the psychosocial consequences of violence are also severe. Domestic violence compromises women's sovereignty and social firmness and drains their emotive strength and self-worth. Repeatedly, there is an connected negative impact on women's reproductive health. Woman strategies for dealing with violence vary from leaving the provoker, tolerating the violence or resorting to self-preservation. Unschooled, drained from repeated childbearing and economically reliant, women are also susceptible to crimes and violence. The former can be ascribed to different cultural, sociological and political factors. Poverty, unawareness, economic reliance and tradition worsen the situation. (Rabbani et al., 2008)

1.3.4 DV Reports

Since the lockdown began on March 17, DV reports in France have increased by 30%, according to the United Nations agency UN Women. Since the lockdown on March 20, DV in Argentina has increased by 25%. In addition, the association reports a 30% increase in aid in Cyprus and a 33% increase in Singapore. However, in the United States, the impact of the COVID-19 pandemic on DV is only now being recognized through narrative reports, as there is limited data on how DV has changed as a result of the use of stay-at-home requests (Stogner et al., 2020).

1.4 Social Constructionism and Social Problems

Social constructionism involves "elucidating the method by which individuals come back to explain, explain, or otherwise account for the globe during which they live". Social constructionists square measure involved with examining the words individuals use and also the ways in which during which people perceive the globe, the social and political processes that influence however individuals outline words and make a case for events, and also the implications of those definitions and explanations-who advantages and UN agency loses as a result of however we have a tendency to describe and perceive the globe. From a social constructionist perspective, words and ideas we have a tendency to use "are product of specific historical and cultural understandings instead of being universal and changeless classes of human experience". From this angle, a single, oppose, universal, or true definition of any conception doesn't exist. Definitions of terms rely upon UN agency gets to outline them; so, definitions replicate the interests of individuals with power. Social constructionism

provides a perspective for exploring social issues like violence. Individuals have associate interest in shaping violence in ways in which exclude their own behavior. Consequently, whose behavior gets outlined as violent and beneath what circumstances, and UN agency gets to make your mind up this, reflects the interests of these in power. Once less-powerful individuals plan to challenge existing power relationships and to push social amendment, associate initial field is usually the words wont to discuss these issues (Muehlenhard et al., 1999).

1.5 Gender-Based Violence in Pakistan

1.5.1 Honor Killing

Women's bodies' area unit related to the respect of the family. So as to shield this honor, men feels entitled to control and direct women's gender and their manner of living. Thus, men prohibit women's freedom of living so as to shield their honor with the assistance of socio-cultural values of society. As family's honor is embodied within the bodies of ladies, they need to guard their condition and chastity in the end, a man's honor lies between the legs of a woman (Hadi, 2017).

When a woman engages in a bootleg relationship, she not solely undermines the possession rights of alternative to her body however conjointly challenges the normal social order erected on structure. Within the matter of honor, it's moot whether or not a woman is guilty or purported to be guilty of illicit relationship. The matter that effects on the man's honor is that the perception of individuals. If the shames the family, then she should die-only "blood cleanses honor. Homicide is committed by man United Nations agency assumes that the conduct and behavior of his women have, in a way, profaned the normal honor code and brought disgrace to him and broken his honor. By killing the ladies, the wrongdoer removes the 'stain' she has delivered to the family and restores his honor within the community. Sharing this read, the police usually ignore honor killings; read them as personal family matters (Henslin, 2015).

1.5.2 Sexual Harassment

Sexual harassment refers to comments, gestures, or physical contacts of a sexual nature that area unit deliberate, repeated, and unwelcome, largely the victims of molestation area unit ladies. There are a unit in the main two reasons for that, which are, cultural and structural. First, culture of our society tends to encourage men to be sexually assertive and to examine

ladies in sexual terms. As a consequence, social interaction among men and girls will simply wrestle sexual overtones. Second is that the structural reason (Hadi, 2017).

1.5.3 Rape and Sexual Assault

Rape and regulatory offence are thought of the first instrument to be used as a mechanism of revenge or penalization during a patriarchal society. However, there's a typical misperception among folks regarding rape that it's the fault of ladies World Health Organization invite/incite/instigate men's sexual needs by her provocative dresses or behavior; or as a result of she ventured outside the outlined permissible parameters among strangers. The subordination and subjugation of ladies targeted on the ability of men to intimidate and penalize them sexually. The philosophy behind sexual violence is essentially regarding power, not sex, and may be considered a dimension of gender stratification. Some feminist theorists square measure of the read that men have used rape and therefore the intimidation of rape in history to exercise their management over ladies (Brownmiller, 1975).

The worry of rape having frightened ladies and creating their lives uncomfortable, limit their economic opportunities. This worry limits wherever and once she is ready to try and do work, thereby limiting her financial gain selections which can keep her addicted to others financially. In different words, the mere presence of rape threats might limit women's liberty of social interaction, deprive them the proper of self-determinations, and force them to be addicted to men and ultimately subjugate to men (Griffin, 1982). It also can be above-mentioned that these cases are increased by war and asylum which ladies are also the foremost liable to rape (Snoubar & Duman, 2016). Typically, some folks marry their kids to stay them from changing into victims of rape and harassment as do the refugees within the geographic region, that will increase the matter (Snoubar, 2016). HRCP (2015) reportable that simply within the year 2014, 597 ladies and ladies were gang raped, 828 raped and thirty-six stripped publicly in Pakistan. A woman-based foundation place Associate in Nursing estimation of a complete of seven, 852 cases of violence against ladies were reportable in Pakistan, in 2013 (Asmat, 2016). Another report free by Madadgaar that indicates that gender-based violence in one or the opposite kind continued intense. Throughout 2001, a minimum of 587 cases of rape, as well as gang rape, and regulatory offence were documented in several components of the country (Khan, 2001) that indicates the upward tendency during this sort of violence against ladies.

1.6 The Role of Gender in Defining Sexual and Domestic Violence

According to standard magazines, the role of gender in violence is clear: violence is a few things that men do to ladies. The husbands in these magazine stories area unit delineated as stereotypically masculine with butch values, and also the wives' area unit delineated as stereotypically feminine-selfless, fearful, and dependent. Once police reply to actual violence calls, however, true isn't continually therefore clear. Police typically hear reports of mutual violence, or of no violence, or generally of women offensive men (Loseke, 1989). Sexual associated violence ought to be outlined as gender specific or gender neutral is current struggle among researchers and activists. "However commonplace the term male violence is to feminist researchers and activists nowadays, gendering violence against ladies has been and remains a prolonged struggle" (Currie, 1998). Kurz (1998) known gender-neutral terms like family violence, intimate violence, and violence joined of the factors that stop US from seeing however violence against ladies permeates society and affects all aspects of women's lives. Kurz argued that "these constructs convey the impression that violence is directed by all relations against all alternative relations, and that they mask the facts of United Nations agency is being violent to whom". Maybe the negative consequences of mistreatment gender-neutral models of violence, advocates of the male violence model describe what happened once inventor (1977-1978), mistreatment information from the CTS, introduced the concept of the battered husband syndrome, which she claimed was the foremost underreported kind of family violence. The subject was picked up by the media, and estimates of the quantity of battered husbands were presently exaggerated (Gelles & Straus, 1988). Conservative politicians used these claims as associate excuse to decrease funding for shelters for battered ladies, dissipation that if ladies area unit as violent as men, there's no justification for shelters for battered ladies. In Chicago, this principle was wont to block funding for a shelter for battered ladies and their youngsters. In New Hampshire, resources were directed faraway from battered women's shelters to open shelters for battered husbands, that have later closed as a result of a "complete absence of clientele" (Currie, 1998, p. 109). What is more, the discourse on battered husbands and mutual combat will create it tougher for battered ladies to flee their violent relationships "by reducing the credibleness of their 'victim status' within the public's mind" (Currie, 1998). Gendering violence, shaping men as violent and girls as victims, additionally has been criticized, however. violence among same-sex couples has been "virtually ignored" by researchers, partly as a result of "rampant discrimination among social scientists" (Bergen, 1998), United Nations agency outlined the term family violence as

referring solely to ancient heterosexual couples, and partly as a result of the idea that ladies wouldn't batter alternative women which any violence between men would be a good fight (Bergen, 1998) .The few studies that are done on this subject recommend that violence happens in lesbian and gay relationships at concerning an equivalent rates as in heterosexual relationships (Elliott, 1996).

1.7 Early Exposure to Violence Within the Family and the Development of Attachment Insecurities

From associate attachment perspective, witnessing violence or being a victim of parental violence could challenge the child's confidence within the parents' convenience and responsiveness. Children will simply understand parental essential remarks, anger, and violence as rejection or abandonment. Conflicts and concern are a part of a climate of family violence and along they scale back the parent's capability to attend to the kid. Similarly, there could also be a scarcity of open communication among members of the family in exceedingly violent surroundings. Consequently, children are exposed to parental violence are less probably to possess their basic would like for obtainable and systematically responsive caregivers consummated, impairing the event of positive internal operating models of self et al., and of healthy relative patterns. Children exposed to parental violence should, additionally, agitate their attachment figures as potential sources of danger. Thus, a context of family violence prevents the event of self-regulation skills and contributes to a vision of the self as helpless and vulnerable, living in an exceedingly threatening world wherever others are unprocurable or untreatable. This context contributes to the adoption of hyper activating ways because the kid learns to do more durable or show dramatic negative emotions to achieve some protecting relationship, or in distinction, to the event of protecting avoidant ways (Godbout et al., 2009).

1.8 Child Abuse and Neglect

According to the CDC, one out of every seven children was abused or neglected in the previous year, and nearly 1,770 children in the United States died as a result of abuse and neglect in 2018. When comparing children from low-income families to children from higher-income families, the rates of child abuse and neglect are multiple times higher. In 2015, the total lifetime financial cost of child abuses and neglect in the United States was estimated to be around $428 billion. When children are abused or neglected, it can have a significant impact on their long-term well-being and prosperity. For example, young people

who are open to savagery run the risk of injury, future exploitation and execution of brutality, substance misuse, explicitly communicated contamination, delayed mental health, reduced educational achievement, and limited business opportunities (Stockman et al., 2015).

1.8.1 Decreasing Reports of Child Abuse or Neglect During the COVID-19 Pandemic

In distinction to growing reports of domestic violence, numerous child welfare organizations are observing a significant drip in reports of child abuse or negligence. Fatefully, this decrease may be a effect of fewer opportunities for uncovering as different to an actual decrease in incidence. The closings of schools and other precarious community organizations has restricted key community partnership to detect and report abuse. In the United States, 67 % of confirmed child abuse or neglect reports come from victim-serving professionals and 19 % of these reports come from education personnel (Reported, 2013).

There is rising worry that we may see an overpowering number of reports of child abuse or neglect when children return to schools. If children do not return to the classroom awaiting after the summer, the disquiets should be even greater known an even further comprehensive period of time out of the school system. When COVID-19 allied measures are lifted and society returns to “normal”, child abuse victim-serving professionals may find themselves totally dormant in reports and unable to meet the needs of an devastating number of victims. Organizations must work to improve community partnerships now with faith-based establishments, summer camps, youth clubs, libraries, public swimming facilities, and youth sports leagues to generate possible opportunities to detect and report child abuse during spring or summer as opposed to waiting until children return to school in the fall. (Campbell, 2020)

1.9 Domestic Violence in Pakistan During Lockdown

The coronavirus crisis has deepened social inequalities in Pakistan, disproportionately impacting vulnerable groups such as women and children. Government officials reported a 25% increase in domestic violence incidents during the lockdown across the eastern Punjab province, with authorities registering 3,217 cases between March and May. Due to a patriarchal society, more than 90% of married Pakistani women reportedly endure physical or sexual abuse, which is considered a private family matter and not a crime to be reported. This grim actuality is deep-rooted in our society and, by international laws, is a clear human rights violation (Baig et al., 2020).

These are unquestionably rare events, as the COVID disease 2019 (COVID-19) continues to display expanding trends of infectivity and transmissions all over the world. However, the same cannot be said about violent conduct at home, which is an endemic issue that has gotten worse over time. Following previous outbreaks of cholera, Zika infection, and Ebola infection, a rise in domestic violence was observed during lockdowns, along with a reduction in funding for general health administration (Baig et al., 2020).

Due to patriarchal society, more than 90% of married Pakistani women allegedly bear physical or sexual abuse, which is measured a private family matter and not a crime to be conveyed. This dingy fact is deep-rooted in our society and, by international laws, is a clear human rights desecration. Each province has legislation to administer the protection of women, which are based on Islamic Shari'ah. Nonetheless, serious violations remain, due to lack of execution of existing laws and revisions, and as the justice system fails them, the victims are imprisoned without recourse. Staying in close detention with the abuser not only intensifies the degree and frequency of violence but also makes it difficult for victims to contact social, protective, and health care services, crisis centers, or have access to external help from friends and families, thereby implanting fear, feelings of oppression, and complete hopelessness. Prior psychiatric illnesses can deteriorate, which further limits the ability to manage with conflicts. Likewise, we must agree that a request to stay at home to reduce the spread of COVID-19 does not prOVIDe security for families who are defied with a deadly infection outside or victims at home, who manipulate these restrictions and spread false information about illness to exert control and influence. (Baig et al., 2020).

1.9.1 Domestic Violence During COVID-19 in Punjab

According to data collected by the Punjab Safe City Authority (PSCA) and the Punjab Organized Touch and Response (PUCAR-15), aggressive activity at home increased drastically during the COVID-19 lockdown. The results are focused on calls to two crisis helplines: the PUCAR-15 crisis line has information on the entire area except for Lahore, and the PSCA-15 crisis line has collected information from Lahore separately. Between January and May 2020, 13,478 calls from Lahore were received on 15 separate helplines, exposing domestic abuse. In January, 2,096 calls were made, 2,360 in February, and 2,853 in March. In April, the helpline received 3,079 calls, and in May, 3,090. During the COVID-19 pandemic, the measurements clearly demonstrate an unprecedented flood of aggressive acts in home situations (Warraich, 2020).

PUCAR-15 measurements show a 25 percent ascend in abusive behavior at home reports during lockdown across the area. 2,581 instances of aggressive behavior at home were accounted for in the prior month lockdown (February 22 to March 22). After the lockdown was forced the quantity of revealed cases rose to 3,217 (between March 23 and April 23). There was a 10 percent decline in protests during the incomplete lockdown (from April 24 to May 23) with 2,889 cases (Warraich, 2020).

1.9.2 Domestic Violence During COVID-19 in KP

During the lockdown, the police records illustrate an escalating tendency in domestic abuse. In a male-controlled society of Pakistan, women were already exposed to numerous threats, now on the forefront of the added burden of physical violence and expected harm. The lockdown confined victims within four walls of the abode, easily approachable, and not able to call for assistance and with zero option of escape to family and friends. The office of Khyber Pakhtunkhawa Ombudsperson released a statement indicating a surge in cases of domestic violence to a ballpark figure of over 500; similarly, according to the police records of March 2020, a total of 399 cases of murder against women have been reported while only 25 calls to the police helpline were made. (Johnson et al., 2020)

As several social governments assistance helplines at the commonplace level have been closed down, the medical care system is attempting to accommodate the increasing instances of COVID-19. Assets for violent conduct at home intercessions have been scaled back. Mindfulness should be encouraged by electronic means, especially in the medical services environment, as this offers an opportunity to interact with victims without their attacker present. Since the victim may be afraid of standing up boisterously, telemedicine may be a viable way to speak about and counsel the person in question, using yes or no questions. Subsidies for 24-hour hotlines and safe havens should be made accessible throughout the country, along with fast testing centers and relevant World Health Organization health conventions. Basic health planning and contingency plans for unexpected situations should be discussed. The effective handling of rumblings, the use of pressing protective measures, and the preservation of the enactment would all necessitate strong support. In the long run, this pandemic may serve as a watershed moment for the implementation of appropriate rules to ensure the prevention of abusive conduct among home victims who are systematically mistreated and segregated.

In this scenario, the exploration analysis is needed to look at the differences in domestic violence before and after the pandemic. In post-pandemic conditions, the research will be conducted for the chosen study area where the most prominent violent crime at home is remembered. For analysis, the blended technical research configuration will be used. Family time, working hours in the workplace or vocation age, and access to state assets for assistance during and after episodes are all considerations to consider. A structural disorder that shows critical information data will provide it (SEM). The aim of this analysis is to learn about the differences in wrongdoing designs in pre- and post-COVID 19 situations.

1.10 Significance of the Study

After the breakdown coronavirus crisis has deepened social inequalities in Pakistan, disproportionately impacting vulnerable groups such as women and children. This grim actuality is deep-rooted in our society and, by international laws, is a clear human rights violation. Even each province has legislation for the protection of women, which is based on Islamic sharia. Nevertheless, serious violations continue, due to lack of implementation of existing laws and amendments, and as the justice system fails them, the victims are trapped without recourse. In this scenario, the research investigations were needed to assess the variation in Domestic violence in pre and post-pandemic situations. The study would conduct for Abbottabad where the highest domestic violence is detected in post pandemic situations. This particular research aims to study the variation in crime patterns in pre and post-COVID 19 situations. Along with highlight the impacts of variation in crime patterns on the study area.

1.11 Statement of the Problem

From the literature review it is revealed that the coronavirus crisis has deepened social inequalities in Pakistan, disproportionately impacting vulnerable groups such as women and children. Government officials reported a 25% increase in domestic violence incidents during the lockdown across the eastern Punjab province, with authorities registering 3,217 cases between March and May. Due to a patriarchal society, more than 90% of married Pakistani women reportedly endure physical or sexual abuse, which is considered a private family matter and not a crime to be reported. This grim actuality is deep-rooted in our society and, by international laws, is a clear human rights violation.

1.12 Objectives

1. To study the domestic violence incidents in study area during COVID 19 Pandemic.
2. To compare and analyze the domestic violence incidents in study area in pre and post COVID 19 pandemic situations.

Chapter2

Review of Literature

2 Literature Review

2.1 Data from US Police Departments

COVID-19 has had an early impact on DV in some districts, according to information from US police agencies. Government-funded schools in Portland, Oregon, for example, closed on March 16, 2020, and stay-at-home requests were received on March 23. Following these incidents, the Portland Police Department saw a 22% increase in DV-identified arrests compared to previous weeks. The schools in San Antonio, Texas, closed on March 20, 2020, and requests to stay at home began on March 24. In March 2020, the San Antonio Police Department reported an 18% increase in calls related to family savagery compared to March 2019. The Sheriff's Office in Jefferson County, Alabama, reported a 27 percent increase in domestic violence calls in March 2020 compared to March 2019. On March 16, 2020, schools in New York City closed, and requests to stay at home began on March 22, 2020 (Boserup et al., 2020).

According to information from US wrongdoing reports, 16 percent (roughly 1 in 6) of the crime should be committed. A personal partner is responsible for the deaths of the victims. IPV has been linked to a variety of negative physical and psychological health outcomes as well as risky behaviors among women, all of which are taken into account. Due to social elimination and isolation during COVID-19, there is concern that the number of personal accomplice brutality cases will skyrocket. In the event of a pandemic, a survivor or casualty may be able to flee a dangerous situation or file a police defense request. Such alternatives are currently unavailable to some people. A request to stay at home may force victims to remain in a dangerous situation (Stockman et al., 2015).

2.2 Status of Domestic Violence in UK

Police chiefs and noble causes in the United Kingdom predicted that an all-encompassing emergency would worsen. We discovered that the lockdown's impact on police-recorded domestic violence is unpredictably variable, with different effects on different subgroups. The decrease in ex-accomplice abuse masked an increase in current accomplice abuse in one power, resulting in no lock-down effect at the total level. There have been fewer reports of victims with a history of detailed homegrown maltreatment in some jurisdictions, indicating that the lockdown is reaching out to those most at risk more enthusiastically. There has been no discernible change in casualty or guilty socioeconomics, implying that there has been no discernible change in the disclosure of minorities' individuals or networks, despite the potential for interlocking imbalances to increase their risk of homegrown maltreatment.

Furthermore, there is evidence of a delayed lockdown on first-time reports of homegrown maltreatment; first-time reports began to rise once lockdown estimates were facilitated around the middle of the year. We're still looking into the impact of the second pandemic outbreak on disclosure, but we expect the postponement of reports to continue until the closure limits are lifted (Stripe & ONS, 2020).

2.2.1 Causes Behind the Increase in UK

Confining victims under the same roof as perpetrators for prolonged periods of time is held to be one of the key factors for the rise. Studies show that whenever families spend more time together there is generally a rise in domestic abuse incidents, even in joyful occasions such as Christmas or summer holiday – events where issues causing anxiety/stress is minimal. It is not surprising that the numbers have shot through the roof given that the pandemic has brought with it additional financial, security and health worries. Moreover, lockdown has also meant that women's mobility and contact with their social support system have been restricted preventing them from seeking emotional and practical support. Another factor has been the financial stress, during the lockdown period millions of employees have lost their jobs and many are working at reduced income. Scholars have asserted that there is a strong link between low income and rise in domestic abuse. Even in families with no history of domestic abuse, financial stress coupled with lack of social support is held to fuel violence. Finally, lockdown has also led to exposing couples to one another's incompatible habit which has led to increased frustration and violence. (Khalifeh et al., 2013)

2.3 The Influence of the Ongoing COVID-19 Pandemic on Domestic Violence in China

Starting in December 2019, an extraordinary episode of COVID-19 infection resulted in a severe lockdown and a long-distance cross-country home detachment, which may have led to increased levels of family violence in China. The large-scale lockdown, which disrupts family clashes, the financial misery and strain caused by the family pandemic, and the lack of assistance for victims of family savagery during the pandemic, could all lead to this rise in family viciousness. During the current COVID-19 pandemic, family abuse has become a significant societal problem that must be handled appropriately and rapidly. Legislative and non-governmental organizations (NGOs), as well as organizations and administrative areas, should be aware of the needs of victims of family savagery and provide adequate and timely assistance. At the conclusion of this speech, an informed consideration of the approach recommendations and proposals for future review is given (Arora & Jain, 2020).

The grip of violent acts at the homes of the guilty parties has been fixed in the midst of the pandemic in India. Victims of violence are cut off from their normal emotional support networks, making it impossible for them to seek help. On March 24, 2020, India's Prime Minister declared a nationwide lockdown to avoid the spread of Novel Coronavirus. The National Women's Commission (NCW) registered a 100 percent spike in violent acts in domestic cases within a fortnight. The NCW was then given the cross-country Whatsapp number in order to provide a replacement plan for women who had been exposed to domestic abuse (Arora & Jain, 2020).

While there was an apparent spike in the quantity of abusive behavior at home cases in India at the point as expected, for some odd reason, the NCW month to month information talked some substitute truth. It indicated a general reduction in the protests got during the long periods of lockdown in contrast with even the underlying long stretches of 2020. In any case, the steady unwinding of the lockdown saw a resulting flood in the grievances. While 552 grievances were recorded in the period of May, June saw more than 730 protests. This information shows that while the worry of a fast expansion in the abusive behavior at home cases during the lockdown was substantial, the occasions were not effectively revealed (Arora & Jain, 2020)

Chapter 3

Materials & Methods

3.1 Methodology

The methodology of Analyzing the Domestic Violence Incidents during the COVID-19 Pandemic: A Case Study of District Abbottabad, K.P.K, Pakistan was designed to make sure the collection of data in the most dependable way. Data on prevailing different forms of domestic violence its causes and consequences were acquired throughout the District Abbottabad. Domestic violence is regarded a very sensitive topic for research in terms of both surveys and qualitative methods that's why a special attention is paid to ensure the safety of respondents, as well as safety for interviewers. This chapter present in depth study of how data in this study was collected and analyzed, as well as to introduce the research strategy and the empirical techniques applied in this research.

3.2 Research Design

The purpose of this research is to study the domestic violence incidents and to compare and analyze the domestic incidents in study area during pre and post COVID-19. The research design was composed using a mixed method approach. Data was collected by using both qualitative and quantitative method.

3.3 Significance of Mixed Research Design

The reason for selecting a mixed approach for this study is to gain the in depth understanding of the extent and essence of the domestic violence issue during pre and post pandemic.

3.4 Study Area

For the present study district Abbottabad will be selected for investigation. District Abbottabad is a district of the Pakistani province of Khyber Pakhtunkhwa, Pakistan. It is the 40th largest city in Pakistan and sixth largest in the province of Khyber Pakhtunkhwa by population. It is about 120 km (75 mi) north of Islamabad and Rawalpindi, and 150 km (93 mi) east of Peshawar, at an altitude of 1,256 m (4,121 ft.). A Kashmir lie to the east. Abbottabad has a population of about 200,000 people (in 2019). The city is home to the Pakistan Military Academy which was established in October 1947 soon after the creation of Pakistan.

3.4.1 Subdivisions, Ethnic Groups and Linguistics in District Abbottabad:

Abbottabad district is divided into three tehsils, Abbottabad Tehsil, Havelian Tehsil and Sherwan Tehsil as well as one urban administration area – Nawanshehr. There are fifty-one Union Councils in the district, 38 in Abbottabad tehsil and 13 in Havelian.

The Hindko speaking belt in K.P.K mainly comprises five districts, i.e Abbotabad, Haripur, Mansehra, Battagram and Kohistan, which were till 2000 administered as one of the divisions of the province called Hazara, a name still used to indicate the peculiar cultural and linguistic identity of the region.

The highly Hindko is spoken even in predominantly Pushtun districts, also including Peshawar where it is called Khari, the language of the city. Hazara borders Punjab, Azad Kashmir and NWFP and has imbibed cultural influences from all the three sides. A number of castes and clans including Utmanzais, Tanolis, Swatis, Tareens, Jadoons, claim Pushtun origins.

There are others that have ties with the clans in adjoining Kashmir like Abbasis and Gujars. Awans are spread all over Punjab and Mughals and Qureshis, all over Pakistan. The one thing common between them all is that an overwhelming majority speaks Hindko and is averse to Pushtun domination. Statistics of language spoken in Abbottabad, the central city of Hazara, in the 1998 census report underline the reality. Hindko is spoken by 94.26 percent population, Punjabi by 2.30 percent, Pushtu by 2.22 percent and Urdu by 1.05 percent.

3.5 Target Population

The target population in this research was focused for the collection of data on domestic violence and prevailing of different forms of domestic violence so that to analyze and see variations of domestic violence cases in pre and post COVID-19.

3.6 Sampling Techniques

For the collection of data regarding domestic violence cases will be taken from Abbottabad City. Both reported and not reported domestic violence cases will be studied. From this selected area quantitative and qualitative data was collected with the help of questionnaires. Furthermore, the sampling technique which was used during this research was random and purposive sampling technique. The sample size was 150 out of which 50 questionnaires was distributed among victims of domestic violence 50 in police department and 50 in social welfare department and Darul aman of district Abbottabad.

3.7 Sample Size

The universe of this study comprises domestic violence cases from DPO office, Social welfare Department, Darul Aman and from victims of domestic violence from all over district Abbottabad. The total population of district Abbottabad comprises of approximately 2 lakhs

so purposive and random sampling technique was used. Sampling size of 150 was selected randomly from targeted population which are directly are indirectly facing domestic violence.

3.8 Tools of Data Collection

In scientific research accurate and systematic data collection is critical to conduct. For the collection of information data collection instruments allow us to collect information needed for study objects. Main part of research is constructed on primary data which is why it is very important to choose instruments that satisfy the objectives as well as the study design of the research. That's why we use Quantitative and Qualitative data questionnaires to meet the research approach of research for collection of information from domestic violence victims, Police and Social welfare department in Abbottabad.

3.8.1 Questionnaire

The data collection tool used to collect data from local community and concerned department was based on a well-designed pre tested questionnaire. The questionnaire's contained total 74 questions that were divided into three questionnaires. The first part of all three questionnaire's prOVIDed the demographic information of those who participated. The second part of first questionnaires were related to victims having 27 questions. The second questionnaire consist of 21 questions related to Social welfare department and Darul Amman. The remaining questions were related to police department that how many cases were reported during pre and post pandemic.

The quantitative questions were close ended and followed Yes or No and qualitative questions were open ended for more in depth understanding. The significance of using a questionnaire is the large group of people directly or in directly affected by domestic violence can express their views.

3.9 Data Analysis

The data of the study was gathered from qualitative and quantitative questionnaire. To analyze the data from the questionnaire's descriptive study was used. Once the sample size was attained the data was put to Microsoft office excels spread sheet in graphical and tabulation form. It had been presented in manner that would be understood by research users. the data obtained from the qualitative questionnaires were observed and examined closely to see the variations in domestic violence in pre and post pandemic.

Chapter 4

Results and Discussion

4 Results and Discussions

This chapter consists of the quantitative and qualitative analysis of research findings with the aim to prove whether my study has achieved its objectives or not.

4.1 Demographic Charcteristics of Respondent

The subjects of study were taken from District Abbottabad .The respondents comprised of males and females of any age.

4.1.1 Gender of Respondents

The graph below shows the gender distribution of the popoulation.The female representation from District Abbottabad is 80% and 20% male population.The gender of respondent is mostly female because domestic voilence is mostly related to female .The gender of respondent is to ensure that opinions of both male and female respondents are taken into consideration.

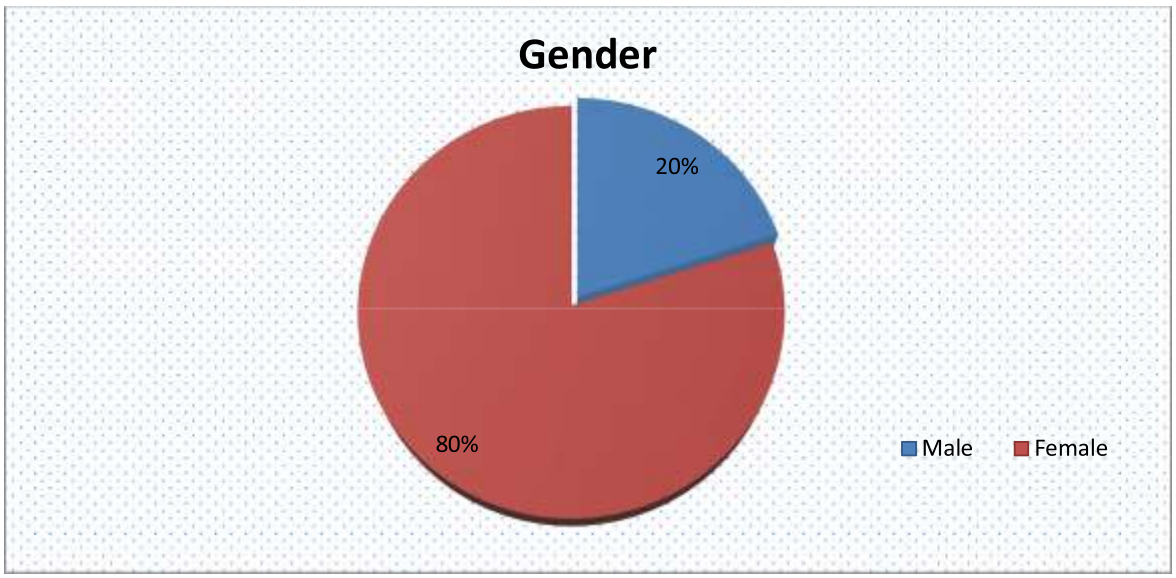

Figure 4.1.1

4.1.2 Age of Respondent

The graph below shows the age distribution of respondents.It shows that maximum respondents 40% fall between the age group 25-30.The 25% fall between the age group of 20-25 ,20 % between age group of 30-40,12% above 40 and the 4% fall between age group of 15-20.

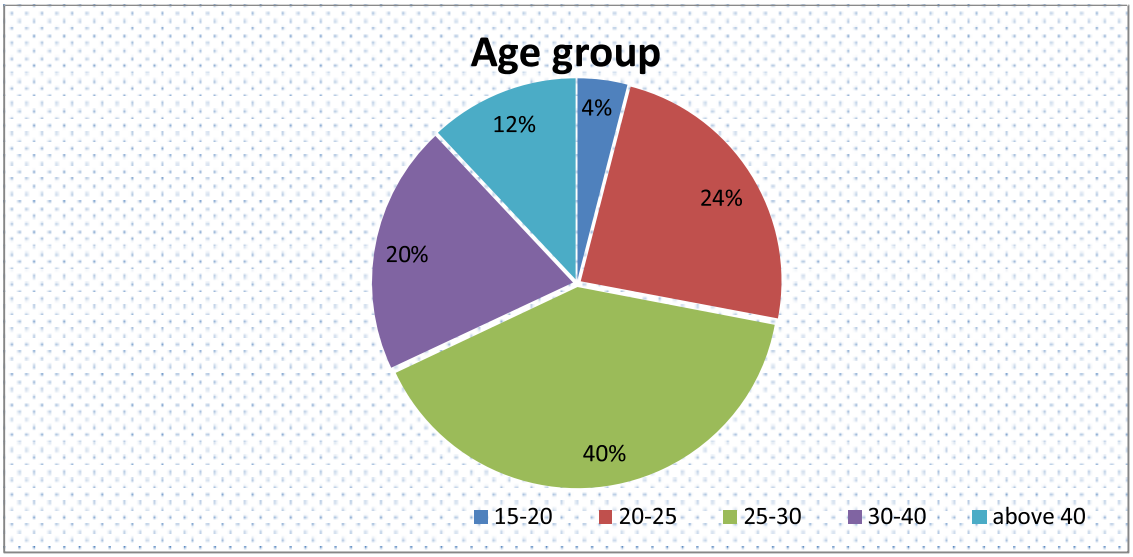

Figure 4.1.2

4.1.3(a) Households

The graph below shows the household of respondents.Most of the respondents are living in average household about 52%.The 28% of respondents are from poor household and 20% of respondents are from above average household.It shows that domestic voilence is prevailing in every type of household in District Abbottabad.

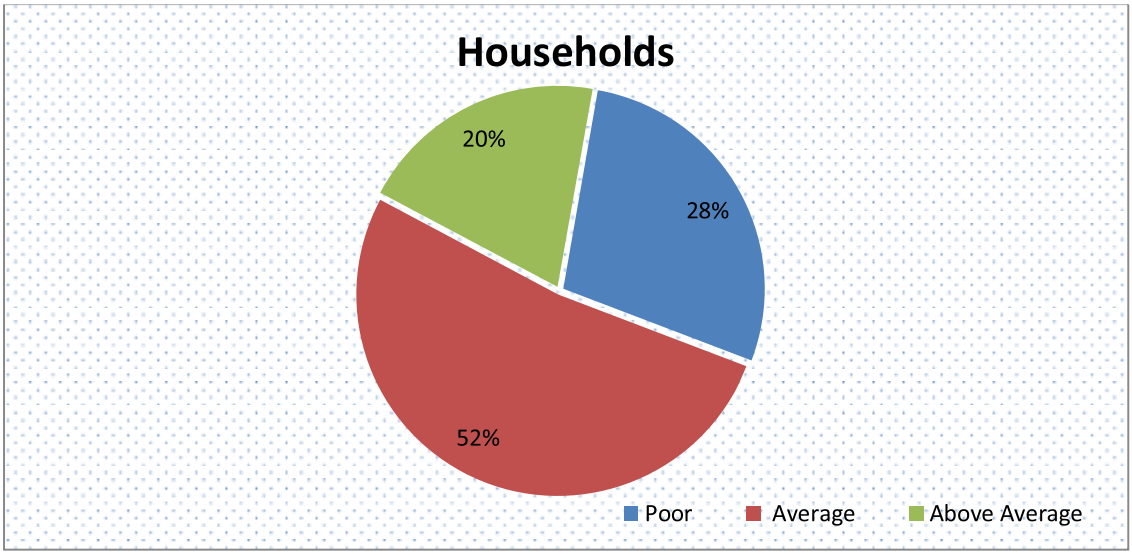

Figure 4.1.3(a)

4.1.3(b) Type of Household

The table below shows the household type of respondent.About 68% of respondents are living in one family household and about 32% of respondents are living in multiple family household.Most of population of Disrict Abbottabad lives in single family household which is also the big cause of domestic voilence.

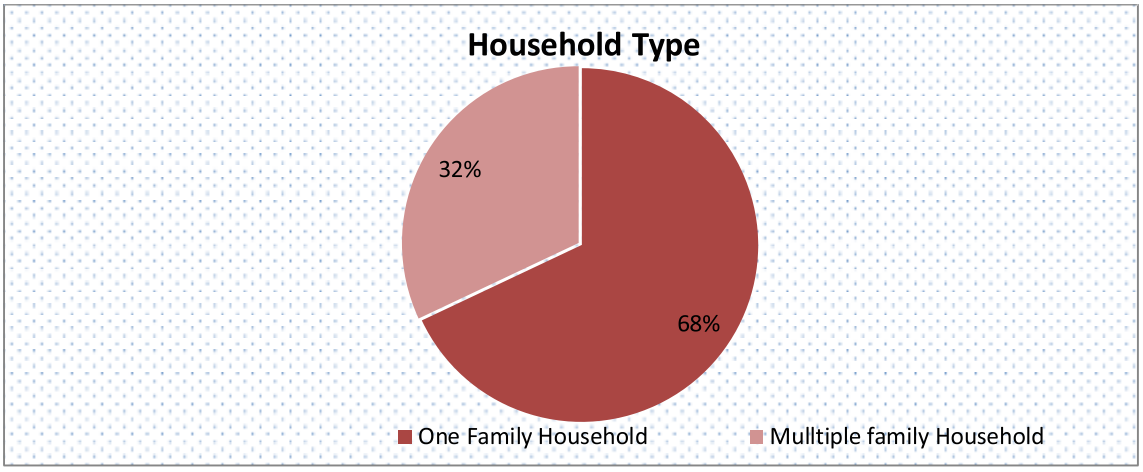

Figure 4.1.3(b)

4.2 Domestic Voilence Types, Awareness and Their Satisfication of Releif

The graphs below shows the result of District Abbottabad in which they were asked series of question about types of voilence,awareness and community support they get when they were voilated.

4.2.1 Domestic Voilence Types

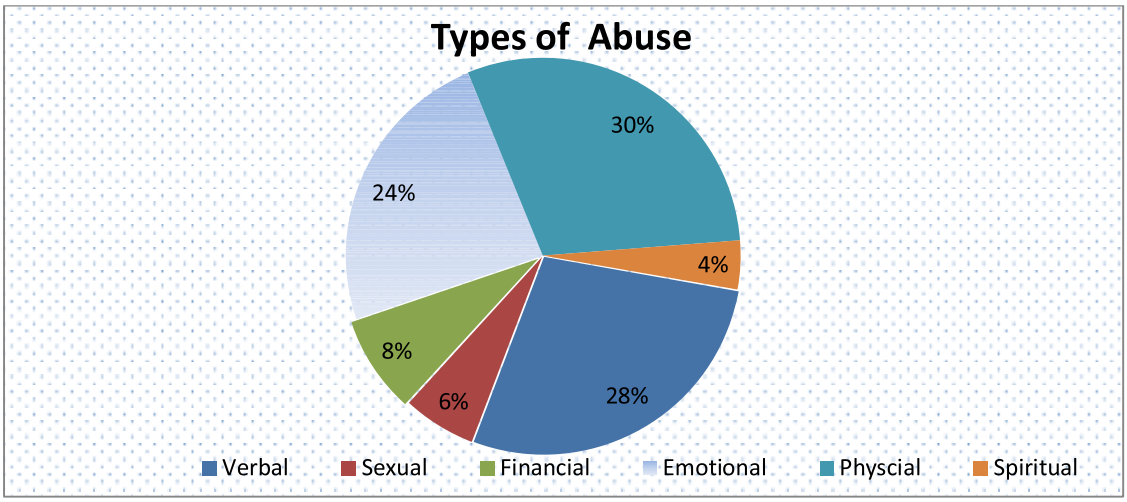

Figure 4.2.1

From the above graph it is visible that 30% of respondent faces verbal abuse .The second most marked answer was physical abuse about 28% .Emotional abuse was prevailing about 24%.The finanicial abuse is about 8%,sexual abuse is about 6% and the spiritual abuse is occuring 4% in District Abbottabad.

4.2.2 Awareness about Domestic Voilence

The figure below shows the percentage of respondents who have some awareness of domestic voilence.About 80% of respondent doesn't have any information about domestic

voilence.And 20% of respondents have some information about domestic voilence.The graphs shows the percentage of respondents who are aware of domestic voilence is far less then the repondents which have not any information about domestic voilence.

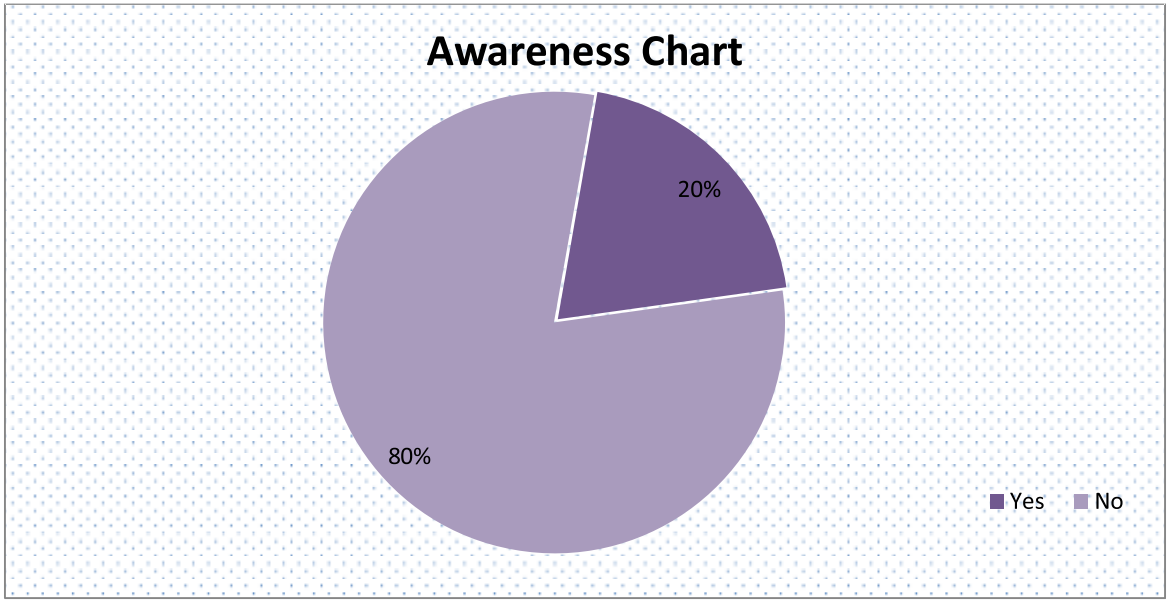

Figure 4.2.2

4.2.3 Community Support

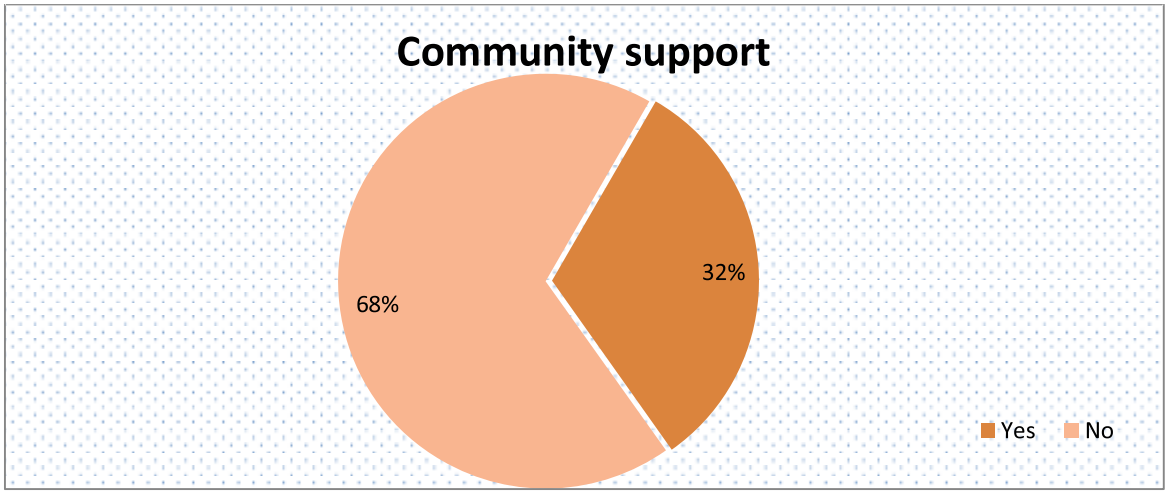

Figure 4.2.3

The graph above shows the community support domestic voilence victims get from community.The statistics shows that about 32% of victims get directly or indirectly support from community and 68% of victims have not get any support or help from community when being voilated.

4.3 Relationship with Abuser and Abuser Gender

The graphs below shows the data about the relationship with the abuser and abuser type at the time of the abuse.

4.3.1 Relationship with Abuser

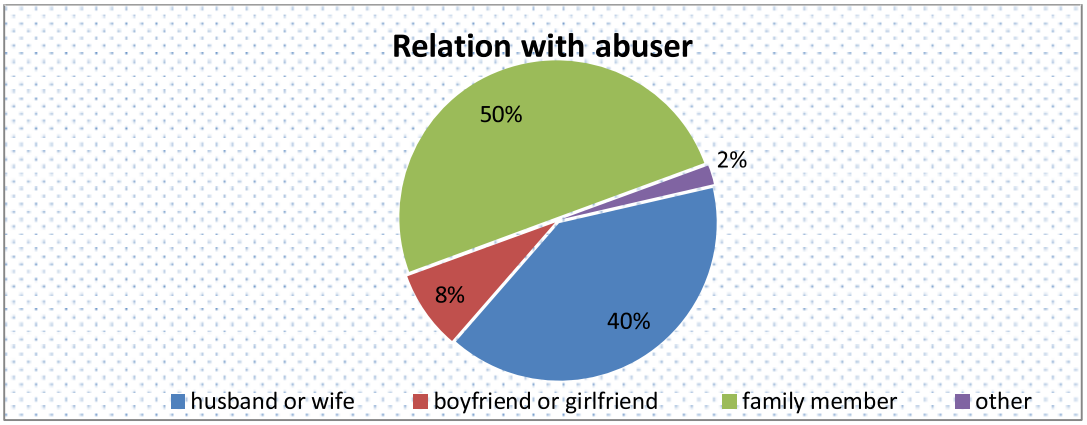

Figure 4.3.1

The graph above shows the relationship with abuser.About 50% of respondent are husband or wife at the time of abuse.40% of respondents are abuse by family member.The 8% of repondents are boyfriend or girlfrienat time of abuse and other abusive relationship is about 2%.

4.3.2 Abuser Gender

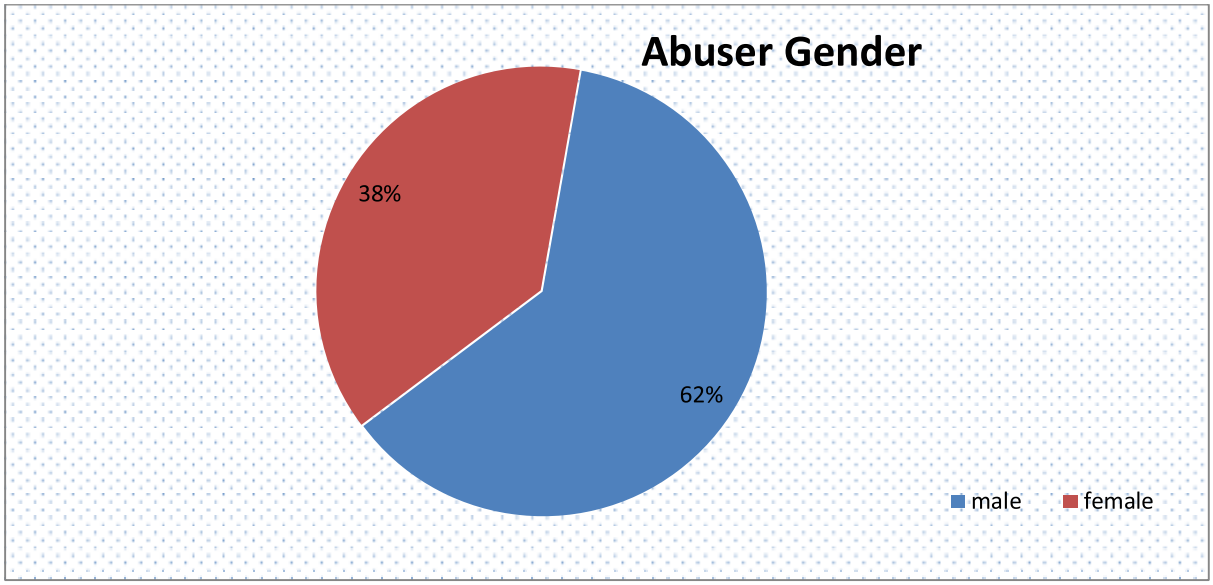

Figure 4.3.2

As indicated in the above graph majority of abuser are female about 62% this is beacause majority of population in District Abbottabad is living in joint family system .So this is why abuser are mostly female.And about 38% of abuse respondents gets abuse from males.

4.4 Types of Physical Assault and Injuries Victims Experienced

The graphs below shows the representation of type of abuse victims experienced and type of injuries they get in District Abbottabad.

4.4.1 Types of Physical Assault

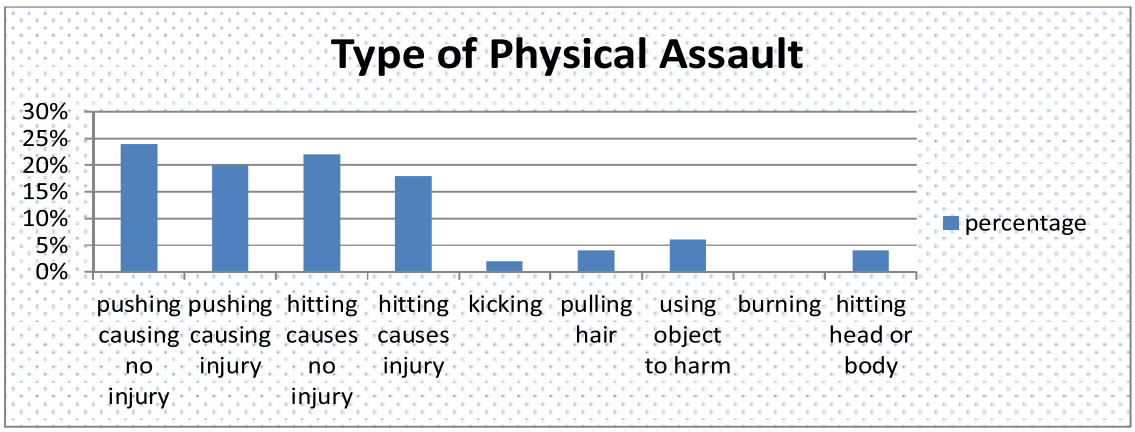

Figure 4.4.1

The graphs above shows the representation of type of physical assault victims faces in District Abbottabad at the time of abuse.Pushing causes no injury is 24%,pushing causing injury is 20% The hitting causing no injury is 22% and the hitting causes injury is 18%.The physical assault including kicking is 2%,pulling hair is 4%,using object is 6% and hitting head or body is 2%.

4.4.2 Type of Injury

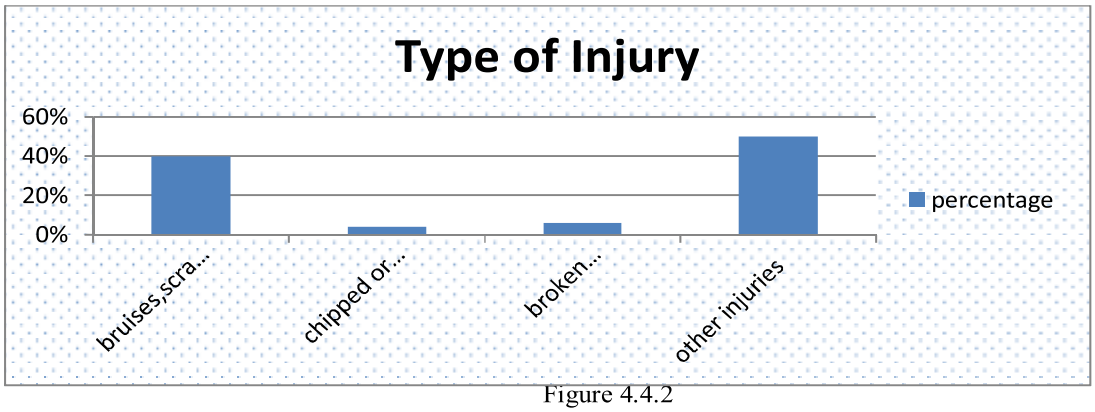

Figure 4.4.2

The above figure shows the type of injury occurred to victims at time of physical assault.The graph shows that type injury causing bruises,blacked-eye,scrathes or swelling is about 40%.Chipped or knocked out teeth is 4%,broken bones is about 6%.And the ratio of other injuries is 50% in District Abbottabad.

4.4.3 Part of Body Targeted

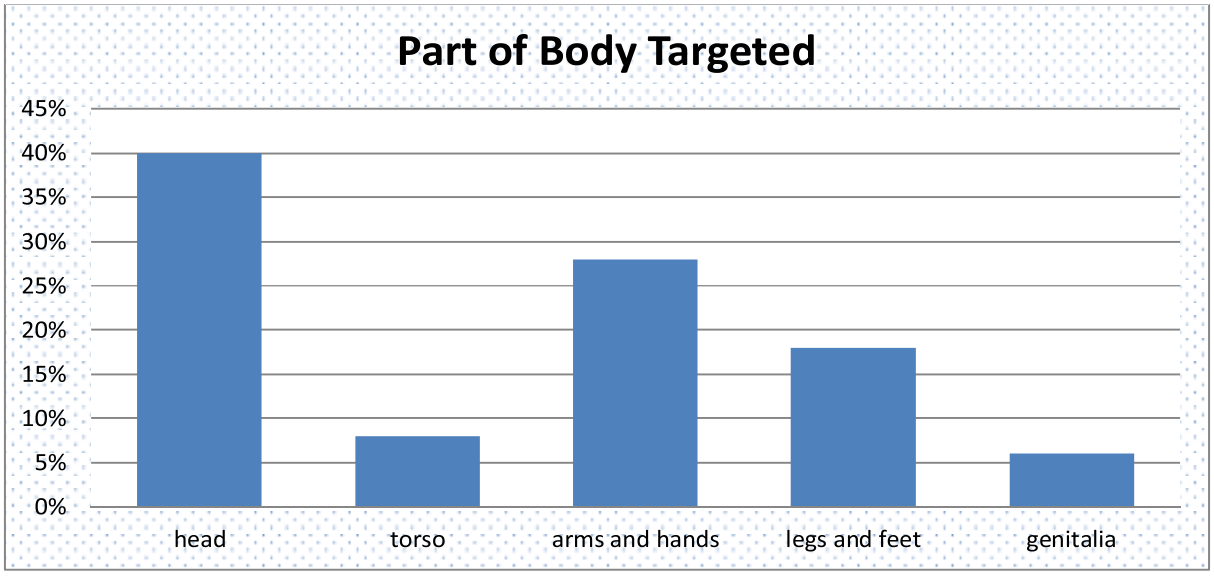

Figure 4.4.3

The above graph shows the percentage of part of body most targeted in physical assault of victims of domestic voilence in District Abbottabad.The figure shows that the most of body part targeted in physical assault is head about 40%. Second most targeted part of body damaged by physical assault are arms and hand about 28%.Legs and and feet are targeted about 18%,torso 8% and genitalia is 6%.

4.5 Intensity of Assault

The graphs below shows the frequency of assault abuser experienced in District Abbottabad after pandemic and initiation of domestic abuse from victims.

4.5.1 Intensity of Assault after Pandemic

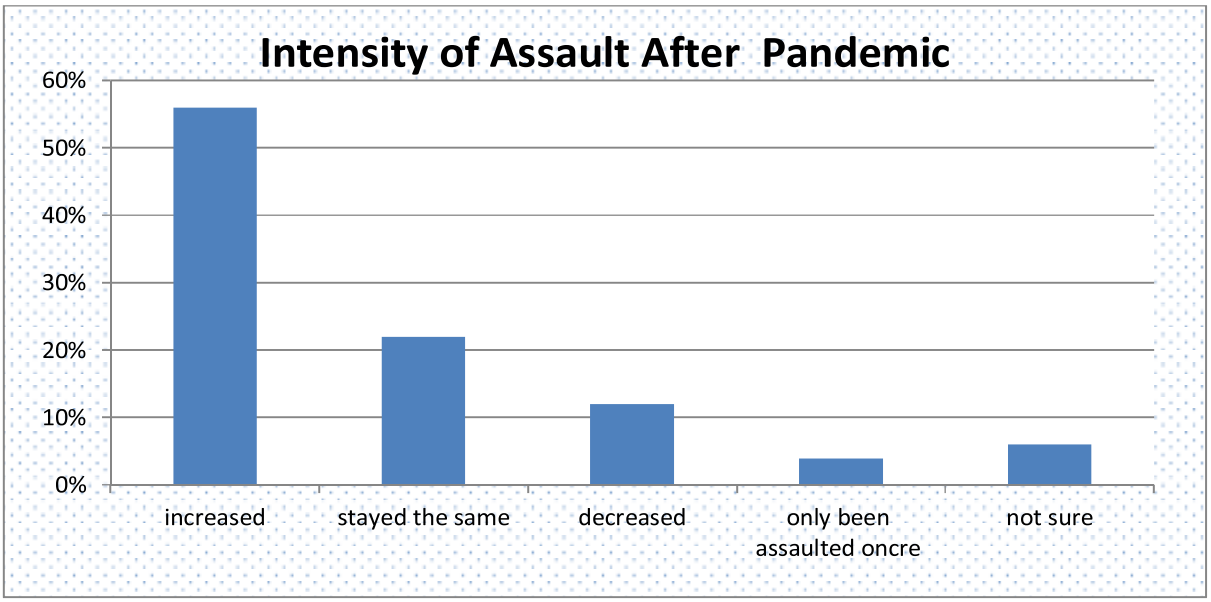

Figure 4.5.1

From figure 4.5.1 it shows that 56% respondents of District Abbottabad faces increased of domestic voilence after pandemic.22% of respondents faces the same intensity of abuse.12% of victims faces decreased in DV,4% of victims have been assaulted once and 6% of population is not sure about the intensity of domestic voilence after pandemic.

4.5.2 Initiatioin of domestic voilence

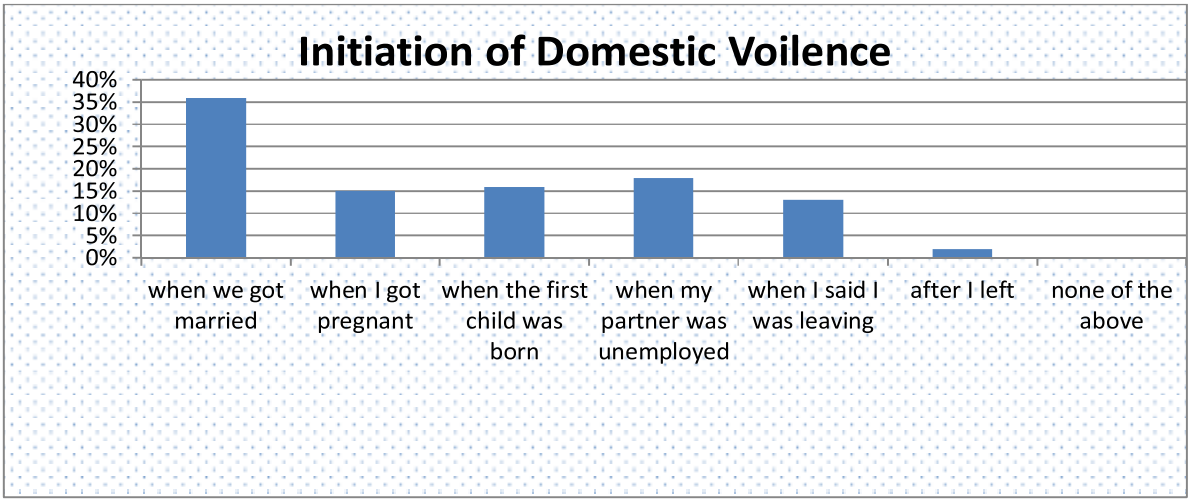

Figure 4.5.2

As indicated in the above graph the majority of respondents faces first time domestic voilence right before their marriage about 36%.The 15% of victims faced after they got pregnant,16%

after the born of their first child.The 16% faces their first voilence when their partner was un-employed,13% when they ask to leave and 2% of respondent faces their first voilence when they left the abusive partner in District Abbottabad.

4.6 Frequency, Initiation and Recognisation of Sexual Abuse

The graphs below shows the frequency of sexual abuse after pandemic and the initiation of sexual abuse after relationship and it recognisation as abuse of respondents in District Abbottabad.

4.6.1 Intensity of Sexual Abuse after Pandemic

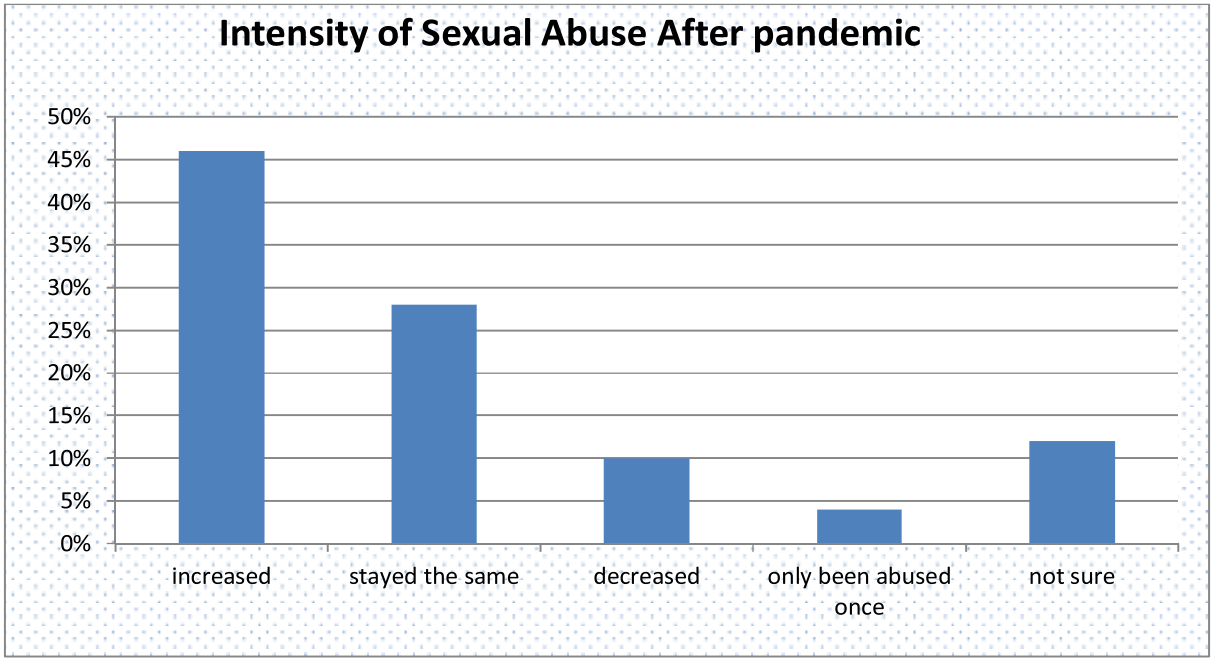

Figure 4.6.1

The graph above shows the intensity of sexual abuse after pandemic in the survey 46% respondent suffered from increased sexual abuse ,28% respondent indicated that it remains the same,10% reported that it is decreased and 12% are not sure about the intensity of abuse.

4.6.2 Recognisation of Sexual Abuse as Rape

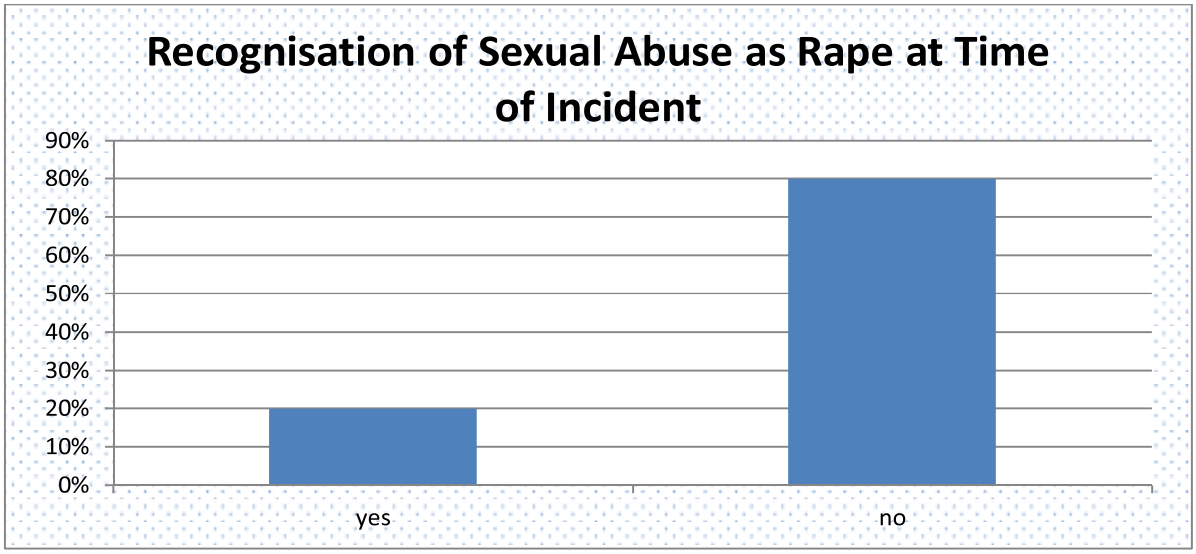

Figure 4.6.2

Figure gives an outlook of the data obtained from respondents of District Abbottabad who can recognize sexual abuse as rape at time of incident. 20% of respondent recognizes it as a rape.And 80% of respondents don't recognizes it as a rape.

4.7 Domestic Abuse and Child

In the below graphs the respondent taken from abbottabd has been given the questions related to any children with abuser,is children also abused,types of abuse children suffer,did child witness abuse .The data of which is given below.

4.7.1 Children with Abuser

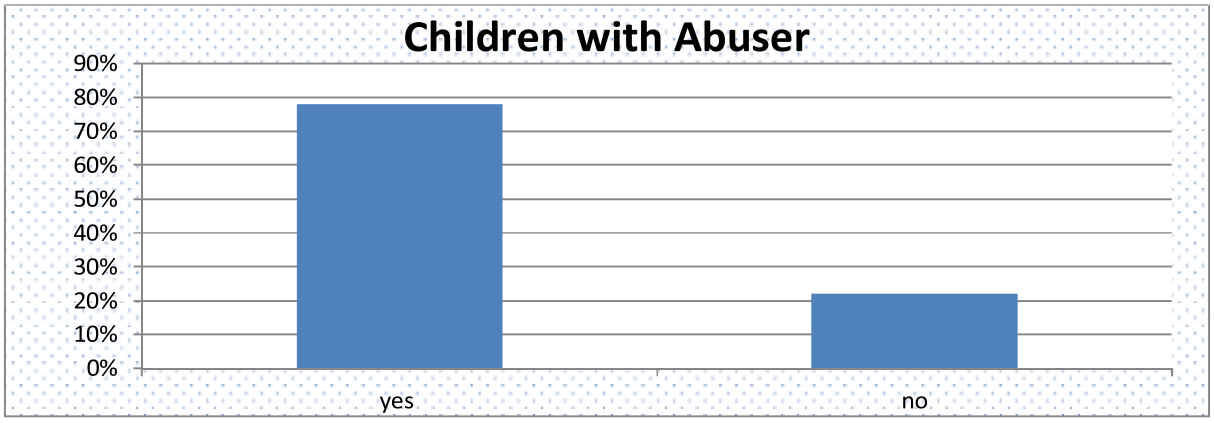

Figure 4.7.1

The above graph shows that if the respondent has any child with abuser.The figures shows that 78% respondent has child with the abuser and 22% don't have any child with abuser.

4.7.2 Children Abused

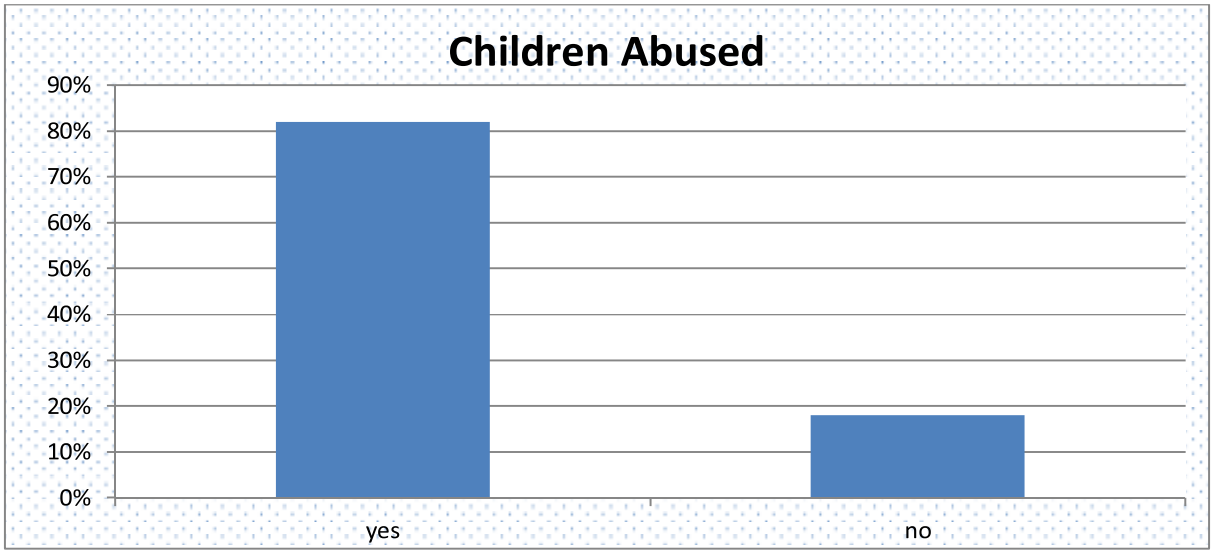

Fig 4.7.2

The data taken from respondents shows the percentage of child abused from abuser in District Abbottabad .About 76% of child are abused while 24% did not suffer from any abuse.

4.7.3 Type of Abuse Children Suffer

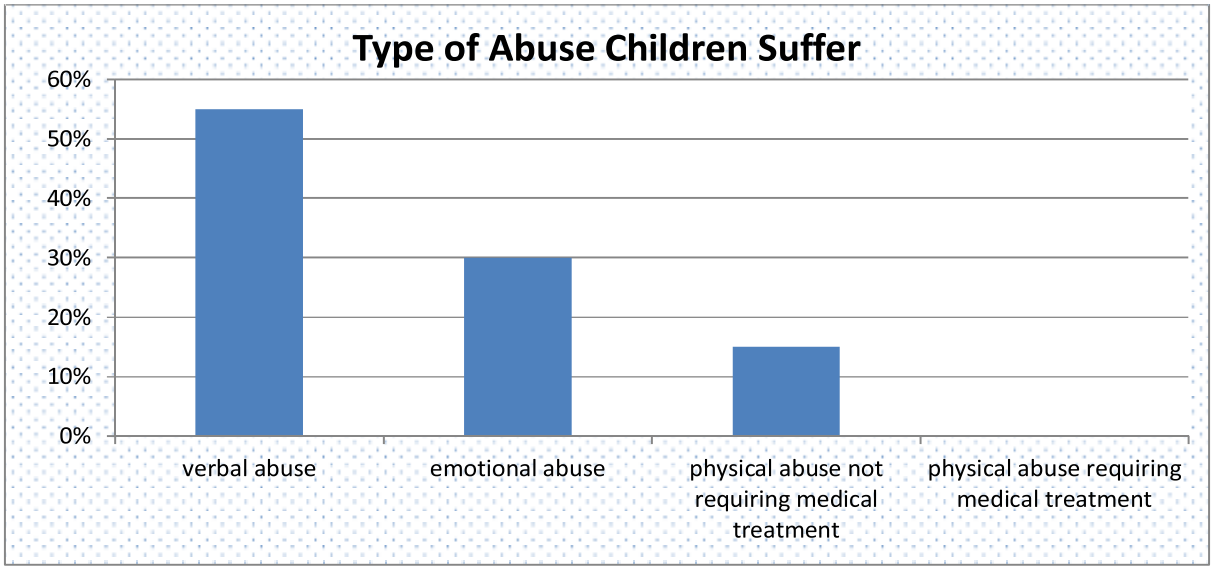

Figure 4.7.3

The data above shows the percentage of type of abuse child suffer during domestic voilence in District Abbottabad.55% children suffer from verbal abuse by the abuser.The percentage of emotional abuse is 30%,physical abuse causing no medical treatment is about 15% and physical abuse requiring medical service is 0%.

4.7.4 Percentage of Child Witness Abuse

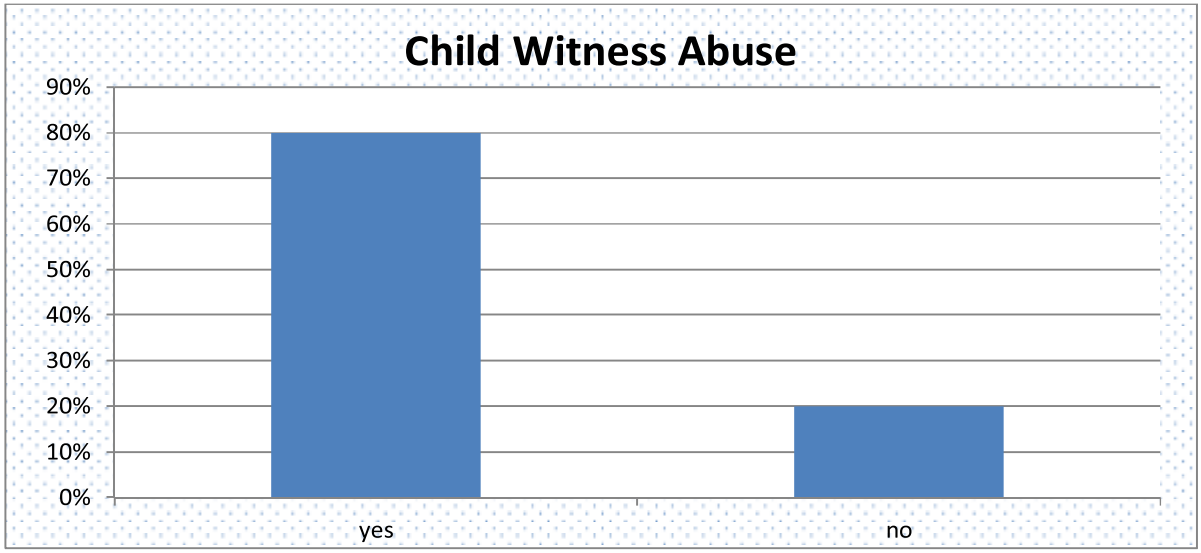

Figure 4.7.4

As indicated in the above graph the majority of children 80% witness domestic abuse while 20% didn't witness any sort of domestic abuse at time of incident.

4.8 Data from Abbottabad Police Department

S.No	Crimes	Provisions	2019	2020	Difference
1	Murder	302	7	13	+6
2	Attempted Murder	324	1	1	-
3	Harm	337	5	8	3
	Total		13	22	+9

Table 4.8

The table above shows data of domestic violence cases in District Abbottabad in year 2019 and 2020 which is taken from District Police Office Abbottabad. According to data of police department 7 women were killed ,1 woman was attempted to murder and women that was harm were 5 in year 2019.While 13 women were get killed,1 woman was attempted to murder and 8 women were harmed in year 2020. Total of 9% increased domestic violence cases were reported in year 2020.It means there increase in domestic violence cases in District Abbottabad.

Chapter 5

Conclusion

Conclusion:

In this research study, the domestic violence incidents in Abbottabad district during COVID-19 are studied, and domestic violence incidents before pandemic and after pandemic are compared, and it is concluded that:

- In Abbottabad District, majority of the people are living in average household, very few people are from above average households and also a bit increase from above average household many people are from poor households.
- In Abbottabad district, the highest most violence that faced by the people was verbal abuse that is about 30% and the less violence that faced by the people was spiritual abuse that is occurring 4%, but almost overall people of Abbottabad do not have any information regarding domestic violence.
- When the victim is being violated, about 32% of the victims get support from the community, while 68% of victims do not get any support from the community, because half of the people that are violated are husband or wife, and a bit less than half people are violated by family members, and Majority of the abuser in Abbottabad district are females
- The physical assault that victims faced in Abbottabad district is pushing causes no injury at highest percentage and the hitting head or body at lowest, and the most of the body parts targeted in physical assault is head and the less targeted body part is genitalia.
- After pandemic, more than half of the population of Abbottabad district faced an increase in the domestic violence, and majority of the people faces first time domestic violence right before their marriage.
- The highly increase in the violence after pandemic is the sexual abuse. The intensity of sexual abuse after pandemic is increased and almost 46% respondents suffered from it, and only 20% people recognize it as a rape.
- Children in Abbottabad district also suffer from different kind of abuses. Half of the children in Abbottabad district are verbally abused and others suffer from physical abuse. Majority of the children are the witness of the domestic violence.
- Data collected from the police department and comparing the data of 2019 and 2020 also concluded that domestic violence in Abbottabad district increased after the pandemic.

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Institutional Capacity of Disaster Management at District Level: A Case Study of Abbottabad

By

Kaleem Ullah Khan

Bachelors Thesis

DEDICATION

In my warmest regards, I bestow this work to my loving family, without their love and prayers, this would have not been achievable. It's not possible to thank you enough for everything you've done for me. I also give credit to the respected teachers, who guided me throughout and to all my friends for their unconditional support.

ACKNOWLEDGEMENTS

All praise is to Almighty Allah who bequeaths upon His blessing and made is possible for me to achieve this challenging work.

I am extremely grateful to my supervisor “Mr. Abu Turab Khan”. Without his consultation, valuable supervision and personal guidance, fulfillment of this task would have not been entirely possible. I am genuinely thankful to him for his assistance and ceaseless help during this thesis.

I am also contented to my family who have been such a great support throughout and for their constant belief in me.

Kaleem Ullah Khan

ABSTRACT

This study was conducted to understand the Institutional capacity of disaster management at district level. The area of the study was district Abbottabad. Stratified Random sampling was used to select the sample and semi-structured interviews were conducted with the respondents which were later analyzed using the thematic analysis. The results and discussion showed that the Institutional Capacity of Disaster Management is influenced by factors such as, lack of structure, lack of trained personnel and lack of modernized techniques and methods. Study concluded that a separate structure of official work shall be allotted to the team of DDMA in the district along with a separate office.

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LIST OF ABBREVATIONS

ATD	Abbottabad
COMSATS	Commission on Science and Technology for Sustainable Development in South
HEC	Higher Education Commission
NDMA	National Disaster Management Authority
DDMA	District Disaster Management Authority
WHO	World Health Organization
EHA	Emergency and Humanitarian Action
UNISDR	United Nations International Strategy for Disaster Reduction
UN	United Nations
OCHA	The Office for the Coordination of Humanitarian Affairs
IASC	The International Agency Standing Committee
UNDP	United Nations Development Programme
GCRI	Global Climate Risk Index
ERP	Emergency Response Paradigm
NDMO	National Disaster Management Ordinance
NDRMF	National Disaster Risk Management Framework
PDMC	Provincial Disaster Management Commission
PDMA	Provincial Disaster Management Authority
NDMI	National Institute of Disaster Management
NDRF	National Disaster Response Force
NDMF	National Disaster Management Framework
PNDF	Philippine National Drug Formulary
DCO	District Coordination Officer
EDO	Executive District Officer
MDMA	Municipal Disaster Management Authorities

HFA	Hyogo Framework of Action
WCDR	World Conference on Disaster Reduction
UNDRO	United Nations Disaster Relief Organization
PMP	Prevention Mitigation Preparedness
DRR	Disaster Risk Reduction
US	United States
DHO	District Health Officer
DPO	District Police Officer
DEO	District Emergency Officer
ADC	Additional District Collector
DDM	District Disaster Management
AC	Assistant Commissioner
ERA	Employee Retirement Association
PERA	Public Employee Retirement Association
DDMO	District Disaster Management Officer

Chapter 1

Introduction

1.1 Background

A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community (WHO/EHA, 2002). There is a need to harmonize the definitions for disaster terms from a wide range of glossaries and other sources, to build a more unitary foundation for further research, policy and practice (Mayner & Arbon, 2015). The term disaster has been defined differently by various scholars due to the system by which they are explained and based on their causes and consequences. The United Nations Office for Disaster Risk Reduction (UNISDR, 2009) confirms that disasters occur as a result of a combination of hazards, vulnerabilities and a lack of measures, where using special measures for planning, coordinating and utilizing appropriate resources will minimize the adverse impact of disasters (Al-dahash et al., 2016).As said by UNISDR; a serious disturbance in the functioning of society that involves material, economic, widespread human or environmental losses and impacts that exceed the capacity of the affected community to deal with the use of its own resources(WESTGATE, 1976) Further, definitions of disaster vary based on time, space, geographical location etc. During a disaster a society or one of its subdivisions undergoes physical harm or social destruction so that all or a part of essential functions of a society are impaired (Al-dahash et al., 2016).

1.2 Effects of Disaster

Disasters can be categorized as Earthquake, volcanic eruption, T-tsunami, Tropical cyclone (typhoon, hurricane), Flood, Landslide, Bushfire (or wildfire), Drought, Epidemic, Major accident, and Civil unrest are all-natural disasters that have their own environmental consequences. In general, typical impacts of disasters may be: death, injury, damage to and destruction of property, damage and destruction of livelihood and cash crops, disruption of production, disruption of lifestyle, loss of livelihoods, disruption of basic services, damage to national infrastructure and disruption of government systems, And national economic loss, and psychological and social impacts(Berren, (1980)). To overcome the disasters communities, build a team of experts that work together to respond against a disaster through a process of activities, the generic term given to the process of activities is ‘Disaster Management’. “The structured method of using administrative orders, agencies, and organizational abilities and capacities to enforce strategies, policies, and enhanced coping

capacities in order to minimize the adverse impacts of hazards and the risk of catastrophe," according to the UNISDR concept of disaster management.(WESTGATE, 1976).

1.3 International Institutions for Disaster Management

In order to have a broad review about the disaster management institutions, understanding their responsibilities first plays a key role. "The systemic method of using administrative orders, agencies, and organizational capabilities and capacities to enforce procedures, regulations, and increased coping capacities in order to minimize the adverse impacts of threats and the risk of disaster," according to those roles. (Boyarsky, (2002)). The emergency relief period can be depicted in a variety of ways, and it is often done so. Alternative words can also be used. The most critical aspect, though, is that the format can convey that emergency response and management are a series of interconnected activities. It is not a chain of events that begins and ends with each tragedy.(DP, (2007)). During the past decade, natural disasters at various scales continue to increase by the year. Experience has shown that local government and holders with their capacity have proved their ability to handle small and medium scale emergency response. As shown in the Aceh tsunami (2004), the Nias earthquake (2005), and West Sumatera (2009), large-scale and mega-scale disaster response beyond the capability of local partners requires the cooperation and assistance of international organizations such as UN agencies (The Office for the Coordination of Humanitarian Affairs [OCHA], the International Agency Standing Committee [IASC]), the Red Cross and Red Crescent Society, foreign governments, foreign non-government organizations, and non-governmental international organizations have been supporting the enrichment and strengthening disaster mitigation efforts, reducing disaster hazards and risks, reducing the suffering of affected people, and accelerating disaster relief efforts.(UNDP, 1992)

1.4 Institutional Order for Disaster Management in Pakistan

According to the Global Climate Risk Index (GCRI), Pakistan was the most affected country in 2010, from number eight during 1991–2000. The country is at high risk of natural hazards including floods, rains, landslides, cyclones, earthquakes, and droughts, devastating vulnerable communities every few years. In its 65-year history, the country has gone through major floods such as in 1950, 1973, 1976, 1988, 1992, 1997 and 2010, and 14 cyclones have hit the coastal areas of Pakistan between 1971 and 2001.

1.4.1 National Disaster Management Authority (NDMA)

In the past, Pakistani crisis management has been based on the 'Emergency Response Paradigm' (ERP). The Calamity Act of 1958 dealt with disasters, and there was a network of emergency management institutions with conflicting functions and obligations, and the disaster response policy was mostly reactive. However, following the 2005 earthquake in Pakistan's northwestern region, the National Disaster Management Ordinance 2006 (NDMO) was enacted, marking the country's first step toward organized disaster management. A national disaster risk management system, known as the National Disaster Risk Management Framework (NDRMF), was conceived in 2007 by involving various ministries of the Pakistani federal government, UN agencies, and some non-governmental organizations (NGOs) in the process. Provincial Disaster Management Commissions (PDMC) and Provincial Disaster Management Authorities (PDMA) and District Disaster Management Authorities (DDMA) are proposed at the second and third levels, respectively. At the provincial and district levels, the PDMAs create municipal plans and the DDMAs create district plans for emergency management. The Act also creates a National Institute of Disaster Management (NDMI) for disaster planning, study, and development, as well as a National Disaster Response Force (NDRF). Furthermore, the Act proposes the creation of a National Disaster Management Fund (NDMF) to deal with any looming disaster situation or disaster. Provinces are now being asked to set up Emergency Management Funds (PNDF) to deal with disasters.(Khan, (2008))

1.4.2 Provincial Disaster Management Authority/Commission (PMDC)

Since Disaster Risk Management is a provincial subject, the provincial/regional governments will have crucial role in implementation of disaster risk management policies, strategies and programs. Each provincial/regional government will form a Provincial (regional) Disaster Management Commission (PDMC) which will be chaired by the Chief Minister. Leader of the opposition and a member to be nominated by him will also form part of the PDMC.

1.4.3 District Disaster Management Authority (DDMA)

District Disaster Management Authorities shall be established by the provincial government in hazard prone areas on a priority basis. The District Authority will comprise of the Nazim, District Coordination Officer (DCO), Police officer, ex-officio, EDO health and Tehsil Nazims. The local government can nominate other officers as members of the DDMA or MDMA. They may include EDOs for education and agriculture, Red Crescent, NGOs, media,

private sector, fire services, or any other local stakeholders. Municipal Disaster Management Authorities (MDMA) will be established in urban areas and cities on similar lines.

Moreover, Institutions at Tehsil and Town level are the frontline of disaster risk reduction and response. For many departments this is the lowest level of administration where they interface directly with communities; agriculture, education, health, police, revenue and others. However, Union councils are the lowest tier of this governance structures. Community Based Organizations are also built in order to promote community level disaster risk management activities, the capacity of existing community organizations will be developed and enhanced by district and tehsil authorities (Disaster & Authority, n.d.).

1.5 Problem Statement

A lack of clarity in the understanding of Disaster Risk Reduction and Disaster Risk Management in the sector, and in particular, between the mandated roles and responsibilities of officers, and what they believe these to be. This strongly indicated that the mandates of agencies need to be reviewed and, where necessary, updated or strengthened, alongside training the officers to fully understand their responsibilities.

However, disaster risk management remains a relatively new concept for majority of the policy makers, UN agencies, donors, civil society organizations and for common people. Historically disasters have been occurring in localized areas in each province or region, and their affects have been limited mainly to the local communities. s. Therefore, Pakistan lacked such mechanisms and institutions. There was a lack of political will and capacities for risk analysis and risk reduction. Lack of disaster risk management plans also remains a major gap. Even the districts and regions that have suffered from frequent hazards don't have plans, except a few. Pakistan lacks application of building codes for construction of housing and infrastructure in hazard prone areas. This could be attributed to lack of political will, lack of trained construction workforce, lack of monitoring and evaluation mechanisms, corruption, and apathy. , Pakistan also lacks an effective system for emergency response, e.g. Emergency Operations Centers, response plans, SOPs to deal with various hazards and capacities in search and rescue, firefighting, medical first response, evacuation at all levels (Disaster & Authority, n.d.).

1.6 Significance of Study

This study will help understand the gaps between the Policy making and the implementation bodies of the district disaster management authority. As Abbottabad is prone to extreme weather conditions thunderstorms and windstorms are expected often but across the district, the management of waste water and solid waste is far from adequate, aggravating pollution, adversely impacting the natural beauty of the area and leading to serious public health hazards. This study will highlight the basic problems that lead towards the man-made disasters which creates imbalance in the management of disasters in the district.

1.7 Objectives

1. To identify the roles of different Department/Institutions in Disaster Management.
2. To analyze coordination mechanism among different institutions for Disaster Management in district Abbottabad.
3. To examine Institutional response for Disaster Management.
4. To identify available capacity and resources for disaster management.

Chapter 2

Review of Literature and Theoretical Framework

2.1. Background

In the 1990s the UN declared the International Decade for Natural Disaster Reduction, leading to the creation of the Yokohama Strategy; the first to provide international guidelines for the prevention and mitigation of disaster impacts. It focused on incorporating emergency management knowledge that existed in the local level and on improving coping capacities to manage known risks. The Strategy was designed to focus international communities on cooperating to implement disaster risk reduction activities (Tiernan et al., 2019). The Hyogo Framework for Action (HFA) was launched at the World Conference on Disaster Reduction (WCDR) held in Kobe from 18-22 January 2005. The HFA is supported by the Hyogo Declaration issued by 168 member states that came together at the WCDR (Pochampally et al., 2008). The Sendai Framework for Disaster Risk Reduction 2015–2030 was adopted at the Third United Nations World Conference on Disaster Risk Reduction, held from 14 to 18 March 2015 in Sendai, Miyagi, Japan, which represented a unique opportunity for countries (Teitelbaum et al., 1991).Disasters and the associated social and economic impacts are on the rise. The last decade has witnessed the highest number of and impacts from disasters, and 2015– 2017 were the hottest years ever (Djalante, 2018). The idea of disaster is usually associated with human suffering caused by natural events: tsunamis, hurricanes, earthquakes, floods. However, human-created disasters stemming from war, the conduct of repressive regimes, the use of sanctions, and economic and social policies represent an equally important dimension of disaster (Harding, 2007). Disasters in Developing countries have the worse outcome due to the shortage of human resources places a considerable burden without the additional constraints imposed by disasters (Davidson & McFarlane, 2006). The global cooperation for disaster management encompasses two theoretical areas, disaster management and international cooperation (Management, 1933). The disaster management discipline, information systems disciplines and other disciplines reveals both commonalities and differences (Schryen, 2014). Global policies on disaster risk reduction have highlighted individual and community responsibilities and roles in reducing risk and promoting coping capacity, strengthening local preparedness is viewed as an essential element in effective response and recovery (Levac et al., 2012). Recent disaster management paradigms have, arguably, shifted from disaster relief to disaster preparedness, hazard mitigation, and vulnerability reduction (Kliem, 2001). The perception, assessment and knowledge of risks and disasters in communities are influenced by individuals' relationship with physical and social environment. Rural and urban residents evaluate and plan for disasters differently and

will follow recommended actions during a disaster differently (Johansson & Linnell, 2014). United Nations Disaster Relief Organization (UNDRO) an experienced organization in Disaster Management has merged human activities and physical phenomena and uses the term 'Complex Disasters' to describe disaster situation (Management, 1933).Natural disasters have been more common in recent years all over the world. Because of the devastating impact of natural disasters, emergency recovery programs must be designed, reviewed, and applied on a global scale. Natural disasters are unavoidable, and a crisis occurs when the danger disrupts a society's ability to survive and deal with the situation using its own resources(Leaning J, 2013).A disaster, according to the International Strategy for Disaster Reduction, is "a significant disturbance of the functioning of a population or society involving widespread human, material, economic, or environmental disruptions and impacts, which exceeds the affected community's or society's capacity to cope using its own resources".((UNISDR)., 2009) A disaster is caused by a combination of threats, vulnerability, and a lack of capacity to mitigate the risk's possible negative consequences. As a result, certain disaster-causing causes can be monitored, while others can be mitigated. The philosophy and practice of disaster risk reduction is described as a concerted attempt to analyze and minimize the causal factors of disasters while also reducing their risk. The international community has been working to make the planet disaster-free for a long time. Despite technical advances in emergency and healthcare systems, development in this area has been hampered by the severity of disasters or a lack of cooperation in recovery operations.(Abdullah, 2015)

2.2. Pakistan's Disaster Management Authority

Natural disasters such as floods, earthquakes, landslides, cyclones, and drought, as well as human-induced disasters such as fires, civil unrest, and terrorism, refugees and internally displaced people, health epidemics, and typhoons – Pakistan, like other South Asian countries, continues to face a plethora of natural and human-induced hazards that threaten the lives and livelihoods of its citizens. The human toll of natural disasters in Pakistan can be measured by the fact that 6,037 people were killed and 8,989,631 people were affected between 1993 and 2002. (World Disasters Report 2003). (Khan, (2008))Focus Humanitarian Assistance (FOCUS)-an agency of the Aga Khan Development Network, was the first to start a disaster management programme named Prevention Mitigation Preparedness (PMP) in Pakistan in late 1999 in Chitral region and Northern Areas. The program's goal is to mitigate natural disaster-related deaths and property damage by allowing preventive steps to be

enforced during the immediate aftermath of a disaster declaration. Mitigation, in the most basic sense, is a long-term strategy for reducing or eliminating the danger of threats and their consequences to persons and property. Probability and outcome are two components of risk that can be addressed by mitigation practices. By reducing any of these factors, the risk to the infected population is greatly reduced. A state of readiness to respond to a catastrophe, crisis, or some other form of emergency situation is described as preparedness. Preparation practices, in general, can be defined as the human component of disaster risk management. Since tactics directed solely toward post-disaster response appear to be more expensive than those that cater for pre-disaster opportunities, mitigation and preparedness are critical for long-term emergency management. However, persuading decision-makers to engage in prevention and preparedness programs can be difficult (Bullock, 2013).In 2007 the Government of Pakistan established National Disaster Management Authority having three tiers ; National, provincial and district disaster management authorities (Isa, 2015).Natural disasters have been more frequent and intense in recent years, and they are predicted to become more frequent and intense in the coming years as a result of climate change. While natural-hazard threats to humans cannot be entirely removed, they can be minimized by systemic methods such as disaster risk reduction (DRR) approaches, which can be scientifically implemented for reducing vulnerability and the societal resilience by multi-sectorial and multi-dimensional steps. The Disaster Management Authority's aim is to assess disaster risk and disaster management strategies and procedures in Pakistan, given the role of DRR methods in reducing disaster impacts.(Ahmed, 2013). DRR (disaster risk reduction) is the method of shielding populations and individuals' livelihoods and properties from the effects of disasters. Earthquakes, hurricanes, cyclones, droughts, price fluctuations, war, and infectious diseases are examples of natural and human-caused threats. DRR works to minimize the detrimental effects of these occurrences by reducing their scale, weight, and frequency of occurrence, as well as increasing the ability of those who are exposed to these threats to expect, withstand, and rebound from them.(Twigg, 2004).Pakistan has been plagued by a string of natural disasters in recent years. The monsoon rains alone triggered major flooding in 2010, killing over 2,000 people, affecting over 20 million people, putting at least 7.8 million people in danger of starvation, and causing over US$ 16 billion in economic losses. On average, climate-related disasters account for 80% of all disasters (Ahmed, 2013). The severity of natural disasters due to global warming and various environment factors is rising. The impacts are multifaceted in the fields of human lives, injuries, economic losses,

infrastructure damages, public property, and livelihood destruction (Shahid et al., 2014). Since 1990, Pakistan has suffered two droughts, 6 earthquakes, 9 floods and several mudslides, earthquake in 2005, in 2007 heavy rainfall in Sindh and 2010's flood. The government response to disaster relief has been varied in its institutional arrangement and corresponding effectiveness over the decades. While there are an increasing number of international humanitarian agencies operating in the country (Humanitarian Policy Group, 2009). By supplying search and rescue services as well as disaster relief in flood-affected areas, the Pakistan Army plays an important role in flood control. Every year in April, the Flood Commission begins flood-fighting preparations, tracks water discharge at strategically critical barrages and dams, and retains constant contact with all provincial governments in advance, during, and after floods. Flood-fighting plans are prepared regularly by the district, provincial, and federal governments, and prompt distribution of early warnings is ensured by indigenous and modern forms of communication.(Ali, 2015)

2.3. Challenges for Pakistan's Disaster Management Authority

Disaster risk management remains a relatively new concept for majority of the policy makers, UN agencies, donors, civil society organizations and for common people. Pakistan lack mechanisms, institutions, political will, risk analysis and reduction, disaster management plan and application for building codes (Disaster & Authority, n.d.). The foremost issue is the reactive mindset at both policy making and society level. Then later it come the governance issue which include multiplicity of institutions with overlapping or conflicting jurisdiction and poor formal linkage and coordination between key line agencies and departments, led by gaps in legal framework (Maqbool et al., 2017)

Pakistan is especially vulnerable to disasters due to its geography, and urgent attention and concerted efforts to improve its healthcare are needed constructing networks. It faces a number of difficulties in designing and enforcing an appropriate emergency response programme, including economic pressures and political uncertainties as a developing country.((NDMA), 2011-2013). Capacity building of municipal government and citizen understanding are critical in a crisis response environment of autonomous obligations. Workers in Pakistan's local government departments lack the expertise, experience, finances, facilities, and technical competence needed to respond to disasters.((NDMA), 2014). Despite the establishment of District Disaster Management Authorities in Pakistan, whose job is to serve as first responders in the event of a disaster, there is no disaster response capability at

the district level in terms of preparedness. Unfortunately, Pakistan lacks a robust trauma care infrastructure to respond to disasters, and there is a significant gap between pre-hospital and hospital emergency healthcare systems, especially in the country's most vulnerable areas. As a result of a shortage of preparedness and skilled personnel in primary healthcare facilities, tertiary care facilities are required. During crises, they are burdened by large number of patients who are referred without some kind of treatment.(Abdullah, 2015)

Chapter 3

Materials & Methods

3.1. Data Collection

Data for this study was collected by Qualitative method. Hence, for collecting primary form of data semi-structure interviews was conducted. Meanwhile, for secondary form of data literature, governmental records were reviewed.

3.2. Target Population

The Target population in this research is the entire population living in the District of Abbottabad, located in the Khyber Pakhtunkhwa Province in Pakistan.

3.3. Study Area

This study was conducted in District Abbottabad, KP Province in Pakistan. To analyze the policy and implementation gaps for disaster management institutions. This study was based on only the qualitative method because the data was collected through Semi-Structured Interviews.



Figure 3.3-1 Abbottabad in Map

3.4. Sample Size

The sample size of the study comprised of 30 respondents. Including, Civil Administration (5), Police Department (5), Rescue team (district) (5), Local bodies (5), District coordination office (5) and District health department (5).

3.5. Sampling Technique

Stratified Random Sampling technique was used for the selection of sample respondents.

3.6. Research Tool

In this study primary data collection would be formulated on the basis of Stratified Random Sampling, and for the Secondary data literature was reviewed from published articles and reports.

3.6.1. Interview Guideline

For the purpose of this study the interview guide was prepared but questions were asked according to the likes of the respondent. Keeping in view the nature of this study, interview schedule was considered an appropriate tool for data collection.

3.6.2. Content of the Study Tool

The Interview Guideline comprised of 23 open ended questions and took approximately 30-40 minutes for each interview to complete. All the questions were prioritized according to the requirement of the research covering the Institutional capacities, resources and their responses against a disaster. Moreover, the hierarchy in the DDMA while dealing with a Disaster was focused for the clear understanding of their Implementation bodies.

3.7. Data Analysis

The data obtained through semi structured interviews was analyzed by frequency of government official's responses and will be presented in percentages. An interview guide was used to take interviews of Government Officials.

Chapter 4

Results & Discussions

4.1. Results and Discussion

This Chapter consists of the qualitative analysis of research findings conducted in this study. Number of Organizations have come together to tackle disasters, mitigate their impact and try to be able to respond against a disaster in such a way that the damage is reduced to minimal. These organizations emerged at national level further breaking down into provincial and district level organizations. This Analysis focuses on the roles, responsibilities and institutional capacity of Disaster Management Authority in District Abbottabad where number of disasters have occurred in the past. This analysis identified details and methods that are applied during the decision makings of the authorities in terms of a disaster. In this chapter the data demonstrates the results. All the respondents interviewed in this study were asked relevant questions to achieve the previously mentioned objectives of this research.

4.2. Demographic Information

Respondents of this study comprised of government officials from the respective departments: District Health office, Police Department, District Commission Officers, Emergency Response team. All the interviews were conducted within 45 minutes and the participants' responses were recorded willingly. All the obtained information is collected by personal interviews, the respondents were Governmental officials and were in their working environment while giving their responses.

4.2.1. Profile of Respondents

Data presented in this section, contextualizing the study and providing a profile of the respondents. The target Population of this study was 30 people including Civil administration, Police department, rescue team along with district coordination office and District Health department. However, 5 of the respondents from the local bodies is not included because there are no local bodies that are working on the field of disaster management. All the respondents are listed in the government employees thus fulfilling the employment criteria for the team. Respondents comprise of 4 key personnel and lower staff working under their command to manage and mitigate the impacts of disasters. The key respondents are: District Health officer (Dr shah Faisal Khanzada), District Commission Officer (Muhammad Mughis Sanaullah), District Police Officer (Zahoor Babar Afridi) and District Emergency Officer.

4.2.2. Age and Gender Profile

The key respondents are recorded as middle-aged men. The lower bound of 20 employees are recorded majority as male including 2 female respondents. The average age of the respondents is recorded as 35 years.

Respondents	Frequency	Average age	Gender
Key respondents	4	35	Male
Team members	18	37	Male
Team members	2	30	Female

Table 0-1 Age & Gender Profile

4.3. Involved Specialties

This section consists of empirical findings from the fieldwork specialties of the respondent in regard to the field of disaster management. Abbottabad is located in the Khyber Pakhtunkhwa province in the northern Pakistan. It is comprised of hilly areas which is vulnerable to a number of disasters. Due to the variations in the nature of disasters it is necessary to acquire the data related the specialties of the senior key respondents, District Commission Officer, District Health Officer, District Police Officer, District Emergency Officer. Abbottabad being one of the most prevalent areas in the region the impact left behind by disasters is on a large scale. While providing basic information the DCO Muhammad Mughis Sanaullah as head of the DDMA told:

"We are not specialized in the field of disaster management except the guidelines given by the provincial government. There are specialized departments like district health office and rescue 1122. I am only responsible for providing the basic guidelines on how, where and when should we respond depending on the nature of the disaster."

According to the DHO, Dr Shah Faisal Khanzada:

"I have the diploma for Public Health Specialization and the health care providers appointed as my staff are trained by the personnel in the department of Rescue 1122."

While responding the question DPO, Mr. Zahoor Babar Afridi told:

"*As representing the department of Police my team is only trained to protect the supplies and affected areas, proper deployment of population and protection of supply routes, there are no other specialties of our department in the field of disaster management.*"

Being the key respondent as the head of rescue department, DEO

"I have an MBA in HR of Emergency rescue services along with 10 years of experience."

Apart from the senior and key respondents there are no specialties found in the team members of various departments that are responsible to respond against the disasters. Team members of rescue 1122 are trained under the supervision of DEO.

The empirical finding from this side of the study is that the higher staff are trained accordingly due to their rank's requirement and rest of the team members are not so very well trained. Their participation and interests have varied but training them might help improve the departmental condition as a whole.

4.4. Sectoral Coordination's

In order to respond against a disaster, the sectoral coordination's are one of the most important factors. In this section the responses of the respondents were aimed to briefly analyze the coordination mechanism among different organizations appointed as the relevant respondents against a disaster. This section was briefly discussed as cross-sectional questions that resulted into extended interviews with all the key respondents. However, the result of the brief conversations is concluded as:

"There is no specified agenda for our coordination. It completely depends upon the nature of the disaster via which we require different resources for different disasters from different departments."

During the interview with DEO, he told:

"Coordination is our key; we work together like a chain. We even have groups on social media so that the news flow as fast as possible between the coordinated departments."

Due to the lack of a proper institution the sectoral coordination is left upon the nature of the disaster. The severity of the calamity requires the coordination accordingly and help is acquired from the suitable departments.

4.5. Number of Employees and Trained Personnel

This section analyzed the capacity of workers/employees working in the institutions that are responsible for managing the disaster along with the required number of man-force required while dealing with a disaster. On this matter DCO Muhammad Mughis Sanaullah responded:

"There is no separate force appointed in the field of Disaster Management except the emergency response team of rescue '1122', ADC relief and DDM officer. We respond according to the condition and type of disaster."

Furthermore, a detailed discussion was brought upon with the response of DHO where he concluded the response as:

"There is no specific staff appointed by DDMA. However, he identified that minimal number of 100 team members are required to do the job. Whereas 250 team members will respond more effectively and efficiently."

However, the department of police headed by DPO responded:

"The number of man-force depends upon the nature of the catastrophe."

The lower staff among all the responsible departments are mostly unaware about the conditions and are mostly supervised by their respectable heads. The distribution of tasks is divided among the team members according to their area of eligibility and expertise. Dr Shah Faisal Khanzada (DHO) quoted the situation as:

"Right person for the Right Job. Including the young people of the society on grass root level also play an important role along with the participation of women who are working on self enhancement and society development. Their Participation is ensured through several awareness campaigns supervised by the DCO"

Staff among the team of rescue 1122 are trained under the supervision of DEO as he told:

"My staff are all very well trained and they have diplomas either in medical, mechanical or fire and water rescue and we divide these professionals into two teams when a disaster occurs."

Women and young generation are preferred into the response and relief method as they are the first respondents to the affected area. Awareness through mass media, social campaigns and several methods are adopted to provide necessary information to the public.

4.6. Selection Criteria

Organizational leaders are concerned about the effectiveness and performance of their team for that they adopt several methods to help enhance and build their team's potential. So, this portion of the study aims to construct and evaluate the team formation for selecting the team members by their respective heads. On this note all the key respondents agreed to a single statement such as:

"There are no selection criteria as there is no separate force, we hire people according to the nature of the disaster from within our respective department."

However, the lower staff under the command of key respondents told:

"We are sent to the site of impact when a disaster hits, guidelines are provided once the visit on the site is completed. We work on orders and under the supervision of our respective heads."

Due to the lack of proper structural incorporation, there are no specified people working in a specified environment to fight against any kind of disaster. The absence of structure is leaving behind an enormous gap between the targets and actual ground work. As for the selection in rescue 1122 the criteria stated by the DEO is:

"Minimum requirement is FSc with a diploma in Disaster Management or mechanical field. However, we provide 6 months training to our employees."

4.7. Existing and Required Resources

This portion of the study focuses on the resources that are required to run the system in the district. This side of the study will highlight the weaknesses as well as the strengths of the department in terms of resources that are necessary to be acquired by the DDMA. The existing resources were mentioned by the DHO as:

"Budgeting and office cars along with heavy machinery are all provided by the provincial government. However, the specialized machinery and transportation is transferred to the rescue team of the district authorities."

The detailed discussion was however brought upon with DCO on the current resources. According to DCO:

"Most of our responses have been related to the landslides in Galiyat region and heavy snowfall. Specialized machinery shall be allotted for both pre and post disaster situations along with expertise to operate those machines."

DEO was concerned with allocation of expertise and told:

"We need the finest mechanical operators because the district is more vulnerable to such disasters that produces more rubble and waste material."

The emergency department has been given the authority over all the resources including transport, budgeting and trained personnel because the first respondents to any disaster are said to be the rescue team in the district.

4.8. Federal Intervention

At the district level policy cycle and implementation bodies are directly affected by such interventions and interest of federal government. So, in order to have an overview on the policy cycle the discussion with DHO and DEO was short and cut to the end where they both agreed to a similar statement which is:

"After the 18th Amendment there are no direct terms of DDMA with federal Government. However, the provincial bodies are supervised by the federal Government."

The assessment of DCO on this note was recorded as:

"There is no direct contact with federal government but catastrophe like 2005's earthquake requires federal administration's complete intervention and support."

The guidelines are provided by the federal government to the provincial government which is responsible to provide policy cycle as well as the implementation body to the district. This amendment was made under the supervision of NDMA.

4.9. Hierarchy of Roles and Responsibilities

The most important aspect of the study is to evaluate and analyze the roles and responsibility criteria while dealing with a disaster. The hierarchy is to be understood for a better understanding of the working capacity and coordination mechanism among the respective departments for efficient and effective response against a disaster. Several questions have emerged within this particular side of the study related to the policy cycle and implementation bodies of DDMA. On which DCO told:

"Policy cycle is present within the provincial guidelines given to the implementation bodies of each district."

DHO responded as:

"Each task is supervised by the DCO and AC and then every department is supervised by their respective heads. Further, roles and responsibilities are distributed among the team members depending on the nature of the disaster."

In other words, there are no specific roles and responsibilities authorized in the policy cycle except the supervision of DCO. It is left on the implementation bodies to distribute the roles and responsibilities among the members of the DDMA. Lower staff are informed on the basis of the severity of the calamity they look up to the hierarchical order for playing their role in the activities.

4.10. Methods and Techniques

There are certain methods and techniques that are adopted in order to be able to respond against a disaster. This side of the study obtain the information about the methods and techniques that are adopted by the professionals in order to be able to mitigate, prevent and respond to a disaster. According to the key respondents there are no certain techniques and methods except the rehabilitation methods and rescuing, recovering and rebuilding. Again, the nature of the disaster is to be observed and analyzed after which the head of DDMA will authorize a team that will be responsible to deal with the disaster. This side of the study reflects the capacity and coordination among the respective departments for the precise distribution of tasks. Here some of the respondents told:

"Our actions are dependent upon the behavior of the people, most of the people are reluctant and rigid towards our rehabilitation methods."

On this discussion DHO suggested that:

"Methods are to be adopted when the affected population is willingly being treated, time awareness shall be provided for the approval of enhanced methods in the future."

Some of the methods are not suitable for the people and their environment. Lack of proper knowledge about the situation of emerging disasters is one of the biggest hurdles. Many projects were left behind as told by DHO:

"ERA and PERA left the projects after the earthquake of 2005 due to the rigid behavior of the people."

Including the affected population in managing the disaster might be the first step towards enhancing the current situation of disasters in the region.

4.11. Field Office of DDMA

The questionnaire is designed to analyze the Institutional capacity which involves the office work for coordination, planning, decision making, interpreting the disaster condition and storing data in a safe environment. This side of the study is focusing on the official work among the respective departments, during and in the absence of disaster which involves the daily activities of the organization. The discussion was at the short end with all the key respondents which is recorded as:

"Unfortunately, DDMA has no separate office in the district. The guidelines are to keep the official work within other governmental departments that are responsible for managing the disaster."

During the interview with DCO he responded:

"Daily patrolling is a part of our routine, if there is any disturbance in the district the patrolling party is to respond immediately and if needed, backup plans are provided according to the severity of the incidents."

However, DEO responded as:

"No office in the district but DDMO is responsible for ensuring the smooth flow of office work. On our account we hold daily activities as the training of our employees to enhance their specialties."

Lower staff are unknown to the situation and are following the strict guidelines given by their respective heads. Their responses were cut short due to lack of proper knowledge within majority of the employees. However, higher staff in the Hierarchy are concerned about the authority being provided a separate office, one of the respondents concluded the discussion as:

"As professionals this field requires a separate office for a smoother and better workflow."

This issue is one of the major causes behind all the departmental issues. Field work can only be improved if the office work is said to be organized and well structured. The absence of a separate Institutional Office is leading towards many problems including, coordination, distribution, decision making etc. This might be one of the root causes behind all the current problems within the boundaries of the departmental work.

Chapter 5
Conclusion

The team members lack the necessary skills and expertise in the area of emergency management, which is taking place within the hierarchy. Activities of the officials of different departments are coordinated under the supervision of their respective head of department. As a result, a lot of facts and conclusions are overlooked on the groundwork because the team members are unaware. To put it another way, educating the whole team could enhance the institution's overall capability. Due to the lack of a distinct institutional framework, their coordinating system is often disrupted, and aid is obtained based on the severity of the disaster. As a consequence, there is a discrepancy between the Institution's goals and the real job performed. Public participation, on the other hand, can help to change the situation, but adoption of such practices must be ensured by awareness using a variety of sources. The members of the team aren't chosen based on a set of criteria, rather they are called upon based on the severity of the disaster. This form of inadequate facility reduces an organization's capability, particularly when a calamity occurs on short notice and a large number of skilled and qualified staff is needed. The new team members are largely unfamiliar with modernized machinery, which is often absent from the institutions' current mechanism. These factors are often guaranteed where adequate supervision is permitted by federal measures that are not currently related to district authorities. The DCO is the head of the DDMA and is responsible to the regional authorities, so the implementation body is also designed by him. The head doesn't use any precise procedures or tactics, instead relying on the dynamics of the disaster to determine the rules. All of these issues ultimately lead to a more complex problem: the lack of a separate institutional system. The recommendation is to provide the authority with a new office so that they can serve within a separate Institution, resulting in the Institution's capability being expanded within the Abbottabad district.

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Perceived Stress Caused by COVID-19 in University Students (A Case Study of COMSATS University Islamabad Abbottabad Campus)

By

Kaneez Ayesha Abbasi

Bachelors Thesis

DEDICATION

This work is wholeheartedly dedicated to my respected parents. A special feeling of gratitude for my loving parents who have been a source of inspiration and taught me the value of hard work and who supported me emotionally and stuck by my side throughout this journey. Thank you for sticking with me through thick and thin.

ACKNOWLEDGEMENTS

All praise is to Almighty Allah who bestowed upon us a minute portion of His boundless knowledge by virtue of which we were able to accomplish this challenging task.

The person, I would strongly like to acknowledge in my thesis is my supervisor, Mr. Abu Turab khan, Assistant Professor of the department of Development studies at COMSATS University Islamabad, Abbottabad Campus, for his support, counseling, valuable feedback and for always steering me towards the right direction. This thesis would not have been possible without his mentorship. I would also like to acknowledge Mr. Babar Jadoon who helped me throughout the data collection process.

I would also like to extend my appreciation to Sharmeen Gulfam and Captain Tasawar. Thank you for guiding me and providing me with all the useful suggestions. I will forever be grateful to you.

Lastly, I'm fortunate enough to this chance to thank all my friends Zeeshan, Areesha and especially Zahra Malik for their constant support, encouragement, and prayers. Without them this would have not been possible.

Kaneez Ayesha Abbasi

ABSTRACT

The global pandemic has proven to be a challenge for students in many ways. Since the introduction of online learning and the "Stay Home and Stay Safe," Government order was implemented. Many students have seen significant changes in their employment status. The study aims to assess perceived stress and coping strategies during the COVID 19 lockdown, in students studying in Comsats University, Islamabad, Abbottabad Campus. The objectives of the study are to assess the perceived rate of stress, its impact and coping strategies Of the university students of all semesters in regard to COVID 19 lockdown. For this an online survey was done using the perceived stress scale (PSS) and brief coping scale Questionnaire. A total of 89 responses were received from students of COMSATS University Islamabad Abbottabad Campus. Out of 89 responses 54. 5%were male and 45.5 % were female. Majority of participants were between 21-25 years. The result shows that 13.4% students suffer from moderate stress and 77.6%students have high stress and 3.4% from low stress. Maximum of the Participants were found to be having Moderate coping strategies score 36 %, while as only 31% of the Participants had high coping strategy Scores and 33% of the participants had Low coping strategies. COVID-19 has significant adverse impact on students' mental health. The most Frequent coping strategy adopted by them are religious/spiritual coping, acceptance, self-Distraction and active coping. It is suggested that mental health of students should not be neglected during epidemics.

Keywords: *COVID 19, Pandemic, Perceived Stress, Coping Strategies, University, Students, Psychological support.*

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LIST OF ABBREVIATIONS

UN	United Nations
WHO	World Health Organizations
PSS	Perceived Stress Scale
Brief-cope	Brief Cope Strategy for Stress
SPSS	Statistical Package for Social Sciences
IDs	Infectious Diseases

Chapter 1

Introduction

1 Introduction

Pandemics are unlike other disasters due to their broad scope and prolonged, fluctuating timeline. COVID-19 (caused by the SARS-CoV-2 coronavirus) is shaping up to be unlike prior coronavirus infections, impacting multiple organ systems, not just the lungs, causing widespread problems related to blood clotting abnormalities and inflammatory reactions.

In particular, the virus crosses the blood-brain barrier, resulting in myriad neuropsychiatric problems ranging from depression and anxiety to psychotic reactions to delirium and cerebrovascular accidents (strokes) to chronic executive dysfunction. The mental health impact of COVID-19 is of increasing concern. In addition to the direct effects on the brain, the COVID-19 pandemic is causing unprecedented psychological distress, threatening a "crashing wave" of mental health problems (Grant, 2020).

COVID-19, the infection caused by a novel coronavirus detected in December 2019 in Wuhan (Hubei province), is now a pandemic announced by World Health Organization, raising concerns of widespread panic and increasing anxiety in individuals (World Health Organization, 2020). This outbreak has also seen entire cities in China effectively placed under mass quarantine since late January 2020. Brooks et al. (2019) reviewed and reported quarantine could bring "post-traumatic stress symptoms, confusion, and anger. Stressors included longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma." Some researchers also suggested long-lasting effects (Brooks et al., 2019). Besides, previous researches showed that infectious diseases of uncertainty in recent years such as SARS, Ebola, the 2009 and 2010 H1N1 influenza pandemic, Middle East respiratory syndrome and equine influenza all caused negative psychological effects (Bai et al., 2004; Taylor et al., 2008; Wu et al., 2009; Liu et al., 2012; Sprang and Silman, 2013; Rith-Najarian et al., 2019).

1.1 Stress (Psychological Disorder)

Stress is a natural feeling, designed to help you cope in challenging situations. In small amounts it can be good, because it pushes you to work hard and do your best, such as during exams. But if you're feeling very stressed or feel you cannot manage stress, it can lead to mental health problems such as depression and anxiety (National Health Service (NHS), 2020).

The pandemic has exposed our social and economic vulnerabilities, and created widespread uncertainty in society," said Prof Sameen Siddiqi, the CHS department chair. "If left unchecked, stress associated with COVID-19 can lead to distress, and the distress can lead to disease. Three out of four Pakistani adults are suffering from moderate or high levels of stress during this COVID-19 pandemic while nearly one in three are experiencing moderate or severe anxiety, according to the preliminary findings of a mental health study conducted by the Aga Khan University (AKU).

Those already suffering from anxiety and stress are especially vulnerable to advanced illness such as depression and other mental health problems (Lakhdir, (2020). Study finds high level of pandemic stress and anxiety. The news international)

The latest situation created with COVID-19 pandemics has largely changed the life routine of individuals and the way the society in general functions daily. The impact of pandemics on people can be explained using construct of the comfort zone (Brown, 2008). The comfort zone is considered to be our daily routine, where we feel comfortable with situations and where our existing skills and abilities are not pushed to the extent that they might challenge our own physical and psychological wellbeing. This new situation is a relatively big change when it comes to keeping people locked in, creating physical and social distance, working online, and all these may challenge our skills and abilities to cope with these demands. Such situations may also be considered as situations of crisis or disorder of a learned balance and routine. These situations can be characterized by an alteration of a person's psychological homeostasis, lack of coping mechanisms to restore psychological homeostasis, resulting with stress which might cause problems in daily functioning (Flannery & Every, 2000). Problems in daily functioning can result with psychological distress and its symptoms as well. Psychological distress is a general term used to describe unpleasant feelings or emotions that affect a person's functioning. No two people experience events in same way this included stressful events. Likewise, the intensity of this discomfort varies. Psychological distress results with psychological discomfort, which might hinder our daily activities. For example, psychological distress might be manifested through sadness, anxiety, and lack of attention (Ridner, 2004; Mirowsky, & Ross, 2003). Psychological distress may be considered as a continuum, where in one end it's the "complete mental health" and in another end its "mental disorder". It can be thought that we move within this continuum at different situations in our

life. Common sense suggesting that stressful situations move us more towards second end. (Lairize arenliu & Deshamir, 2020).

1.2 Effects of COVID-19 on World Educational Systems/ Academics

The COVID-19 pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities, and colleges. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of COVID-19. As of 24 May 2020, approximately 1.725 billion learners are currently affected due to school closures in response to the pandemic. According to UNICEF (report 2020) monitoring, 153 countries are currently implementing nationwide closures and 24 are implementing local closures, impacting about 98.6 percent of the world's student population (Nicholas Grubic, Shaylea Badovinac and Amer M Johri, 2020).

1.3 COVID in Pakistan

In Pakistan, the first case of COVID-19 appeared on 26th February 2020. The situation Escalated quickly and in order to effectively contain COVID-19, on 23rd March 2020, a complete Lockdown was imposed in the country. This complete lock down was converted into 'smart Lockdown' on 9th May 2020. However, all the education institutions as well as big markets and all Public places were directed to remain closed (Kaleem, 2020).

The continuous spread of the disease, conspiracy theories, myths and blame games, Sensational media reporting of COVID-19, frustration and boredom, implementation of social Lockdown with classmates, friends, and teachers, lack of personal space at home, and family. Financial loss due to lockdown are some of the main risk factors significantly influencing the mental health of university students. There have been reports on the psychological impact of the Epidemic on the general public, healthcare workers and students (Wang et al., 2020; Cao AL 2020)

1.4 COVID-19 and Students

The COVID-19 outbreak has disrupted the lives of many people across the world. The worldwide rapid increase of infected cases has created a sense of uncertainty and anxiety about what is going to happen. It has also caused a tremendous level of stress among the university fraternity, inclusive of students. This stress may lead to unfavorable effects on the learning and psychological health of students. International students staying far from home

are not only worried about their health, safety, and education but they also have a huge number of concerns for the wellbeing of their families.

The COVID-19 pandemic may have a serious impact on the careers of this years' university graduates. They are experiencing major interruptions in teaching and assessment in the final part of their studies. They may likely graduate late due to the postponement of the final examination. Further, the graduates are going to face the severe challenges of the global recession caused by the COVID-19 crisis (Pradeep Sahu (Ed) closure of universities due to COVID. Cureus.2020).

Students are sitting in the same chair all day and staring at a screen for hours on end, watching their professors, completing homework and waiting for COVID-19 test results. This is nothing like the expected college experience, but the result of an increasingly dystopian world (Zoe Erturk, 2020).

1.5 Stress Faced by University Students Due to COVID-19

The COVID-19 pandemic could result in increased psychiatric disorders such as Post-Traumatic Stress, Depression, frustration and Anxiety Disorders, as well as grief-related symptoms (Sélim Benjamin Guessoum, Jonathan Lachal and Marie Rose, 2020).

University students are a vulnerable group and they are experiencing a time of difficult transition (Swick et al., 2002; Larsen and Luna, 2018; Struma and Moghaddam, 2011).

The more common problems faced by university Students are mood disturbances, destructive behaviors, Interpersonal problems and impairment of self-concept (Grayson, 1989). University students often claim to Experience stress, anxiety, symptoms of depression, eating Problems and other psychological issues, which have Significant negative impact on their academic performance and their mental health (Cooley, Toray, Valdez, & Tee, 2007; Tosevski, Milovancevic, & Gajic, 2010).

Stress is the common mental health problems experienced by university students. Being in higher education is associated with many stressors and transitional events, and students fall within the age range when common mental health problems are at their developmental peak. Stress can impair students' academic performance and social functioning, cause significant burden at university, and potentially affect their future career opportunities (Dr. Agnes Yuen-Kwan Lai,US national library of medicine, 2020).

Adverse psychological effects of pandemic usually include confusion, anger, and post-traumatic stress symptoms, and also increase of the prevalence of stress and depressive symptoms in the students. More prolonged quarantine duration increases stress related to infection fears, inadequate supplies, and support. The most common psychological and behavioral reactions on quarantine are irritability, nervousness, frustration, emotional disturbance, sadness, guilt, exhaustion, boredom, insomnia, inadequate information, poor concentration, and indecisiveness, detachment from others, deteriorating work performance, financial problems, and stigma(Aleksandra M Rogowska, Cezary Kuśnierz,Anna Bokszczanin, 2020, Examining Anxiety, Life Satisfaction, General Health, Stress and Coping Styles During COVID-19 Pandemic in Polish Sample of University Students, psychology research and behavior management, volume 13)

1.6 Factors that Triggers Stress (Psychological Disorder)

Due to COVID-19 pandemic and lockdown, Stressful life events, extended home confinement, brutal grief, interfamilial violence, overuse of the Internet and social media are factors that could influence the mental health of university during this period.

The COVID-19 outbreak and lockdown may have multiple consequences on the lives of university students, chronic and acute stress, worry for their families, unexpected bereavements, sudden school break, and home confinement in many countries, increased time of access to the internet and social media, worry for the economic future of their family and country.

Social relations are disrupted. Individuals are staying at home. Wearing masks is becoming more and more common in some countries where people were not used to it, and individuals no longer see each other's facial expressions. The COVID-19 pandemic is having a psychological impact on individuals (Asmundson and Taylor, 2020; Li et al., 2020).

1.7 Coping Strategies used by Students During COVID-19

Coping strategies Refer to the specific efforts, both behavioral and psychological, that the Students are employing to master, tolerate, Reduce, or minimize stressful events during Lockdown.

Coping helps individual to adapt to New and challenging situations and is Important for stabilization. In the times of lockdown and COVID 19 pandemic it Important to adapt

ourselves to the new and Modified routine. '(Deepika Sheroun1, Dapple D Wankhar2, Amita Devrani3, 2020)

Therefore, the present study was carried out to determine the perceived stress levels and students during the COVID-19 pandemic and their coping strategies.

1.8 Problem Statement

COVID-19 has adverse effects on students' mental as well as physical health due to closure of institutions and quarantine it causes stress, anxiety, and total suicidal thoughts. The acute impact seems clear, the long term consequences are unknown and whilst suicidal thoughts have risen substantially, it seems unlikely that will result in death.

The continuous spread of the disease, conspiracy theories, myths and blame games, Sensational media reporting of COVID-19, frustration and boredom, implementation of social Lockdown with classmates, friends, and teachers, lack of personal space at home, and family financially loss due to lockdown are some of the main risk factors significantly influencing the mental health of university students. An additional burden is imposed on students due to change in mode of learning and social interactions. The students of COMSATS face a great deal of Pressures and challenges that pose a variety of physical, social and emotional difficulties. As a result of changing social and emotional picture of university students, they become more vulnerable for developing mental health problems.

No literature is there that indicates the problem and consequences and facilities that contributes to the possible mental health issues (stress).

1.9 Significance of Study

COVID-19 is a global issue but still no study is conducted to discuss the psychological impact of COVID-19 on Pakistani university students. This will help to fill this gap by examining the issues faced by students of COMSATS Abbottabad as well as explore how it impacts the mental health of students regarding their studies. The logic behind choosing this campus is that COMSATS Abbottabad has a major influx of national and international students in its graduate and undergraduate programs yearly with different backgrounds and cultures. As COVID-19 is the pandemic that effects the life of millions of students worldwide the pandemic has shone a spotlight on inequality. University closure and social isolation have effected all students, but particularly those living in poverty. Adding to the damage to their

learning, a mental health crisis is emerging as many students have lost access to services that were offered by universities. This research will help to understand the psychological issues and provide a suitable solution for this.

1.10 Objectives

1. To determine the Prevalence rate of stress among the university students.
2. To explore the impacts of stress on students.
3. To identify the coping strategies used by students to manage distress caused by COVID-19.

1.11 Overview of the Study

The first chapter gives introductory concepts of research title, including the significance of the study, problem statement and objectives. Second chapter includes the relevant existing literature reviewed. It includes the previous knowledge on the factors that triggers the stress in the students due to COVID and the tools to measure the rate of prevalence stress in the students and its impact. Similarly, the commonly used strategies to cope with the stress. The third chapter provides a detailed account of the methodology adopted to conduct the research. It includes the data collection method, tools and how the data was analyzed. The fourth chapter presents the findings in tabular, graphic, and narrative form while also discussing the findings. The last chapter offers conclusion of the study identifies areas for future research.

Chapter 2

Review of Literature and Theoretical Framework

2 Literature Review

This chapter provides a survey of the relevant literature relating to the stress in students due to COVID, factors of the stress and assessment of the coping strategies being used by the students during this pandemic. A brief review of research concerning the stress, factors of the stress and the impact of stress on their social and academic life and how they coping with the stress. This is followed by a revive of a general experiences of the students going through the stress during this pandemic

2.1. Background

'History has shown us that courage can be contagious and hope can take on a life of its own'

-Michelle Obama-

The world has seen outbreaks of Epidemics and pandemic since prehistoric Times – 5000 BC China , 430 BC Plague of Athens , AD 165-180 Antonine Plague , The Black Death 1346-1353 Asia to Europe , American Plague 16th century , to the Present age like Great Plague of London 1665-1666 , Great Plague of Marseille 1720-1723 , Philadelphia yellow fever Epidemic 1793 , Spanish Flu 1918-1920 , Asian Flu: 1957-1958 , SARS pandemic 2003 , H1N1 Swine Flu pandemic: 2009-2010 , West African Ebola epidemic: 2014-2016 , Zika Virus epidemic: 2015-present Day(Jarus O. Twenty worst pandemics in the World, 2020).

COVID Pandemic, which is currently affecting the world with its origin in Wuhan, China started in Dec 2019. Affecting nearly all the countries in the world it is a historic Health emergency condition the world has ever seen which is even worse than world War II. The rate of contagion and patterns of Transmission is threatening the whole mankind. Pandemic is the outbreak of a disease that Occurs over a wide geographic area and Affects an exceptionally high proportion of The population: a pandemic outbreak of a Disease (Deepika, Dapple, Amita Devrani, Lissamma, S Gita, Keka, 2020).

The coronavirus disease 2019 (COVID-19) is a highly infectious respiratory disease caused by severe acute respiratory syndrome-coronavirus-2 (SARS-Cov-2).1 The COVID-19

outbreak has rapidly extended globally from Wuhan (China) in early December of 2019.2 The first confirmed case of COVID-19 was noted on March 4, 2020, in Poland. The Polish government introduced a general state of the epidemic on March 20, 2020. As in other countries, also in Poland, the pandemic outbreak caused many restrictions in moving house, traveling, shopping, taking exercise, accessing critical public services including childcare or education, medical and social services, court, or victim support (Rogowska AM, Kuśnierz C & Bokszczanin A, 2020).

The World Health Organization (WHO) declared the COVID 19 outbreak as sixth public health of emergency Services (SPHEC) on January 30, 2020. This was not the first outbreak of the coronavirus. The previous coronavirus outbreaks include Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) outbreak and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreak. The COVID-19 thought the third outbreak of the coronavirus which affected more than 209 countries including Pakistan. According to the World Health Organization (WHO), total of 1,093,349 confirmed cases with 58,620 mortalities. To date, the number of highest positive cases encountered in USA followed by Italy and Spain (A. Waris U.K. Atta M. Ali, A. Asmat, A. Baset, 2020)

People start a new life in quarantine to be safe. Quarantine life is accompanied by psychological, social and economic consequences, and its implementation requires the support, supervision and Compliance of the country's medical staff. Research conducted to postgraduate students with natural experience of living in quarantine. The research data reached theoretical saturation with interviews. All data is recorded and handwritten and analyzed using the "Van Manen Phenomenology" approach. Data analysis includes four main themes, "developing negative Emotions, confusion and pessimism", "Developing obsessive-compulsive behavior about the body and washing", "concerns about family health", "economic and social care, fear tomorrow will get rid of the virus". Students living in quarantine are very unique Understanding the Complexity of their experiences, beliefs, and attitudes about living in quarantine can provide Comprehensive plans for decision makers, health care professionals, and mental health Professionals (Andria Pragholapati, 2020).

A survey done was by Deepika, Dapple, Amita, Lissamma (June 2020) COVID 19 pandemic has a negative impact on the student's life. With the imposing stress of COVID 19 on the students, the present study is focused on the perceived stress by the BSc Nursing students. Previous studies from UK and India have revealed that nursing students face comparatively

higher level of stress as compared to their counterparts in other colleges. Senturk et al (2018) in Turkey Determined in a descriptive study done on the nursing students that the level of stress faced by them was above moderate level. Therefore, dealing with the hectic Student nursing life the drastic lifestyle changes imposed due to COVID-19 Pandemic can be very challenging.

In Pakistan, the first case of COVID-19 has been confirmed by the Ministry of Health, government of Pakistan on February 26, 2020 in Karachi, Sindh province. On the same day another case confirmed by the Pakistan Federal Ministry of Health in Islamabad. Within fifteen days, the number of total confirmed cases (COVID-19 Positive) reached to twenty (20) out of 471 suspected cases with highest numbers in the Sindh province followed by the Gilgit Baltistan. All of the confirmed cases had recent travel history from Iran, Syria and London. And currently these cases increase by high rate and the situation is worst (Warris, Atta, Baset,2020).

Historically, emergence and re-emergence of large-scale infectious diseases (IDs) have had civilization-altering consequences. In addition to physical problems, a variety of psychosocial problems also emerges mainly due to the lack of sufficient knowledge about these IDs. Initially, the fear, anxiety and hysteria in people are observed that lead to stigma – irrational response to the disease – in the society. Recent examples in this context include stigmatization of HIV/AIDS, SARS, H1N1 and Ebola. Such impulsive reactions reveal the enormous psychological distress consequential of emerging diseases particularly when it is unfamiliar, highly contagious and fatal such as ongoing COVID-19 pandemic (Muhammad Salman, Noman Asif, Zia Ul Mustafa, Tahir, Nauruan, Khalid, Humera , Husnnain , Tanveer, 2020)

In Pakistan, the first case of COVID-19 appeared on 26th February 2020. The situation escalated quickly and in order to effectively contain COVID-19, on 23rd March 2020, a complete lockdown was imposed in the country. This complete lock down was converted into ‘smart lockdown’ on 9th May, 2020. However, all the education institutions as well as big Markets and all public places were directed to remain closed (Kaleem, 2020).

2.2. Stress Among Students due to COVID-19

Stress is a natural feeling, designed to help you cope in challenging situations. In small amounts it can be good, because it pushes you to work hard and do your best, such as during

exams. But if you're feeling very stressed or feel you cannot manage stress, it can lead to mental health problems such as depression and anxiety. It can also affect your academic performance (National health service (NHS), 2020).

Pandemics Not only impact the mortality morbidity but also stagger the economic growth, delays Development. There is social disruption, Political tension and individual behavioral changes, such as fear-induced aversion to Workplaces and other public gathering Places. Pandemic affects the mental Health of individual as a total result. Pandemics like COVID 19, affects the mental health due to numerous reasons. Uncertainty, poor prognosis, economic loss, Insecurity, confusion, emotional isolation, Stigma, school/work closure, inadequate Resources for medical response, and deficient distribution of necessities. As a result, people experience a lot of emotional Disturbances such as stress, insomnia, Frustration, irritability which could lead to Psychiatric disorders like depression, Anxiety, behavioral changes (substance Abuse), also post-traumatic stress disorder in Later stages. Some groups may be more Vulnerable than others to the psychosocial Effects of pandemics. In particular, people Who contract the disease, those at Heightened risk for it (including the elderly, People with compromised immune function, and those living or receiving care in Congregate settings), and people with pre-Existing medical, psychiatric, or substance Use problems are at increased risk for Adverse psychosocial outcomes. The psychological issue can worsen with social distancing and the lockdown Measures taken by administrations as Observed in many countries worldwide (Limacaoco, 2020).

In a Descriptive study titled Anxiety, worry and Perceived stress in the world due to the COVID-19 pandemic, March 2020 which Was conducted in 41 countries, revealed that Significant higher scores of perceived stress Were observed among women, youth, Students, and among those who expressed Concern and those who perceived increased Susceptibility to the COVID-19. (Lee J in an article published in Lancet (Apr 2020) explains the effects of COVID 19 pandemic on students. In a Survey, which included 2111 participants up To age 25 years with a mental illness history In the UK, 83% said the pandemic had made Their conditions worse, 26% said they were Unable to access mental health support; peer Support groups and face-to-face services Have been cancelled, and support by phone Or online can be challenging for some young people (Deepika , Dapple, , Amita Devrani, Lissamma , S Gita, Keka, 2020).

2.3. Pakistani Students and COVID-19

In Pakistan, the first case of COVID-19 appeared on 26th February 2020. The situation Escalated quickly and in order to effectively contain COVID-19, on 23rd March 2020, a complete Lockdown was imposed in the country. This complete lock down was converted into 'smart Lockdown' on 9th May 2020. However, all the education institutions as well as big markets and all Public places were directed to remain closed (Kaleem, 2020).

This situation may hinder university students' studies, disrupt their daily routines and habits, and impact their mental health. Further, home quarantine, physical/spatial Distancing, and other restrictions are likely to have psychological impacts on students and Negatively influence their mental wellbeing.

Public health crises can elicit considerable negative emotions, in line with stress and perceived risk theories. For students, COVID-19 related stressors may include health Concerns emanating from increases in cases, squealed of distancing/isolation strategies, and Disruptions in starting classes and taking exams. These may lead to feelings of Hopelessness, fear of death, and frustration that may grow among students in quarantine (Md. Saiful Islam, Md. Safaet Hossain Sujana,b, Rafia Tasnima,b, Md. Tajuddin Sikdera, Marc N. Potenzac,d,e,f, Jim van Osg, 2020).

The human body is biologically better at reacting to more acute stresses rather than prolonged stress. The hormonal response that helps you react to stress is optimally not turned on all the time. So when it's on for a longer period of time, there can be different kinds of effects on the body. You might be vulnerable to other things (Zoe Erturk, 2020).

The students' ability to cope with the pandemic and to effectively and appropriately regulate their emotions and behavior during the pandemic could have a significant impact on their Long-term academic, social and mental health outcomes. On the other hand, young adults (and even more students) have the potential and resilience resources compared to others. They are not at risk of health complications, they are very informed and competent in Dealing with social media and usually do not need to care for children or parents (Mate, Paola Sturnela, 2020).

Quarantine has negative and potentially prolonged effects on the psychological health of individuals, including severe stress symptoms, confusion, and anger (Brooks et al., 2020). In children and adolescents, periods without school are associated with decreased physical

activity, more screen time, irregular sleep patterns, and less appropriate diets (Wang et al., 2020). There are reciprocal interactions between brain maturation and social environment, and isolation may have an influence on psychiatric disorder onsets during adolescence (Lamblin et al., 2017).

The COVID-19 pandemic is taking place in a new social and technological context: social media, internet, and access to information have never been so developed, easy, and immediate (Sélim, Jonathan, Rahmeth, Emilie, Sevan Minassian, Laelia and Marie, 2020).

Although students are not the primary risk population in the COVID-19 pandemic (such as Infected patients, people in quarantine or healthcare workers), they are at high risk for various mental health problems due to the multiple stressors in this stage of life (Beiter et Al., 2015). In addition, in some cases it has been found that economic and social factors were more strongly and consistently associated with emotional stress during the COVID-19 Pandemic than exposure to viral health risks (Shanahan et al., 2020). The COVID-19. Pandemic brought many additional sources of stress, and all these stressful normative. Transitions are grouped together as COVID-19-related stressors: concerns about one's own Health risks and those of loved ones, abnormally reduced social contacts with others, Separation from friends and family, loss of freedom, closure of universities, online education, Etc. They appear to be associated with feelings of frustration and insecurity and to have Negative effects on mental health and well-being (Cao et al., 2020; Liang et al., 2020; Rith-Najarian et al., 2019; Serafini et al., 2020; Shanahan et al., 2020; Z Odriozola ivin et al., 2009; Wang and Zhao, 2020). Some previous studies pointed to an increased psychological burden during the Pandemic in the samples of young adults: in the representative sample of university students In China, Wang and Zhao (2020) found that their participants experienced higher levels of Anxiety than the general population after the outbreak of COVID -19; in the university Community during the first weeks of confinement in Spain, -Gonzáleza et al. (2020)

Observed higher levels of depression, anxiety and stress among students compared to the University workers; and the study by Kazmi et al (2020) in India found that depression, Anxiety and stress were more common among participants aged 15-35 years.

Limacaoco et al (Apr 2020) In a Descriptive study titled Anxiety, worry and Perceived stress in the world due to the COVID-19 pandemic, March 2020 which was conducted in 41 countries, revealed that significant higher scores of perceived stress were observed among

women, youth, Students, and among those who expressed Concern and those who perceived increased Susceptibility to the COVID-19.

2.4. Stress Coping Strategies Used by Students

Pandemic is adding additional stress to students' lives. As stress levels increase during these difficult times, it is important to ensure that students have access to resources that will provide guidance in reducing stress. How you respond to stress during the COVID-19 pandemic can depend on your background, your social support from family or friends, your financial situation, your health and emotional background, the community you live in, and many other factors. The changes that can happen because of the COVID-19 pandemic and the ways we try to contain the spread of the virus can affect anyone (center for diseases control and prevention, 2020).

Mental health has been severely affected by the COVID-19 infection owing to fear of the pandemic, and various coping strategies are observed, affecting mental health care, human care, psychological crisis control measures, and intervention in COVID-197. Previous research surrounding coping strategies has focused mainly on SARS; however, as COVID-19 is novel, the socio-psychological impacts of COVID-19 are still under investigation. Coping strategies are not only urgently required, but also need to be adapted to university students requiring an emergency strategy to be decided on by policy makers. Coping strategies for COVID-19 cannot be short term. There may be a long time frame, since subsequent waves of COVID may arise. While researchers are continuously working to provide the right medicine, vaccinations and recovery measures, little research has been conducted on the coping strategies of students studying (Mohammed, Hosnain, 2020).

"Coping is the process of Managing demands that are appraised as Taxing or exceeding the resources of the Person." (Shelley E. Taylor, 2003).

Thus, Coping is not a one-time action that someone takes; rather, it is a set of Responses, occurring over time, by which the environment and the person influence Each other's. Coping helps individual to adapt to new and challenging situations and is important for stabilization. In the times of Lockdown and COVID 19 pandemic it Important to adapt ourselves to the new and Modified routine. In the present study Brief Cope was used to assess the Coping Strategies of the students using 'Brief Cope' (Deepika, Dapple D, Amita , Lissamma , S Gita, Keka, 2020).

The students' ability to cope with the pandemic and to effectively and appropriately regulate their emotions and behavior during the pandemic could have a significant impact on their Long-term academic, social and mental health outcomes. On the other hand, young adults (and even more students) have the potential and resilience resources compared to others: They are not at risk of health complications, they are very informed and competent in Dealing with social media and usually do not need to care for children or parents. This was the reason for the research on how the change in lifestyle in the early stages of the Coronavirus pandemic in Croatia would affect university students and whether the corona Crisis and quarantine (lockdown) would increase or decrease their stress (Anit, Matea, Paola, 2020).

The perceived stress levels of students with chronic diseases were significantly higher in the study. Although chronic diseases are among the primary stressors that change the ability of the individual to adapt, several other accompanying factors (treatments, medications, deterioration in family relationships, change in body image, or pain) can cause stress, too. 18 COVID-19 increases the likelihood of morbidity and mortality in individuals with chronic diseases, for this reason, it was an expected result that students with chronic diseases had high stress levels (Fatma and Mert, 2020).

Chapter 3

Materials & Methods

The purpose of research methodology chapter is to introduce the research instruments that we have developed and utilized in the pursuit of our research goals. This chapter presents in detail how evidence in this study was collected and analyzed, as well as to introduce the research strategy and the empirical techniques applied in this research. Describing advantages and disadvantages of each approach and design considering their practical applicability to our research (Mohajan, 2017).

3. Research Methodology

This is a set of systematic technique used in research. This simply means a guide to research and how it is conducted. It describes and analysis methods, throws more light on their limitations and resources, clarify their pre-suppositions and consequences, relating their potentialities to the twilight zone at the frontiers of knowledge. Research methodology indicates the logic of development of the process used to generate theory that is procedural framework within which the research is conducted (Holden, M. T., & Lynch, P, 2004). It provides the principles for organizing, planning, designing, and conducting research. Methodological decisions are determined by the research paradigm that a researcher is following. The research paradigm not only guides the selection of data gathering and analysis methods but also the choice of competing methods of theorizing (Carcary, 2009).

3.1. Importance of Research Methodology

Research is important both in scientific and nonscientific fields. In our life new problems, events, phenomena, and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems that arise. Scientists have to undertake research on them and find their causes, solutions, explanations and applications. Precisely, research assists us to understand nature and natural phenomena. Social research helps find answers to social problems. They explain social phenomena and seek solution to social problems (Creswell, 2017).

And checking their relevance with experts and assessing their reliability by use of statistical tests. (Ochieng, 2009). This approach can be further sub-classified into inferential, experimental and simulation approaches to research.

3.1.1. Research Design

This research will help to understand the psychological issues (mainly stress) and the factors that triggers the stress in students due to COVID 19 and determining the suitable coping strategies used by students during this pandemic. This study used a mixed approach. Data was collected using both qualitative and quantitative method. To help one achieve greater insight into the meaning of the data and to help examine specific hypotheses.

3.1.2. Significance of Mixed Research Design

The reason to select mixed approach for this study is to have an in-depth understanding of the various factors that triggers the stress during COVID, measuring the Prevalence rate of stress in the students (both national and international students), the impact of stress on the life of the students, the coping strategies used the students to handle this situation. This approach will help gain a comprehensive picture of all the underlying factors, impacts of the stress and the strategies being used by the students to cope the stress.

3.2. Study Area

This study was conducted in Comsat university Abbottabad Campus. Comsats Spanning an area of 308 Kanals, holds the grand structure of Abbottabad Campus of CUI. Conveying quality education, contributing effectively to the research base of Pakistan, offering state-of-the-art services to students, assisting. The community in improving its social structure. The campus symbolizes a modern and progressive seat of learning. Abbottabad Campus became functional in July 2001, and the first academic session started in September 2001.

From a modest beginning with three departments and 121 student strength, three undergraduate programs and physical structure comprising old World-War II barracks, emerged the leading institute of the region which has now eleven departments, a student strength of 5500 (47 fold increase), 17 undergraduate programs, 24 graduate programs, a qualified faculty strength of 575 including more than 200 PhDs and 85 modern laboratories. Our physical infrastructure emulates the best educational institutions of country.

COMSATS Abbottabad hosts a major influx of international students in its graduate and undergraduate programmes yearly. The key domination is of Afghani students but apart from that COMSATS Abbottabad also hosts students from Nigeria, Palestine, Kenya and now from China. Currently the population of international students in COMSATS Abbottabad campus

is 297. A total of 13 students are enrolled in graduate programs of MS and PhD from this 5 belong to China, 1 is from Sudan, 6 from Nigeria and 1 from Palestine. The undergraduate programs are hosting around 284 students all of them mainly belong to Afghanistan.

3.3. Population of the Study

The target population in this research was both male and female, students enrolled in the Comsats university **Islamabad** Abbottabad Campus.

3.4. Sampling Size and Techniques

For the purpose of this study the total sample size selected was 88. The target population was divided into two categories male and female respondents both from graduate and undergraduate level.

The total sample size of female students was 48 and that of male was 40. They belonged to the different departments of undergraduate and graduate level. Random sampling technique was used to collect data.

3.5. Data Collection Instruments

Accurate and systematic data collection is critical to conducting scientific research. Data collection instruments allows us to collect information that we want to collect about our study objects. In social science research a direct contact with the respondent is required. It is important to choose appropriate data collection instrument that helps in obtaining the desired information needed from the respondents without crossing any set boundaries. The main part of this research is based on primary data which is why it was important to choose instruments that satisfy the objectives as well as the study design of the research. To match the research approach of the research two data collection instruments are used in the research. To gather Quantitative data a pre-tested psychological questionnaire is used. The tool for measuring the intensity of stress will be perceived stress scale (PSS) and for coping strategies a cope brief questionnaire is used. To fulfill the qualitative part of the research approach semi-structured interviews were conducted from the 10 national and 5 international students.

3.6. Tools of Data Collection

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion. There are many tools used to collect primary data face to face interviews, questionnaires, observation, case studies etc. depending on the research design. In this section the tools used by researcher for data collection are described.

3.6.1. Questionnaire

The data collection tool used to collect data from the students was based on a well-designed, pre-tested questionnaire. The questionnaire was to support the quantitative side of the data collection. The Questionnaire Consisting of 3 sections;

i) Sociodemographic data
ii) Modified Perceived Stress Scale
iii) Modified Brief Coping Strategies Scale

3.6.2. Sociodemographic Data

It consists of 10 questions – Gender, Age, Year of study, Academic Program, Department of The Respondents, Country of Origin: family setting, residing with family or in hostel and Source of Information about COVID 19.

3.6.3. Perceived Stress Scale

The PSS was developed by Sheldon Cohen and its Turkish validity and reliability study was conducted by Eskin et al. The scale consists of 14 items and aims to measure the extent to which certain circumstances in one's life are appraised as stressful. It has two subscales: perceived self-efficacy and perceived stress/strain. Also, it has a 5-point Likert type scoring system. Each item on the scales is scored with options, such as "never = 0 points," "Rarely = 1 point," "sometimes = 2 points, "often = 3 points," and "Always = 4 points." The scores of the seven positive items on the scale are inversed.

The scores of the scale range from 0 to 40, and high scores indicate a high level of stress. Score ranges from 0 -13 would be considered as low stress. Score ranges from 14-26 is considered as moderate stress and score ranges from 27 to 40 is considered as high stress.

The internal reliability coefficient of the items about perceived stress on the scale is 0.84. In the current study, Cronbach's coefficient of the scale was calculated as .86.

The Perceived Stress Scale (PSS) is the Most widely used psychological instrument for measuring the perception of stress. The Scale also includes a number of direct queries about current levels of experienced Stress. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a General nature and hence are relatively free of content specific to any subpopulation Group. The questions in the PSS ask about Feelings and thoughts during the last month.

In each case, respondents are asked how often they felt a certain way. Stress among university students was measured using a previously validated (Cronbach's α coefficient of internal Consistency 0.85) perceived stress scale (PSS). The scale yielded a single score, with High scores indicating higher levels of stress and lower levels indicating lower levels of Stress.

3.6.4. Brief Cope Strategy Scale

The Brief-COPE is a 28 item self-report questionnaire designed to measure effective and ineffective ways to cope with a stressful life event.

"Coping" is defined broadly as an effort used to minimize Distress associated with negative life Experiences. The scale can determine Someone's primary coping styles such as Emotion Focused Coping, Problem Focused Coping, Adaptive Coping and Maladaptive Coping.

The Brief-COPE questionnaire was used to evaluate the coping strategies adopted by the Study participants. It is a validated 28-items self-report questionnaire that measures effective and Ineffective ways to cope with a stressful life event (Carver, 1997). Responses to each item are scored from one (I have not been doing this at all) to four (I have been doing this a lot). The Brief Cope explore the following 14 coping methods: self-distraction, active coping, denial, Substance use, use of emotional support, use of instrumental support, behavioral disengagement, Venting, positive reframing, planning, humor, acceptance, religion and self-blame.

Validity: The Brief-Cope was developed as a short version of the original 60-item COPE scale (Carver et al., 1989), which was theoretically derived based on various Models of coping.

3.6.5. Interview Guide

For the qualitative part of the research interview sessions were held. The face to face semi-structured interviews were conducted from the students of the Comsats University Islamabad Abbottabad Campus. The interview questions were considered appropriate for exploring the rate of stress, factors triggered the stress and for accessing the coping strategies from the students. 13 questions were asked related to the factors that triggers the stress during COVID, impact of stress on their life, and the coping strategies they used for reducing stress. The Interviews were noted down and also audio recorded which were later transcribed. I adopted the semi structured interview in this study; thus, each participant replied to the same research questions, so I can explore more information based on their responses. The interview

questions were related to the changing patterns of their daily life due to which they feel stressed, the strategies they used to cope with the stress and the factors of the stress. The rationale of using this approach is to understand the respondent's point of view rather than generalize about behavior.

3.7. Data Analysis

The data of the study was gathered from the questionnaire and the interviews. A statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 23.0 software (SPSS Inc., Chicago, IL, USA). Categorical variables were expressed as percentages. The Chi-square test was used to compare between perceived stress scales (low, moderate, and high perceived stress). When p-values were less than 0.05, the differences were considered statistically significant. To analyze the data from the questionnaires descriptive study was used. The qualitative data from the interviews was analyzed using thematic analysis. The findings obtained were incorporated into themes.

Chapter 4

Results and Discussions

4. Results

This chapter consists of the quantitative and qualitative analysis of research findings with the aim to prove whether my study has achieved its objectives or not. From last year, COVID is effecting the lives of the people badly and creates a stress on the general public as well as on the mental health of the students. The COVID-19 pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities, and colleges. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of COVID-19. As of 24 May 2020, approximately 1.725 billion learners are currently affected due to school closures in response to the pandemic. According to UNICEF (report 2020) monitoring, 153 countries are currently implementing nationwide closures and 24 are implementing local closures, impacting about 98.6 percent of the world's student population (Nicholas Grubic, Shaylea Badovinac and Amer M Johri, 2020).

The continuous spread of the disease, conspiracy theories, myths and blame games, Sensational media reporting of COVID-19, frustration and boredom, implementation of social Lockdown with classmates, friends, and teachers, lack of personal space at home, and family. Financial loss due to lockdown are some of the main risk factors significantly influencing the mental health of university students (Wang et al., 2020; Cao AL 2020)

Below is the analysis of the data obtained from the students of COMSATS University both male and female students from undergraduate programs as well as the graduate programs. The analysis focuses on the various factor due to which students suffered from stress during COVID and the impact of these issues on the mental health of the students and Coping Strategies these students used to reduce the stress during COVID. For better comprehension of the subject the data is collected from the international students as well.

This chapter is subdivided into 2 sections. The first section shows the analysis of data collected through structured questionnaire from undergraduate and graduate students of different nationalities as well as from separate department to show the variation of factors that trigger stress, scales of stress and Coping Strategies among the students to cope with the stress they confront. In the second section the analysis is of the data collected through semi-structured interviews from the students of COMSATS University focusing on the issues and their coping strategies to reduce the stress level.

4.1. Quantitative Analysis

4.1.1. Sociodemographic characteristics

A total of 88 students responded to the survey. The demographic characteristics of the surveyed population are presented in the table. The students had an average age of 18.292 ± 2.321 years. Most responders were female (54.5%) and (45.5%) respondents were male. The gender of respondents is to ensure that opinions of both male and female respondents are taken into consideration.

The results show a gender gap among the students that female respondents are more affected by the COVID 19 as the stress level among the female respondent is more because they are more vulnerable to the psychological issues.

4.1.2. Cross Tabulation of Gender and Area

Gender		Rural	Urban	Total
Male	count	15	25	40
	%within gender	37.8%	62.5%	100
	%within area	60.0%	39.7%	45.5%
	% of total	17.0%	28.4%	45.5%
Female	count	10	38	48
	% within gender	20. 8%	79. 2	100%
	% within area	40. 0%	60. 3	54.5%
	% of total	11.4%	43.2%	54.5%
Total	count	25	63	88
	% within gender	28. 4%	71.6%	100%
	%within area	100. 8%	100. 8%	100%
	% of total	28.4%	71.6%	

Table 4.1 cross tabulation of gender and area

The table 4.1 shows that the 71.6% students belonging to urban areas are most effected from stress as compared to the 28.4% students of rural areas. Similarly, 43.2%females belong to urban areas and 11.4% belong to rural areas. 28.4% male students belong to urban areas while 17.0% belong to rural areas. Due to home confinement, severity of lockdown and sops, the students from urban areas are mostly more effected by the students.

4.1.3. Cross Tabulation of Gender and Semester

When the cross tabulation for semester and gender was done in statistical package for social science it becomes clear that 10.2% students of 1st semester are suffering from the stress

while students from 3rd and 5th semester are the highest in number that are most effected by the stress followed by the last semester students that are 15.9% out of total 88 respondents.

When Chai-square test was applied on this data to compare between perceived stress scale, it gave the clear insight that values are less than 0.05 that means results are significant. 8% female students are suffering from the stress than that of the male respondents of the first semester i.e. huge 2.3%. Highest number of students are found in 3rd and 5th semester i. e female 11.4% and 12.5% while 8.0 and 6.8% male are suffering from stress. Out of total 88 respondents 54.5% females and 40% males are suffering from stress due to the fact that women are the most vulnerable to the stress in current situations.

	1st	2nd	3rd	4th	5th	6th	7th	8th	Total
Male	2	1	7	4	6	5	8	7	40
% within Gender	5.0%	2.5%	17.5%	10.0%	15.0%	12.5%	20.0%	17.5%	100.0%
% within Department	22.2%	33.3%	41.2%	40.0%	35.3%	83.3%	66.7%	50.0%	45.5%
% of total	2.3%	1.1%	8.0%	4.5%	6.8%	5.7%	9.1%	8.0%	45.5%
Female	7	2	10	6	11	1	4	7	48
% within Gender	14.6%	4.2%	20.8%	12.5%	22.9%	2.1%	8.3%	14.6%	100.0%
% within Department	77.8%	66.7%	58.8%	60.0%	64.7%	16.7%	33.3%	50.0%	54.5%
% of total	8.0%	2.3%	11.4%	6.8%	12.5%	1.1%	4.5%	8.0%	54.5%
Total	9	3	17	10	17	6	12	14	88
% within Gender	10.2%	3.4%	19.3%	11.4%	19.3%	6.8%	13.6%	15.9%	100.0%
% within Department	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of total	10.2%	3.4%	19.3%	11.4%	19.3%	6.8%	13.6%	15.9%	100.0%

Table 4.2 Cross tabulation of gender and Semester

4.1.4. Cross Tabulation of Gender and Department

The table 4.3 shows that how the students of different departments are effected by the stress. The highest number of students are from the development studies are 27% followed by BBA

(18.2%), electrical engineering (15.9%), Biotechnology (14.8), earth sciences (8%), computer science (8%) pharmacy (5.7%) and chemistry (3.4%).

4.1.5. Residency

	Development Studies	Electrical Engineering	Biotechnology	Chemistry	BBA	Pharmacy	Computer Sciences	Earth Sciences	Total
Male	9	11	3	1	5	1	5	5	40
% within Gender	22.5%	27.5%	7.5%	2.5%	12.5%	2.5%	12.5%	12.5%	100.0%
% within Department	37.5%	78.6%	23.1%	33.3%	31.2%	20.0%	83.3%	71.4%	45.5%
% of total	10.2%	12.5%	3.4%	1.1%	5.7%	1.1%	5.7%	5.7%	45.5%
Female	15	3	10	2	11	4	1	2	48
% within Gender	31.2%	6.2%	20.8%	4.2%	22.9%	8.3%	21%	4.2%	100.0%
% within Department	62.5%	21.4%	76.9%	66.7%	68.8%	80.0%	16.7%	28.5%	54.5%
% of total	17.0%	3.4%	11.4%	2.3%	12.5%	4.5%	1.1%	2.3%	54.5%
Total	24	14	13	3	16	5	6	7	88
% within Gender	27.3%	15.9%	14.8%	3.4%	18.2%	5.7%	6.8%	8.0%	100.0%
% within Department	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of total	27.3%	15.9%	14.8%	3.4%	18.2%	5.7%	6.8%	8.0%	100.0%

Table 4.3 Cross tabulation of gender and department

Residency	Percentage
With family	77%
Off campus hostel	15%
On campus hostel	08%

Table 4.4 cross tabulations with residency of respondents

The examination of the tabulated data show in table 4.4 is clear that the most of the students live with the family (77%) followed by off campus hostels (15%) and on campus hostel (08%) that are mostly the foreign students. Living with the family during lockdown causes stress among the students.

4.1.6. Source of Information

Source of information	Percentage
Internet	49
Television	45
Others	06
Total	**100**

Table 4.5 source of information

This table clarify that the mostly used source of information is internet (49%) followed by the television (45%) and other sources like newspaper, peers and hospitals (6%). According to table, mostly students got the information about COVID from internet that might be one of the factor of stress among the students.

4.1.7. Perceived Stress Scale

Perceived stress scale	Never 0	Rarely 1	Sometimes 2	Often 3	Always 4
Change to daily work routine	04(4.54%)	15(17%)	41(46.5)	15(17%)	11(12.5%)
Change to education	19(21.5%)	10(14.7%)	32(36.3%)	23(26.1%)	13(14.7%)
Changes to social routine	12(13.6%)	12(14%)	26(29.5%)	21(23.8%)	19(21.5%)
Uncertainty about long quarantine	09(10%)	13(15%)	27(31%)	19(21.5%)	14(16%)
Risk of becoming infected	20(23%)	04(4.5%)	26(29.5%)	14(16%)	20(22.7%)
Risk of loved ones becoming infected	16(18%)	10(11.3%)	21(24%)	26(29.5%)	15(17%)
Read or heard other talk about the severity and contagious news of COVID	07(8%)	20(23%)	17(19.3%)	25(28.4%)	17(19.3%)
Inability to travel	08(9.0%)	16(18.1%)	16(18%)	21(24%)	35(40%)
In adequate	21(24%)	21(24%)	30(34%)	16(18.1%)	28(32%)

access to reliable information					
Often upset	05(6%)	15(17.0%)	21(24%)	27(31%)	05(6%)
Control irritation	16(18.1%)	07(8%)	26(29.5%)	17(19.3%)	12(14%)
Being angered	06(7%)	08(9.0%)	27(31%)	22(25%)	O8(9.0%)
Being confident	06(7%)	26(29.5	31(35%)	17(19.3%)	18(20.4%)
Stressed or nervous	7(8%)	32(36.3	32(36.3)	27(31%)	30(34.0%)

Table 4.6 Perceived stress scale

According to the responses to the 14 items of the PSS provided by the participants. Through the month preceding the survey, the following trends were observed: 77.3% of the students (fairly or very) often felt nervous and stressed; 77.3% were often angered due to things that happened outside of their control; 49.0% often felt that difficulties were piling up so high that they could not overcome them; 42% often found that they could not cope with all the things that they had to do; 42.2% often felt that they were unable to control the important things in their life; 34.9% were often upset because of something that happened unexpectedly. Conversely, 49.3% of the students often felt confident in their ability to handle personal problems, 30.8% often were able to control irritations in their lives, 26.5% often felt that things were going their way, and 25.6% often felt that they were on top of things. The mean value of the total PSS scores was 22.12 ± 7.33, with an absolute range of 1–40, median of 24, and inter-quartile range of 17–27. The cut off limits for the 25th, 50th, and 75th percentiles were 17, 23, and 27, respectively. In general, 77%of the students had high stress, and 19.3% had moderate stress.

4.1.8. Stress Level

		Frequency	**Percentage**	**Valid percent**
Valid	1.00	3	3.4%	3.4%
	2.00	17	19.3%	19.3%
	3.00	68	77.3 3%	77.3%
Total		**88**	**100%**	**100%**

Table 4.7 stress level

As shown in above tables, Females had a significantly higher percentage of perceived stress level compared to males (22.75 versus 20.27; p-value = 0.003). However, more than half of them had high levels of stress (19.3%) whereas (77.3%) had high stress levels and 3.4% had low stress.

4.1.9. Coping Strategies

Coping score	Number of students	Percentage
28-56(low)	29	33%
Moderate (57-84)	32	36%
High (88-115)	27	31%
Total	**88**	**100%**

Table 4.8 coping score

As depicted in table 4.8, maximum number of the participants were found to be having moderate coping strategies score 36 %, while as only 31% of the participants had high coping strategy scores and 33% of the participants had low coping strategies.

	Maximum	Minimum	Mean	S. D
Maladaptive coping score	13	48	31.5	5.19
Adaptive coping score	4	16	9.44	2.64

Table 4.9 coping strategy style

After analyzing the data in SPSS, on observing the type of coping strategy style as seen in Table 4.9 Maladaptive Coping scores were highest with mean –31.5 (+5.19) and adaptive coping being the least 9.44 (+2.64).

Association of age with coping Strategies was seen, with age group of 17-20 years showing higher scores of coping strategy as against age group of 20-25 yrs.

4.1.10.Coping Strategies Adopted by the Students

Coping Strategies adopted by students	Percentage
Self-distraction	2
Denial	7
Motivational support	14
Informational support	11

Humor	15
Venting	06
Acceptance	12
Religion	30
Self-blaming	03
Total	**100**

Table 4.10 coping strategies adopted by the students

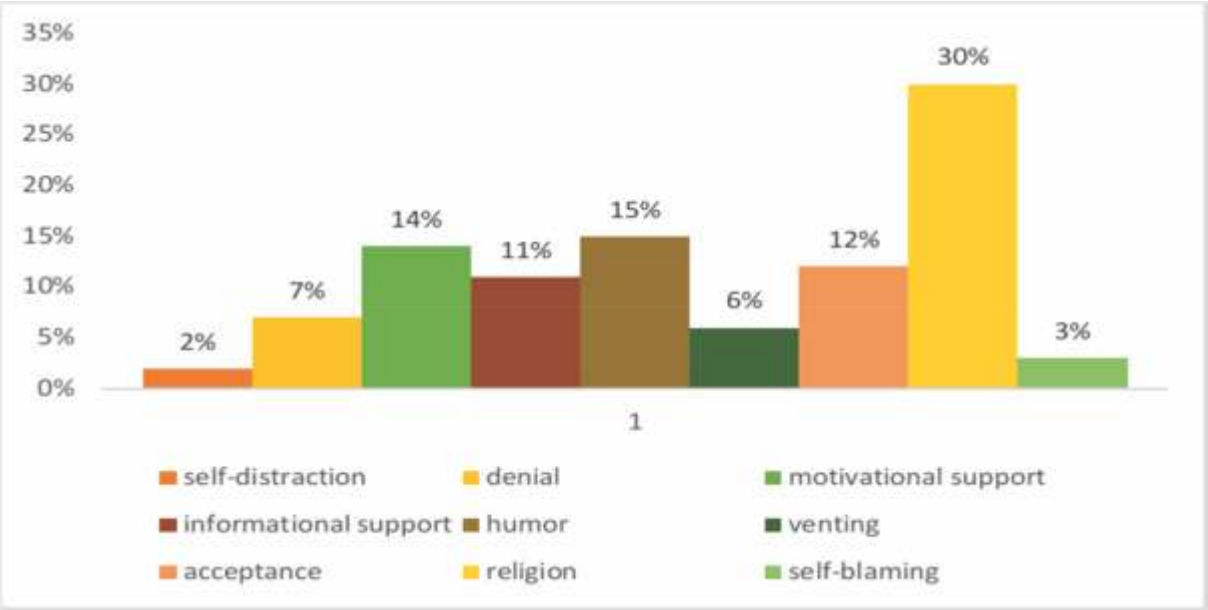

Figure 2: coping strategies adopted by students

Table 4.10 depicts that highest number of students 30% have been trying to find comfort in their religion or spiritual belief followed by the 15% used humor to get themselves comfortable and 14% students got emotional support from the family, friends and peers. 12% students said that they have accepted the situation that they have to live with it and adopt themselves to the changing environment. Only 2% students use self-distraction to cope with the stress.

4.2. Qualitative Analysis

4.2.1 Exploring Students' Emotions and Concerns

The qualitative exploratory question regarding the emotions and concerns of the participants showed diversity. Students reported feeling depressed, stressed, anxious, fearful, angry, and unmotivated. Challenges related to studying, problem solving, and time management were

also reported. One of the respondent who is high achiever were aiming for high scores to secure admission in PHD were worried about his grades and future. One student mentioned that she was diagnosed with anxiety and was currently taking an antidepressant for her symptoms, which helped her feel that she was able to control things, although she believed that she might panic in a given situation.

4.2.2. Insight of the Students' Perception Regarding COVID-19

Data from the study revealed that majority of students mentioned that they face major challenges during COVID that causes stress. They explicitly pointed out that one of the major factor that trigger the stress in University Students is the fear of becoming infected with virus one participant mentioned "We are constantly in a fear of becoming infected with virus as it effects everyone irrespective of discrimination. We are constantly living in a state of fear as their lives are at risk every time. We don't know from where we get caught by the virus and unknowingly effects our loved once."

One of the foreign student also mentioned that he is more worried about his loved ones becoming infected than his own self due to which he is always in stress and nervous. He can't pay attention towards his study due to which he can't be able to score good in exams.

There are many reasons to believe the COVID-19 impacts might be larger for children in poverty and from rural setting," Their families suffer higher rates of infection, and the economic burden disproportionately falls on students, who are less likely to be able to work from home during the pandemic.

4.2.3. Concerns of Students Regarding COVID-19

The only concern of the students regarding COVID is when this situation is going to end and when the vaccine of the virus will be prepared. As COVID effect everyone in the whole world so people are waiting for this situation to end and they get back to their normal routine work. One of the respondent mentioned that" the situation is getting worse day by day due to COVID. We are not just economically and socially disturbed but also psychologically suffering from the perdition. He further said they are not ready to live with this virus forever."

4.2.4. Perception of Students about Paradigm Shift of Education

Students are feeling stressed and anxious about their future firsthand. One of the respondent from first semester of his university life said, "remote learning and the greater dilatancy of the pandemic have badly impacted his university experience. Coronavirus has acutely caused

a lot of stress because there are a lot of problems that present itself with online learning and hybrid learning."

He also mentioned that "we have to deal with all of the uproar that is happening in the world and our aversion about the pandemic. With less support than in-person learning provides, he mentioned his experience with Learn from anywhere results he needed to devote more time to his studies than she typically would. Because of online learning, I have to study a lot more to retain the knowledge compared to before, I'd probably be able to study less and retain it more."

Another respondent mentioned that "We remained sitting in the same chair all day and staring at a screen for hours on end, watching our professors, and waiting for lecture to end. This is nothing like the expected University experience, but the result of an increasingly virtual world.

4.2.5. Discussion

This study examines the level of stress experienced during the COVID-19 outbreak among students at the Comsats campus in Abbottabad. It includes students from 10 faculties and different levels of secondary and higher education. The results are unsurprising given that the total number of confirmed COVID-19 cases in Pakistan during the study period has reached thousands of people at risk of contracting a second coronavirus. Isolation measures have been expanded in terms of time and travel restrictions. The university was closed for the second time. Furthermore, three items on the 5-point Likert scale of perceived stress (in Table 2) were endorsed by more than half of the sample, which are often (fairly or very) felt nervous, stressed, and angered and unable to overcome piled up difficulties. Similar results were recently found in other studies, which evaluated the mental health of university students during COVID-19 in China and Spain and reported anxiety, stress, and depression.

Previous studies regarding mental health during the pandemic have studied general populations in other regions of the world. The outbreak of the virus and the implementation of sudden control measures may cause excessive fear and social isolation, while the lack of infectious disease knowledge can foster widespread panic. The novelty of the virus itself and the unpredictability and uncertainty of when the situation will be entirely controlled has put people under excessive stress, especially when social face-to-face interactions are lost.

Patients infected by the virus or who are suspected to have contracted the illness experience the fear of its potential fatality.

In our study, university students scored significantly higher in terms of levels of stress. This is most likely because university students are emerging adults who pursue identity exploration, work toward independence, and have different roles to fulfil. Other sources of stress include the frequency of and performance on examinations, broad curriculums, parental pressure, loneliness, and worrying about the future. Finally, female students reported significantly higher levels of stress, which may be due to female participants representing the majority of the sample. However, similar results were reported in previous related surveys. High levels of stress among females have been attributed to various factors, including hormonal changes and expression of emotions and thoughts regarding their social situation.

Psychological stress was higher at the beginning of the study period. As a result, stress has shown significant differences in some studies. In addition, online learning is stressful due to academic, financial, and social difficulties. Online trading can be a challenge for students. This includes the student's ability to use technology, adequate home resources to facilitate online learning, or an unstable internet connection. Sudden outbreaks of viruses and control measures can lead to confusing fear and social isolation, and ignorance of the epidemic can trigger widespread panic. The novelty of the virus itself, as well as the uncertainty and uncertainty about when the situation will be completely under control, creates undue stress on people, especially when personal social interactions are lost. Patients infected with the virus or suspected of having the disease fear death. According to this study, students were hit hardest by COVID 19 due to the arrival of freshmen. Adults who want to explore their personality must strive for independence and play a different role. Other causes of stress include frequency and test results, parental pressure, loneliness and fear of the future. Finally, women and international students report much higher stress levels, as high stress levels in women are caused by a variety of factors, including hormonal changes and the expression of emotions, social status, and the expression of thoughts of international stress. Students away from home express concerns about the safety of family members.

Eisenberg et al. (2012) reported two major components namely "avoidant coping" and "approach coping" in the Brief-COPE. As the humor and religion subscales did not exclusively Load on either of the aforementioned factors, they were not included in either. Avoid exclusively is described by the brief-cope subscales of denial, substance use, venting,

behavioral Disengagement, self-distraction, and self-blame. It is not ideal at managing anxiety and has been linked with poorer physical health among those with medical conditions (Eisenberg et al., 2012). On the other hand, approach coping is characterized by the subscales of active coping, positive Reframing, planning, acceptance, seeking emotional support, and seeking informational support. Compared to avoidant coping, it has been associated with better responses to adversity, including Adaptive practical adjustment, better physical health outcomes and more stable emotional Responding. However, Meyer (2001) categorized the strategies measured by the Brief-COPE into Maladaptive coping and adaptive coping. Among other afore-mentioned subscales, religion as well humor was also considered as adaptive coping. Religious coping is defined as

"Religiously Framed Cognitive, emotional, or behavioral responses to stress, encompassing multiple methods and purposes as well as positive and negative dimensions" (Wortmann, 2016).

In the present Study, it is reported that around 30% students have been trying to find comfort in their religion or spiritual beliefs and reported that they have been praying or meditating. All in all, it was encouraging to see that scores for positive/adaptive Coping strategies were greater than avoidant or maladaptive coping in our respondents.

4.2.6. Limitations

There are several limitations to this study. First, the sample is much larger than in previous similar studies, but still smaller. In addition, samples come from one of the best universities in Pakistan and rarely represent the country. Further research can improve research design by recruiting more students from universities, local governments, universities, colleges, etc., under the Ministry of Education. , Anxiety and other mental health problems. In addition, we did not collect information on the infections of participants and affected family members, and the main source of information on COVID 19 among students may be improved in future research. Self-reported questionnaires were used to identify gaps in self-report data (self-analysis, response bias, sampling). Finally, there has been no clinical evaluation for the diagnosis of stress disorders according to the DSM-V (Diagnostic and Statistical Manual of Mental Disorders) criteria. However, our results provide valuable insight into the psychological impact of COVID-19 on Pakistani students.

Chapter 5

Conclusion

Conclusion

The results showed that students experienced severe or moderate stress during the COVID epidemic. The results showed that students experienced severe or moderate stress during the COVID epidemic. Most likely, this is due to mandatory lockouts and online learning. International university students experience more stress from not living with their parents. Online stress management programs are recommended to enhance your strategies for coping with stress and prevent further psychological consequences. Further research is needed to longitudinally evaluate mental disorders such as depression and anxiety and to provide evidence-based mental health interventions in crisis situations. To minimize the growing mental health problems, the government along with the universities, should work together to deliver fast and accurate economy- oriented psychological support for students. Universities must initiate comprehensive online learning so that students can continue to participate in the curriculum. To ensure continued student participation in the curriculum, universities must offer scholarships or student loans to initiate an extensive online education program that can reach students living in remote areas with or without devices with an ISP. In addition, parents should be encouraged to create a friendly and positive family environment for students by providing responses to the epidemic and support for recovery from the mental stress without burdening their future academic and professional careers. Research shows that during an epidemic, mental health cannot be ignored. Educational institutions should work with authorities to promote the measures proposed by the World Health Organization to improve student mental health.

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