ANALYSIS OF PAKISTAN RESPONSE AMID COVID-19 AND WAY FORWARD

CRITICAL APPRAISAL TO NAP AND PPRP FOR COVID-19 PAKISTAN

A Thesis of

Master of Science

by

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DEDICATION

I wish to dedicate this thesis to my parents,

Without their support I would not have been able to continue with my thesis work. They knew my temperament and helped me to get motivated and be always on track, time and gain. They have always remained my source of inspiration and perseverance all through my life.

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Who has been my strong support in all my endeavours

And My Respected Teachers.

ABSTRACT

COVID-19 has proved to be a battle of nerves for the countries. Never have the world thought that it will be dealing with an unconventional enemy like coronavirus that too without any preparedness in place as par the requirement. It is not that the world has never been exposed to any such outbreaks before. According to the WHO it is the sixth Public Health Emergency of International Concern PHEIC. Still lack of preparation means a failure on our part. Countries tend to cope up with the situation on the basis of the available resources and this had a great impact on the type and level of response generation by each country. Developed countries had a more comprehensive and resource modernized response as compared to the developing or under developed. But one thing that is common in relation to this Pandemic specially is that the level of non-preparedness was the same whether it be the developed nation or a resource limited under developed. The concept of dealing with an infectious disease outbreak was considered to be a very rare phenomena, hence no preparation was already in place to fight a pandemic. Secondly, this pandemic has hit both the developed and under developed, the rich and poor equally. Somewhat similar was the case with Pakistan. The way Pakistan responded in the wake of COVID-19 shows two things; lack of prior Preparedness and Infectious Disease Control and Response plan and fragile healthcare system. The already crippled economy of Pakistan had to fight against a pandemic with its meagre resources. The challenge seems to be the toughest. But it still managed to carry out with a decent response. This study is also focused on the in-depth analysis of the response generated by Pakistan against COVID-19 with a special emphasis given to what were the challenges and hurdles faced in response generation. The research method used is Qualitative. The study is based on four tier research and is

divided into two major segments. The first segment deals with the Response analysis done via making use of the Qualitative Content Analysis method. Whereas, the second segment deals with the critical evaluation of the National Action Plan NAP for COVID-19 Pakistan in order to find out the limitations in the plan and lay down recommendations for improvement. The results of the Analysis shows that the Response by Pakistan in the wake of COVID-19 was a decent one. With the already crippled economy Pakistan's measures adapted for the containment of the virus are far reaching and all encompassing. Many good strategies were adapted like smart lockdown. But on the other hand the delayed response in the beginning and absence of a preparedness and response plan for infectious disease outbreak along with the lack of co-ordination among the centre and province are some of the challenges that hindered the response.

Keywords: COVID-19, Response, initiatives, Challenges, Content Analysis, critical appraisal, plans, policies, SOPs, way outs.

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SOP	Standard Operating Procedures
POE	Point of Entries
PPE	Personal Protective Equipment
NAP	National Action Plan
PPRP	Pakistan Preparedness and Response Plan
PHEIC	Public Health Emergency of International Concern
WHO	World Health Organization
NCOC	National Command and Operation Centre
COVID-19	Corona Virus Disease 2019
NCC	National Co-ordination Committee
NDMA	National Disaster Management Authority
SITREP	Situation Reports
NIH	National Institute of Health
CDC	Centre for Disease Prevention & Control
NHSR&C	National Health Service Regulation and Co-ordination
NHEPRN	National Health Emergency Preparedness and Response Network
NHSC	National Health Security Council
GoP	Government of Pakistan
PoE	Point of Entries
DRA	Drug Regulation Authority
SAPM	Special Advisor to Prime Minister
NHSC	National Health Security Council
GHSA	Global Health Security Agenda
MoFA	Ministry of Foreign Affairs
ICRC	International Committee of the Red Cross
BISP	Benazir Income Support Program

CHAPTER 1

INTRODUCTION

1.1 Preamble

Covid-19 has opened up a new Pandora box in front of us. It has exposed our weaknesses. A segment that was taken for granted before, never given its due share of importance or perhaps deemed not that precarious to be considered as a threat worth prepared for. Covid-19 has challenged us by what we must be prepared for. We were preparing in the wrong direction not knowing what the world has kept for us to tackle with in future. Nobody would have thought that he/she will be dealing with a virus and are still doing that. So where does it leads us to? What does it show? It's trying to convey us that we must prepare, by now onwards, for something that is not new but is going to be a risk worth preparing for, because of the fact that not a single community has to deal with it but the complete humanity.

Every hazardous situation requires some preparedness measures at its fore-front. This preparedness takes in response resourcefulness and activities for successful containment of the predicament circumstances/anomaly. The best possible approach is to be already prepared in advance for any such anomaly that is referred to as the proactive approach of disaster risk management, where the risk is already identified and preparedness done in order to be organized well enough for any risk factor. The primitive way was reaction based i.e. response generated after the risk has already surfaced. This contains focus on rescue and relief activities and allocation of all resources in that direction. The case of Pakistan is different, it is working on building

an efficient and effective disaster management system with a proactive approach ever since the 2005 earthquake. It is step wise working on achieving its goal. But there are many challenges in the attainment of this objective. There are many aspects where they require to overall change their perspective and similarly, there are many areas that are left behind and require some serious consideration like for instance the response generation in case of covid 19. Analysis of response generation against covid 19 highlighted some serious drawbacks in the system. One of them, for instance, being the unavailability of an infectious disease control plan in that case, irrespective of the fact that infectious diseases localized outbreaks are not new for Pakistan. The history of Pakistan is filled with a number of such contagious infections occurrences like, hepatitis, measles, crimean-congo flu, dengue, HIV/AIDS, and polio for instance (Jafri, 2020). This shows that there must have been a proper plan already in place for dealing with such infectious disease outbreaks in Pakistan, or be made part of the National Disaster Response Plan NDRP of NDMA. In fact it talks nothing about infectious disease outbreaks be it localized, epidemics or pandemics in current scenario. Plans like National Action Plan NAP for COVID 19 or Pakistan Preparedness & Response Plan for COVID 19 were both made afterwards (Global humanitarian response plan for COVID-19 WHO, 2020). One of the paramount reason for this study is an in- depth analysis of the response generation is wake of covid 19 by Pakistan and simultaneously identifying the research gaps and the resulting challenges faced in the response generation. This also takes us to the second part of the research i.e. critical appraisal of the NAP and PPRP in the context of recommendations for improvement and proposed way-outs.

1.2. From Epidemic to Pandemic; World at the cross roads of COVID-19

The world has witnessed how the year 2020 began with a virus pandemonium and how it is still fighting with the pandemic. The outbreak that begin from Wuhan, china infiltrated in the outside world within the blink of an eye (Neha Tyagi, 2020). With its origin in China's Wuhan city, the earliest possible infection dates back to November 2019, the pandemic already affected 7000 people by the end of January.

From epidemic to pandemic this COVID 19 has left no corner unaffected. It was declared PHEIC and later a Pandemic by WHO on 30th January, 2020 and 11th March, 2020 simultanuously.

1.2.1. What are Pandemics

Pandemics are defined as infectious disease outbreaks all over the globe at the same time. Many times an epidemic when uncontrolled has the potential to convert into a pandemic like in the case of COVID 19. An Outbreak is different from the Pandemic in the context that in an outbreak there are unexpectedly higher numbers of the infections/illnesses that can either be localized i.e. stay in one place or widespread.

The pandemic observant structure of WHO goes from Phase 1 (a low risk) to Phase 6 (a full pandemic) (Robinson, 2020):

- **Phase 1:** The virus is only prevalent in the animals with no animal to human transmission
- **Phase 2:** An animal to human transmission has occurred.
- **Phase 3:** Limited cases of localized infections in human beings. Only human to human infection spread and is specified so no community level outbreaks possible due to its limited capacity.

- **Phase 4:** The virus is spreading with an accelerated speed from one person to another with epidemic rooted at community level.
- **Phase 5:** The viral outbreaks in more than one country but of a specified region as demarcated by the WHO.
- **Phase 6:** The viral outbreak in one or more countries outside the phase 5 region.

Similarly, the death toll in a pandemic is determined by:

- How many individuals have been infected?
- How severe the virus's sickness is (its virulence)
- The number and intensity/capacity of the vulnerable groups, and how successful prevention measures are.

1.2.2. The Virus-why so dangerous

Which one is considered the most dangerous form of an illness? Absolutely the one with no cure at all and in the extreme cases even where the origin is untraceable. The thing with viruses is that they are already dead or to simply put as non-living so when they get their desired atmosphere/host they get activated. So if something is living like bacteria or other microorganisms, killing it is easy but what about non-living pathogenic agents, how will one kill them.

Viruses are tiny particles that may be found nearly anywhere on the planet. They are prevalent in animals, plants, and other living things and can occasionally infect humans. The thing with the viruses is that they require host body for their survival where they multiply and grow in number. The host can be any of them be it humans, an animal or a plant. Some of them can be pathogenic like SARS-CoV-19 for instance with diverse virulence. Viruses are classified into many based on their shapes and

sizes. Each of these consists of genetic material i.e. DNA or RNA, enclosed by a protein based shell. Few of these casings comprises of an additional coating identified as the envelope. They might be spiny or pointed that aids in their attachment to and entry into host cells. They can only replicate in the presence of a host. When a virus enters a host cell, it hijacks the cell by releasing its own genetic material and proteins. It replicates itself via the host's cellular machinery.

Viruses do not leave fossil remnants, making it impossible to track them back in time. Scientists utilise molecular methods with the help of which they analyse and match the DNA and RNA of the viruses in order to look for and identify their origins (Wessner, 2010)

Viruses are of various kinds. A coronavirus, for instance, has a sphere-like form with an RNA-containing helical capsid. It also has an envelope on its surface with crown-like spikes (Eugene, 2015)

Several coronaviruses can infect people, but each one can alter or mutate, resulting in a large number of variations.

Another crucial property of viruses is its easy transmission. A virus thrives solely to replicate itself. They further spread to other host cells as it reproduces. A virus impact and physiognomies are dependent upon its capacity to easily transmit. The more virulent the virus is the easier will be its propagation. Some of the common ways of its transmission are:

i. Touch

ii. Respiratory droplets

iii. When in direct contact with the infected

iv. Through body fluids for example HIV infection via blood

v. By consuming contaminated food and water

vi. Insects for e.g. Mosquitoes transmit the Zika virus from person to person.

1.3. The Epidemiology of SARS-COV-19

1.3.1. Its Origin

Since December 2019, China had been witnessing many instances of an anonymous pneumonia in Wuhan city of Hubei Province. This all happening just a month prior to their Spring Festival. (Nanshan Chen*, 2020) (Penghui Yang, 2020). With the help of metagenomics next-generation sequencing technology on the Broncho alveolar lavage fluid sample collected from the Wuhan Seafood Market, this unique trait of coronavirus was identified and isolated (Penghui Yang, 2020) (Vivek Kumar, 2020). Later on February 11 ,2020 this virus was categorized by the International Committee on Taxonomy of Viruses (ICTV) as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 the seventh among the members of the coronaviruses after severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV), can cause illness in human beings. (Penghui Yang, 2020) (Fan Wu Su Zhao, 2020)

The COVID 19 Pandemic was labelled as Public Health Emergency of International concern PHEIC by the World Health Organization WHO, on 30th January 2020 (Sharaf E.D.Mahmoud, 2021). The internationally accepted terminology used for this unique coronavirus contagion resultant of SARS-CoV-2 is Coronavirus disease 2019 (COVID-19) (Nazim Hussain, 2020). By the time 9th March, 2020, the statistics grew in number to as much as an aggregate of 80,905 cases confirmed from lab-testing along

with 3123 deaths, all documented in China, with an accelerated spread in the rest of the world. (World Health Organization WHO, 2020)

China has placed COVID-19 under the Class B contagious infections in accordance with the People's Republic of China's law on infectious disease prevention and control, and has implemented preventative and control methods in line with Class A contagious infections. (Mengyang Li 1, et al., 2020) (Yuan Yu, 2020).The extraordinary rise in COVID-19 infections, which too not just confined to China alone but also the rest of the world, has voiced concern for community health officials to counter to a comparatively new and resurfacing infections. To defeat COVID-19 and other infectious illnesses, a comprehensive approach that includes observation, identification, medical cure, research and analysis, and vaccine and medication improvement is urgently required (Penghui Yang, 2020).

1.3.2. Historical Perspective

Coronaviruses are not a novel type of pathogenic disease. In 1937, the first coronavirus was isolated from hens. The first humanoid coronaviruses were discovered in the mid-1960s.

Coronaviruses are a much wider category of zoonotic viruses that causes numerous infections similar to mild common flu/cold and in severe cases might lead to lung disorders (Siegel, 2018). Being zoonotic means they are transferrable from animals to humans. It’s been stated that there are many types of coronaviruses prevalent in animals but they don’t infect human beings, COVID 19 is unique in this sense as it infects humans (Wessner, 2010).

The early indications of COVID-19 resembles that of common cold like for instance temperature, desiccated coughing, chest tightness, and difficulty breathing (Vince

Mcleod, 2020). Patients may develop pneumonia and other respiratory complications that in extreme scenarios might lead to fatality owing to multiple organ failure. COVID-19 contamination is transmitted to humans by droplets released by infected person while coughing and sneezing i.e. relating to the respiratory system. In accordance with the existing records, the time period amid the contact as well as symptoms appearance is roughly around 2 to 14 days, keeping a usual of five days.

There had been two prominent Coronaviridae epidemics prior to COVID-19. Severe Acute Respiratory Syndrome (SARS-CoV) discovered in 2002 and is said to be transferred from civet cats to humans. The second one is Middle East Respiratory Syndrome (MERS-CoV) discovered in 2012 that transmitted via camels to human beings (Vince Mcleod, 2020).

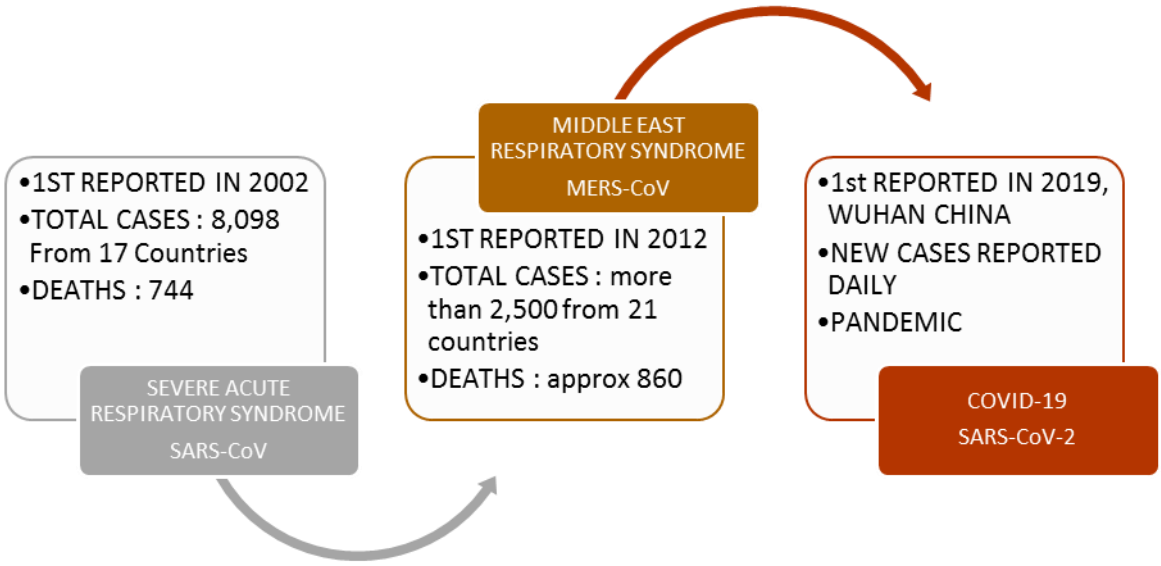

Figure 1.1 1: The Three Corona Virus Epidemics and Pandemic statistics

1.3.3. Aetiology

Coronaviruses are members of the Coronaviridae family. Coronaviridae is an encapsulated, single-stranded, positive-sense RNA virus family. The genome is 30Kb in length and is made up of a 5'-terminal noncoding region and a -3' non coding region, along with a **s,e,m and n region** encoding for **spike glycoprotein** (**S protein**),**envelope protein (E protein**), **membrane protein (M protein**), and the **nucleocapsid protein (N protein**). The structural protein S is the protein responsible for the viruses to penetrate in the vulnerable host cells that they are going to infect. They have the ability to connect specifically to the host receptor cell. The M and E proteins are involved in viral envelope development, whereas the N protein is important in virus assembly (Rabeea Siddique, 2021)(Alimuddin Zumla, 2016).

This family of coronaviruses can be split into four types based on the structure of their genome and phylogenetic study of flaviviruses: α, β, γ, and δ. The α and β kinds mostly attack humans and mammals, whereas coronaviruses of the γ and δ primarily infect birds. SARS-CoV-2 is a new coronavirus of the genus; it is round or oval in form, with a diameter of 60–140nm and a crown-shaped appearance under electron microscopy (C.N Stanley et al, 2020) (Penghui Yang, 2020). Aside from SARS-CoV-2, human coronaviruses 229E (HCoV-229E), OC43 (HCoV-OC43), NL63 (HCoV-NL63), HKU1 (HCoVHKU1), SARS-CoV, and MERS-CoV may all infect humans (Na Zhu, 2020).

A protein sequence study was done directed on the investigation of the amino acid sequences similarity of the seven intact non-structural proteins of both SARS-CoV and SARS-CoV-2, and it came out to be 94.6%. This much similarity shows that both the viruses may belong to the same group of species (Penghui Yang, 2020). The genomes

of SARS-CoV-2 and bat SARS-like coronaviruses (Bat-CoV (RaTG13)) are 96 percent identical.

Coronaviruses are non-resistant to high temperatures and excessive radiations (sunlight, UV). They may be preserved at -80°C for several years and rendered inoperative at 56°C for 30 minutes (one of the frequently used technique to make SARS-CoV-2 dormant in the laboratory) (Penghui Yang, 2020).

1.3.4. Pathogenicity (Virulence) & Causative Agents of Covid-19

Coronavirus might well infect the respiratory tract of humans as well as the intestines of animals. Virus infects the host by the presence of receptors on the outer most layer of its cell membrane. The S protein on the coronavirus surface has the ability to detect and then attach to the host cell receptor before entering the cell via clathrin-mediated endocytosis (Wang, 2008). To finish the invasion, various coronaviruses might employ different cell receptors. For example, the HCoV-229E receptor is aminopeptidase N (also known as CD13), the SARS-CoV receptor is ACE2,7, and the MERS-CoV receptor is DPP4 (also known as CD26) (Keiji kuba, 2005). SARS-CoV and MERS-CoV can both cause SARS and MERS. Both produced major epidemics where death rate was also high (Lu, 2013)

The COVID-19 pathogenicity analysis indicated that the over activation of T cell, coupled with increased Th17 as well as elevated cytotoxicity of CD8 T cells, causes an acute immunological damage (Penghui Yang, 2020). Individuals are typically prone to SARS-CoV-2, which takes 1 to 14 days of time period to fully mature i.e. show symptoms, keeping an average of 3 to7 days. COVID-19 patients happens to be chief source of contagion, although asymptomatic people may also be the source of infection (Muhammad Saqlain et al, 2020). Furthermore, a research found SARS-CoV-2 nucleic

acid in the faeces and urine of COVID-19 patients, indicating that SARS-CoV-2 may be transferred through the digestive system (Nanshan Chen*, 2020).

1.3.5. Identification/Isolation and Prognosis

Owing to the effective isolation and genome sequencing of the virus i.e. SARS-CoV-2, the existing identification and analysis is based primarily on quantitative reverse transcriptase polymerase chain reaction, commonly known as PCR testing kits, to identify the SARS-CoV-2 nucleic acid. The respiratory specimens or blood samples shows that the new coronavirus is particularly similar to the already known SARS-CoV-2 coronavirus. This striking similarity can further benefit in diagnosis and prognosis of the SARS-CoV-2 infection (National Health Comission of the People's Republic of China NHC, 2020) Recently, colloidal gold and enzyme-linked immunosorbent technologies have been used to effectively develop and use immunoglobulin M (IgM) and IgG antibody detection reagents, as well as SARS-CoV-2 antigen detection reagents (Penghui Yang, 2020).

1.3.6. Inhibition and Control

The central themes of infectious disease prevention and control involves elimination of the infection source, blocking the spreading route thus ultimately safeguarding the vulnerable ones. COVID-19 spreads mostly via air droplets and contact. Individual preventive measures are necessary for restricting the spread of COVID-19. Vaccination and immunization are the perfect means of protecting the vulnerable ones. To date, all the vaccines available have made use of the several biotechnological methods like mRNA Nano vaccine technology, recombinant or inactivated vaccine technology, and DNA vaccine technology (Penghui Yang, 2020).

1.3.7. Initial Means of Cure

1. **Indicative management and Appropriate therapy**

Currently indicative management and appropriate therapy is used to treat COVID-19 patients. This includes the care from rudimentary disorders, symptomatic respite, ensure safety of the vital organs, effective diagnosis plus control of co-morbidities and mechanical ventilation as per requirement. Added emphasis must be placed on preserving the homeostasis of the body, as well as the internal environment's constancy. Glucocorticoids can also be administered for a brief time period depending on the severity of the shortness of breath. (Zhe Xu et al, 2020)

2. **Chinese medicine treatment**

The illness is caused by a virus. The treatment depends on the level of the infection i.e. early, intermediate, severe, and recovery. So far, as a minimum 54 preventative, surveillance, and interventionist therapeutic trials utilising a range of primitive Chinese and Western medications have been filed in the national clinical trial registration centre, including Lianhua Qingwen capsule, chloroquine, darunavir/corbistar, and others (Penghui Yang, 2020).

2. **Social distancing and maintaining the SOPs.**

3. **Vaccination and immunization.**

1.4. Reasons for the Selection of the Topic

The biggest need of our times is to deal with corona virus in every possible way and every possible aspect. As a developing country, with the mega issues of weak economy, poverty, terrorism, sectarian conflicts etc. covid 19 has hit us hard and made us realize that how weak our health sector is and in what ways changes are to be brought for efficient working of the machinery. It is now our foremost responsibility

to strengthen our health care system and facilities not just in terms of capacity but also in terms of generating better response and incorporating all the relevant fields.

We cannot sit and relax thinking that the threat has been contained completely. As a matter of fact it's still prevalent. The future is uncertain. In such a scenario the best possible option is that to look for the weaknesses and strengthen the system where it's needed. That's only possible when proper analysis of the health sector response against covid 19 is conducted.

It's high time to take some bold steps and come up with best suited action plans to deal with health emergencies that were not taken seriously before. Now is the era of biohazards and biochemical warfare where we have to deal with biological weapons that require us to make our health sector more resilient and act well as a frontline force in fighting with such emergencies.

This pandemic has made the nations realize that how weak and fragile their systems are when it comes to tackling a disease scenario. No one ever imagined that a pandemic will stop the functioning of the whole world, such was and is the force of the covid 19. Mega economies crippled to the pandemic in worst possible way. This shows that we need to take pandemics as a high risk factor with larger potency and higher sensitivity and fortify our health sector and medical facilities and staff to deal with such hazards.

1.5. Objectives of the Study

- The aim is to systematically describe the response generation in the wake of covid 19 by Pakistan.
- The basic objectives of the study are:

1. To analyse Pakistan's response to COVID 19
2. To identify the challenges faced and offer recommendations

3. The critical appraisal of NAP and PPRP
4. Recommendations for the upgradation of NAP and proposed way outs

1.6. The Response to COVID-19 in general

The successful containment of any disaster situation is dependent on an efficient and effective response generation. All the activities pertaining to a disaster are included in response and response activities. The literal meaning of response is the protection of people lives and assets at the time of a disaster. The basic aim of the response is to protect the people form the destruction's way. What must be the sequence of action in wake of a disaster is the ultimate objective of response. This includes both pre and post activities i.e. prior to the onset of the disaster/hazard which includes preparedness, containment, mitigation, response plans etc. and after the onset of the hazard i.e. rescue, relief, evacuation, rehabilitation and reconstruction. A well prepared and strengthened response is the basis for mitigation and control of any crisis condition. By response we mean the sequence of actions expected to take place at the onset of the crisis.

Response comes 3rd in the four phases of disaster management cycle (Special Report on Emergency in Ontario-Pandemic Response, 2020) i.e.

1. Mitigation
2. Preparedness
3. Response
4. Recovery

The world is fast shifting from disaster risk management to risk reduction where the response activities are focused on pre risk containment activities. The aim is to reduce the risk prior to its onset via best possible preparedness and response initiatives than to manage the risk upon its onset i.e. from reactive to proactive. The same was the

requirement of COVID 19 where lack of preparedness and mitigation was the sole reason for the situation getting out of hand. The initial response was slow, unplanned and lacked any sense of direction. Many countries had no preparedness and response plans for dealing with infectious diseases outbreak like Pakistan. Pandemics were considered a very rare case so no serious efforts were in place to deal with such scenarios. Countries were completely unprepared for the virus, and the thing with viruses is that they spread with an unprecedented speed so the best possible solution is containment and isolation, that was missing at that time. Countries must have prepared upon its very first onset in the Wuhan city of China in 2019. Instead they waited for the situation to get worsen until it was declared a pandemic by WHO on March 11, 2020.

1.6.1. The response by the world

1.6.1.1. Introduction

COVID 19 was declared a PHEIC and a Pandemic by WHO on January 30, 2020 and March 11, 2020 simultaneously (Alfonso J. Rodriguez-Morales1, 2020).Till date there had been 6 PHEIC assertions, all after 2009 (David S. Hui et al, 2020). That includes:

- The 2009 H1NI (swine flu) pandemic
- The 2014 polio
- The 2014 Ebola outbreak of the Western Africa
- The 2015-16 Zika Virus epidemic
- The 2018-20 Kivu Ebola epidemic
- The ongoing SARS-COV-19 (coronavirus) pandemic

1.6.1.2. World Response in General

The year 2020 happened to be a challenge for the world. They were introduced to a pandemic, a hazard never expected with the probability of once in a million years or maybe more. The fight with the invisible enemy is the hardest that too when is an immortal one. Till date world has faced 3 waves of COVID 19 with an eminent threat of a fourth wave of the delta variant. The time of the onset of these waves and surges differed from region to region. These waves are owing to the variants of covid 19 that causes them. The thing with viruses is that they continuously mutate thus giving rise to new variants and the issue with these variants is that the treatment already in use might not be effective against these variants and so resulting in the rise of the cases and death toll respectively. Till date there are four variants of COVID-19 (What You Need to Know about Variants, 2021).

I. Alpha (origin US & UK)
II. Beta (origin US & South Africa)
III. Gamma (origin US, Brazil, Japan)
IV. Delta (India)

The world response towards covid 19 was very chaotic and an unplanned one. Countries were acting directionless with continuous surge in the cases day by day, so as the death toll was increasing. Absence of specialized equipment plus dearth of knowledge and specialists of the field were one of the major reason for the delayed response generation. Lack of preparedness played a very major role in containment of the virus. Countries with effective preparedness and response plans for dealing with the infectious disease outbreak are the one with comparatively better response in relation to the ones with no such plan in place like for instance Pakistan. Still irrespective of the presence of the plan countries suffered a lot in case of covid 19

because of the fact that a virus attack was considered a very rare phenomenon. Countries never thought that they would be dealing with a virus and similarly a viral outbreak was considered a very rare occurring resulting into very minimal preparation in this regard. This covid 19 made the nations realize the intensity of such outbreaks and pandemics.

Another crucial factor in response generation is the strengthened critical healthcare response facilities. Countries with best equipped health sector with required resources were more capable to cope with COVID 19. Mega economies like China, USA or Europe in that case had a well settled health sector to fight covid 19.

The response involves complete range of activities. No one factor is responsible for efficient response generation. A holistic multi-faceted response generation is the ultimate means to successful containment of the virus. The case of china can be taken as an example in this regard.

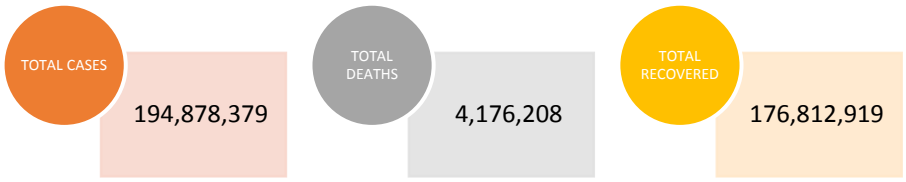

Figure 1.2 1: COVID-19 World Statistics **(Worldometer, n.d.)**

Currently the response is focused on two aspects i.e. maximum vaccination outreach and coexistence with the virus. This virus has given us two options either to live with it with peace, dignity and positive capacity enhancements or surrender to the virus leading to chaos and destruction.

1.6.2. The Response by Pakistan

The response by Pakistan on the onset of the COVID-19 in the country was a mix blend of both positive and negative outcomes. The very first COVID-19 infection in Pakistan was documented on February 26, 2020 (Meesha Iqbal, 2020). These initial cases were that of having travel history. This shows that the cases were imported within the country. Many reasons can be attributed to this fact, one being lack of travel restrictions and proper scrutiny at airports. The response was fast enough only after the virus infiltrated from outside. The borders of Pakistan frolicked a central part in this penetration especially the Taftan-Iran border. Pakistan's distinctive geostrategic location posed to be a challenge, as because of the fact that it's positioned between two epicentres of COVID-19 namely China and Iran (News, 2020). The very first step taken by Pakistan after the virus been declared as PHEIC by WHO, was the formulation of the PPRP for COVID-19. The sole purpose of the plan is to keep a check on airports and includes guidelines and SOPS for the transnational air travel and planes entering Pakistan in order to curtail any further virus infiltration. Afterwards, many other response initiatives were taken according to the situational analysis like:

- Activation of the concerned authorities and ministries like Ministry Of National Health Services Regulations and coordination (NHSRC) and National Health Emergency Preparedness and Response Network (NHEPRN).
- Formulation and activation of National Command and Operations centre NCOC
- Formulation of National Co-ordination Committee on coronavirus headed by special advisor to Prime Minister SAPM
- Lockdown initiation both smart and partial lockdowns

- Quarantine facilitation
- Suspension of both international and domestic flights
- Closure of borders
- Ban on mass gatherings of all types and forms
- Social distancing
- Work from home
- Social protection programs
- Prime minister relief fund
- Mandatory thermal screenings at all point of entries
- Formulation of NAP for COVID 19 and many more such initiatives.

Efficient response requires both government and people's participation. No measure is successful if it's not initiated by the government and implemented upon by the community. It requires community's active participation. Same is the case with COVID 19. Things can get out of hand if authorities don't act wisely and similarly a hazard can turn into a catastrophe if the community don't respond to the government initiatives and protocols.

The response was limited because of many factors, some of them are highlighted below:

- Inadequate resources
- Absence of infectious disease outbreak preparedness and response plan
- Fragile healthcare system
- Limited testing capacity and kits availability
- Limited to non-co-ordination between centre and provincial level
- Lack of monitoring and evaluation
- Nonexistence of accountability

- Unavailability of PPE
- Limited healthcare facilities (hospitals, clinics etc.)

This research is also focused on how Pakistan responded upon the advent of COVID 19. The response is studied in four categories i.e.

1. The response by the government
2. Pakistan's health sector response
3. The initiatives taken by the NCOC, and
4. The community participation in the response activities

Besides this, the existing response mechanism at all tiers was also studied. This all gave a complete picture of what the response was and what were the shortcomings. An in-depth analysis gave a complete picture of what has been done. With such meagre resources Pakistan was able to come up with a better response well enough to deal with the crisis irrespective of the steeplechases and technical hitches.

1.7. Research gap and Challenges faced during Response generation

The study of Pakistan response to COVID 19 identified many challenges that were faced by them. One of the basic reason of the comprehensive study of the response generation was to identify and address these challenges as much as possible. With the help of this study a generalized perspective was generated which aided in the identification and isolation of the challenges faced and so relevant suggestions and recommendations were given. Every country, irrespective of its size and shape, faces many challenges during the response activities. It's only that the severity and intensity is different that is dependent primarily on its economic condition. Same was the case with Pakistan, it was not an exception. Things were much more brutal for Pakistan to handle as because of the fact that it comes in the category of developing countries

that's struggling hard in maintaining its economy to a certain level. Issues like COVID 19 pandemic add on the burden upon the already crippled economy of Pakistan. So dealing with such crisis reveals the already prevalent challenges in the system. Here some of the most profound challenges faced during COVID 19 response generation are discussed with relevant facts and figures.

Weak healthcare system with meagre resources happens to be the most perpetual issue of Pakistan. Pakistan only spends 2.6% of its GDP on health sector where the WHO benchmark is at least 6%. Whereas that of US is 17.6%, such big is the gap between both the countries that clearly states how fragile our healthcare system is. Similarly WHO standard is 1:1000 medic vs patient proportion which is 1:1300 in Pakistan, similarly doctor to nurse ratio standard is 1:4 that in Pakistan is 1:2.7.5 (Feroz Khan, 2021) (Zaidi, 2020). With such limited healthcare workforce coupled with limited number of medical equipment and healthcare facilities, the vulnerability of Pakistan multiplies and so was its effects seen at the time of response generation against COVID 19.

Another very major challenge faced by the government of Pakistan in response generation was the absence of an already existent infectious disease outbreak emergency preparedness and response plan. In the absence of this plan the initial response activities were directionless. Things went at hoc, nobody knew what is to be done and how. If their happened to be a plan already in place things would have been much different than now, especially that infiltration of the virus from outside would have been stopped in the very first instance. Lack of a plan made response slow, directionless and delayed in the beginning. Amid the crisis there was no single organization ready to intervene, with set protocols, in order to deal with the situation. The concept of dealing with the biohazards was new and lack of preparedness could

be seen in this regard. The 1958's Epidemic Diseases Act (The West Pakistan act to amalgamate the law involving the avoidance of the outbreak of hazardous epidemic infections in the Province of the West Pakistan). Many organizations and ministries were activated on the same time leading to decentralization of the issue. Although NDMA exists but due to the lack of a health emergency response plan in specific lead to a chaotic situation where no one knew what has to be done and who are the responsible agencies. Things went ad hoc due to lack of policy and plan.

Decentralized centre and province along with absence of designated roles and responsibilities, was the other major challenge faced in the response generation. The 18th Amendment and Devolution of Power resulted in the healthcare sector becoming a subject solely under the jurisdiction of the provincial government, having the autonomy on its decisions with limited to no control of the centre. The inadequacy of this happened to be in the form of dearth of centralized policy formulation at federal level. This was the principal challenge faced throughout the administration of the ongoing Covid-19 pandemic. This devolution of power has increased the distance between the centre and province. Where on one hand it has made provinces autonomous in its decisions there on other hand it has decentralized all the policies and actions. Nothing is coherent and streamlined with the centre and others.

Another major challenge faced was the lack of strict adherence to the SOPs by some of the community fragments. This can be either because of the lack of awareness or false information.

Besides these many other challenges has been identified and discussed in the methodology part.

1.8. Scope of the Study

The study regarding COVID-19 is something new, as the world never knew that it will be dealing with a novel Pandemic. As a matter of fact, the world has not experienced such a large scale pandemic in the recent years, hence the measures that are carried out are miniscule and appears somewhat deficient. It is pertinent to mention here that there is no thorough conjecture that will detail the results this pandemic will provide. This constant viral evolution has led to plethora of various mutants of the progenitor virus. From analysis of data collected across the globe, there is dearth of research yet on the pathophysiology of Coronavirus. Therefore the present analysis has been planned to provide baseline data for the competent response generation for the authorities of Pakistan. In addition, challenges faced in the response generation by the world specifically Pakistan will also be addressed. The results of the current study will supplement the literature of Pakistan and will be useful for future research endeavours. Fighting with an unknown enemy is the hardest that too when the encounter is least probable. Beginning with the year 2020 till now, world has been fighting with an unconventional enemy that too without any advanced strategies and measures already in place. Things are evolving as per requirement, the way the virus express itself. Lack of knowledge and research done in this domain has cost us a lot. Now is the time for taking some bold initiatives in the research filed in order to better tackle the situation. This research is also focused on an in depth analysis of the response activities performed by the government of Pakistan which will help us in understanding the complete scenario and thus taking steps in the right direction so as to generate more positive results than negative outcomes.

The research is focused on the study of Pakistan's response amid COVID-19 and way forward, with special attention given to the critical appraisal to NAP and PPRP, so as

to better understand the current ongoing C0VID-19 scenario in Pakistan and how things have been handled so far. The critical appraisal will help us identify the limitations and gaps in the policy and planning division's initiatives taken to combat the SARS-CoV-19. This will further assist in identifying and isolating proposed recommendations and way-outs that will chart us a holistic approach in dealing with the virus that is benefiting and up to date.

No response is efficient if it's not based on research and analysis of the situation. If one don't have the complete picture of the scenario, they cannot generate an efficient response that too with desired results and outcomes. Research helps us identify which areas require more attention, ultimately helping us in resource mobilization and allocation in right direction. With the help of this research not only the ground realities will be identified but also the challenges faced in the response generation will be gathered. The research will help us study in detail the response initiatives taken by the government, the community response to the measures adapted, identification of the challenges faced in the response mechanism and proposed way-outs.

One of the most significant aspect of the research is the critical appraisal to the NAP and PPRP. This in depth scrutiny of these two plans will assist in detecting the limitations in the plan and then ponder upon for proposed improvements in the plan for best possible results.

1.9. Structural build-up of the Research

Whole of the dissertation is divided into following chapters each with further sub-divisions. This is a qualitative type research. The methodology used is explanatory and the research design is content analysis.

1.9.1. Introduction/ research layout

Chapter 1 – gives a complete overview of the dissertation topic, covering all the important aspects. That includes preamble, an overview of the pandemics in general and COVID-19 in specific, historical perspective and epidemiology of C0VID-19, significance of the research, justifications for the selection of topic, aims and objectives along with research gap and limitations.

1.9.2. Literature review

Chapter 2 – deals with all what has been done previously directly or indirectly on the topic of research. An in depth analysis of maximum available and accessible research material relevant to the subject of COVID-19 has been done in order to better interpret the objectives of the study and have a sound basis for comparative analysis and generalizing results. Literature review as an integral part of this study because of the fact that the research methodology involves content analysis for elaborative study of the response by Pakistan. Literature review was not only limited to research journals and papers but covers all possible material available in any form that serves to the purpose of the study.

1.9.3. Research Methodology

Chapter 3- constitutes of the complete research methodology used in the completion of this research. This includes the complete overview of the methodology used, type of research incorporated for the study, the approach used for the research and sources of data collection.

1.9.4. Data Collection and Analysis

Chapter 4- incorporates the various means via which the required data on the subject is gathered. For the purpose of systematic in depth analysis of the subject qualitative research methodology was used. All the data was collected from secondary sources like available Research Journals and papers, NCOC SITREPs and databases, NIH statistics, WHO and Worldometers data, significant literature on internet, readily available desktop data, audios and videos coupled with observations and focused group discussions. All the data was collected as a passive observer due to the covid 19 induced lockdown conditions. Due to the subject being new leading to limited research and data availability qualitative method was used.

1.9.5. Results and Discussions

Chapter 5- includes the results drawn from the research done also incorporating the discussion on these findings.

1.9.6. Conclusion and Recommendations

Chapter 6- discusses about the proposed way-outs and recommendations for the challenges faced in the response generation by the government in the wake of COVID-19. The major part of the research is the critical evaluation of the two plans for COVID-19 formulated by Pakistan in the wake of the crisis i.e. NAP and PPRP. The purpose is to identify the loop holes in the plan and give recommendations for the improvement in the plan. That's why the recommendations and way-outs part is of immense importance to the study. As the ultimate reason for the study and analysis of the response is to address the challenges faced with proposed way-outs.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

A state's ability to tackle emergency situations and provide effective measures to curb calamities and disasters determines the functional independence of the infrastructures and the state authorities. Given the fact that disasters are perpetual in nature and do not require a pretext to happen, provides the stance that beforehand preparation to encounter them is the only solution. Over the course of last few decades, there is sufficient evidence of numerous infectious outbursts of several viruses round the globe .It was observed that the rate of recurrence of these viral agents has increased exponentially in the recent past. On the authority of expert's note, the rapidly mutating viruses caused epidemics will further aggravate and upturn in years to come. Factors like ecological variances, man-made and induced derogatory activities and rise in the vulnerable population will further trigger these causative agents to effect and impact upon different environmental zones and niches (Priyadarsini SL, 2020). It is pertinent to mention here that there is no thorough conjecture that will detail the results this pandemic will provide. As a matter of fact, the world has not experienced such a large scale pandemic in the recent years, the measures that are carried out are miniscule and appears somewhat deficient (Karabulut G, 2020).

2.2. The H1NI Spanish influenza pandemic, progenitor virus

Aftermath of World War II resulted in the infamous H1N1 Spanish influenza. A virus of 1918-1919 provided the world with the one of the firsts large scale medical emergencies of its kind. The virus persisted in humans for over 90 years and evolved

with mutations into new pandemics, epidemics and epizootics. This constant viral evolution has led to plethora of various mutants of the progenitor affecting its descendants and several lineages. It was being called the 'Crowd disease' rendering the US military officials in-effective, spreading from camp to camp outside Boston (N, 2010). Popular opinions at the time created the alarming image of overwhelming sickness and the increasing fatality rate among the young military men. Evidence was recorded that the outbreak reached its peak in the fall of 1918 with the statistics suggesting at least 50 million deaths worldwide and 550,000 only in the USA by the time it ended in the winter of 1920. Historical work suggested Quarantine, social distancing and ban of public in theatres and school closures, crowd control and personal hygiene along with mass movements for spreading awareness and reduce panic among the masses. (Stern AM, CA; 2010.).

2.3. The Origin of SARS COV, 2002:

The 1960s marked the arrival of zoonotic coronaviruses, viruses that transmit diseases from animal hosts to humans. The beginning of 2002 SARS-CoV outbreak marked the first ever pathogenic human coronaviruses of this category with its recent mutation being the SARS-CoV-2 which makes it to the total of 7 coronaviruses now existing in the world. Before the outbreak of SARS-CoV in 2002, two human coronaviruses, the HCoV-229E and HCoV-OC43, were considered as one of causative agent of the common cold. But with advances and future evidence regarding the MERS 2012 outbreak in the Middle East and the latest COVID 19, it was eminent that the proper disposal of resources and containment along with thorough intervention is the need of time (YA., 2020).

The severe acute respiratory syndrome coronavirus originated in the Guangdong province in China in 2002-2003 and was contained 6 months later. The MERS-COV

outbreak, a decade later in 2012, was the second wave of this lineage with the latest being the 2019 nCov. Scarcity of pharmaceutical research in this dimension focused the efforts to basically curb and curate the strategies that could slow down the spread .Literature all around the word suggested that measures such as quarantine, social distancing, lockdown and minimizing social interactions owing to the fact that the air droplet spread of the virus accelerates the spread and is rendering it more contagious. The blueprint list of priority held as an annual review by the WHO labelled the SARS-COV, MERS-COV under the list of PHEIC due to the absence of effective drugs and vaccines and diverted the main focus to their research and development (Bonilla-Aldana DK, 2020).

2.4. MERS COV 2012; the Middle Eastern fiasco:

The first case the MERS COV disease was seen in March 2012 in the pilgrims returning from hajj that year. Hajj being one of the most important religious obligation of Muslims, calls for several activities that requires mass gatherings and movement of the pilgrims every year. The fact that these mass gathering predisposes the pilgrims to a variety of health risks provided by the limited time frame and restricted geographical area is significant .The first laboratory case of the MARS COV outbreak of 2012 was observed in those returning from Jeddah (Aldossari M, 2019). Being a zoonotic disease the course of transmission was dromedary camels as per the presumed evidence (Oboho IK, 2015). During such a large scale scenario the Saudi government provided services for better health care and disease prevention. These curative services included communicable infection observation, epidemic examinations and large scale immunisations in the population, provision of prophylactic drugs on a large scale, and health consciousness and education (Aldossari M, 2019). A year later in 2015 the index case MERS COV was reported in south Korea as well the mode of transmission of

which was travel history to the middle east. As first line preventive strategy the KSLM Korean society for laboratory medicine the KCDC implemented a three tier mechanism;

i. Quarantine and isolation system
ii. Temporarily closing schools and public ban on gatherings
iii. Sharing correct information from trustworthy authorities

Some of these strategies caused mass panic among the public due to the exaggeration of facts on the social media platforms which in turn caused dissemination of false information and slowing down the whole process. Role of NGOs was noteworthy among the crisis tho un-timely and the government faced a lot of public criticism. Therefore a generalization of the following amendments and recommendations was made

i. Traveller tracking system via information and communication technology
ii. Reinforcement and capacity building of healthcare system.
iii. Revising the contagious infection prevention act
iv. Instituting bioethics
v. Following WHO course of action (C., 2019).

2.5. Mode of information; social media storm;

Owing to the increasing advances in technology, increasing awareness and individual attention and understanding, generation Z is known to be quite intellectual and fast in spreading information hence the name global village. Platforms like twitter, facebook are the e-media platforms with the fastest transmission of information across the globe. The world leaders are making use of twitter as a public health tool to dissemante relevant COVID-19 information to public as much as possible, together with media such as television, print media like newspapers and radio. The leaders from the seven

most developed countries of the world comprising of the G7 , has the power to influence the masses and shape public opinions. Therefore the, political leaders have the due authority to influence public opinion in order to address public health issues and spread awareness. Therefore a qualitative study used the method of content analysis quoting and describing the opinions of world leaders by observing their twitter platforms. Another objective of the study was to execute a comprehensive content analysis on all the famous tweets of the G7 leaders and rank and classify them according to the message they convey. For this purpose the twitter accounts of all the G7 leaders i.e. the Prime Ministers and Presidents like for instance Canadian P.M Justin Trudeau and Boris Johnson of UK were used as methodology tools.

The study yielded the following results after a thorough content analysis over the data obtained:

(i) Informative— shares facts and figures.

(ii) Boosting and cheering— lifts optimism or stimulate.

(iii) Partisan— from a specific political point of view

Referring to the prime objective of the analysis i.e. observe the reach of valid and reliable information by the world leaders to the public masses .The analysis had an amount of limitations, first being the inadequacy of generalization of information since the key words used for the content analysis were one-dimensional and limited. Secondly content analysis yields subjective and sometimes biased opinions because of the unversed thematic exposure of the masses who can extract subjective meaning of the information. (Rufai SR, 2020).

2.6. COVID-19 and the Environmental Sustainability: A Perspective from the Southeast Asian Region

The apparent increase in the number of cases has specifically made the Southeast Asian region countries to adapt to relatively more aggressive measures in order to cope up with the imminent rise and curtail the pandemic growth. Measures such as total area lockdown and limitations on mass mobility, ban on any kind of public gatherings, quarantine and isolation of COVID-19 patients, itinerant and tourist bans, sealing of borders, shutting down of education institutes, and resorting to the online and work from home strategy, suspension of all kinds of business goings-on and transportations, as of March 2020.

The drawback to such drastic curative measures i.e. Lockdowns and restrictions has led to economic stagnation particularly distressing the developing countries, creating more unemployment, increase in debts and reduced activity of industrial and services sector (Praveena SM, 2021).

2.7. Preparedness and Response Capacity Pertaining to Public Health Emergency

In any emergency situation or an imminent threat, the public health sector plays a pivotal role preparing the communities to respond well and recover from the crisis. There first and foremost task is to provide relevant information about the emergency to public and led them to a proper channel to avoid panic. Governmental organizations along with WHO, CDC are public health centres that play an important role in provision of emergency services and action plans under red light. A recent innovation is the development of PHEM (public health emergency management). Different strategies have been adapted and initiatives taken in order to strengthen the health sector and increase its capacity under the global health security agenda.

Elements of the 9/11 made things take a drastic turn. There was a need to redevelop the public health strategies in the domain of relief assistance, risk management, arsenal safety guidelines, civil defence and minimize the sensitivity to spontaneous exposures and manage adversities respectively (Rose DA, 2017).

2.8. The Health Sector of Pakistan and COVID-19.

Pakistan reported its first COVID-19 infection on 26th February, 2020. Due to being a developing nation with meagre resources the heath sector has always been lagging behind with insufficient contingency plans and immediate rescue facilities.

Pakistan's Health Sector response was studied via a framework on analysis in association with the WHO's standards. The framework consisted of three steps. The first tier was associated with the politico-economic policies like lockdown, resource mobilization and allocations for instance. The second step was based on thorough assessment of the interventions taken by Pakistan in accordance with the WHO standards. The third step revolved around the extent in which community participation was noted. (Meesha Iqbal, 2020).

The tragedy that unfolded in the mismanagement at Taftan quarantine was the basic source of COVID-19 spread in the country. Pakistan received a surprising amount of pilgrims from Iran and was not prepared for such a crisis on a large scale. Some of the problems the evidence of which was uploaded on the print and social media reported the following insufficiencies:

1. Unclean settings
2. Deficiency of medical staff
3. Absence of medicine
4. accommodation
5. Obtainability of water and food

The following were the measures as taken to curb and control the situation.

1. Quarantine houses
2. Closure of schools
3. Managing the daily wages labour
4. Feeding under the line population (Nafees M, 2020).

2.9. Million Dollar Question; is the Response by Pakistan Adequate;

Pakistan shares on of its border with Iran, one of the epicentre of COVID-19 at that time. China lies on the west east border with Pakistan. Due to the sharing of borders with two epicentres (China and Iran) of the COVID-19 Pakistan's government took some drastic measures to cope up with the risk of viral infiltration in the country. Iran being the pioneer of epidemic in the area of Taftan was the reason for the diffusion, had it not been mishandled the toss would have flipped. The first step taken by Pakistan was to close all air traffic to prevent any incoming cases and then devised an action plan. Practices such as

1) Quarantine,

2) Social Distancing

3) Screening and Contact tracing

Were put into place but were deliberately received with indifference from public and inclined to as rumours and clouded with myths (Javed B, 2020). Such an alarming situation called for a step to amend the health sector and provide reforms to contain the alien pathogen. The public –private sector demanded the priority to be placed on the attainment of the six foremost objectives like ultimate priority be given to health sector, improved allocation of resources and many such (Nishtar S, 2013).

CHAPTER 3

RESEARCH METHODOLGY

3.1. Preface

Research can be defined as “an activity that involves finding out, in a more or less systematic way, things you did not know” (Walliman and Walliman, 2011). “Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based” (Brown, 2006). The research methodology is the ultimate basis of any research. It is the technique via which a researcher analytically orients his/her study in order to gather the research outputs and results. It answers the question of how the research has been conducted. It is the experimental or practical aspect of the research. It incorporates a clear step by step structure, respective to the problem statement, with logical reasons and justifications for selection of the method. Broadly it’s been classified into three i.e. qualitative research methodology, quantitative research methodology and mixed-methods of research. The selection of the right kind of methodology is the most crucial step of any research as it is the basis for the successful attainment of the desired objectives.

3.2. Population of the Study

The study constitutes of all the relevant studies available on the problem statement, whether it be in the form of Research Journals, online Articles and Papers, blogs and news articles, databases, websites, audios, videos and many such online sources published during March 2020 to July 2021. The reason for the selection of this time frame is the ongoing status of the COVID-19 Pandemic.

The studies selected were based on the following standards:

- On account of the world response
- Epidemiological studies of the last 10 yrs.
- Studies acknowledged by WHO
- CDC and its involvement in response generation and dealing with the pandemic.
- The response initiatives taken by Pakistan
- Challenges faced by Pakistan
- Statistical analysis based on parameters like case fatality rate, recovery rate etc.
- Grass root accessibility and availability to health care facilities in Pakistan.
- Community participation and response to government initiatives
- History of interventions carried out in previous PHEIC
- Studies from world economies for comparative analysis of response cohort.

Studies where permission was required were duly authorized by the authors.

3.3. Data Collection Tools

Data collection incorporates the means and ways via which the data on the respective topic is achieved, either through primary or secondary sources. The selection of methods depends upon the type of research used that fits perfectly for the attainment of the respective aims and objectives of the study. Different sets of data collections methods are used for qualitative and quantitative research methodologies.

For the purpose of systematic in depth analysis of the subject qualitative research methodology was used. All the data was collected from secondary sources like

available literature on internet, relevant research articles and papers, readily available desktop data, audios, videos coupled with observations and focused group discussions. All the data was collected as a passive observer due to the covid 19 induced lockdown conditions. Due to the subject being new leading to limited research and data availability qualitative method was used.

Since the study consists of two major parts i.e.

1. The Analysis of the Response by Pakistan
2. Critical appraisal of the NAP and PPRP plans in order to identify Research gap and recommendations for improvement in the plan along with proposed layouts *per se* the world standards.

Consequently, the data for the first part has been collected and analysed through Qualitative Content Analysis QCA. Whereas for the second part, the plans itself were critically evaluated in comparison to international standards. For this purpose the already existing plans of the world countries like San Francisco's department of public health "infectious disease emergency response plan" , U.S. Department of Health and Human Services Centres for Disease Control and Prevention's CDC Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health , the WHO's Strategic Framework for Emergency Preparedness and COVID-19 Strategic Preparedness and Response Plan SPRP.

1. Existing Data/Record Keeping

The initial and current state of covid 19 pandemic was examined via online available data. All the relevant study materials were collected both via online and offline sources. The journals available online were a great source of information like Elsevier, Research Gate, Global Biosecurity, Nature's cellular and molecular immunology,

BMJ Global Health, Frontiers in Medicine, Wiley Journal of Medical Virology and many such.

Along with that NCOC database and SITREP reports, the documents on the websites of the Ministry of National Health Service Regulation & Co-ordination NHSR&C, National Health Emergency Preparedness & Response Network NHEPRN, National Institute of Health NIH data base and daily situation reports, and websites like World Health Organization WHO and Centre for Disease Control CDC were also approached for information and data collection. Apart from these information was also collected from print, electronic and social media.

1. Participant Observations

Observations were done on community level along with other means like social and electronic media. Due to the ongoing lockdown scenarios and social distancing parameters direct one on one interaction induced observation recordings were not possible. The area dynamics were not suitable thus a different and distant way of situation analysis and observations was selected and implemented. Unobtrusive Data was collected by analysing community and social interactions without the direct involvement of the participants. This way the Data collected was transparent, valid and reliable, minimizing the false opinions and subjective biasedness. With the help of such observations a clear picture was drawn as to what the ground realities were upon the very onset of COVID-19 and how it was dealt with, thus making it easy to clearly mark and underline the loop holes and weak points. Observations immensely helped in isolation of the challenges in the response generation and gave a clear picture of how community participated in the response generation. Covid 19, Pakistan and response generation, the relationship between these three was easily understood via observing the community and deducing the results via interpreting it in one's own way.

Figure 3.1 1: The dependency of the three factors (COVID-19, Community Response, and Community) in response activities

2. Focused Group Discussions

Informal community discussions were conducted focused on the question of how the government responded to the covid 19. What do they perceive of covid 19? Their thought process and how community itself participated and responded to the government response initiatives and covid 19 crisis as a whole. Due to the lockdown situation and social distancing factor there were no physical focused group discussions conducted as per the rule rather it was a form of opinion generation in whatsoever way possible, like for instance telephonic discussions or by making use of social media and zoom or skype meetings where possible. But due to the area dynamics and accessibility options many community participation activities were casually conducted like gathering in the mosque, family gatherings, community sittings all under the supervision of covid 19 SOPs whenever and wherever possible.

3.4. Data Analysis Tools

Once the data has been collected the next step is to analyse the data. This is done for two reasons. Firstly, in order to check whether the desired objectives have been achieved or not and secondly, to generate results and conclude with recommendations and discussions. This research is focused on a detailed analysis of the response activities carried out by Pakistan as a whole, with special attention to health sector response, on the very onset of COVID-19. For this purpose Content Analysis method is used.

3.4.1. The Qualitative Content Analysis Method

A method that involves a complete interpretation of the actual original content in all dimensions for the purpose of its systematic and objective elucidation and analysis. The process of content analysis involves breaking down the text or the collected data into manageable categories for example words, phrases or sentences etc. labelling it as one single sample and then further carrying out its analysis. This sample selection dependents upon the amount of data available on the subject. If data is limited then the step of sample selection can be avoided and all the data can be analysed and vice versa if there is a giant pool of data accessible on the subject. This is the most crucial step of the analysis as the focus is placed on the selection of the right perfect chunks from the pool of the data most relevant to the study aims and objectives.

As this study is carried out on the Analysis of COVID -19 Response by Pakistan and owing to the novel characteristics of COVID-19 limited research has been done world-wide. Therefore all the data collected is analysed without the sample selection process. All that was available on the Response initiatives taken by Pakistan has been readily analysed and desired results been generated.

Data analysis is only one part of the research. The basic and most important part of the research is the critical evaluation of the NAP so as to identify and propose recommendations for the improvement in the plan with proposed layouts.

3.5. Research Questions

The Qualitative Content Analysis is done in order to answer the Research Questions based on the Objectives of the Study. Following are the main research questions of the study:

1. What Response measures were adapted?
2. What were the challenges faced in response generation?
3. Do we have any kind of health related emergency plans for dealing with health emergencies?
4. How an individual and community responded to the response initiatives?

3.6. Overview of the Methodology Used

This is a qualitative type research. The methodology used is explanatory and the research design is content analysis. This content analysis method is used for the first part of the research i.e. the analysis of response. The second part is the crux of the research where the plans are critically evaluated for possible changes and improvements in order for them to be well versed for any such future scenarios. The aim is to systematically describe the response generation in the wake of covid 19 by Pakistan. The methodology involves secondary research tools i.e. existing data available in the form of research journals, NCOC databases, NIH stats, worldometers data, research papers, articles, images, audio and videos, taken from different sources, along with observations and focused group discussions. Due to the ongoing lockdown

situations in the country direct surveys and contact with the relevant authorities was not possible/limited so no primary level data was collected.

The research is about how Pakistan responded towards covid 19 and the way forward. This research is a four step approach towards an in depth study/analysis of covid 19 scenario in Pakistan. The first step discusses about the way Pakistan responded upon the onset of COVID-19 both initial and ongoing in the context of all that happened till date with respect to virus outbreak in the country. The second step deals with challenges faced by Pakistan in the response generation; the vulnerabilities attached the risk factors associated along with the way outs individually and simultaneously. The third step is the critical analysis of NAP and NPRP i.e. what are the lose points in these plans and what changes could be made with respect to the already existing plans of the world countries. The fourth and the last step is reviewing the already existing National Action Plan for COVID 19 (NAP) with recommendations for the improvement in the plan keeping in mind all the research done, the points highlighted via the critical appraisal to the plan in the third step of the research and in accordance with the international standards and prospects.

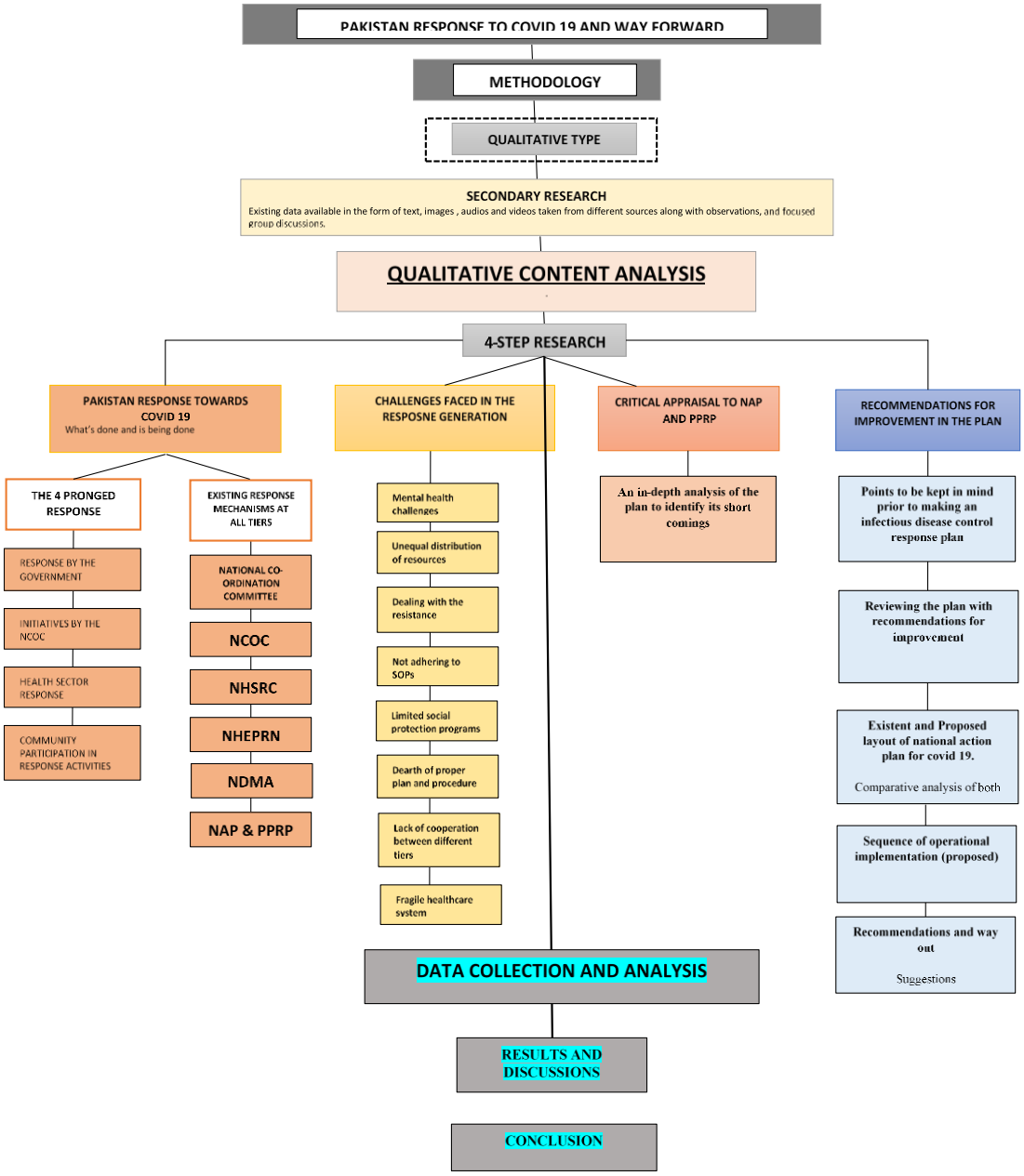

Figure 3.2 1: Methodology flow chart

3.7. Pakistan Response to COVID-19

After the very first case of covid 19 in Wuhan city of China, the disease spread accelerated to an extent that the WHO declared it a public health emergency on 30th January 2020 and a pandemic on 11th March 2020. In order to curtail the virus spread and in an effort to contain it world nations begin to take remedial measures like enforcing travel restrictions initially to and from China and later from all over the world globally isolating themselves and then later resorting to wide spread lockdowns all that to limit its spread. But as little was known of the virus coupled with global challenges like limited instrumental capacity of health sectors to deal with viral outbreaks and negligence on our part happened to be the main reason for the profound rise in the cases all over the world. Something of the similar level happened in Pakistan too. Due to the dearth of guided policies and plans already existent, the response generated was late and had gaps and loop holes like for instance as per the case in the very beginning the foremost priority must have been a check and restriction on the airports in order to contain any viral infiltration from outside in Pakistan (Meesha Iqbal, 2020). As this have been the crucial factor in the infiltration of the virus inside our country, the every first cases diagnosed had travel history.

Pakistan reported its first two cases on 27 February 2020, both having travel history from Iran. The case of Pakistan is very much linked with its geographical location. It shares borders with both the epicentres of covid 19 i.e. China and Iran. The Iran-Taftan border side was the biggest transmission and infiltration point from where majority of the influx of the infected happened that later spread throughout Pakistan. Second reason being the influx of infected from outside travel. After the WHO's declaration Pakistan was forced to take some drastic steps in order to curtail the crisis. For this purpose the very first step was to seal the borders with China and place stringent

screening devices at the border with Iran. Along with that, in accordance with the civil aviation authority, passenger screening at the airports was imposed nation-wide via which none of the passenger was allowed to enter the country without proper screening and clearance order by the officials, although this step was late and lead to unchecked infiltration of the virus inside the country that could have been avoided. Many cases diagnosed in the beginning had travel history from abroad that could have been avoided if timely measures had been taken along with proper check and scrutiny in airports.

Pakistan's government has put up PKR 1.13 trillion ($6.76 billion) to cope with the corona crisis effectively. A major portion of this cash is going into health care in order to combat the COVID-19 issue. For example, PKR 50 billion ($298.94 million) is being used only to purchase clinical gear. Pakistan's corona testing lab capacity has been expanded from 30,000 to 280,000 and would be increased to 900,000 by May 2020. (Jafri, 2020)

To appropriately mitigate the impacts and tackle the COVID-19 challenges, both the federal and provincial administrations have enacted COVID-19 legislation. With the lockdown exceeding six weeks in the country, major impediments in the supply chain are further aggravating the situation for both the community and the economy, with poor being the most vulnerable.

Many civil society and community groups have come forward in giving support and sustenance to the affected. Up to this point, Pakistan has been able to execute efficient medical, social, and economic initiatives and the situation in the country appears to be in hand. For instance, the overall number of COVID-19 fatalities up until now (May 1, 2020) are 385, which is 2.1% less than the anticipated mortality rate (Jafri, 2020). In a recent statement, Pakistan’s Prime Minister Imran Khan stated that the

government has taken unparalleled actions to mitigate the impact of COVID-19 catastrophe, and that the state has handled the pandemic successfully so far, and that Pakistan's scenario was not quite as disastrous as that of the United States or Europe.

The response can be studied in four aspects. The first aspect is how government of Pakistan responded to covid 19. Second aspect discusses about the initiatives taken by the NCOC. Thirdly, how health sector responded to covid 19 and lastly, the fourth aspect focuses on community participation in all the steps taken.

3.7.1. The 4-Pronged Response

3.7.1.1. Strategies, Laws and Guidelines Adapted by the Government of Pakistan in the Wake of COVID-19

A confused response due to lack of coordination between federal and provincial.

The case of Pakistan required swift response as because of the fact that it's geographically sandwiched between two epicentres of COVID-19 i.e. China and Iran. That being the major reason of spread. A brief account of the initiatives taken and measures adapted by Government of Pakistan.

- Transport restrictions and Travel impositions both local and international
- Airport screening and surveillance
- Quarantine facilities
- From Complete Lockdown to Smart/Partial lockdown
- Contact tracing and testing
- The Government of Pakistan COVID-19 relief fund.
- Tiger force
- P.M Ehsaas Program
- COVID-19 Relief Fund

- Ensure Adherence to SOPs
- Closing of all the education institutions
- Banning of public gatherings
- The vaccination program

The fear of economic stagnation and the fact that the daily wagers of Pakistan cannot sustain the repercussions of the lockdown, made it even more difficult for the administrators and policy makers to take step forward in locking the cities for effective containment of the virus. In order to help out the vulnerable ones, a $5.66 billion package was approved by the government in order to improve their health standards. But the fact remains the same that the challenges faced in response generation are the biggest impediments in the successful containment of the virus. (Javed Bilal, 2020).

3.7.1.2. Pakistan Health Sector Response to COVID-19

The health sector response in the wake of covid 19 was both the blend of positive and negative outcomes. Due to the absence of one single mainstreamed plan for infectious disease prevention and control, all things went ad hoc, as per the situation, what seemed the best possible solution. Many were the challenges faced by the health sector in the wake of the pandemic crisis like:

• Initially we lacked in testing facilities for the virus. We didn't have the required laboratory facilities and lab technicians of the field, thus we had to rely on China, Japan and Netherlands for the testing of the samples. And because of that time lag in the results the government's response to the virus also got effected. This issue got resolved when Pakistan received its very own diagnostic kits from china and primers from japan and so became self-sufficient in testing and diagnosis of the virus. And this contributed

in accelerated and timely response generation by the Government of Pakistan. WHO also designated seven hospitals nationwide to test suspected COVID-19 patients.

- Weak health infrastructure
- Limited resources and budget constraints
- Limited healthcare workforce
- Lack of microbiologists and virologists in the field of infectious disease research and control.

Still managed to respond effectively to the crisis:

1. The central government of Pakistan, in conjunction with the Health Ministry, created a strategy dubbed "The National Action Plan for The Corona Virus Disease (COVID-19) Pakistan." The goal of this strategy was to establish policies and a framework to assist Pakistan in evolving techniques and policies to cope with the COVID-19 Pandemic.
2. Government acted proactively in providing isolation centres nation-wide for the covid contracted patients isolation and treatment. Karachi and Lahore expo centres were converted into 1200 and 1000 bed isolation centres. Similarly, 220 of Pakistan Railways coaches were converted into quarantine chambers for covid-19 patients, with a total capacity of 2000 hospital beds.
3. The administration has also designated a freshly completed apartment complex in the city of Sukkur as an isolation camp with 2,000 beds.
4. In parallel, another quarantine facility was built in Taftan. Three big rooms of Pakistan houses on the Taftan-Zahedan border have been converted into isolation chambers with a capacity of 2000 persons. To present, 7000 Pakistani pilgrims have returned from Iran and have been quarantined in Taftan for three days. They

were freed and sent to their respective provinces on February 28, 2020 (Noreen, 2020).

5. The provincial administration, in collaboration with the Directorate of Central Health Establishments (DOCHE), is in charge of the screening activities in Pakistan. There is a scarcity of physicians and other essential services, as well as terrible living conditions in camps. Due to a shortage of space, close contact circumstances during quarantine led in multiple illnesses at the Taftan facility.
6. In Islamabad, an advanced quarantine centre with 300 beds has been built. The authorities also announced the closure of all restaurants and declared most of them as isolation camps via using extraordinary powers. In addition to these containment facilities, the government constructed isolation units in a number of hospitals.
7. The Ministry of Health was also able to supply critical materials to the war against this virus, including such face masks, gloves, and protective suits to safeguard paramedics and physicians on the frontlines of this pandemic.
8. Covid 19 patients became the foremost priority in Hospitals.
9. The provincial governments launched telephone helplines to assist general public for health related information concerning COVID-19. The platform was also utilized to advise callers that if they begin to develop any signs of the virus, they must remain at home.
10. Programmes were initiated all across state's mainstream media and social media platforms to raise public awareness about correct hand disinfection protocols and the significance of social distance in breaking the chain of transmission.
11. The government’s telemedicine web portal and corona mobile application, are some of the other initiatives for providing unrestricted virtual consultation

facilities to patients. (Dailytimes, 2020). The Young Doctors Association (YDA) also took part in providing such services (Tribune, 2020).

3.7.1.3. Initiatives taken by the NCOC

To operationalize the decisions of National Co-ordination Committee NCOC was formulated. The NCOC consists of both the federal and military representatives. NCOC met daily, tracked the virus round the clock, and implemented containment measures. Following are the initiatives taken by the NCOC (NCOC, 2020):

1. Sops Violation Reporting

There is a WhatsApp number that the NCOC has set up for the public to use to report COVID-related violations. Any violation of COVID SOPs, such as not wearing a mask, not adhering to social distance, or overcrowding in public areas, should be documented with a photograph and brief description sent to 03353336262 (0335333NCOC) with the following information:

Location Name:

Tehsil / District / City:

Date and Time:

Event:

2. Smart Lockdowns

By reducing the number of IP addresses to a specific hotspot, smart lockdown is intended to contain/delay the spread of COVID-19 locally and interrupt the transmission cycle. A key point in our disease's trajectory has been reached, and only our proactivity will be able to stop it in its tracks, at least for the next several weeks. As handy as city-wide lockdowns may be on the administrative side of things, they are not feasible from an economic/socio-economic standpoint. Due to the documented

diversity in illness prevalence in different regions of a city, it is possible to use a different strategy. To restrict the spread under the circumstances, smart lockdowns offer a balanced strategy.

3. Resource Management System RMS

An IT-based methodology for reliable health resource mapping was created by NCOC. On May 31st, the Resource Management System (RMS) was implemented in roughly 4000 covid and non-covid hospitals throughout the country. A accurate requirement assessment and capacity development may be made easier using this technique. In addition, it powers Pak Negheban, a public utility app that directs users to the nearest covid-treating hospitals depending on their geographic location.

4. Pak Neghayban Application

Assigns a colour coded status based on the availability of beds or vents to hospitals in real time. Different emergency response organisations utilise Pak Neghayban to coordinate their efforts.

5. Integrated Disease Information Management System (IDIMS)

It is the National Emergency Operation Centre's (NEOC) Integrated Disease Information Management System that is the repository for all COVID related data. Data is sent in near real-time between IDIMS and all provincial systems through the integration of IDIMS. Based on the system's data analytics, illness predictions and smart lockdowns may be predicted and identified.

6. Education Institutes Monitoring System (EIMS)

We are making our first attempt to create a nationwide central database for the estimated 275,000 educational establishments of all types that are now operating across the country. In conjunction with the NITB development team, NCOC played the primary role in developing the system. EIMS is a useful tool for a variety of

purposes, since it will provide complete and up-to-date statistics on educational institutions at the national level. As part of COVID-19 compliance monitoring, provinces are updating SITREP and SOP compliance data on a daily basis.

7. National Helpline-1166 & Whatsapp Chatbot (+92300 1111166) For Healthcare Workers

For healthcare professionals to submit concerns with appropriate government agencies, the national helpline-1166 & WhatsApp Chatbot (+92300 1111166) was updated on June 19, 2020. Additionally, healthcare professionals can text their complaint to the WhatsApp Chatbot number +92300 1111166. NCOC's helpline is linked to NHSR&C's complaint management team, which will process complaints. A federal and provincial focal person will be notified of the complaint and will follow up with HCW to let them know how the complaint is progressing and what steps have been done.

8. Covid-19 Telehealth Portal

Pakistani doctors can join up to offer their services to provide patients free consultations. Whatsapp +92 300 1111166 has a Corona screening questionnaire that Pakistanis may complete out and decide to speak to a doctor about.

9. 1166

Health Special Assistant to the Prime Minister Dr. Zafar Mirza established the Sehat Tahaffuz 1166 information line on February 6, 2020. They'll also be able to ask questions about Polio and regular immunizations, and get quick answers.

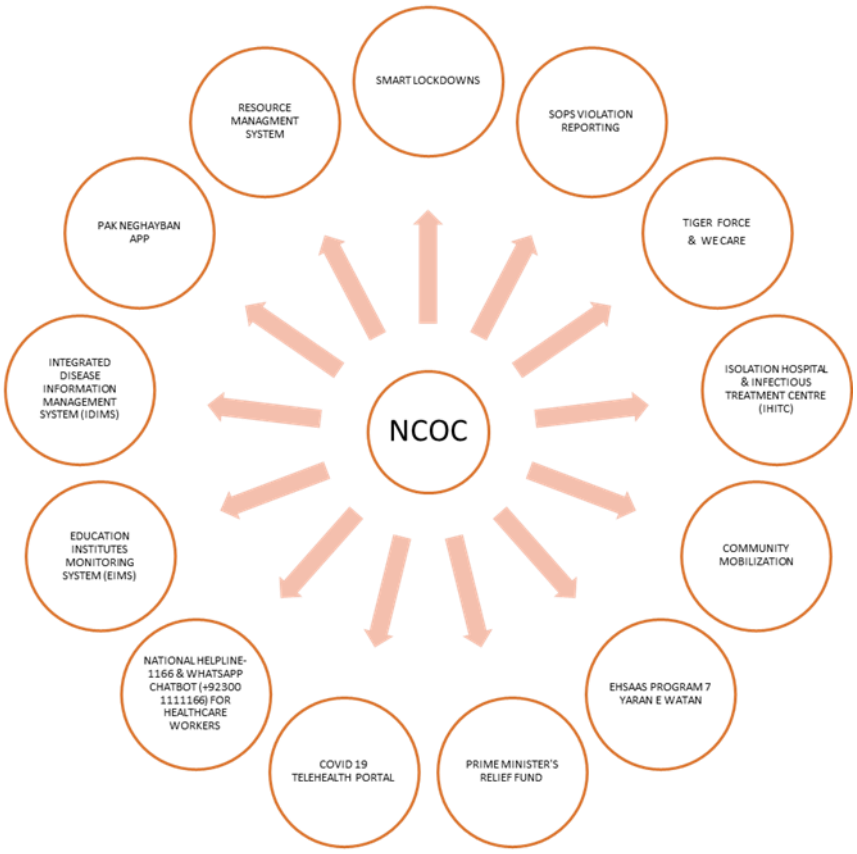

Figure 3.3 1: NCOC Initiatives Overview

10. Isolation Hospital & Infectious Treatment Centre (IHITC)

To provide medical aid to patients suffering from viral infections, Prime Minister Imran Khan opened the Islamabad Isolation Hospital & Infectious Treatment Centre (IHITC) on Monday, July 9th, 2019. With five distinct wards and 250 beds, the IHITC is equipped with the latest technology to detect and treat infectious illnesses.

11. Community Mobilization

Combating COVID-19 necessitates a coordinated response from all sectors of society. The Rural Support Program (RSP), which has been in place for some time, is currently mobilising the community. A collaboration agreement was formed between the NCOC and RSPs (active in 66 districts) to work with the District Administration on initiatives

such as awareness campaigns, help with trace and quarantine, sanitation of public spaces and data collecting. The previous efforts have paid off in terms of attaining the goals put out.

12. Prime Minister's Relief Fund

Fighting this epidemic, the Prime Minister's COVID-19 Pandemic Relief Fund-2020 has been established by the government. This fund would help individuals who have become vulnerable as a result of the shutdown, according to the Prime Minister.

13. We Care

Within the context of Covid-19, the MoNHSRC has launched "We CARE", a nationwide campaign aimed at safeguarding and supporting our frontline health professionals Health professionals will be provided with sufficient personal protective equipment (PPE), instructed on how to use various PPE items according to international standards, and a psycho-social atmosphere of support will be created. Patients and visitors at healthcare facilities are also being encouraged to support frontline healthcare workers by adopting preventive behaviours that not only reduce their own risk of infection, but also reduce the work load and health risks for healthcare providers as a result of the campaign 'WE CARE'.

14. Tiger Force

To assist the government, the Prime Minister created the Corona Relief Tiger Force on April 1st. They will give food to the needy and raise awareness of Covid-19 in places that are under lockdown, by the volunteers. Citizens can volunteer for the force by filling out a digital form on the PM Office web.

15. Ehsaas Program

As a result of the growing coronavirus epidemic, the Ehsaas Emergency Cash programme was created.

16. Yaran E Watan

Public-private collaboration led by the Ministry of National Health Services, Regulations & Coordination (MNHSRC) and the Ministry of Overseas Pakistanis & Human Resource Development (MOPHRD) with assistance from the Pakistani Diaspora Health Organizations (PDHO) (NCOC, 2020).

3.7.1.4. Community Participation and Response

No step taken by the government will be effective only when it's taken seriously by the public as in case of the success story of China. Community participation bring either positive or negative impacts depending upon how seriously the community tackles to the crisis. Their attitude and the way they react to the response and measures adapted by the government and the concerned authorities' plays a pivotal role in the success of any initiative. In case of Pakistan, there was a mixed reaction. Some took it seriously and adhered to the guidelines and SOPs whereas a major chunk of the population didn't even bothered. We had and have a non-serious behaviour throughout the crisis and is still on-going.

- Not wearing masks
- Not strictly adhering to the social distancing as per the SOPs.
- Social distancing and community participation
- Self-quarantine limited to a few.
- Lockdown and law enforcement agencies role

- The issue of public being unaware of the SOPs was a common occurrence all over the country. Despite the warning, people continued with their mass gatherings and meetings, further aggravating the situation.
- Initially social media became the very source of false information, rumours, news, stories and misinterpretation of the facts thus instilling fear among the masses.
- The price of daily life commodities inflated, due to the limited to no trade as of pandemic restrictions and lockdown and majorly because of the black marketers and hoarders who took advantage of the situation and started selling the products on high prices. So far, the local price regulator authorities started monitoring utilities costs on the order of the central government.
- Many single negligence occurrences were also recorded, for instance as exactly how an individual itinerant from Spain succeeded in evading the airport screening. Several came out of their isolation chambers in the Sukkur camp, coming directly in contact with others thus facilitating in the further spread of the virus. Such was our community response and contribution in response activities, which further aggravated the situation adding into the number of positive cases.

3.7.2. The Existing Response Mechanism at all Tiers

National Disaster Management Authority (NDMA), National Health Emergency Preparedness & Response Network (NHEPRN) and the Ministry of National Health Services, Regulations & Coordination (MNHR&C) are some of the organizations involved in disaster management in Pakistan (Ul-Haq, 2018). The 18th Amendment has decentralized the uniform policy formulation at federal level and has given the health sector on individual level in hands of the provinces, thus making them free in their decisions pertaining to health sector. This decentralization has costed in the response generation For COVID-19. In order minimize the negative impacts, the Central government has decided to set up the National Health Security

Council (NHSC) that will be chaired by the Prime Minister. The aim of NHSC will be uniform policy making for COVID-19 containment measures. (Tribune, 2020).

i. National Co-Ordination Committee

A National Co-ordination Committee was formed by the National Security Committee of the Government of Pakistan on March 13th 2020, headed by the SAPM (ZA, et al., 2021). The objective of the committee was to frame and implement an all-inclusive policy and approach to mitigate the spread of the virus. (PPRP, 2020).

ii. National Command and Operations Centre NCOC

Similarly, NCOC has been formed in order to effectively and efficiently monitor the overall covid 19 situation with effective coordination at both national and local levels (Malik Safi, 2018). In every province, a Task Force has been made. (PPRP, 2020).

iii. National Action Plan (NAP) for COVID-19

The purpose of NAP is to ensure that all the response activities like preparedness, inhibition and control and mitigation are in accordance with the basic guidelines discoursed in the plan. The vision of the plan is to maximize the preparedness and response capacity of Pakistan in order to deal with COVID-19 pandemic both in present and future with minimal possible morbidity and mortality rates, such that the strain on the national economy can be reduced (Jawad Sarwana, 2020). And so the aim is focused on the formulation of national preparedness and response plan for COVID-19 as a blue print for pandemic preparation in Pakistan under global health security agenda, as pandemic has become a new security concern for nation-states. This will act as a frame work for the all the relevant authorities and organizations that are working both on federal, provincial and regional levels. They will act according to the mentioned guidelines in the plan. This was the very first step taken upon the onset of the COVID-19 crisis in Pakistan.

The objective is maximum possible containment and timely response in containment of the virus along with resource mobilization in the right direction to the right required. The three dimensional approach of the plan includes:

- Preparedness and response
- Containment
- Mitigation

iv. Pakistan Preparedness And Response Plan (PPRP) for COVID-19

It envisages the required transnational support by Pakistan in order to cope up with the covid crisis, in accordance with the national action plan NAP. The aim is a holistic well-coordinated struggle assisted by the international community/funds, as directed by the relevant Ministries of Pakistan like MoFA, NDMA/PDMA and M/O NHSRC. The plan is made with the assistance of the UN and WHO SPRP. It will help in multiple domains like overall strengthening of the organizational hierarchy, increasing the capacity of uniform policy making, plummeting the gaps, assistance in pandemic monitoring and evaluation, increasing treatment capacity, community mobilization in response generation and many such.

The ultimate objective of the plan is the inhibition and control of the pandemic in Pakistan. This via proper resource allocation to the healthcare facilities and interventions with special focus on the most vulnerable groups. The plan revolves around inhibition, preparedness and treatment of covid-19.The Plan aims at the attainment of US$ 595 million as a financial assistance from the world community in order to effectively tackle the corona crisis in the country(PPRP, 2020).

v. Ministry Of National Health Services Regulations And Coordination (NHSRC).

There was a federal ministry founded on April 2012, the Ministry of National Regulations and Services. Later on, with additional functions added, its name changed to the Ministry of National Health Services, Regulations and Coordination (MNSRC).

To help the people of Pakistan preserve and strengthen their health as well as to make our population one of the healthiest in the region, the Ministry of National Health Services, Regulations, and Coordination is devoted to service Pakistan in the direction of healthy living.

vi. National Health Emergency Preparedness and Response Network (NHEPRN).

Strengthening overall capacity and capability of the country to effectively manage all Health related aspects.

The Ministry of Health of the GoP created NHEPRN in January 2011. The purpose of the plan is to manage health hazards via efficient preparedness, response and recovery measures in place. This for the first time gave rise to the concept of health hazards preparedness in Pakistan.

- *All of these plans and policy frameworks were adapted specifically for Covid 19. No such generalized Plan concerning biohazards/health related Emergency Response exists.*

3.8. Critical Appraisal of the NAP and PPRP for COVID-19

i. The plan was not present on the very first instance instead when the pandemic struck Pakistan then the plan was formulated. This clearly shows how much we lack in dealing with infectious disease outbreak containment and further mitigation.

ii. The historical evidence shows that this virus is not something new still we lacked in its preparedness. What is preparedness for? It is for any possible and potential threat without considering its very minimal chances of proliferation. The threat potential of virus is not something new. All the research done shows that how deadly they are still the preventive measures taken are limited to none.

iii. The plan was meant to focus on the containment of the virus but now the things have changed much. Instead of just focusing on containment many other strategies

must be taken into consideration taking into account the changing dynamics. The thing with the virus is that its characteristics changes with time or to simply put forward that things are unpredictable. Sometimes theirs a rise sometimes it's comparatively steady. In such uncertain scenarios policies or plans primarily formed must have the tendency to respond well with the changing scenarios by continuous monitoring and evaluation resulting into updating the plan as per the requirement. Update with time as per the situation reports is the ultimate necessity for the success of any plan.

iv. From reactive to proactive. Our plans must not be reaction focused instead they must be based on minimizing the risk. World is fast shifting towards risk management and risk reduction models rather than the primitive concept of disaster management. Initiatives must be taken to prevent any anomaly from happening then to invest more and more into response generation that too when the damage has been done.

v. We plan a lot but implement less. We have loads and loads of documentations but limited to none practical implementations. For a plan to be successful in current world dynamics must have following three aspects; it must be short, precise and readily applicable. Our plans are so lengthy that the actual essence of the plan is blurred. Be it the technician or a layman, none is able to interpret what must be the course of action.

vi. The plan must be dynamic and evolving. The preparedness and response must be focused for both the current pandemic and any such anomalies in future.

viii. The plan must be such that it is readily understood by even a lay man, not just a professional of the field. And the plan must be readily available to the people. All platforms of media whether it be print, electronic or social media can be used for this purpose. The source must be credible.

ix. One of our biggest issue is that people don't stick to the designated SOPs. The Community-disease surveillance, community involvement and accountability along

with the strengthening of the monitoring and evaluation is a must for the success of any such plan. We will get the desired results only when every single citizen stick to the plan as guided.

x. The plans must be practically oriented. No plan is effective if it's not build on practical experience and study of the ground realities. A nation cannot just import a plan and think that it will suit best for its country dynamics.

xi. A proper plan activation segment which clearly demonstrates what is to be done and by who and how in the wake of the emergency so that everyone knows what function/role he/she has to play without any delay.

xii. Short and precise/to the point.

xiii. Effective plans are those that are readily up-dated and upgraded with due course of time as per the changes observed. The NAP was formulated in the very beginning of the pandemic dealing with what was required at that time but now as the things have changed to a greater extent and the approach towards pandemic is also changing, where the world is fast moving towards means and approaches whereby they co-exist with the virus along with the new waves and consequent vaccination programs, requires the plan to be updated on these lines.

xiv. The purpose of the PPRP is only to stop the transmission of COVID-19. It has nothing to do with the humanitarian or socio-economic consequences of the epidemic, the GOP is preparing two other plans to address that (PPRP, 2020).

xv. The PPRP is dependent on monetary assistance from the world community thus hindering its response capacity and making it dependent. Besides that its basic purpose is focused on the PoE and airport screening mechanisms. (PPRP, 2020).

xvi. A plan must have clearly defined roles and responsibilities.

xvii. The NDRP of NDMA must have in place preparedness and response measures for infectious disease outbreak prevention, control and mitigation. If such measures were taken way before the outbreak things would have been more efficient and effective than now, as there would have been set protocols and guidelines to start the response with.

3.9. Recommendations for Improvement in NAP and Proposed Plan Layout.

In making of a plan that too for an infectious disease control, following points must be kept in mind:

1. Infectious disease outbreaks or to simply say pandemics are one of the most rarely occurring phenomena so the plan must be such that it is both cost effective and resource friendly.
2. Due to its varied nature the response must also be all encompassing i.e. for all types of infectious disease outbreaks as viruses and related infectious diseases are of varied nature so no single plan is effective. But some basic level preparedness can be taken in place keeping in view the risk perception. Like for instance, for all types of infectious disease control plans some standard SOPs are to be followed like social distancing, lockdown or quarantine facilities. This can be achieved by continuous monitoring and evaluation with feedbacks and assessment resulting updates.
3. The plans must be more of proactive (pre-emptive) than reactive or response based i.e. it is better to stop the spread than to contain it later on. As disease containment is very difficult and requires strenuous actions.
4. Modern day disaster management measures are based on risk perception than risk management. You prepare the way you perceive the risk. This approach benefits more in right track preparedness and mitigation measures. In case of infectious

diseases spread control plan, this strategy also works in way that you don't have to keep aside a major chunk of your resources for the purpose instead you have to overall strengthen your system so that it is itself capable of dealing with the crisis like in that case our healthcare system and overall health sector.

5. Such plans are not the dormant ones that are only required at the time when a risk surfaces instead they are and can be made active all the time by monitoring the local infectious diseases spread like malaria, polio, dengue or any such in our case. This means that they can activated at medium level for any health emergency that is outside the capacity of the basic health provision system. There are many situations that require limited activation and many that require full activation. This depends upon the capacity of the healthcare system in general. (Health, 2011).

6. A plan must be easily accessible by the relevant organizations and first responders.

7. Any plan dealing with infectious disease outbreak control must be in association with the public health sector of the state for better results.

8. The plan must be modular with stimulations, drills and emergency exercises.

Objectives of the Plan

Since the plan came right after the outbreak so it lacks preparedness prior to the outbreak and is more of a response based as to how things must be taken forward and what actions must be taken, side by side working on bolstering preparedness capacity for such future scenarios that too just an initiative by far as the first requirement is to deal with the COVID 19.

- The plan has not been updated till now.
- Focus is being made on respiratory pathogens only.

The objectives of the plan are

a) Containment of the virus
b) Timely response
c) Prevention of spread
d) Strengthen country and community emergency response
e) Resource allocation and mobilization for the emergency situation

Here, the response has not be elaborated as to how and what response has been carried in what way and what form. The response is the major aspect of the plan, it must have been clearly defined as to what response must be carried out and in what direction in order to help out the other organizations that are making use of this plan for their operations. The three 'T's of response must have been incorporated i.e.

a) Tracing
b) Testing
c) Treatment

Only then one must be able to contain or prevent the virus spread. For a plan, these are the major parts that needs to be further elaborated in order for its adherents to know what they have to do and how.

Similarly, the dissemination of relevant information and guidelines and the proposed SOPs with the corresponding authorities and society that includes healthcare practitioners, first responders, community members and the specific area under consideration.

Both the objectives and goals don't clearly states the public health disease containment measures such as infection control, mass prophylaxis (preventive measures adapted), social distancing, lockdown, isolation and quarantine, or restriction and clearance. The

plan lacks any details about as to what strategy will be adapted if any vaccination program starts.

Policy frameworks and reforms are being discussed but no priority is being given to data collection in the domain of research and analysis for the development of objectives and tactics. Your objectives will be advanced and more specialized only when you analyse the data. A research and analysis wing must be dedicated for the purpose.

A plan purpose must also be to prepare projections of the incident which will help in identifying response needs, and response capabilities.

A plan must have clear cut strategies. Here the plan discusses about the roles and responsibilities but does not properly classify as to what roles and responsibilities, what duties are assigned to specified groups. Things are more generalized than specific in the plan.

The plan talks about the initial prevention and containment of the virus but now as the cases has risen what must be the strategy of response and preparedness. More focus must have been given to this aspect as successful containment is only possible when the plan was already in place prior to the outbreak, which was not the case in our situation. We planned after the outbreak, so the time of containment was very crucial and relatively small. By the time we were able to contain the virus the virus had already spread all across the country. It's better to prepare than to respond or how the proverb says it prevention is better than cure, but as we were not prepared so our response must be efficient and effective, multi-faceted and robust.

The factor of accountability and people's participation must also be incorporated in the plan. As the success of every plan is based on the fact that how easily approachable

and clear the plan is for a lay man. In any emergency situation, results will only be positive when the general public is educated and guided enough as to how to respond. The plan lacks on community mobilization and awareness. Similarly, the factor of accountability is necessary for efficient response generation, as people adhere to the SOPs from the fear of being liable to punishment.

Goals of the Plan

The goals of the plan are

a) Strengthen co-ordination at all levels

b) Allocating precise duties to all the relevant authorities.

c) Increasing response capacity

d) Steady supply of resources and goods safety

e) Infection prevention and control in healthcare settings.

f) Health protocols for travellers (NAP, 2020)

Proper maintenance and documentation of all response related activities must also be one of the goal of the plan. This not only helps in decision making but also help us to prepare for any such future scenarios. What is the purpose of the plan? Its purpose is to generate effective response and gather all possible data and information in order to prepare for worst future scenario, this is the proactive preparedness and mitigation.

One of the major issue faced during response generation and containment of the virus was the unavailability of the trained specialist staff of the field i.e. microbiologists, virologist for instance. The plan must give special importance to coordinate access to technical specialists as needed.

One of our issue is that we respond but don't report back. Reporting back helps us to identify gaps in the response activities and aids in further streamlining the reaction.

Operations of the Plan

The operations part lack as to what the sequence of action be upon the activation of the plan. This is because the plan lacks proper division units and sub-units defined with specific functions like

1. Situation Analysis Wing
2. Resource Assessment and Mobilization unit
3. Data Entry and Documentation unit
4. Disbandment unit
5. Feedback Assessment unit

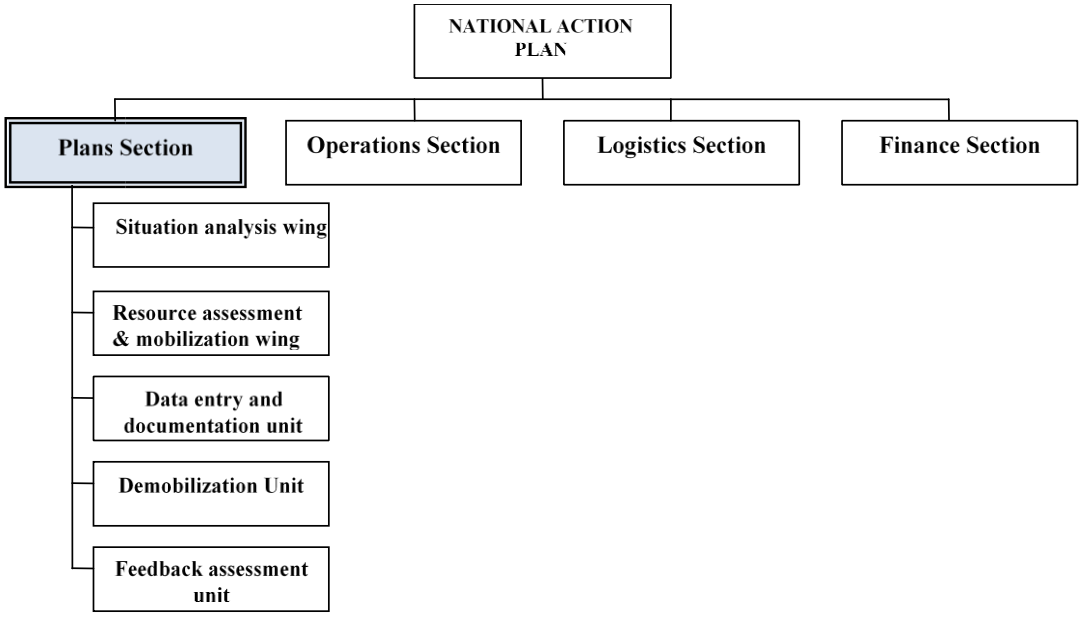

Figure 3.4 1: Proposed plan layout (A)

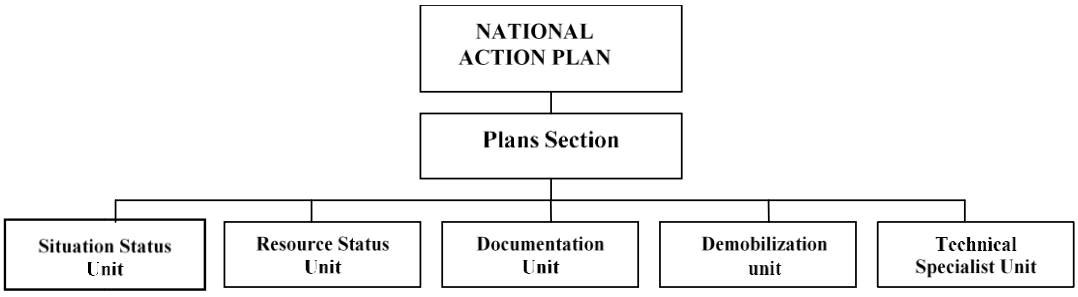

Figure 3.5 1: Proposed Plan layout (B)

Who must do what is not clear instead only the functions of the plan are discussed in the domain of:

- Preparedness and response
- Containment
- Mitigation

Like,

- Governance policies and reforms
- Capacities assessments and identifying the gaps
- Resource allocation and mobilization
- Strengthening co-ordination at all tiers
- Risk communication
- Funding
- Infection prevention and control IPC
- Stockpiling and logistics
- Data collection
- Case management
- Laboratory diagnostic capacity

The plan discusses well about the operations functions but not about its implementation. Like how the things must be activated at the time of an outbreak. Even though, this plan was made after the pandemic had already penetrated but still it must give an insight of things possible for such future occurrences.

The plan activation is sequential, that is done via proper surveillance of the situation. The operations part must clearly tell as to how and when and in what sequence the plan

must be activated. Who are to be the first responders and who are to be the last? An efficient plan don't work on generalized details on functions, roles and responsibilities of its adherents. Rather it must give proper procedural detail in step wise for its activation and operations respectively.

Every situation entails exact preparation and plan design for its apt management. Plans like national action plan for covid 19 or any such infectious disease outbreak control and response plan are more of a detailed versions elucidating each and every aspect and probable future scenarios. For every specific situation Incident Action Plans are to be drafted for specific time frame and must be approved from the Incident Commander.

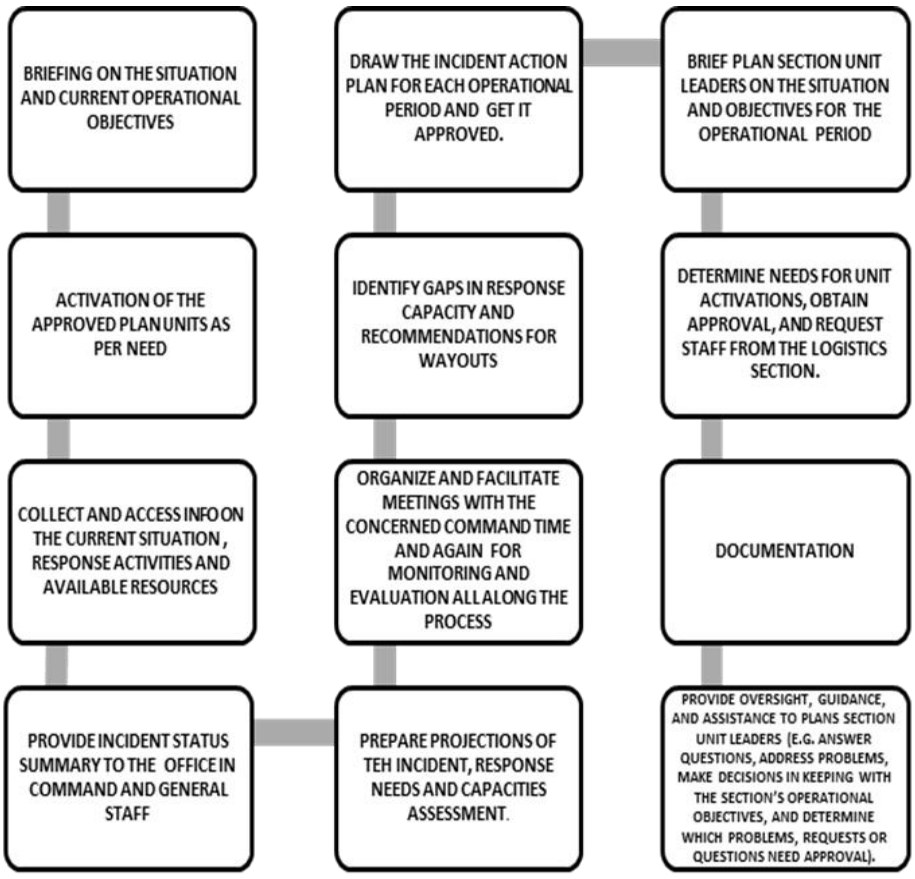

Figure 3.6 1: The proposed sequence of Operational implementation.

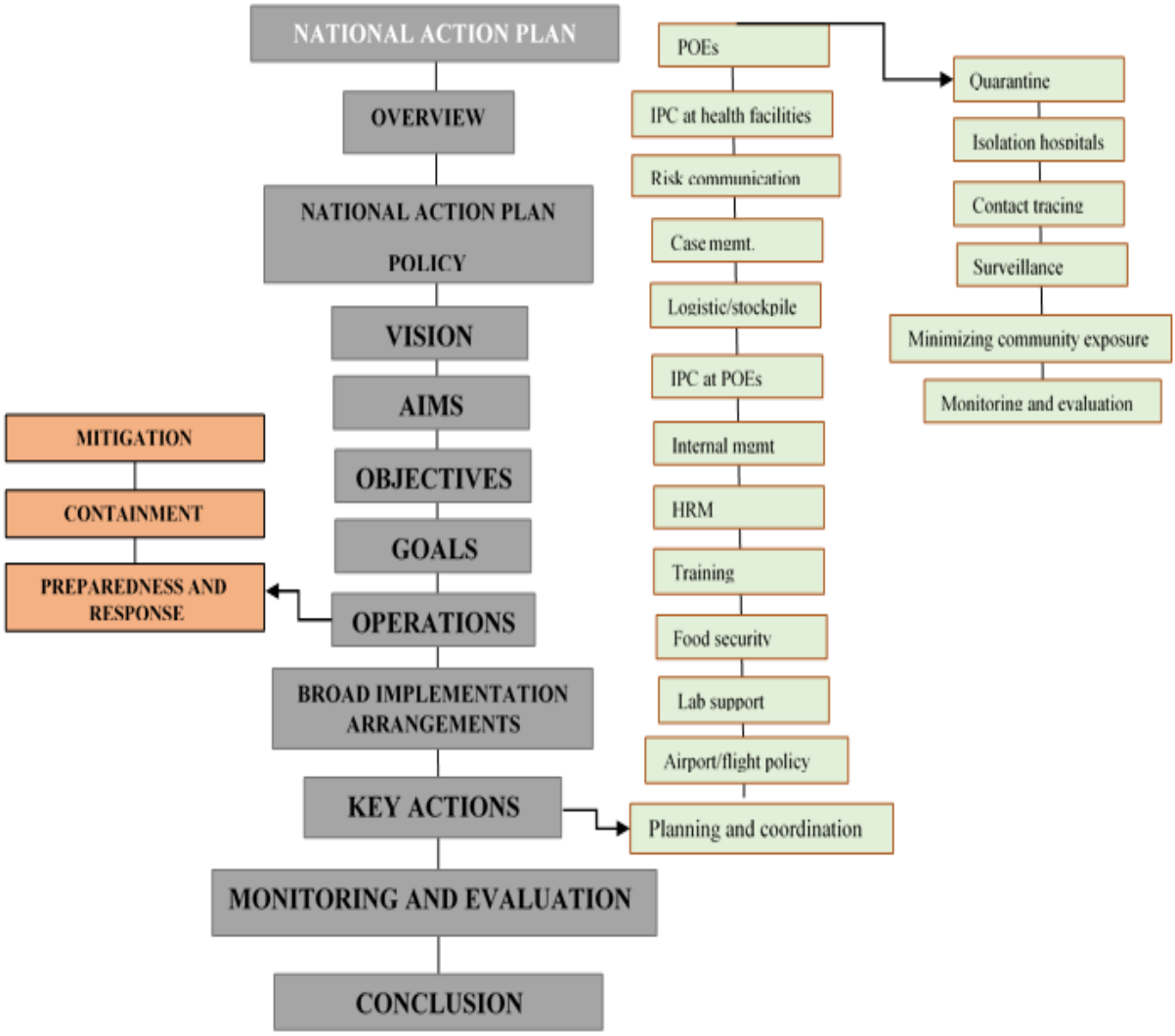

Figure 3.7 1: The Layout of the NAP for COVID-19 Pakistan

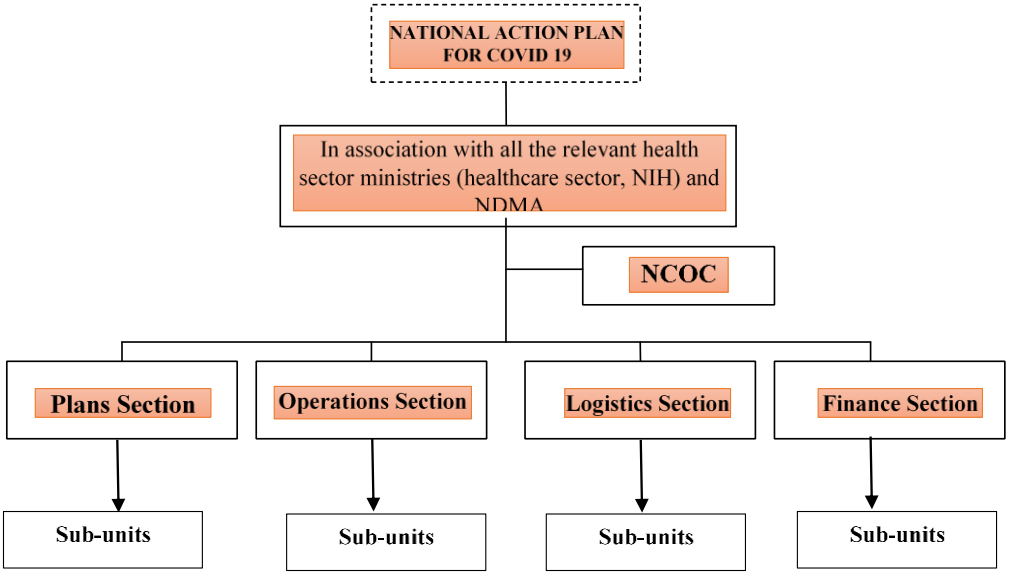

Figure 3.8 1: Proposed layout of the Plan

Figure 3.9 1: Proposed Units of Plan

3.10. Advantages of the Study

- Be better prepared for the new corona world. The new lifestyle.
- Better response can be generated.
- Better preparedness can be done.
- Health related emergency plans can be generated.
- Community participation in response generation by health sector can be achieved by awareness and education on the subject.
- By knowing the loose ends we will be able to better strengthen the health sector.
- If the challenges are known only then can they be resolved.

CHAPTER 4

DATA COLLECTION AND ANALYSIS

4.1. Data Collection

Pertinent to qualitative research type, the data collection tools includes online available sources like:

- Research Journals like Elsevier, Research Gate, Global Biosecurity, and Nature's cellular and molecular immunology, BMJ Global Health, Frontiers in Medicine, Wiley Journal of Medical Virology, Springer and many such.
- National Institute of Health NIH website and database
- NCOC database and Situation Reports SITREP were consulted.
- The data and information on the websites of NHSR&C, NHEPRN and NDMA.
- CDC and WHO along with UN relevant agencies.
- Websites like Worldometers for world statistics and comparative analogy.
- Relevant online articles sources like Medical News Today, The News, Hilal editions, Dawn Articles and Blogposts, Relief web International, International Society for Quality in Healthcare and ICRC.

All the Data is collected within the designated time frame from March 2020 to July 2021 owing to the ongoing status of the pandemic. Data is collected with reference to the research questions in order to find the particular answers. Relevancy is an important factor in this for the purpose of avoiding dispersion and duplication of the data collected. This is done through proper inspection and analysis of the data.

4.2. Data Analysis

All that Data that has been collected thru above mentioned research tools will be analysed by using Qualitative Content Analysis QCA method. Qualitative Content Analysis is the subjective interpretation of the content under study for finding required answers for the questions under consideration by picking and choosing relevant content, via sampling or assigning codes, in the form of words, sentences etc. from the text. This is the most suitable method for the type of research the subject demands. All the Data will be analysed against the research objectives. Since the methodology is explanatory so it can be best presented/manifested via secondary research tools like online research journals, relevant articles, websites, databases, audios, videos, newspaper and magazines along with observations and focused group discussions to some extent where possible with due permissions. The results of this study will be presented through graphs and charts. Descriptive data will be demonstrated in the form of facts and figures.

4.3. Qualitative Content Analysis of Pakistan Health Sector Response to COVID-19.

QCA Method has been applied for the analysis of the Response by Pakistan. The content is analysed against the stated objectives and the research questions. The Table 4.1 consists of four columns i.e. the serial no, title of the article, its source and lastly the key findings that are pertinent to the research objectives and questions. There are a total of 34 entries presented. A total of 100 articles were identified thru online sources and databases. Out of these 44 were analysed and presented owing to its direct relation to the study. The 56 left were those that were either not directly related to the study objectives or were repetitive. The area of the study covers all the online sources in the form of Journals, newspapers, articles, blogs, databases, websites and magazines.

S No	Title of the Article	Source	Key Findings
1	COVID-19: a new challenge for human beings	Cellular & Molecular Immunology (2020) 17:555–557; https://doi.org/10.1038/s41423-020-0407-x	WHO confirmed COVID-19 as PHEIC on January 30, 2020. A holistic approach is required consisting of observation, Analysis, diagnostics, research and development in the field of virology and immunology, for successful containment of the coronavirus.
2	Pakistan's Health System Against COVID-19: Where Do Things Stand?	Article in Journal of College of Physicians And Surgeons Pakistan · June 2020.	COVID-19 has highlighted the weakness of health sector. Study recommend a well-co-ordinated response mechanism between the public and private health sector after an in-depth framework of analysis. A neighbourhood warden system must be introduced at community level for efficient participation in response by the community.
3	Coronavirus disease (COVID-19) Pandemic and Pakistan; Limitations and Gaps	https://jglobalbiosecurity.com /articles/10.31646/gbio.63/? Report=reader	Lack of awareness along with illiteracy and high population are the major factors responsible for failure in generating effective response outcomes. The methodology of trace, test and treat requires to be rigorously executed.
4	Challenges Revealed to Pakistan in the Wake of COVID-19	Pak Armed Forces Med J 2020; 70 COVID-19 (1): S421-23	WHO has placed immense emphasis on social distancing as one of its basic postulate of the guidelines presented by it for efficient response generation for Pakistan? But the issues like fragile economy, weak

			healthcare and cultural settings have rendered it difficult to attain.
5	Coronavirus Disease in Pakistan: Response and Challenges from Prevention to Care	Journal of Medical Research and Health Sciences https://doi.org/10.15520/ jmrhs.v3i9.247 JMRHS 3 (9), 1090−1094 (2020)	The very first case of COVID-19 in Pakistan was imported from outside. The situation became worst pertaining to the extreme contagious nature of the virus and easy community transmission. The preparedness must be such that it works on the line of interrupting the community transmission chain of the disease.
6	COVID-19 in Pakistan: Current status, challenges and recommendations	Article in Journal of Clinical Medicine · July 2020 DOI: 10.23950/1812-2892-JCMK-00766	Mass media has played an important role when it comes to awareness and dissemination of information. However some of them had been misleading instilling fears, uncertainties and false rumours, myths and conspiracy theories regarding the virus.
7	Making Sense of Corona virus Mutations	www.media.nature.com /original/magazine	Provided the numerous variants of SARS-CoV-2 strains ,the resulting impact of the pandemic hasn't yet unfolded to complete extent — but its highly likely that they might occur in future. There's a sure possibility and probability that the virility of the virus will enhance and change its susceptibility to the antibodies and immunity already existing.
8	Disaster Management in a Pandemic	https://www.paho.org/disasters/ dmdocuments/RespToolKit _Complete.pdf	Handling of a disaster at municipal level requires to have a strong organizational structure, a continuous assessment of disaster needs

			DNA, identify and implement resources and plan respectively. These are the main ingredients of an efficient response.
9	Is Pakistan's Response to COVID-19 (SARS-CoV-2) adequate to prevent an outbreak?	https://www.frontiersin.org/ published 21 April 2020	By 26th February 2020 the virus spread outside was 13-fold more as compared to the numbers inside China. That was due to the lack of testing and screening equipment globally. On 27th February 2020 Pakistan reported its first two COVID-19 cases that too with a travel history.
10	Health reform in Pakistan: a call to action	Lancet 2013; 381: 2291–97 4th Series	Pakistan has to fight on various fronts like weak economy, internal security, illiteracy, population explosion, policy crisis, along with recently highlighted weak health sector. This calls for a change in right direction. High priority must be given to the Health sector by a combination of approaches, frameworks and objectives discussed.
11	Is Pakistan prepared fortheCOVID-19epidemic?A questionnaire-based survey	Wiley : Journal of Medical Virology 10.1002/jmv.25814	The study shows that Pakistanis are unaware of the COVID-19 and the respective strategies adapted for its prevention and control, including the front-line workers.
12	COVID-19 and its Challenges for the Healthcare System in Pakistan.	Asian Bioethics Review https://doi.org/10.1007/s41649-020-00139-x	The government of Pakistan must work on its capacity enhancement specifically in the Health sector and must give adequate facilities to the healthcare professionals. Testing, tracking, and lockdowns must be focused on

			areas where clusters are detected.
13	Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross sectional survey from Pakistan	Journal of Hospital Infection http://www.elsevier.com/locate/jhin	The healthcare workers HCWs are much aware of the pandemic but still there are some areas where they lack knowledge that requires due attention. This can attributed to their source of knowledge as they are using less authentic sources. The issue must be rightly addressed as it will affect the perception ultimately impacting on the functioning of the HCWs.
14	Addressing the challenges of COVID-19 pandemic outbreak: Pakistan's preparations and response	Wiley Online Library Journal of Public Affairs 10.1002/pa.2430	COVID-19 has further increased the poverty owing to the economic stresses it has resulted into. The government is doing its best to stabilize the economy. The policy initiatives taken until now are working efficiently like for instance partial lockdown.
15	Pakistan and the COVID-19 challenges	https://www.researchgate .net/publication	Surveys in Pakistan indicate that the urban population are more aware than the rural population. COVID-19 has majorly inflicted physical and mental health issues in health care providers' world over. Inability to identify asymptomatic population has been the greatest challenge worldwide.
16	Pakistan's Response to COVID-19 Pandemic and	MODESTUM: Electronic Journal of General Medicine https://doi.org/10.29333/ejgm/7951	Pakistan vulnerability increased owing to its border sharing with the two epicentres of COVID-19 i.e. China and Iran. Delay in

	Efficacy of Quarantine and Partial Lockdown: A Review		the arrangement of Quarantine Facility further aggravated the situation. Simultaneously the lockdown adversely affected the labour class.
17	COVID-19 Outbreak: Current scenario of Pakistan	Elsevier: New Microbe and New Infect 2020; 35: 100681	Despite the meagre funds Pakistan has taken intrinsic initiatives for example prepared specific COVID-19 Hospitals, quarantine facilities, testing capacity, awareness campaigns and lockdown initiation, in its fight against COVID-19
18	Who: A Strategic Framework for Emergency Preparedness	WHO	The Response must be strengthened regarding healthcare emergencies like infectious disease outbreaks. Therefore, the resources must be mobilized and allocated for better community and country preparedness.
19	Worldometer	https://www.worldometers.info/coronavirus/#countries	Till date the total cases in Pakistan are 1085294, with total deaths of 24187and 975474 recovered.
20	No one is safe until everyone is safe-why we need a global response to COVID-19	International Committee of the Red Cross icrc.org	In order to make a positive change the world needs to join hands to work on a common cause of health for all. Equal and urgent access to vaccination must be made available both within and inside countries. The 2021 has witnessed the worst economic downturn since 1945. World leaders must support countries financially, politically and technically in order to curb the COVID-19 crisis.
21	WHO's Strategic preparedness and	WHO_SPRP.pdf	A plan envisaged on 4 February 2020 by the WHO for the

	response plan SPRP		purpose of formulating guidelines for effective response generation against COVID-19 by the world community. The ultimate objectives are the containment of the virus, save lives and protect the vulnerable.
22	Pakistan's Response to COVID-19: Overcoming National and International Hypes to Fight the Pandemic	JMIR Public Health and Surveillance Journal https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8136406/	Pakistan handled COVID-19 based on the experiences gathered from other countries. Many initiatives were taken like preparing SOPs, isolation wards, awareness raising thru media cells and many others.
23	Risk perceptions of COVID-19 around the world	Taylor & Francis Online Journal of Risk Research https://doi.org/10.1080/13669877.2020.1758193	COIVD-19 Risk perception is uniformly high. This variance can be mainly attributed to socio-cultural factors among different countries. As per research it's been found that risk perceptions pertaining to Asian Influenza were relatively higher in Asia than Europe so the actual perceived risk was not higher in absolute terms. Scientists speculate that this thought process that the pandemics can be controlled based on the past experience could be the reason for lowering risk perceptions.
24	Awareness, Attitude and Practices Related to COVID-19 Pandemic in General Public of	Research gate Ali, A., Farooq, S., Khalid, N., & Ahmed, F. (2020). Awareness, attitude and practices related to COVID-19 pandemic in General Public of Province Sindh, Pakistan. Pak J Med Dent, 9(3), 90-95.	the public has a positive attitude towards the roles of guidelines provided for COVID-19 prevention. There primary source of information is internet and T.V.

	Province Sindh, Pakistan		
25	Psychological Predictors of Anxious Responses to the COVID-19 Pandemic: Evidence from Pakistan	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7711115/	In the COVID-19 epidemic, there was noted a diverse nature of anxious responses and safety instincts. A general trend was observed that people who have greater concern of contamination are likely to respond anxiously to COVID-19 and therefore are likely to feel contamination concerns.

Table 4.1 1: QCA Method (a)

S No	Title of the Article	Source	Key Findings
26	10 steps Pakistan is taking to contain coronavirus	Gulfnews.com	10 important steps were announced by the GoP. That includes the formation of National Co-ordination Committee for COVID-19, NDMA activation and monitoring of the situation, closure of all education institutes nationwide, sealing of borders, closing of Kartarpur Corridor, screening at all POEs, ban on public gatherings, a comprehensive food security plan, check on religious affairs and SOPs for courts and prisons.
27	Comparison of actions taken by Pakistan, United Arab Emirates and Vietnam for COVID-19 prevention and control	jglobalbiosecurity.com	Vietnam was successful in quick imposition of travel restrictions that helped immensely in curbing the COVID-19 surge in the country in parallel to Pakistan and UAE where this strategy was delayed.

			This shows that for developing countries decisions like travel impositions are perplexing owing to the socio-economic conditions and food & supply chain.
28	Pakistan's Combat and Comeback Against COVID-19	https://www.ncbi.nlm.nih.gov /pmc/articles/PMC7673173/	The failure to timely detect and combat the pandemic lies in the fact that there exists a visible gap between modern medicine and technology. Irrespective of the efforts taken by GoP and the Military, the cases still rose owing to the careless defiance of the locals.
29	Coping with COVID-19: The Pakistan Experience	www.cgdev.org/blog	Pakistan's pandemic inhibition and control strategy is based on that of South Korea's Model of Testing, tracking and quarantine. It consists of two stages; at grass root level and at technology level. The aim was to move from complete to partial/smart lockdown.
30	Pakistan's Role in COVID-19 Pandemic	www.thebiomedicapk.com/articles	In order to help the poor and labour class, Pakistan started Ehsaas Emergency program. The program reached out to 12 million families with 12000 /pkr per family, making a total budget of 144 billion PKR.
31	Threat of COVID-19 Vaccine Hesitancy in Pakistan: The Need	The American Journal of Tropical Medicine and Hygiene. Ncbi.nlm.nih.gov	Many conspiracy theories ensued on the very onset of the pandemic in Pakistan. One of the most prevalent

	for Measures to Neutralize Misleading Narratives		one was that it's a conspiracy against Muslim countries. This has generated vaccine hesitancy amongst the masses.
32	COVID-19 suicides in Pakistan, dying off not COVID-19 fear but poverty? – The forthcoming economic challenges for a developing country	www.ncbi.nlm.nih.gov /pmc/about/covid-19/	Increase in the suicide rate is a common consequence of a pandemic. In case of COVID-19 lockdown induced economic downturn is the major contributor to increase in suicide cases. Fear of the infection happens to be the second factor.
33	How did Pakistan avert disaster?	Dawn news article	Owing to unstable economy Pakistan cannot afford a complete lockdown. Instead it's been devised to learn to live with the virus and follow the SOPs.
34	Coronavirus command centre reports people not following SOPs — Pakistani planning minister	www.arabnews.pk	One of the biggest issue with Pakistani community is not following the SOPs.
35	Questions about Pakistan's Covid-19 control strategy	Thenews.com.pk	Lockdown is not the only perfect strategy to contain virus outbreak. Countries do resort to many other strategies like restrictions of movements as for instance in Wuhan city of China.
36	Pakistan now equipped to test for novel coronavirus, says P.M aide	Dawn.com	Pakistan is now capable of identifying the coronavirus owing to the procurement of nearly 1000 testing kits from China.

37	Pakistan's Confused COVID-19 Response	Thediplomat.com	Due to policy lag and changing paradigm of decisions pertaining to COVID-19 people in general were and are in a state of doubt and rejection. They consider it as a conspiracy against Muslims by non-Muslims. There are numerous fast disseminating myths and rumours with origins not known.
38	How local government can strengthen Pakistan's fight against covid-19	Democarcy-reporting.org	Dealing with COVID-19 requires swift measures readily accessible and applicable at grass root levels. In case of Pakistan established and mainstreamed local governments can play a pivotal role in both during and post corona world.
39	Pakistan: Lifting virus lockdown may lead to 'herd immunity'	Anadolu Agency aa.com.tr	Ease in lockdown can further swell the cases curve. And this may ultimately lead to herd immunity.
40	Herd Immunity?	Dawn.com	The coronavirus can be contained via two means that is either vaccination or achieving herd immunity. Achieving herd immunity without vaccination is by contacting the virus as surviving for as much as 70% of population. Presently it is being followed by Sweden.
41	Pakistan Struggles to Fight COVID-19	Thediplomat.com	Ample supply of the PPE is the ultimate requirement of

			the frontline health workers, along with adequate testing capacity.
42	Pakistan's COVID-19 Crisis	International Crisis Group Crisisgroup.org	Lockdown is not the sole solution to the crisis. Cases will rise unless a vaccine is found. We need to co-exist with the COVID-19 by maintain precautions and SOPs. The new strategy happens to be of ''living with the pandemic''. This has made the public more fearless and opinionated. Efforts must be made on increasing capacity of health sector and initiatives like smart lockdown instead in order to keep public in control.
43	First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies	Ncbi.nlm.nih.gov	COVID-19 and its relevant SOPs had a huge impact on the mental health of masses world over. It had been a source of fear, uncertainty, sadness, worry and anger for instance. This frustration and helplessness in severe cases is leading to suicidal behaviours, as can be seen from instances in Bangladesh.
44	Contact tracing slows the spread of COVID-19	www.cdc.gov	Contact tracing is the best means for slowing down the virus spread and can be done at individual levels in order to protect yourself and your family.

Table 4.2 1: QCA Method (b)

CHAPTER 5

RESULTS AND DISCUSSIONS

5.1. Preamble

The research shows that Pakistan was hit hard by this pandemic due to many factors like fragile healthcare systems, meagre resources, lack of planning and management on our part, ignorance and stupendous conflicting policies (decentralization).

The response generated by Pakistan was not a steady one. It had a rough start due to many reasons, one majorly being the lack of Infectious Disease Control Plan. Similarly the challenges faced made the progress more difficult and slow. But despite all these hurdles Pakistan successfully tried to curb the crisis in a decent way in contrast to the history. It was able to flat line the COVID-19 curve and manage it properly. With such meagre resources and external pressures it tried to balance out the situation. It's because of the fact that we have become resilient enough, via facing quite serious situations prior to covid 19 (earthquakes, floods, terrorism, security crisis etc.), that we were able to manage this one.

Through the research analysis we gathered that Pakistan had no native case of covid 19 to begin with instead the very first cases were transported inside. This happened due the geographical location of Pakistan where it shares border with Iran and China, the first few highly infected areas. On February 27th, 2020 The Ministry of Health reported its first two COVID-19 cases in the city of Karachi by individuals who had travel history from Iran. This shows that it was our ignorance and deviation from the standard operating procedures that things got out of hand. The Taftan border crisis is also one such example of negligence on our part. This shows that the very initial cases

of covid 19 in Pakistan were imported from outside, had it been stopped on time things would have been different now.

5.2. The Response Capacity

The detailed research and analysis of Pakistan's response to covid 19 gives a variant trend of positive and negative consequences. There were some aspects where response was steady and some where it happened to be slow and misguided. The biggest issue was the decentralization of the federal and provincial set-ups on the question of covid 19 crisis. After the devolution of power, the health sector became a subject of provinces only, hence they became free in their activities. This where on one hand had positive outcomes on the other hand led to many issues that were clearly witnessed between the centre and province at the time of covid 19 pandemic situation, as because of the fact that there was no single body to streamline and well coordinate all the activities simultaneously rather all worked independently whether it be the centre-province or public and private sector. This led to chaotic situation in the beginning where everyone did what they thought was right. In amid of the crisis there was no single organization ready to intervene, with set protocols, in order to deal with the situation. The concept of dealing with the biohazards was new and lack of preparedness could be seen in this regard. Many organizations and ministries were activated on the same time leading to decentralization of the issue.

Moreover, the fragile health care system has also put strain on the efficient response generation by the government of Pakistan. Pakistan's percentage GDP allocation for the public health care systems expenditure remains the lowest in the world i.e. less than 1% of the GDP for and only 0.6 beds per 1000 people. Even with the allocation of 12,671 million rupees in 2019 for the development of health sector, still Pakistan needs robust measures to uplift the already collapsing health sector. Special attention

must be given in increasing the budget percentage for the health sector in order to meet the challenges.

5.3. Demographics

5.3.1. Qualitative variables

The following qualitative variables i.e. COVID-19 cases trend in Pakistan , Pakistan COVID-19 statistics and healthcare response capacity analysis from April 2020 ro July 202 are discussed in the form of the subsequent graphs and charts. The trends observed are shown below:

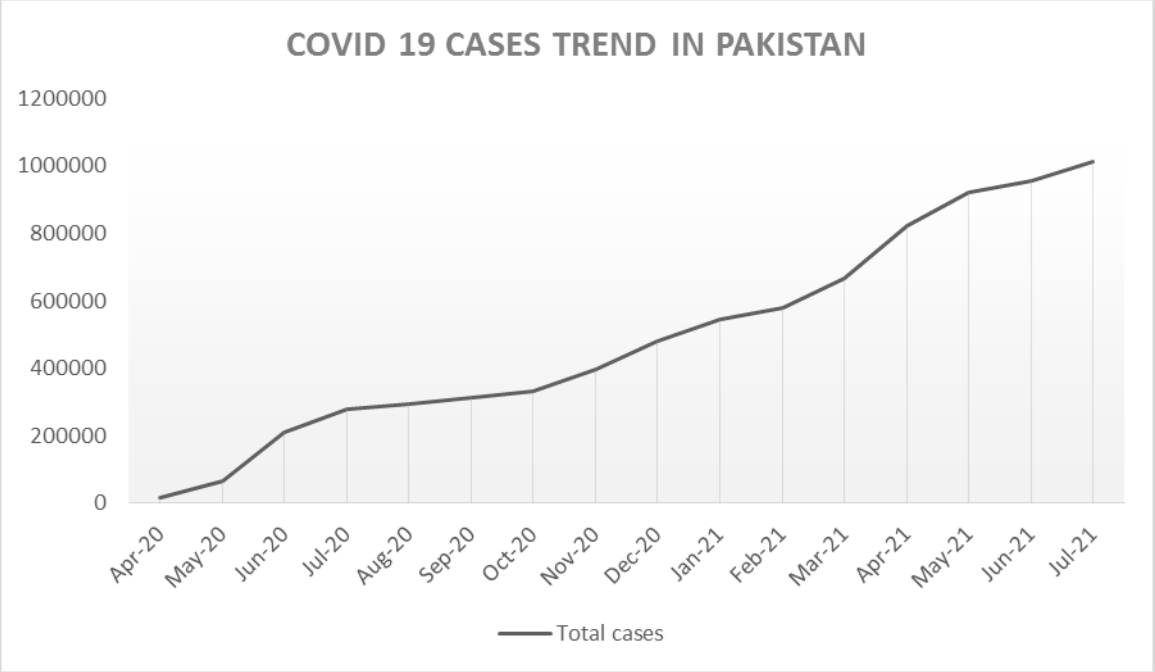

Figure 5.1 1: COVID-19 Cases trend in Pakistan from April 2020 to July 2021 **(NCOC, 2020)**

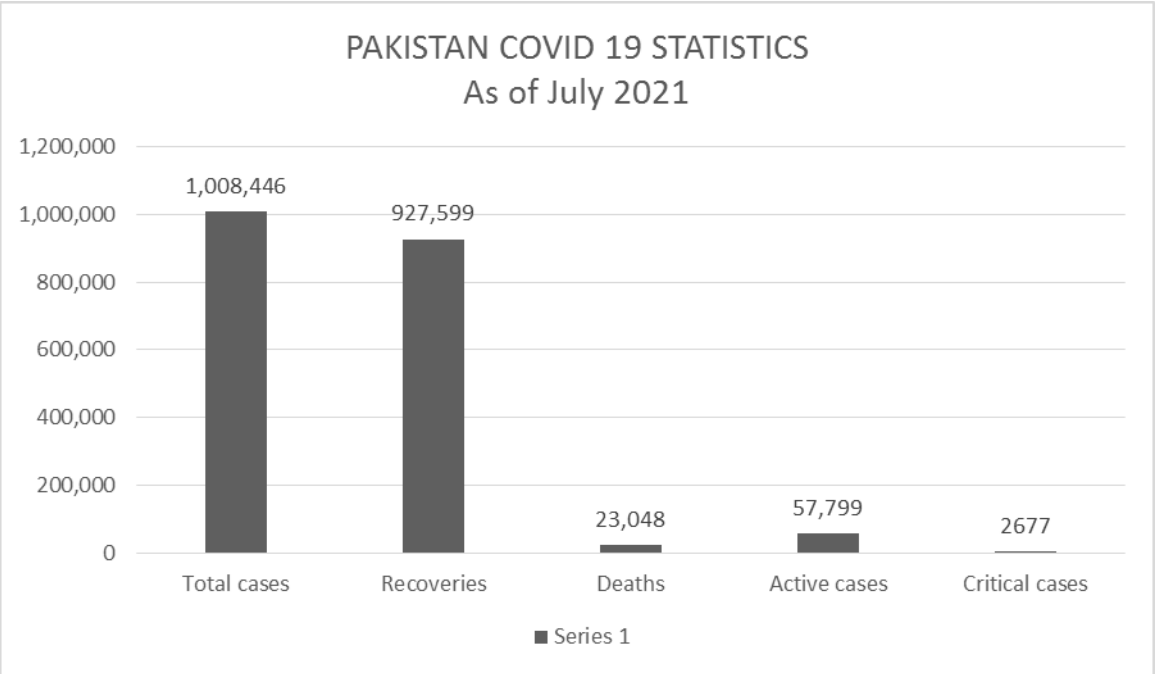

Figure 5.2 1: Pakistan COVID-19 statistics as of July 2021 **(covid.gov.pk, 2021)**

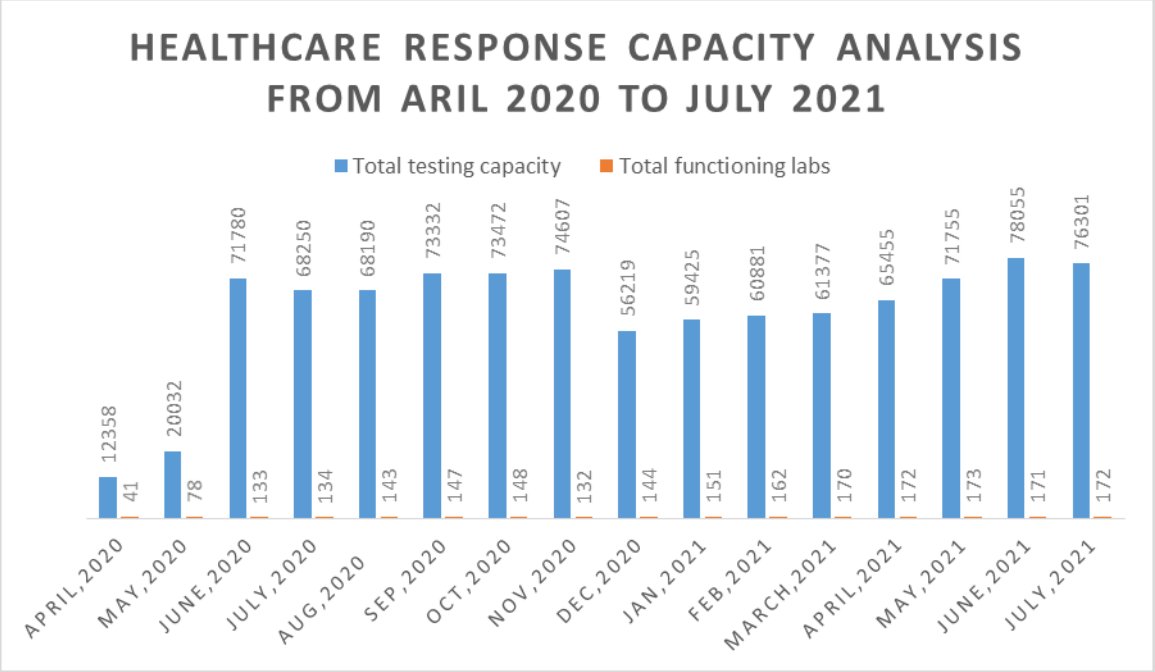

Figure 5.3 1: Healthcare response capacity analysis from April 2020 to July 2021 **(NCOC, 2020)**

5.3.2. Province Wise Distribution of Quarantine Facilities in Pakistan

The Fig 5.4 gives an insight of the quarantine facilities all across Pakistan. The Analysis of Response gives a critical evaluation of steps taken by the GoV, what measures were adapted, how resources were allocated and what hurdles were faced. This critical evaluation is then statistically analysed in order to get a clearer picture of the facilities already available and the ones that were established as per the requirement. Similar was observed in the case of Quarantine Facilities available nationwide. After the analysis of the data provided by the covid.gov.pk an overall graph was generated showing the number of quarantine facilities available at the moment in different provinces.

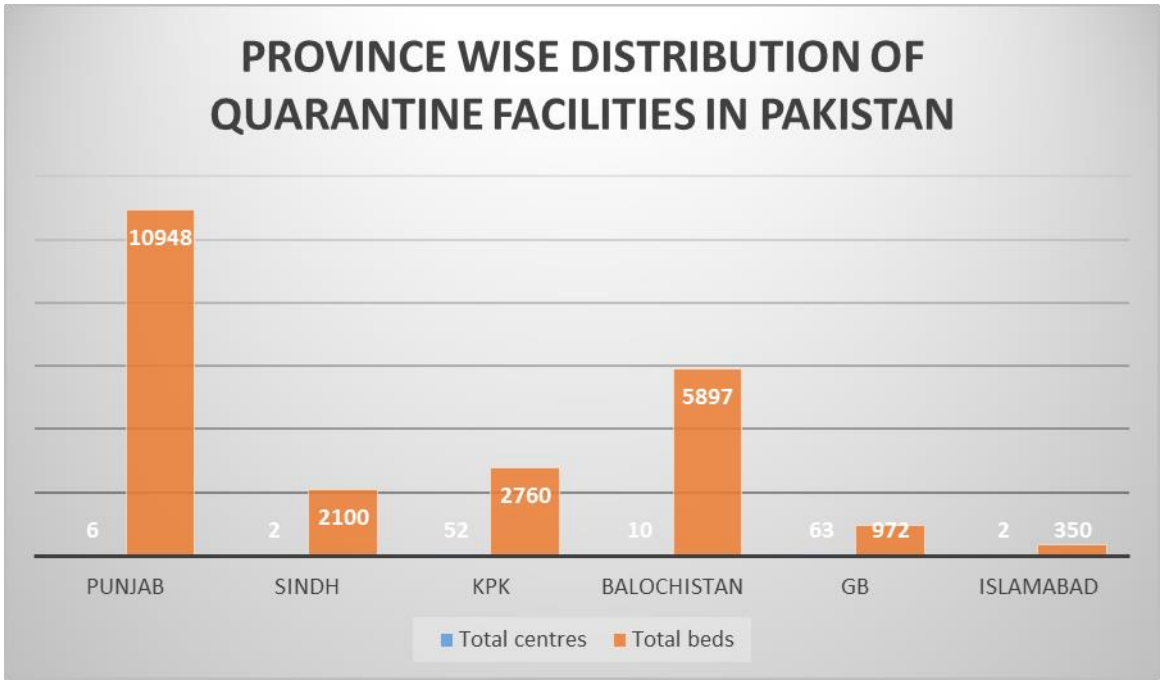

Figure 5.4 1: Province wise distribution of Quarantine facilities **(covid.gov.pk, 2021)**

5.3.3. Province Wise COVID-19 Statistics From March 26,2020 to July 29,2021

The fig 5.2 shows when the province wise COVID-19 statistics comprising of cases vs recoveries vs deaths were analysed from the beginning of the pandemic i.e. March 26,2020 till July,2021, a clear trend was generated showing the cases, deaths and recoveries per province. This investigation at provincial levels helped in understanding the severity index in each province, by analysing the number of cases, deaths and recoveries. It can be clearly seen in the graph that the positivity ratio of cases is at par with recoveries whereas a clear trough can be seen in the deaths observed. This shows that the cases and recoveries of COVID-19 are parallel, depicting that the response initiatives were positive in this regard. Likewise, the lower rate of deaths also shows the positive outcome of the response generation.

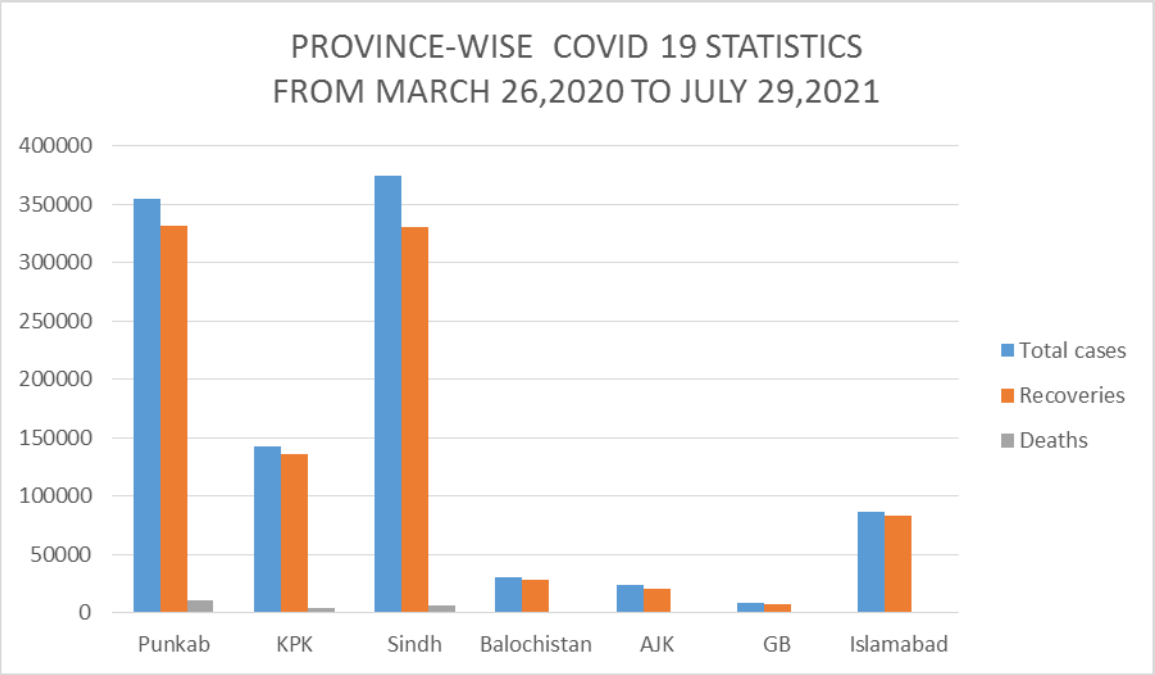

Figure 5.5 1: province-wise COIVD-19 statistics from March 26, 2020 to July 29, 2021 **(NCOC, 2020)**

5.4. Challenges Faced in Response Generation

Neglect and not adhering to the sops is our biggest issue and challenge yet to overcome.

Major categorization of challenges can be done in as

a. Healthcare
b. Mental
c. Social

The worst hit by the pandemic were the countries that had fragmented decentralized health care system, for instance the case of Pakistan. Before covid 19, a common perception was that militaristic strength is the only security approach and strategy most relevant in the world. Nations strived to achieve military power in order to be ready for any security threat. Similarly, in the context of disaster management, like in case of Pakistan, the only focus was on natural hazards like flood, earthquakes, droughts, landslides, GLOF, avalanche etc. limited to none focus was given to biological hazards including biological weapons, biochemical warfare and in the current case COVID-19 pandemic. With the advent of COVID-19 crisis, nations came across the harsh reality of the fact that they were the least prepared for a viral attack that they presumed to be a case once in a blue moon. They realized that they were preparing in the wrong direction. Nothing is never unexpected, their always are signs that warns us only we need to identify them, realize its importance and prepare for it. But its human nature that we tend to give less importance to such phenomena. Our biggest concern is to strengthen our economy and look for and prepare against our visible enemies, identify threat to our territorial security and sovereignty, detect invasion by the enemy, focus on more and more arms race and armament, deterrence, prepare for expected armed

conflict, and thus nations invest more and more in building militaristic strength and neglect all other mass risks like climate change, global warming and pandemics. And when these warning signs convert into reality, due to lack of preparation.

1. The Dearth of a Proper Plan and Procedure

There is a common perception that Pakistan emphasizes on public health preparedness only now and again, primarily as a response to experiences where vulnerabilities spike. This is the reason why there is an absence of an all-encompassing health system that work efficiently and effectively at the time of a disease outbreak.

One of the principal challenge that Pakistan faced on the onset of COVID-19 pandemic was a lack of infectious disease control plan. Although plans exist for other hazards like floods, earthquakes etc. but due to the absence of the respective plan for pandemics response and control, significantly impeded the country's response against COVID-19 (Meesha Iqbal, 2020). There were no guided SOPs already in place as to how to deal with the virus outbreak. Prior to the pandemic, the only active document dealing with epidemics was the primitive The Epidemic Diseases Act, 1958 (An Act to consolidate the law relating to the prevention of the spread of dangerous epidemic diseases in the Province of West Pakistan) that too an in sufficient one not up to the modern standards. Even though, National Action Plan for COVID-19 was formulated on emergency basis but still a contemporary plan would have had an impact worth benefiting.

Similarly, the implementation of the formed policies as per the requirement also lacks focus and monitoring in true sense. Many policies are in place but what we lack is its proper and fruitful implementation, they are mere bundles of documents. We are over-sufficient in documentations but extremely limited in its proper implementation in order to get the desired results. We have a lot of ministries and relevant paper work

and material available but all lacks practicality. Government's failure in the execution of the relevant policies and plans is the biggest issue that is to be resolved in order to get the desired results.

From the perspective of disaster risk reduction one must prepare well before the expected onset of disaster on the fore fronts of risk reduction. Instead of managing the risk one must work on reducing the risk in order to limit the damages caused in the aftermath. Mitigation and preparedness must be the focus instead of response and recovery when the damage has already been done and thus adding on additional burden on the already crippling economy. But in case of COVID-19 forget about mitigation and preparedness no measures were there even for response and recovery operations. All things went ad hoc in a way as to ones best understanding. Amid the crisis there was no single organization ready to intervene, with set protocols, in order to deal with the situation. The concept of dealing with the biohazards was new and lack of preparedness could be seen in this regard. Many organizations and ministries were activated on the same time leading to decentralization of the issue. Although NDMA exists but due to the lack of a health emergency response plan in specific lead to a chaotic situation where no one knew what has to be done and who are the responsible agencies. Things went ad hoc due to lack of policy and plan. Uncertainty over federal and provincial roles, inadequate healthcare systems, a lack of resources, as well as inadequate execution at the local level define Pakistan's environment, along with challenges like illiteracy and over population. It was decided to analyse the national response of Pakistan's health care system to the COVID-19 pandemic based on scientific metrics in the midst of these obstacles.

2. Co-ordination at Government Levels

In addition to the challenges posed by religious institutions, there are impediments to collaboration within the government that need to be addressed. The federal and provincial governments are not working together. This catastrophe necessitate well-coordinated governing systems. Due to devolution of power each and every province is now free in taking its independent decisions, be it related to critical healthcare facilities which on side is beneficial in getting desired results but on the other hand lacks co-ordination and generation of mainstreamed response. Similarly, on one side where Provincial Governments have control on many decisions, important judgements like border control and aviation comes under the jurisdiction of Central Government and so provinces can do nothing pertaining to increase of surveillance at airports.

Furthermore, large demography's like Pakistan must make use of their native administrations like CBOs and local government for effective control of the virus at the very grass root level and simultaneously tackle the confrontation faced by the healthcare practitioners by reinforcement of the native nets. Due to the lack of local administrations, it has taken longer for healthcare and humanitarian efforts to reach communities.

3. Fragile Healthcare Infrastructure with Limited Facilities

This is because health care has been delegated to the provinces after the Devolution of power via 18th Amendment in the Constitution of Pakistan, which makes it difficult to create and administer a unified policy at the federal level. This problem was encountered during the continuing Covid-19 epidemic. Pakistan's health sector has long been plagued by the "Diversified Health structures Disorder," where a mix blend of both public and private health systems exists. Pakistan allocates nearly around 1%

of its GDP to health sector against the WHO's benchmark of at least 6%. Pakistan's health care system is rudimentary.

Initially, following were the impediments in health sector response:

- Limited health care facilities and testing equipment that resulted in delayed response. Though later on this crisis was balanced out when the required medical equipment and testing kits along with the primers were received and made available locally by the government of Pakistan. Simultaneously, the WHO congruently arranged test centres for COVID-19 in about seven hospitals nationwide.
- Inadequate capacity of quarantine centres nation-wide. This gap was filled on later on.
- The disposal of Personal Protective Equipment PPE which includes face masks, gloves and all was insufficient. At the start, they were in abundance but later on they became scarce and pricey at the same time. Many factors can be attributed to this shortage. The PPE equipment were hoarded and sold via black market. This led to the extreme shortage of the protective equipment for the healthcare professionals working on the frontline, even though in reality they were surplus. In order to handle this situation both NDMA and DRA stepped in to help government get rid of this hoarding and black marketing.
- A lot of medicines and medical apparatus went short in the drugstores during the pandemic. Hoarders took advantage of this situation and started making profit by selling those medicines and all in high prices. The government instantly took control of the situation.
- There are only 14,000 beds available in both public as well as private hospitals in Karachi, Lahore, and southern Sindh, which account for more than 70,000 of the

state's 98,000 patients. Numerous people were approaching hospital authorities, but owing to a shortage of medical equipment, hospitals were failing to give enough medical help to the patients. In Baluchistan, quarantine centres were constructed, however they required standardised treatment and screening processes for infected individuals.

- Limited hospitals coupled with lack of doctors and paramedical staff, the biggest challenge. The sudden surge in infection cases gave rise to shortage of space in ICUs and likewise the workforce dwindled. The health professionals were not given any specialized training prior to the pandemic regarding the pandemic (Jaffery, 2020).
- Many of the costly medical gear stayed non-functional for ages. Elite were treated with the best available medical services whereas the poor were left with limited to no basic medical facilities thus making them more vulnerable (Hadid, 2020). Not only that but also the maintenance was also ignored time and again, making the scenario even more grey.
- Harsh behaviour of the general public was another issue. They blamed the hospital and the doctors for the loss of their loved ones, as a result agitation ensued. Public smashing and lashing out at the hospital equipment and staff was a common occurrence scene everywhere. Families, annoyed and irritated, vented out their frustration on the doctors and the hospital administration owing to them being not admitted by the hospital due to lack of facilities and staff. (Kermani, 2020). The way the COVID-19 cases are swelling shows that it will ultimately cripple and overpower Pakistan's healthcare system. The way it is spreading and engulfing the communities hints that this pandemic is going to stay for long. Prior to the

pandemic Pakistan's health sector was already weak and resource constrained. (Afzal, 2020).

- The prevalence of medical myths like for instance there were a segment of population who firmly believed in that it is the doctors and hospitals that are incorporating some kind of injections leading to infections.
- Business on the donation of the plasma. Primary studies propose that plasma obtained from the patients that have recovered from covid 19, contains in it the antibodies that can supposedly fight against the corona virus antigen thus can prove to be helpful for the infected patients (Duan, 2020). Many people voluntarily started donating their plasma as one of the biggest humanitarian response drive but there were some people who sought out some ill intentions from this, they started making business out of it taking advantage of the helplessness of the affected. Even to the fact that Recuperating plasma transfusion was itself not a complete sure remedy but a means of treatment that too in its trial phases. The procedure must be carried out under controlled circumstances. In no way it should be publicly experimented without prior supervision (Epstein, 2020). In the same way, many medications like dexamethasone got short at chemist's the moment they were professed helpful for corona infections (Qureshi, 2020).

4. Unequal Distribution of Resources

The thing with catastrophe is that they do not target their audience specifically instead they affect all the community equally be it rich or poor. It's just that some are more vulnerable than the others based on the access to and availability of the live saving resources. In case of us, the problem had been of unequal distribution of healthcare facilities and other. The rich are provided with better accessible healthcare facilities, economically they are stable, the perks of work from home and many more as

compared to the poor. And the paradox of the situation is that it is the poor who are the most vulnerable to the crisis. This was the reason behind partial lockdown to protect the labour class.

5. Limited Social Protection Programs

In any emergency situation stress is always placed on the need for social protection. In case of Pakistan, the disbursement on any social protection is below 2% of GDP, very near to the ground in comparison to the global average of 11.6%. And to the very fact, majority of the informal sector are not the part of such schemes irrespective of their input to the GDP (almost one-third) and employment (72% of all jobs outside agriculture) (Shaikh, 2020).

Pakistan ranks 9th largest in terms of workforce in the world i.e. 65.5 million people. But, the irony is that only 4.4 million of them are eligible to social protection assistances which denies the rest from their legal constitutional right to entitlement. The rise in the number of jobless day by day and out-of-work daily wage labourers gives a pretty bad image of the labour force of an already poor country. The daily wagers and the ones associated with the informal sector are the worst hit by the pandemic. According to an assessment, 19 million people have lost their jobs due to COVID-19 and its economic impact. And if no proper measures are taken the figure of 50 million people living below the poverty line are anticipated to get twofold (Manzoor Ahmed Abbasi, 2020). In the province of Sindh, mere 0.5 million out of 15 million workforce are registered for social protection, that means 96.7% of the workforce is without any financial support. Similarly, The Prime Minister's COVID-19 Relief Fund's cash transfers of PKR 12,000 for workers losing their jobs has only benefited 1.1 million workers in the province until now.

Besides, proper scrutiny and transparency is required in the implementation of such programs, only then they will provide us with the desired results.

6. Dealing with the Resistance

When the community don't stand with you they resist you, this is what the Government of Pakistan faced in case of covid 19, that significantly hindered its capacity to deal with the contagion in all potential spheres be it the social, political or cultural setting of the country . Opposition in the form of community dynamic forces, spiritual practices and standards, political uncertainty, financial instabilities, and above all absence of reliance on administrations, made it even difficult for Pakistan to fight with an infectious disease like polio that is far less in intensity as compared to corona virus. Similar were the challenges faced by Africa in their fight against Ebola virus and so are projected to be confronted by Pakistan.

The closing of Mosques became a great debate in the country, whether they eb closed or not owing to the rising cases of COVID-19. Many Muslim countries have already taken the step forward in closing of the religious centres. But in Pakistan, due to the expected extreme reaction, only Friday prayers in congregation has been restricted. This requires for a means of alliance between both the parties for desired outcomes (Shaikh, 2020).

7. Not Adhering to the SOPS

One of the biggest problem of our people is their irresponsible non serious behaviour, that also witnessed and being witnessed in the ongoing corona pandemic. Public tend to forgo the standard operating procedures and the guidelines imposed. When dealing with the infectious disease outbreak, one of its biggest trait is its ever changing dynamics. As a result of which all the strategies, plans, guidelines and measures for

efficient dealing of the virus also changes with the changing dynamics of the disease. So in such an unpredictable scenario the best strategy is to stick to SOPs in order to hinder the propagation of the outbreak. These SOPs are for both the concerned officials/ healthcare officials and the general public as designated to them as per the requirement. This also happened during H1N1 outbreak in USA, where the administration familiarised SOPs to control the rise of the infection growth. Those SOPs contained guidelines for all including the officials of the concerned authorities and the general public. Owing to which the spread was limited to a greater extent.

Albeit to the fact that we did not adhered to the SOPs completely, still the dissemination of the virus was less than the perceived numbers (Primary & Secondary Health Care Department, 2020). Unfortunately, the Pakistani public seemed to have blown precaution to the wind, appearing to be in no hurry to follow SOPs. They openly violated the given instructions, downplayed the risk, and acted unconcernedly. "They waffled, wavered, and drew a blank. They manipulated the decisions the way they wanted them to be. (Khalid A, 2020) (Adams, 2020).

Just as people die as a result of this pandemic spiral, life goes on as normal everywhere. Because of this destructive and reckless mentality, there was a rapid alarming rise after the lockdown was relaxed, with a total of 255,769 cases as of 15 July 2020. The public's initial reaction to corona virus was off-the-cuff and unconcerned. Rumours aplenty, supporting a clear and specific violation of lockdown.

Conservatives perceived the pandemic a conspiracy against their religion (Khattak, 2020). Regardless of the hazard, congregational prayers remained as it is along with the day to day activities, which assisted in virus transmission.

8. Mental Health Challenges in Face of Covid-19

This lockdown, in the wake of COVID 19, is in itself a source of anxiety, frustration, confusion, ambiguity, insecurity, fear of unknown and is generating a sense of chaos and vulnerability. People who are locked down at home or have self-isolated themselves are also under extreme physical and mental trauma and distress. In addition, many have lost their jobs and are in dire financial straits.

The multiple waves (1st, 2nd, 3rd & an estimated 4th wave) of the pandemic has further augmented the terror in between the masses. This fear of the virus augmented in the number of suicides being observed in countries like Pakistan, India and Bangladesh (Yang, 2021). In Pakistan, over 23 suicide cases linked to COVID-19 have been reported; 7 of these cases were confirmed, while the remaining four were suspected COVID-19 cases (Mamun, 2020). Such mental health conditions are expected to rise in due course of time and cases of post-traumatic stress disorders PTSD will also increase. This calls for some serious measures to be adapted and steps taken in order to tackle mental health concerns as a consequence of COVID 19 in the country.

9. Concluding Remarks: The Challenges Remain Severe

2021 and the new challenges

1. The handiness of vaccines (Pfizer, Moderna, AstraZeneca and Sinopharm) and low-cost fast tests.

2. To get rid of all the conspiracies and rumours pertaining to the COVID-19 vaccination. To get rid of the anti-vaccine propaganda.

3. One of the major constraint in Covid-19 containment is testing. In Pakistan, a reliable Covid-19 test costs more than 6000 rupees and the results are reported within 15-20 hours. Cheaper and more efficient tests are now available in several other regions of the world. If Pakistan can obtain these testing technologies by 2021, it will be a major plus in its war against Covid-19.

4. The second aspect is the nature and intensity of recovery — both from the virus and from economic instability. If such outbreak continues around the globe, the odds of a significant and prompt financial rebound in 2021 are modest, due to Pakistan's constrained global exports and way limited trade market.

5. The effectiveness of policy changes in response to COVID-19 by GoP will give a clear picture of how the future of Pakistan will be. The country is working rigorously on improving and expanding health capacity along with other projects like increase in number of social protection programmes and uplifting the livelihoods. The definitive effect of these endeavours will define the country's path in 2021.

6. The catchphrase of today's world is coexistence with the COVID 19 i.e. a new covid world, this is what leads us to the 4th factor. If nothing else, it has accelerated developing nations' preparations for the fourth industrial revolution, which will be powered by electronic and telecommunications. The more equipped we are for this transformation, the better positioned we will be to capitalise on the possibilities it creates.

7. In the same way, this pandemic has made us realize the immense importance of the agriculture and food sector. Pakistan had to fight on three fronts in reaction to the pandemic that included the collapse of the health sector, financial crunch and above all "food scarcity". Though Pakistan decently escaped the very catastrophe, still it

needs to ponder upon extensive measures and ways to make its food supply and agriculture sustainable and climate smart, able to be self-sufficient and capable of handling emergency situations. This will define Pakistan's course of action in 2021.

5.5. The Way-Outs for Challenges Faced

A holistic public-government well integrated and streamlined response is the very requirement for the successful containment of the pandemic situation in Pakistan. An all Government and all society approach is the successful means for the inhibition and containment of COVID-19 in the country. The three important domains where quick action is required are (Noreen, 2020):

i. Centralized well-co-ordinated response initiation and mechanization between federal and provinces in order to streamline the designated activities, roles and responsibilities.

ii. To acknowledge the on time supply of the PPE, hospital apparatus like ventilators, respirators and mechanized vaccination campaign.

iii. Efficient and effective role of media in maintaining public order, avoiding chaos and uncertainty by providing the credible and required information both in time and on time. They can also help in contact tracing and safeguarding of our frontline healthcare workers.

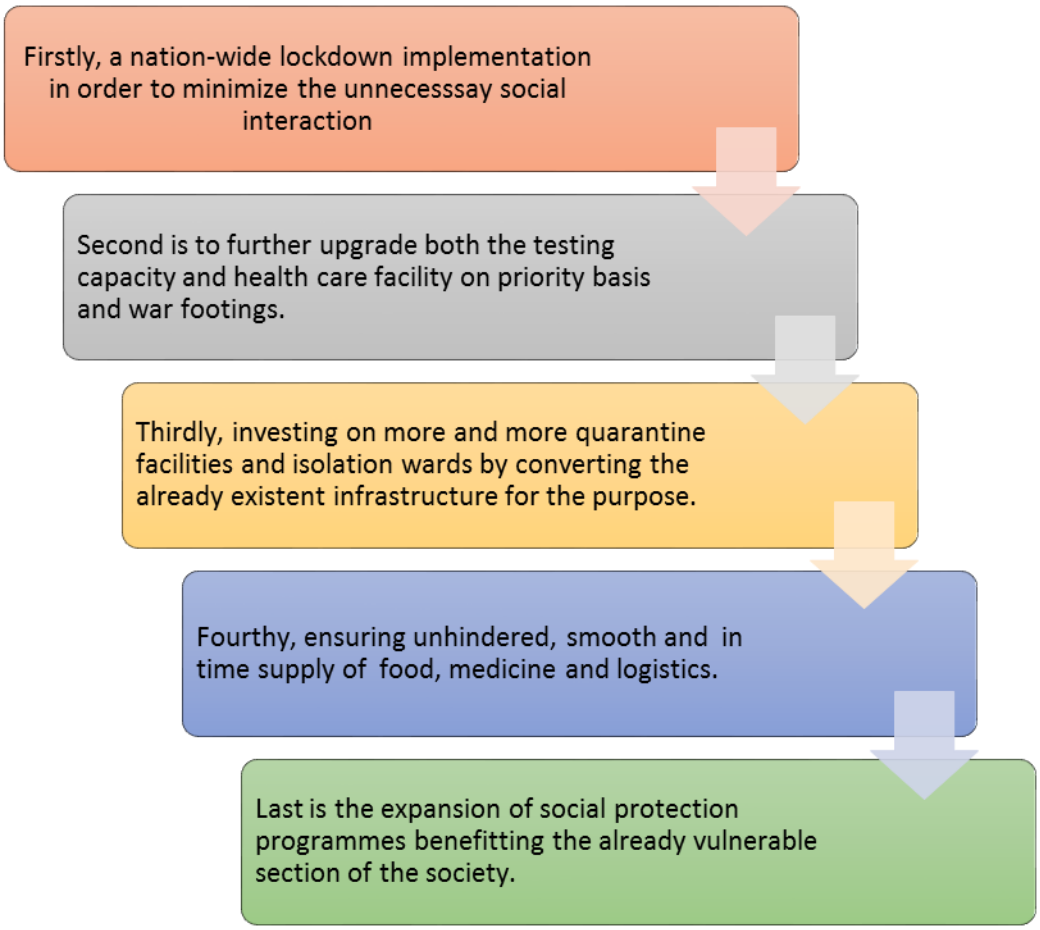

Figure 5.6 1: Proposed sequence of response initiatives in wake of COVID-19.

The in-depth analysis of Pakistan's response to covid 19 highlighted many challenges that were faced by the government of Pakistan while response generation in wake of covid-19. Many initiatives has been undertaken in order to tackle with the challenges faced.

I. Efficient and Timely Response Generation for Virus Containment

One of the first measures done by the government was the establishment of functioning emergency response units and the identification of disease transmission routes in Pakistan. The first issue was about the virus's origin; hence, obtaining comprehensive histories of infected ones was critical not only for the identification of the virus but also for contact tracing in the community under surveillance (Tribune, Corona patients

with travel history to be allocated tag numbers, 2020). This aided in the isolation of regions or the confinement of persons who had come into close touch with a coronavirus victim. Furthermore, infected ones with latest foreign trip account were thoroughly followed. This made sense given the number of cases and its dissemination reported in Pakistan's bordering nations (Akhtar H, 2021).

ii. Operative Border Closures

According to the WHO, the cases are increasing by every minute, plus illness dissemination was no longer restricted to those who had recently travelled in pandemic-affected areas. The spread of disease inside the population was frightening, necessitating extreme measures not just by local governments, but also by counties in general. To this day, all required facilities and procedures are being employed to the fullest extent possible to protect the societies as much as possible. Owing to the fact that all initial cases had a travel history, it was presumed that the contagion came from the outside to Pakistan (Akhtar H, 2021). As a result, in order to limit the viral infiltration travel restrictions were imposed (Dhama, 2020) (World, 2020).

iii. Provision of Camps and Quarantine Facilities

Following the closure of the borders, it was critical for the state to offer a way for all those stranded on the frontiers to come in without risking the rest of the population (Congress, 2020). The other crucial step was the isolation of these individuals so that they could either be tested for the infection or kept quarantined for two weeks straight in order to check for possible infection, prior to them being sent home in order to avoid virus infiltration. Afterwards, after proper screening they were sent home (Abid K, 2020). The government had a tremendous fiscal and strategic challenge in developing

these shelters. In the first week of March 2020 alone, almost 3000 pilgrims arrived from Iran and were kept in quarantine shelters in Taftan and Chaman (Guardian, 2020).

The administration decided around the end of March 2020 to move the pilgrims to their respective regions, where quarantine centres had been established. The majority of news sources and social media users opposed the government's action. The pilgrims and other individuals who were confined at these institutions encountered a variety of issues, including tiny, overcrowded living quarters, unsanitary circumstances, a lack of food, water, and pharmaceuticals, and a lack of doctors (Akhtar H, 2021).

iv. Nation-Wide Lockdown Initiation

Lockdown was the first step taken by the government for the containment of the virus in all across the country(Akhtar H, 2021) (Khan, 2020). Lockdowns were enforced at various times in different locations, and most public venues were locked down, with the exception of utility stores, chemist's, and vegetable and fruit shops. The federal government shuttered all restaurants, parks, wedding venues, schools, and businesses until further notice (Raza, 2020).

This prompted reaction from regional governments and resistance since it presented a significant economic risk to the daily wagers and low-income people; nonetheless, it was a crucial step to prevent disease transmission. One more step taken by the administration, which was met with strong criticism, was the shutdown of mosque prayers, particularly Friday prayers (Hassan, 2020).

V. Dealing with the Most Vulnerable

Pakistan, being a developing country, has a 29% of its population that accounts for 55 million people, that lie below the poverty line and this pandemic has further increased this percentage, not only in Pakistan but also in many other nations of the world.

Besides this an estimated 3 million functioning as daily wagers. In such extreme scenarios abrupt lockdown without prior contingency planning is not a best possible solution, keeping in mind the country's vulnerability and hazard profile. For daily wage earners, the government offered an assistance worth 200 billion rupees, which equates to 17,500 rupees per person. Subsidies were also provided for gasoline, fuel, electricity, and gas, as well as standardised pricing for key food products at utility shops (TheNews, 2020).

Similarly, the "Prime Minister's Corona Relief Fund" was also established to further assist the vulnerable class at the time of lockdown. Another such government initiative being "Corona Relief Tiger Force," that comprises of around 3 million young individuals, was formed for the purpose of reaching out to maximum possible such vulnerable communities and providing them with necessary commodities (food) along with relevant information and guided awareness regarding the pandemic (Meesha Iqbal, 2020)

Similarly, for the benefit of the vulnerable class the concept of complete lockdown was turned down by the P.M in later stages and instead of that new initiative like partial or smart lockdown were introduced that were highly appreciated by the world also.

vi. Making Sure of Adherence to the SOPs

A complete set of SOPs were formed for the general public to abide by once they are outside their houses, during all possible interactions. Which include directives on social distancing, such as avoiding congested places, keeping a physical separation of three feet, wearing masks, hand sanitization, observing basic hygiene, keeping areas disinfected and many similar ones. In line with the guidelines of Pakistan's National

Command and Control Centre, the administration began pursuing punitive proceedings against individuals whom disobeyed the SOPs in public areas around the nation. The National Command and Control Centre concentrated on SOPs, conformance, rigorous procedural regulations and the implementation of distinct prongs of the track, trace, and quarantine method (APP, 2020).

vii. Shutting down Areas

As indications of viral propagation began to emerge, particularly in Islamabad, the authorities started to cease the infected areas where cases has been detected. Following a rise in the infections, the state chose to cordon off locations to guarantee safety of the public, as advised by the higher officials (Akhtar H, 2021). This aided not only in containing the spread of the virus, but also in tracking contacts and subsequent testing of the general population.

viii. Training of the Front Line Health Workers

The Training Programs in Epidemiology and Public Health Interventions Network is a consortium of 75 field epidemiology training programs operating in more than 100 countries, including Pakistan. Following the World Health Organization's declaration of the pandemic as a PHEIC, graduates from the Field Epidemiology Training Program established SOPs for pandemic checking and inspection at airports. Similar steps were also taken for the screening of the tourists belonging from areas with extreme number of cases.

ix. Direct Investments in Health Sector

Keeping in view the weak healthcare system, many robust investment ventures has taken place.

Percent of GDP spending on healthcare sector	**0.97%**
Total number of hospitals	1979
Public sector hospitals	1279
Private sector hospitals	700
Total number of hospital beds	132,277
Bed per patient ratio	1 bed / 1608 patients
Total number of doctors	220,829
Doctor per patient ratio	1 doctor / 963 patients

Table 5.1 1: Healthcare statistics **(Khan A. A., 2019)**

An amount worth 50 billion pkr ($298.94 million) has been reserved aimed at the acquisition of the hospital apparatus. Similarly, the diagnostic and treatment capacity has also been upgraded from 30,000 to 280,000 with further expected increase of 900,000 (April 2020). The government is also intending on launching a COVID-19 Regulation in order to accelerate the attainment of PPE to the concerned frontline health workers.

x. Responsiveness via Technology

Pakistan is also making use of technology and social media in fight against covid 19 pandemic. For public awareness and ease of access to relevant information, the GoP in partnership with the media and communication networks including social media platforms, has come up with many innovative ideas like replacing ringtones with awareness message regarding covid 19 current status. Besides this an awareness SMS system has been set up that sends an SMS on regular basis to encourage people to

maintain and practice basic hygiene and social distancing. The establishments are also using mobile tracking for contact tracing and identifying suspects of confirmed cases. Similarly this can also be used to mitigate the panic and fear raised in the society as a result of pandemic. With easy access of social media and technology many more such breakthroughs can be made with desired results.

xi. The Three 'T's Approach

The response must be such that it incorporates the three major functions i.e. it must be in accordance with the three T's as shown in the figure below (CDC, 2021):

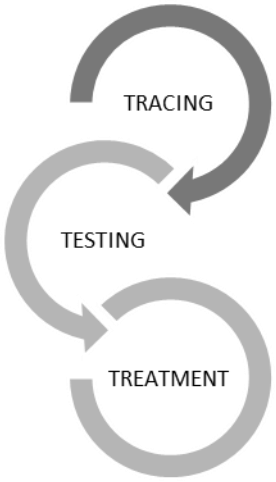

Figure 5.7 1: The Three T approach

xii. Travel Impositions

There is no doubt in the fact that the preliminary case of coronavirus in Pakistan had travel history. There was no native case of covid 19 to begin with. This shows that how important it is to have proper surveillance of travel restrictions and impositions, as travel had been the major source of infections in case of Pakistan. Government has taken many steps in this direction like travel restrictions and bans by all means be it flights, road route or trains. Even public transport had been restricted time and again

in order to minimize in state mobilization of the virus. Similarly borders with all four were also closed whether it is that of Afghanistan, Iran, China or India. Similarly strict checking and surveillance has been placed in airports in order to have proper tests and check on the travellers.

xiii. Ensuring Food Security

The primary focus in any major disaster is availability of the very basic necessities for survival, which include food, shelter, and protection from the harm. As a result, maintaining food security is as important as devising a comprehensive healthcare system. The administration has come up with a strategy to momentarily eliminate all tariffs on basic food items in conjunction with a substantial discount in fuel costs. People, whose bills lies below a certain threshold, are given benefit in the form of delay in the payment of electricity bills and others up to three months especially for those.

For the attainment of this goal many monetary budgets have been set aside. Like for instance an amount worth of 50 billion PKR has been allocated for the government-run utility stores in order to ensure the uninterrupted supply of basic commodities to people. Likewise PKR 280 billion has been reserved for wheat farmers so that the wheat supply is made continuous (Shaikh, 2020).

In addition, monetary assistance is also being reimbursed in the state, like the monthly stipend of the BISP has been increased from 2000 PKR to 3000 by the GoP. Moreover, the government is working on a livelihood support programme by providing PKR 12,000 per month for the sustenance of the vulnerable communities like the labour class, the daily wagers, street vendors and many such. This will be provided via a

proper scrutiny and analysis process, so as to make sure that the deserving person gets the help.

Local administrations are also working on such agendas. The Sindh government is giving assistance in the form of cash and such via an automatic process, in which the underprivileged call an allocated contact number. Together with the rollout, the mechanism for verifying inclusion is also being updated.

xiv. Safeguard the Investments

The government must provide the groundwork for the economy to get off to a good start. To safeguard exporters and businessmen, the economic boost plan includes a wide variety of fiscal policies (tax cuts, financial assistance through utilities, gasoline and transportation subsidies, allowances and tariff reimbursements). A secondary package worth PKR 100 billion has also been announced by the GoP for the small and medium enterprises, which constitutes for nearly 90% of all industries in Pakistan.

The State Bank (SBP) has also come up with an incentive for the entrepreneurs and new investors by providing subsidised loans that too with a *refinancing mechanism*. They have also depressed their interest rates to 11% , still very high in comparison to the rest of the world but a major breakthrough.

5.6. Pakistan Current Scenario

As per the Data Analysis from the NCOC, it has been deduced that the positivity ratio from the First Wave happened to be 18% to 23%. Where the peak was witnesses on July 14, 2020. After which the cases started to decline. But, again the cases started to rise in the late November 2020 and the NCOC declared it as the Second Wave of COVID-19. Irrespective of the First Wave this time the strategy adapted was of Partial

or Smart Lockdown instead of Complete Lockdown in areas with high concentration of positive cases. Simultaneously, the start of the March 2021 marks the beginning of the Third Wave where the positive ratio lied between 10 to 11 %. Along with that the Vaccination process has also began in the country. Both the Sinopharm and Cansino vaccines has been received by Pakistan from China as a part of the COVID-19 Vaccines Global Access (COVAX) initiative. The Second and Third Waves of Britain and India has alarmed the Pakistani Authorities of the Delta Variant.

The NCOC situation report SITREP of July 2021 gives a clear picture of current scenario of the pandemic in the country. According to National COVID 19 status, National positivity ratio was recorded at 2.24 %, with maximum cases reported in Sindh i.e. 337,674 followed by Punjab 346,301, Kpk 138,068, and Islamabad capital territory ICT 82,706, Azad Jammu & Kashmir AJK 20,343 and Gilgit-Baltistan GB 6,138, making it a total of 958,408. Currently Pakistan is facing with its third wave of covid 19 where strict lockdown is being followed (Rasheed, 2021).

The Government of Pakistan, like many other countries, is looking for alternatives of effectual lockdown. Sindh was the first to introduce a curfew-like lockdown. Similarly, in Punjab it was relatively minor in parallel to Sindh and Khyber Pakhtunkhwa (KP) had a smart lockdown. The government is against complete lockdown owing to its across-the-board repercussions.

CONFIRMED CASES	963,660	LAST 24 HOURS	1,347
SERIOUS PATIENTS	1,894	LAST 24 HOURS	19
DEATHS	22,427	LAST 24 HOURS	19
RECOVERED CASES	907,934	LAST 24 HOURS	650
TOTAL TESTS	14,778,275	LAST 24 HOURS	45,245

Table 5.2 1: Pakistan statistics updated July 5, 2021(NCOC SITREP JULY 5, 2021)

PROVINCE-WISE	NUMBER OF CASES
SINDH	340,902
KPK	138,533
PUNJAB	346,852
ICT/ISLAMABAD	82,969
BALOUCHISTAN	27,419
AJK/GB	20,558/6,427

Table 5.3 1: Pakistan covid 19 statistics province-wise cases, updated July 5, 2021(NCOC SITREP JULY 5, 2021)

Travel restrictions has been imposed as because of the fact that even vaccinated patients might be the carriers of the Corona Virus variants. A large scale nationwide government induced COVID 19 Vaccination is also taking place in Pakistan in order to curb the pandemic situation in Pakistan.

PARTIALLY VACINATED	FULLY VACCINATED	TOTAL DOSES ADMINISTERED
14,026,856	3,363,490	17,390,346
LAST 24 HRS	**LAST 24 HRS**	**LAST 24 HRS**
290,377	98,880	389,257

Table 5.4 1: Pakistan covid 19 vaccination statistics, July 5, 2021(NCOC SITREP JULY 5, 2021)

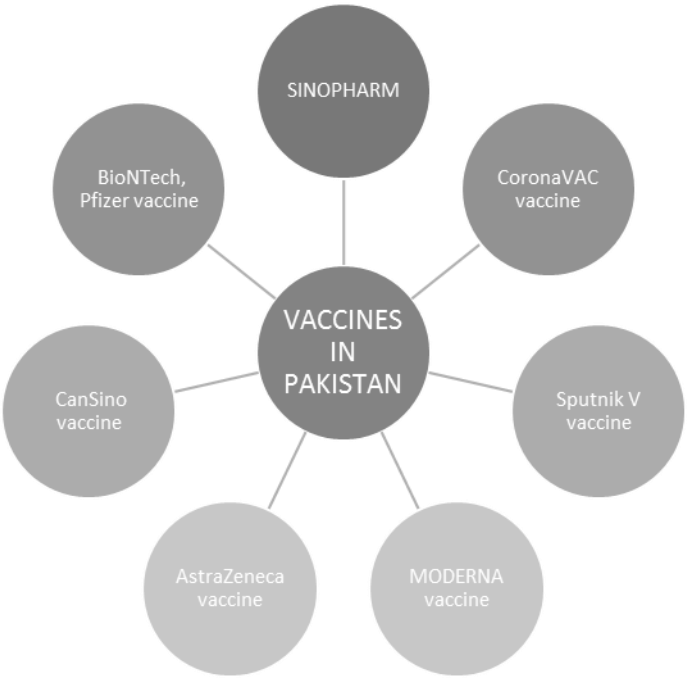

Figure 5.8 1: The vaccines available in Pakistan

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusion

We plan a lot but ground realities are always different. Many ministries are setup, many plans made but lack of implementation and accountability at every level reduces the success ratio.

1. The lack of a Plan to Begin with

Talking about Pakistan what we lack is a national level integrated health emergency response plan. Our national disaster management plan NDMP and national disaster response plan NDRP discusses of hazards that are either natural like floods, earthquakes, landslides, droughts and GLOF, or anthropogenic like industrial hazards, terrorism , accidents etc. what we require is a uniform policy making and implementation at national level. Already placed contingency planning for dealing with health crisis like epidemics, pandemics, outbreaks, biological hazards and biochemical weapons.

In case of covid 19, in Pakistan things went ad hoc due to lack of relevant policy and plan. Amidst the crisis there was no single organization ready to intervene, with set protocols, in order to deal with the situation. The concept of dealing with the biohazards was new and lack of preparedness could be seen in this regard. The Epidemic Diseases Act, 1958 (An Act to consolidate the law relating to the prevention of the spread of dangerous epidemic diseases in the Province of West Pakistan).Many organizations and ministries were activated on the same time leading to

decentralization of the issue. Although NDMA exists but due to the lack of a health emergency response plan in specific lead to a chaotic situation where no one knew what has to be done and who are the responsible agencies.

Although national action plan NAP and its subsequent national preparedness and response plan NPRP for covid 19 were formulated soon after the outbreak in Pakistan. But these were made on spot with the aim of virus containment and is covid 19 specific.

What we require is a holistic multi-faceted well integrated preparedness focused health emergency response plan that is specific to deal with outbreaks like that of the intensity of covid 19 ,not just health emergencies secondary to other hazards like floods and earthquakes. This must also be incorporated but not all in all.

2. COVID-19 A Lifestyle Change

Nobody knows as to when this pandemic will end as we are managing with the severe third wave of the virus right now, with many new variants entering in the picture day by day. Such situations require some serious lifestyle changes and adaptations as we don't know when all of this will end. A mega change is already being predicted but it is in our hands as to what way this change will lead us. Whether it will be a positive one or a negative one depends upon the way we perceive and carry out with things and activities in future pertaining to COVID 19. We must learn lessons from our mistakes to bring about positive change. To coexist with COVID-19 we must adapt to positive changes.

The future is not about full fledge military warfare but a new form of biological warfare has taken its place which is done via biochemical weapons like plague, anthrax, small pox, ricin, q fever, e bola, weapons of mass destruction (biological, chemical , nuclear). This has posed a new kind of biological threat.

6.2. Recommendations and Lessons Learnt for the Future

No response is effective and no measures are efficient enough if are not open for improvement and change. And this can only be brought about via proper monitoring and evaluation, updating and feedback at relevant intervals. Nothing is standard or something we can call a perfect plan, there is always a room for improvement due to the continuously changing dynamics. Same is the case in dealing with infectious disease pandemics. Infectious agents are not fixed, no one plan is sufficient enough to deal with diverse forms of pathogens. Rather it requires a holistic, all encompassing, all time changing and updating form of an emergency response plan that perfectly fits well in any kind of an infectious disease outbreak. So an improvement on your part doesn't mean failure of the existing policy and plan. Current response mechanism in the fight against COVID 19 can also be made more efficient and productive by working on some changes for improvement. Following are some of the recommendations in this regard:

1. Accountability and ensure adherence to the SOPs

2. Strict monitoring and evaluation at all tiers. Community based organizations can be strengthened for this regard.

3. Interactive public and government interactions and accessibility

4. Breaking stereotypes, myths, false info etc.

5. Well-coordinated public and private health care sector.

6. From lack of public awareness towards community responsiveness and active participation.

7. Proper and well directed resource allocation. This includes the economic and social costs of the lockdown that are to be well addressed for better mitigation.

8. Biotechnologists and microbiologists be given their due importance as because of the fact that this pandemic has made the world realize that how much we lack in research field when it came to identification of the virus and formulation of the vaccine. Had it been given their due significance the immunization and vaccination process would have been much faster. The process was much slow due to lack of efficient microbiologists and biotechnologists.

9. Sustainability of health system and emergency preparedness. The 2005 led to the formation of the NDMA similar steps must be taken in the current situation.

10. Adequate health budget is the need of the time. Pakistan spends less than 1% of its GDP on health sector for decades, very less as compared to the WHO's standard. In 2019, 12,671 million rupees were allocated for development in the health sector. The current covid-19 state has clearly depicted how much in worst shape our healthcare system is requires revision in budget allocation.

11. Responsible role of media in panic minimizing, floating right info and helping in public information along with information technology as a tool for contact tracing.

12. An all-of-government and all-of-society approach is the need of time where all the factions of the society and all sectors of government join hands and become one, work tirelessly in well coordination and in a mechanized way, to deal with the crisis with fruitful results.

13. No policies, no plans will work in the best of the interest of the people or the nation as a whole unless and until all agrees to it and generates a unified response and

reaction. If you have plan efficient and effective enough but the public don't adhere to it than it's of no use.

14. The three-step approach of trace, testing and treating needs to be aggressively implemented like in South Korea (Noreen, 2020)

6.3. Limitations of the Study

Due to the lockdown situation in the country no direct surveys and Data collection was possible. Therefore all the data has been collected from secondary online sources as a passive observer.

The methodology used for the analysis of the response is Qualitative Content Analysis QCA. The methodology is restricted to the content taken from online sources like Research Journals, websites, data bases, relevant articles, news and many such. That is why the results that were not recorded online or by the media or press could not be taken into consideration for study and analysis.

REFERENCES

Abid K, B. Y. (2020). Progress of COVID-19 Epidemic in Pakistan . *Asia Pac J Public Health.*, 32(4):154-156.

Adams, B. (2020, May 19). *Pakistan reopens malls claiming no Covid-19 crisis: response to pandemic is endangering people's health.* Retrieved from Human Rights Watch,.

Afzal, M. (2020, June 5). *With a mix of pandemic denialism and exceptionalism, Pakistan makes a cynical bet on the coronavirus.* . Retrieved from Brookings: https://www.brookings.edu/blog/order-from-chaos/2020/06/05/with-a-mix-of-pandemic-denialism-and-exceptionalism-pakistan-makes-a-cynical-bet-on-the-coronavirus/

Akhtar H, A. M. (2021). Pakistan's Response to COVID-19: Overcoming National and International Hypes to Fight the Pandemic. *JMIR Public Health Surveill*, 7(5):e28517.

Aldossari M, A. A. (2019). Health issues in the Hajj pilgrimage: a literature review. . *East Mediterr Health J*, 25(10):744-53.

Alfonso J. Rodriguez-Morales1, 2. ,.-A. (2020). COVID-19, an Emerging Coronavirus Infection: Current Scenario and Recent Developments – An Overview. *Journal of Pure and Applied Microbiology*.

Alimuddin Zumla, J. F.-Y. (2016). Coronaviruses — drug discovery and therapeutic options. *Nature Reviews Drug Discovery*.

APP. (2020, October wednesday). *NCOC to re-close public service sectors if SOPs compliance goes neglected.* Retrieved from app.com.pk: https://www.app.com.pk/national/ncoc-to-re-close-public-service-sectors-if-sops-compliance-goes-neglected/

Bonilla-Aldana DK, Q.-R. K.-P.-O.-M. (2020). SARS-CoV, MERS-CoV and now the 2019-novel CoV: Have we investigated enough about coronaviruses? *Travel medicine and infectious disease.* , 33:101566.

C., P. (2019). MERS-CoV infection in South Korea and strategies for possible future outbreak: narrative review. *Journal of Global Health Reports.,* 3:e2019088.

C.N Stanley et al, .. (2020). Review of Pathogenesis of COVID-19: Considerations. *Journal of Advances in Medicine and Medical Research*, 30-34.

CDC. (2021, February). *Contact tracing slows the spread of COVID-19.* Retrieved from cdc.gov: https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/contact-tracing.html

Congress, L. o. (2020, June). *Pakistan: "Smart Lockdown" Imposed across Cities of Pakistan as Covid-19 Cases Grow Rapidly.* Retrieved from loc.gov: https://www.loc.gov/item/global-legal-monitor/2020-06-25/pakistan-smart-lockdown-imposed-across-cities-of-pakistan-as-covid-19-cases-grow-rapidly/

covid.gov.pk. (2021). *Ministry of National Health Services Regulations & Coordination.* Retrieved from covid.gov.pk: https://covid.gov.pk/

Dailytimes. (2020, April). *Daily Times. 13 Apr 2020. Pakistan. In a first, governor inaugurates Corona Telemedicine Web Portal. Retreived from https://dailytimes.com.pk/578965/in-a-first-governor-inaugurates-corona-telemedicine-web-portal/.* Retrieved from dailytimes.com.pk: https://dailytimes.com.pk/578965/in-a-first-governor-inaugurates-corona-telemedicine-web-portal/.

David S. Hui et al, .. (2020). The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health — The latest 2019 novel coronavirus outbreak in Wuhan, China. *International Journal of Infectious Diseases*.

Dhama, K. &.-A.-M. (2020). Coronavirus Disease 2019 - COVID-19. *Clinical microbiology reviews,* 33. e00028-20. 10.1128/CMR.00028-20. .

Duan, K. B. (2020). Effectiveness of convalescent plasma therapy in severe COVID-19 patients. *Proceedings of the National Academy of Sciences of the United States of America*, 117 (17):.

Epstein, J. a. (2020). Points to consider in the preparation and transfusion of COVID-19 convalescent plasma. . *Vox Sanguinis*.

Eugene. (2015). Origins and evolution of viruses of eukaryotes: The ultimate modularity. *virology elsevier*.

Fan Wu Su Zhao, #. B.-M.-G.-W.-H.-Y.-L.-L.-H.-M.-J.-Z. (2020). A new coronavirus associated with human respiratory disease in China. *PMC Nature*, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7094943/.

Feroz Khan, Y. A. (2021). A new fuzzy FUCOM-QFD approach for evaluating strategies to enhance the resilience of the healthcare sector to combat the COVID-19 pandemic. *Emerald Insight The international journal of cybernetics, systems and management sciences*.

Global humanitarian response plan for COVID-19 WHO. (2020, april). Retrieved from reliefweb.int: https://reliefweb.int/sites/reliefweb.int/files/resources/globalhumanitresponseplancovid19-200510.v1.pdf

Guardian, T. (2020). *Pakistan coronavirus camp: 'No facilities, no humanity'.* Retrieved from theguardian.com: https://www.theguardian.com/world/2020/mar/19/pakistan-coronavirus-camp-no-facilities-no-humanity

Hadid, D. a. (2020, June 19). *Pandemic panic in Pakistan: 'people are just literally fighting for beds'. , 19 June 2020.* Retrieved from National Public Radio: https://www.npr.org/sections/goatsandsoda/2020/06/19/878896370/pandemic-panic-in-pakistan-people-are-just-literally-fighting-for-beds

Hassan, S. R. (2020, April). *Pakistan's Sindh province bans prayer at mosques during Ramadan.* Retrieved from reuters.com: https://www.reuters.com/article/us-health-coronavirus-ramadan-pakistan/pakistans-sindh-province-bans-prayer-at-mosques-during-ramadan-idUSKCN226166

Health, S. F. (2011). *Infectious Disease Emergency Response Plan* . Retrieved from San Francisco Department of Public Health .

Jaffery, R. 2. (2020, April 15). *Jaffery, Rabiya. 2020. Pakistan struggles to fight COVID-19. The Diplomat, 15 April 2020.* Retrieved from The Diplomat,: https://thediplomat.com/2020/04/pakistan-struggles-to-fight-covid-19/

Jafri, D. H. (2020, May). *Pakistan meeting the Challenge of COVID-19.* Retrieved from isqua.org: (https://isqua.org/blog/covid-19/covid-19-blogs/pakistan-meeting-the-challenge-of-covid 19.html?print=1&tmpl=component

Javed B, S. A.-u.-R. (2020). Is Pakistan's response to coronavirus (SARS-CoV-2) adequate to prevent an outbreak? *Frontiers in medicine,* 7:158.

Javed Bilal, S. A.-u.-R. (2020). Is Pakistan's Response to Coronavirus (SARS-CoV-2) Adequate to Prevent an Outbreak? . *Frontiers in Medicine* , 158.

Jawad Sarwana, A. A. (2020). *COVID-19 Legislation*. Retrieved from www.coronavirus-legislation.com: https://www.coronavirus-legislation.com/home/pakistan

Karabulut G, B. M. (2020). How pandemics affect tourism: International evidence. . 2020;84:102991. *Annals of tourism research,* 84:102991.

Keiji kuba, Y. I. (2005). A crucial role of angiotensin converting enzyme 2 (ACE2) in SARS coronavirus–induced lung injury. *Nature Medicine* .

Kermani, S. (2020). *Coronavirus: rumours, fear and rising Covid deaths in Pakistan.* Retrieved from BBC News.

Khalid A, A. S. (2020). COVID-19 and its Challenges for the Healthcare System in Pakistan. *Asian Bioeth Rev.*, 12(4):1-14.

Khan. (2020, April 3). *Coronavirus updates: Pakistan imposes curfew to curtail Friday prayers.* Retrieved from BBC News.: https://www.bbc.com/news/world-asia-52149688.

Khan, A. A. (2019). *Healthcare Resource Guide: Pakistan.* Retrieved from export.gov: https://2016.export.gov/industry/health/healthcareresourceguide/eg_main_108609.asp

Khattak, D. (2020, June 9). *Pakistan's confused COVID-19 response.* Retrieved from The Diplomat,: https://thediplomat.com/2020/06/pakistans-confused-covid-19-response/.

Lu, G. H. (2013). Molecular basis of binding between novel human coronavirus MERS-CoV and its receptor CD26. *Nature 500*, 227-231.

Malik Safi, K. I. (2018). Development of a Costed National Action Plan for Health Security in Pakistan: Lessons Learned. *Health Security*.

Mamun, M. A. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. *Asian journal of psychiatry*, 51, 102073.

Manzoor Ahmed Abbasi, M. A. (2020). SPREAD OF COVID-19 AND ITS IMPACT ON. *Margalla Papers-2020 (Issue-I)*.

Meesha Iqbal, A. Z. (2020). Pakistan's Health System Against COVID-19: Where Do Things Stand? *Journal of the College of Physicans and Surgeons Pakistan*.

Mengyang Li 1, 2., Heather Leslie 3, 4. B., Bin Qi 5, B., Shan Nan 1, 2. P., Hongshuo Feng, H. C., Xudong Lu 1, 2. 6., & Huilong Duan 1, 2. P. (2020). Development of an openEHR Template for COVID-19 Based on Clinical Guidelines. *Journal of Medical Internet Research* .

Muhammad Saqlain et al, .. (2020). Knowledge, attitude, practice and perceived barriers among healthcare professionals regarding COVID-19: A Cross-sectional survey from Pakistan. *Journal of Hospital Infection*.

N, T. (2010). "Destroyer and teacher": managing the masses during the 1918–1919 influenza pandemic. *Public Health Reports*, 125(3_suppl):48-62.

Na Zhu, P. D. (2020). A Novel Coronavirus from Patients with Pneumonia in China, 2019. *The New England Journal of Medicine*.

Nafees M, K. F. (2020). Pakistan's Response to COVID-19 Pandemic and Efficacy of Quarantine and Partial Lockdown: A Review. *Electron J Gen Med.* , 17 (2): emXXX. 2020.

Nanshan Chen*, M. Z. (2020). *Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China:*. Retrieved from cdc.gov: https://www.cdc.gov/coronavirus/2019-ncov/downloads/characterstics-of-nCoV-patients-Wuhan-Lancet-1-29-2020.pdf

NAP. (2020). *National Action Plan for Corona virus disease (COVID-19) Pakistan NAP*.

National Health Comission of the People's Republic of China NHC. (2020). Retrieved from nhc.gov.cn: http://en.nhc.gov.cn/index.html

Nazim Hussain, A. A. (2020). A REAL-TIME UPDATED PORTRAYAL OF COVID-19 DIAGNOSIS AND THERAPEUTIC OPTIONS. *Journal of Experimental Biology and Agricultural Sciences*.

NCOC. (2020). *NCOC*. Retrieved from ncoc.gov.pk: https://ncoc.gov.pk/govt-initiatives.php

Neha Tyagi, N. D. (2020). Coronavirus Spreading Forecasts Based on Susceptible-Infectious-Recovered and Linear Regression Model. *Big Data Analytics and Artificial Intelligence Against COVID-19: Innovation Vision and Approach*, https://link.springer.com/book/10.1007%2F978-3-030-55258-9.

News, T. (2020). *Coronavirus: Pakistan Army helps set up field hospital at Karachi's Expo Centre.* Retrieved from thenews.com.pk: https://www.thenews.com.pk/latest/631969-coronavirus-pakistan-army-helps-set-up-field-hospital-at-karachis-expo-centre

Nishtar S, B. Z. (2013). Health reform in Pakistan: a call to action. *The Lancet.*, 381(9885):2291-7.

Noreen, N. D. (2020). COVID 19 Pandemic & Pakistan; Limitations and Gaps. . *Global Biosecurity*.

Oboho IK, T. S.-A.-M. (2015). 2014 MERS-CoV outbreak in Jeddah—a link to health care facilities. *New England Journal of Medicine.* , 372(9):846-54.

Penghui Yang, X. (2020). COVID-19: a new challenge for human beings. *cellular and molecular immunology*, https://www.nature.com/articles/s41423-020-0407-x?code=0d567e44-dc73-4fb7-975d-f816f1424b17&error=cookies_not_supported .

PPRP. (2020). Retrieved from reliefweb: https://reliefweb.int/report/pakistan/pakistan-preparedness-response-plan-covid-19

Praveena SM, A. A. (2021). The impacts of COVID-19 on the environmental sustainability: a perspective from the Southeast Asian region. . *Environmental Science and Pollution Research.,* :1-8.

Primary & Secondary Health Care Department, G. o. (2020). *COVID-19 notification/SOPS & guidelines.* Retrieved from Primary & Secondary Health Care Department, Government of Punjab: https://pshealth.punjab.gov.pk/Home/Covid19SopsGuidelines.

Priyadarsini SL, S. M. (2020). What can we learn from previous pandemics to reduce the frequency of emerging infectious diseases like COVID-19? . *Global transitions,* 2:202-20.

Prof Nanshan Chen et al, .. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*.

Qureshi, Z. (2020, June 19). *COVID-19: 'breakthrough' drug dexamethasone running short in Pakistan markets.* Retrieved from Gulf News.

Rabeea Siddique, Q. B. (2021). Evidence and speculations: vaccines and therapeutic options for COVID-19 pandemic. *Taylor and Francis Online: Human Vaccines & Immunotherapeutics*.

Rasheed, R. R. (2021). Socio-economic and environmental impacts of COVID-19 pandemic in Pakistan—an integrated analysis. *Environ Sci Pollut Res*.

Raza, Z. (2020, March). *Curfew remains only solution to keep people confined to home.* Retrieved from dailytimes.com.pk: https://dailytimes.com.pk/586250/curfew-remains-only-solution-to-keep-people-confined-to-home/

Robinson, J. (2020). *Epidemics, Pandemics, and Outbreaks.* Retrieved from webmed.com: https://www.webmd.com/cold-and-flu/what-are-epidemics-pandemics-outbreaks

Rose DA, M. S. (2017). The evolution of public health emergency management as a field of practice. . *American journal of public health.,* 107(S2):S126-S33.

Rufai SR, B. C. (2020). World leaders' usage of Twitter in response to the COVID-19 pandemic: a content analysis. *Journal of public health*, 42(3):510-6.

Shaikh, H. (2020, April 6). *COVID-19: Pakistan's preparations and response.* Retrieved from theigc.org: https://www.theigc.org/blog/covid-19-pakistans-preparations-and-response/

Sharaf E.D.Mahmoud, S. E. (2021). Management Trends in the Cath Lab During the COVID-19 Period, an Egyptian Survey. *Elsevier Current Problems in Cardiology*.

Siegel, R. D. (2018). Classification of Human Viruses. *Elsevier Principles and Practice of Pediatric Infectious Diseases (5th Edition)*, 1044-1048.

(2020). *Special Report on Emergency in Ontario-Pandemic Response.* Ontario: Office of the Auditor General of Ontario.

Stern AM, C. M. (CA; 2010.). The 1918–1919 influenza pandemic in the United States: Lessons learned and challenges exposed. . *SAGE Publications Sage CA: Los Angeles,*.

Telehealth for coronavirus (COVID-19). Liaquat National Hospital. . (2020). Retrieved from www.Inh.edu.pk: https://www.lnh.edu.pk/Pages/ teleHealth.

TheNews. (2020, April 12). *PM Imran allocates Rs200bn relief package for daily-wagers amid coronavirus outbreak.* Retrieved from The News International.

Tribune. (2020, April). *Corona patients with travel history to be allocated tag numbers.* Retrieved from tribune.com: https://tribune.com.pk/story/2201833/1-corona-patients-travel-history-allocated-tag-numbers

Tribune. (2020). *tribune:Cabinet set to approve national health emergency response plan* . Retrieved from www.tribune.com.pk: https://direct88786.tribune.com.pk/index.php/story/2255881/cabinet-set-to-approve-national-health-emergency-response-bill

Tribune, T. E. (2020, March 19). *The Express Tribune. Corona telemedicine portal, App introduced. 19 March 2020.* . Retrieved from tribune.com.pk: https:// tribune.com.pk/story/2179012/8-corona-telemedicine-portal-app-introduced/.

Ul-Haq, Z. &. (2018). Health system preparedness in Pakistan for crisis management: a cross-sectional evaluation study. *Eastern Mediterranean Health Journal.*, 24. 10.26719/emhj.18.072.

Vince Mcleod, C. (2020, March). *COVID-19: A History of Coronavirus.* Retrieved from lanmanager.com: https://www.labmanager.com/lab-health-and-safety/covid-19-a-history-of-coronavirus%2022021/amp?fbclid=IwAR3EWJjj93KLRwMN4EJBZFrOcCX4scpClbeyX1_3f5OuJ0w6e

Vivek Kumar, V. A. (2020). COVID-19: Review on Its Etiology, Pathogenesis, and Existence in Humans. *tech science press*, https://www.techscience.com/biocell/v44n4/40988.

Wessner, D. R. (2010). *The Origins of Viruses.* Retrieved from nature.com: https://www.nature.com/scitable/topicpage/the-origins-of-viruses-14398218/

What You Need to Know about Variants. (2021). Retrieved from cdc.gov: https://www.cdc.gov/coronavirus/2019-ncov/variants/variant.html

World Health Organization WHO. (2020, January). Retrieved from who.int: https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON233

World, G. (2020). *Pakistan: Border closures extended for two weeks on April 13 /update 17.* Retrieved from garda.com: https://www.garda.com/crisis24/news-alerts/332031/pakistan-border-closures-extended-for-two-weeks-on-april-13-update-17

Worldometer. (n.d.). Retrieved from woldometers.info: https://www.worldometers.info/coronavirus/

YA., M. (2020). Properties of coronavirus and SARS-CoV-2. . *The Malaysian journal of pathology.*, 42(1):3-11.

Yang, Y. K. (2021). A Bayesian risk assessment of the COVID-19 pandemic using. *International Journal of*.

Yuan Yu, D. X. (2020). Patients with COVID-19 in 19 ICUs in Wuhan, China: a cross-sectional study. *Biomedical Central Critical Care CC*.

ZA, B., F, S., A, I., AH, H., A, H., & M., I. (2021). Balancing science and public policy in Pakistan’s COVID-19 response. . *East Mediterr Health J.* .

Zaidi, S. R. (2020). CHALLENGES REVEALED TO PAKISTAN IN THE WAKE OF COVID-19. *Pakistan Armed Forces Medical Journal PAFMJ*.

Zhe Xu et al, .. (2020). Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *The Lancet*.