Assessment of Awareness Concerning Prophylaxis Against COVID-19 in Pakistani Population

by

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A thesis submitted in partial fulfillment for the degree of Master of Science

in the

Faculty of Health and Life Sciences
Department of Bioinformatics and Biosciences

2021

In the Name of Allah, the Most Beneficent and the Merciful.

Dedicated to My Most loving Mother ZubaidaKhatoon Whose prayers took me out from any trouble My Beloved Father Abdul Rehman Whose encouragement & support are always for me My Brothers Zia-ur-Rehman, Hafiz Ubaid-ur-Rehman,Anees-ur-Rehman & My Dearest Husband Tariq Mehmood Whose moral support and gaudiness are always helpful for me.

CERTIFICATE OF APPROVAL

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Acknowledgement

All Praises and thanks to **Almighty Allah**, The most beneficient and merciful, WHO is the source of all wisdom and knowledge, WHO knows whatever is there in the universe, hidden or evident and is entire source of all knowledge and wisdom to mankind. I offer my humblest thanks to the Holy Prophet **Hazrat Muhammad (peace be upon him)**, who is forever torch of guidance and knowledge for humanity.

I want to thanks my supervisor **Dr. Shaukat Iqbal** for the continuous support in my research, for his patience, motivation and immense knowledge. He had been a consistence source of inspiration for me. His soft behavior always gives me courage to face all difficulties with patience. His guidance helped me in all the time of research and writing of this thesis.

I would like to record my sincere thanks to **Dr. Sahar Fazal** HOD of Bioinformatics and Biosciences Department, Capital University of Science & Technology Islamabad for providing facilities in research work.

I find myself short of words for expressing the greatness of my **parents** whom prayers have always been my strength in every difficult moment life. My parents always brightened my path with love and affection, and no words I could found for my dear brothers **Zia-ur-Rehman Niazi, Goher Rehman, Hafiz Ubaid-ur-Rehman, Anees-ur-Rehman** and lovely husband **Tariq Mehmood**. Their help, support, care enable me to work in every circumstances.

I owe cordial thanks to especially to my friends **Farhana Hamza** and **Tehmina Hashim** for their help, suggestion, support and encouragement throughtout my M.S. They were always there cheering me up and stood by me through the good time times and bad.

(Shagufta Niazi)

Abstract

Survey studies shows that Pakistani residents had keen awareness, and had positive practices following precautionary steps. In regarding to practices of different prophylaxis against COVID-19 is satisfactory among Pakistani population. Some of the most important strategies to help keep our immune system strong are to eat a well-balanced diet, expend energy in regular physical activity, and get enough sleep. Despite the fact that some of them may have antiviral capabilities, there is no specific evidence that any of them can protect against COVID-19. The main aim of this study was to evaluate the people awareness about different precautionary measures practicing against COVID-19, and to give knowledge to the people and save them with application/treatment of prophylaxis from COVID-19.

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Abbreviations

ACE2	Angiotension Converting Enzyme 2
CRF	Corticotrophin-Releasing Factor
GIT	Gastro Intestinal Tract
HCWs	Health Care Workers
HSPs	Heat Shock Proteins
HL	Healthy Lifestyle
HCQ	HydroxyChloroquine
ICU	Intensive Care Unit
IM	Intra Muscular
ICMR	Indian Council of Medical Research
MHC II	Major Histocompability Complex II
MERs	Middle East Respiratory Syndrome
NK	Natural Killer
PPEs	Personal Protective Equipments
RdRp	RNA-dependant RNA- polymerase
ROS	Protein Data Bank
SARS	Severe Acute Respiratory Syndrome
SP	Spike Protein
SD	Sleep Deprivation
TMPRS2	Trans Membrane Proteases Serine 2
TLR	Toll-like Receptors
WHO	World Health Organization

Chapter 1

Introduction

1.1 Background

An envelope, having diameter of 60 nm to 140 nm, positive sense RNA, with spike like projection on the surface having crown like appearance under electron microscopy is named as Corona virus [1]. Severe respiratory infection with none of the reason is started reporting in people of Wuhan, in December 2019. The samples of these infected patients were sent to different laboratory for etiologic investigation. China notified the outbreak to World Health Organization on 31st December 2019 [1]. Due to its faster and exceptionally spread, its mortality rate is very high. Therefore an adequate treatment is need of time. Although the vaccine and drugs to treat COVID-19 began to search quickly but it is time consuming process. Coalition's specialist for epidemic preparedness describe major three challenges in developing of vaccine, the first is no surety about optimal antigen target on SARS-COV-2, second is exacerbating lung infection is reported by immunization against SARS and MERS infection, therefore it is mandatory to pre-testing in animals models and last one reason is effectiveness of dose and duration of immunity is unknown [2]. There is no legitimate treatment against COVID-19 there are only two possibilities to care human from COVID-19. The one is immunization which is not available yet and other is most ideal approach prophylaxis. The term "prophylaxis" means "to prevent." Prophylactic treatment

is most widely used to prevent illness and disease in healthcare workers, it derives from the Greek word "phylax," which means "to shelter" or "to monitor, but in such pandemic it is allowed to all citizens of the countries to prevent themselves [3]. Various attempts are observed to seek voluntary alternative ways to inhibit the transmission of COVID-19 [4]. Domestic meditate, implementation of healthy items and prophylactic assess are to build buffer against COVID-19 [5]. The concern regarding to well-being has frequently arisen among masses around the world [6].

TABLE 1.1: Non Pharmacological Prophylaxis against COVID-19 at Different Levels

Personal Level	Community Level	Health Care Worker HCWs
1.Voluntary home quarantine	1.Collaboration with organizations	1.Implement triage, early diagnosis and containment
2. Use of face mask	2.Proactive communication	2. Implementing empiric precaution
3. Hand cleanness	3. Social distancing	3. Collecting and handling laboratory sample
4. Avoid touching face	4. Reduce stigma	4.Apply standard precaution
5. Proper food hygiene	5. Shield extremely vulnerable people	5. Implementing administrative controls
6. Physical activities		6. Management of HCWs exposed to covid-19
7.Maintain mental health		
8. Timely medical care		

The current global catastrophe calls for the development of prompt solutions to rescue people at risk for certain diseases. The WHO has focused on critical into diagnostics, vaccines, and medications for this new Coronavirus [7]. The following are amongst the several strategies to mitigate transmission and recurrence of this airborne infectious agent;

1.2 Personal Prophylaxis Against Covid-19

1.2.1 Self Isolation

The benefits of quarantine to restrict the transmission of infections are described in "The Canon of Medicine," authored by Persian philosopher Ibn Sina (980-1037), better known as Avicenna [8]. He also portrayed a method (dubbed "al-Arba'iniya," which means "quarantena") for preventing illness by isolating people for 40 days in sanitary circumstances. Quarantine vs. non-quarantine situations were examined in a recent Cochrane study, and the former was recommended based on the ratios of disease and mortality avoided reviewed to the later [9].

Due to frequent human interaction, the disease spread from China to other parts of the world, resulting in a deadly outbreak and a fast spike in the proportion of affected individuals [10]. Infected persons in self-isolation must stay away from the public to limit the occurrence of illness to others. They are advised to seek medical help as needed and to keep in touch with doctors because the virus's intensity can have devastating effects.

1.2.2 Hand Hygiene Practice

It is the initial stage in the preventive process. Whereas hand hygiene program are successful in decreasing disease transmission, the level of protection provided varies depending on the environment and community compliance. Hands must be washed often with soap and water for at least 20 seconds (as prescribed by

the WHO), or with an alcohol-based hand-rub and then air-dried [11]. Hand washing using antimicrobial soaps or alcohol-based sanitizers is a strategy to avoid the spread of microbiological diseases. The WHO and the Centers for Disease Control and Prevention have recommended hand washing with soap and water before and after coughing/sneezing, attending a public venue, physical contact surfaces outside the home, and caring for a sick individual as well as before and after eating, in the context of Coronavirus disease 2019 (COVID-19). Alcohol-based sanitizers can be utilized when soap and water aren't accessible [12]. Apart from bacterial spores and protozoan oocysts, alcohol-based hand sanitizers have previously proven equivalent and better effectiveness than antimicrobial soaps for eradication of most microorganisms [13].

1.2.3 Use of Face Mask

Cotton masks, surgical masks, and N95 masks all provided some protection against the transmission of infective SARS-CoV-2 droplets/aerosols in airborne simulation experiments however, medical masks surgical masks, and even N95 masks cannot inhibit the spread of virus [14]. One of the ideal ways to inhibit illness is to keep less prone to the virus. This can be done by washing hands frequently with soap and water for at least 20 seconds, as well as covering the nose and mouth with any type of mask, by putting elbow while coughing and sneezing, keep distancing about 1 to 3 meter with infected persons, stay at home avoid gathering and touching your eyes and nose with un-washed hands and self-isolate immediately in case of feeling unwell. Medication in case of infection are supportive treatment in mild cases while mechanically support ventilator are for acute cases [15].

1.2.4 Avoid Touching the Face

Hands can become infected during a variety of tasks, and the virus can then spread to the eyes, nose, or mouth, gaining access to bodily fluids [16]. In areas with limited compliance with social distancing measures hospitals markets where

there's a significant number of infected individuals, or where there is evidence of communal spread, it is recommended to cover the face with handmade fabric face-coverings [17].

1.2.5 Proper Food Hygiene

During lockdown and quarantine, intake of liquids and eat nutritious foods to build immunity and manage stress. However, there are several food-related myths and superstitions that exist in the society. There is currently no indication that COVID-19 is transferred through food. The virus can't replicate in food since it needs an animal or human host to do it [18]. Dietary supplements or drugs comprising vitamins and micronutrients that enhance the immune system are a low-cost, viable option to boost the immune system and fruitful subsidiary for combating COVID-19's acute respiratory tract obstruction [19]. Vitamins have been shown to play a role in innate and adaptive immune responses. Vitamins E and C, as well as certain vitamin B family members, have antioxidant and other immune system effects. Furthermore, as immunomodulatory agents, the defense process is focused on vitamins A and D [20].

1.2.6 Maintain Physical Activity

Excessive stress, disturbance of normal routines, limited gym access, workplace closures, and restricted physical exercise can all have negative impacts on people's general health and well-being, even if they are physically active on a regular basis. As a result, physical exercise and relaxation are recommended at this period since they promote awareness and maintain one's health. The WHO advises 150 minutes of moderate-intensity 75 minutes of vigorous intensity physical exercise each week, or a mix of both [21]. As per the WHO, consistent physical activities offers many medical benefits, including lowering blood pressure, weight maintenance, and lowering the risk of type 2 diabetes, stroke, heart disease, and different malignancies, all of which are factors that can enhance vulnerability to the Acute respiratory

infection outbreak [22]. The majority of working people are accustomed to having a jam-packed schedule in their daily lives. Exercise has been shown to offer clear health advantages for both healthy people and people suffering from various ailments [23], advise that at least thirty minutes of light exercise each day and at least 20 minutes of vigorous exercise should be done at each alternate day. Maintaining a routine of physical activity and performing workouts at home is an important approach for keeping yourself healthy during the COVID-19 pandemic.

1.2.7   Maintain Mental Health

For many people, the COVID-19 outbreak is a once-in-a-lifetime experience. Such a traumatic scenario might affect people's mental health, creating dread, uncertainty, isolation, or discrimination, as well as their community's economics, academics, and scarcity of basic needs [24]. Individuals may find it hard to adapt with their distress, which can lead to a variety of psychiatric problems like depression, anxiousness, frustration, and discouragements, as well as an increase in substance misuse and even defiance of local government mandates [25]. Large swathes of the population being confined to their homes for extended lengths of time, variances in stay at home orders issued by different jurisdictions, and inconsistent signals from government and public health organizations are all likely to exacerbate the current pandemic's suffering. Although community members, higher prevalence, and health care workers were motivated to adhere with quarantine orders to minimize the chances of infecting others and prevent the health of the public, emotional turmoil persuaded some to consider breaching their instructions, according to a study conducted in communities affected by severe acute respiratory syndrome (SARS) in the early 2000s [26].

1.2.8   Timely Medical Care

If you're feeling under the weather, stay inside. If the patient develops a fever, cough, or trouble breathing, medical attention should be immediately. It is critical

to heed the advice of the doctors, as they have even more updated knowledge about this outbreak.

1.3 Community Prophylaxis

To improve community readiness, several steps must be implemented. However, extreme caution must be exercised in implementing these suggestions and taking into account risk levels, community awareness, wishes, national and sub-national capability, and actual local contexts.

1.3.1 Collaboration with Organizations

It is critical to ensure a prompt reaction in order to validate the pandemic preparedness. It is critical to contact and cooperate with many organizations that may be prepared to support. It must be reinforced that the health care system must concentrate on facilitating the community so that they may lead local behavior-change advocacy efforts with limiting damage.

1.3.2 Social Distancing

It is described as "the purposeful increase in physical separation between individuals to prevent the spread of disease [27]. The terminology "social distance" is a misrepresentation, and "physical distancing" should be used instead. It is used in crowdies areas where we may expect a large audience at most often times. According to current standards, a minimum spacing of six feet between individuals is required to be successful. Previous research has backed up the usefulness of social distance in pandemic control [28].

Because of the delays in implementing this, many European nations have seen an unsustainable number of cases increase every 3-4 days. However, quarantine

imposed via social isolation, as well as other circumstances such as a longer period of confinement, insufficient supplies, difficulties obtaining medical treatment and drugs, and resultant loss of income, has its own set of consequences[27].

1.3.3 Reduce Stigma

Patients who are infected are stressed and attempt to avoid social contacts. They may not even reveal their true symptoms for fear of disease-related stigma. The likelihood of community transmission increases as a result of this. Frequently empathic dialogue with such patients can aid in the reduction of stigma, the facilitation of social support, and the provision of basic necessities [24]. Because stigma may derail communal cohesiveness, a clear description of the pandemic can aid in reducing confusion, avoiding misconception of data, and intervention programs.

1.3.4 Shield Extremely Vulnerable People

Shielding is a means of securing vulnerable population, such as children, who are at a high risk of severe sickness from COVID-19 because to a pre-existing health condition. It entails minimizing all contacts in order to prevent them from becoming infected with the virus. Solid organ transplant recipients, persons with cancer, respiratory illnesses, atypical diseases, or congenital metabolic defects, people on immunosuppressive treatments, and pregnant women with severe cardiac disease are among these populations [11]. Before getting any infection worst immune system play vital role in human health system to keep them healthy, while it becomes open invitation for various diseases like cancer, COVID-19 Diabetes if immune system response will be weak, low or damage [29]. The rapidly spreading Corona virus disease 2019 (CoVID-19) has generated a lot of concern in the epidemic's treatment and prevention [30]. There is no approved treatment for covid-19, but a number of clinical trials have been started, including Hydroxychloroquine, Remidisvir, Tachylizumab, anesthetic immunoglobulin, and convoluted plasma [31].

1.4   Prophylaxis for HCWs

Around the world, HCWs are spearheading the battle against COVID-19. They are frequently unprotected, increased susceptibility to infections.

1.4.1   Implementation Triage Early Diagnosis and Containments

Until proven differently, all patients with symptoms matching the standard case description must be considered COVID-19 cases. Such patients must be separated and handled as soon as possible once normal safety precautions have been taken.

The following methods are proposed to aid in early case detection [32] by urge healthcare practitioners to stay alert and informed about the condition and its treatment regimen, creating a very well fever clinic at the center's entrance, using the most up-to-date standard screening instrument, maintain a uniform database of patients who attended these clinics, placing appropriate Information, Education, and Communication materials in prominent locations across the health-care facilities and Maintain an empathetic approach and make sure that the new suspected or confirmed disease is not stigmatized.

1.5   Apply Standard Precaution

Hand and respiratory hygiene should be promoted in patients. Apart from standard injection safety protocols, biomedical waste management, disinfection, and sterilizing processes, use personal protective equipment (PPE) based on the patient's risk [32].

Before and after touching a patient, practicing any clinical treatment, or being exposed to bodily fluid, HCWs should follow the WHO's five minutes for hand hygiene strategy [33].

1.6   Implementing Empiric Precaution

All HCWs should implement these precautions. Contact and droplet measures, airborne prevention for aerosol-generating operations, public monitoring, and contact-tracing actions are all examples of this [34]. Medical masks/respirators, gloves, long-sleeved gowns, and safety goggles should all be available to HCWs [35]. PPEs, on the other hand, should be utilized carefully based on the HCWs' risk profile.

COVID-19 has been reported to be established across over 230 countries worldwide [36]. Pakistan is also been hit by this COVID-19 and the graph of COVID-19 patients are increasing day by day [37]. Remarkable measures have taken by the Government of Pakistan to control the COVID-19 spread in Pakistan[38].These measures include the closure of public transportation, the closure of educational institutes and universities, and the declaration of a general state of emergency in the country, as well as special measures to isolate COVID-19 patients and suspected cases [39]. The number of COVID-19 patients in Pakistan is estimated to more than report due to poor testing facilitie [40]. The most exposed peoples are healthcare workers to disease and their families on daily bases [41]. Infected and asymptomatic healthcare worker is a serious threat to their concerning, therefore preventive strategies were sought out all over the world such as pre-exposure or post-exposure prophylaxis [42].

1.7   Problem Statement

Prophylaxis is not well recognized in Pakistani population and mostly of them are not aware about their effectiveness against COVID-19.

1.8   Objectives

1. To know the awareness about prophylaxis using as protective or treatment agents against COVID-19.

2. To evaluate the association between different variables regarding gender, age, profession and qualification of study population.

3. To know about treatment commonly practicing against COVID-19.

Chapter 2

Literature Review

2.1 Need for Prophylaxis

COVID-19 is currently without a treatment that is effective [43]. The safety of COVID-19 vaccines is a top priority but due to under trial of different drugs, clinical management relies on supportive treatment and mechanical ventilator support in critical cases [44].

Since there is currently no successful antiviral treatment for COVID-19, the WHO blueprint has favoured research and has established a master randomised medical treatment protocol that can be used and adapted globally [45]. There are ethically approved clinical trials worldwide that evaluate at a variety of therapeutic treatments, including recommended agents like Hydroxychloricoquin, Actimara, and Remedisvir [46].

2.2 Hydroxychloroquine/Chloroquine Role as Prophylaxis

The drugs Chloroquine and Hydroxychloroquine are among the first to be considered for coronavirus treatment [47]. Both have demonstrated in vitro antiviral

efficacy against coronaviruses, including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [47-50]. Both know the immunomodulating effects of autoimmune diseases that could theoretically reduce the incidence of cytokine storms [51, 52]. SARS-2 is an RNA envelope virus with such a single-stranded RNA envelope that infects host cells by bonding to the ACE2 complex on the host cell through a wireless synthetic spike (S) protein. As a result, host proteases such as trans membrane proteases Serine 2 (TMPRS2) and Freon facilitate the viral spike S protein outbreak, which reinforces viral infection of the host cell [53, 54].

The antiviral properties of HCQ have been associated with a number of mechanisms of action, this could explain how effective it is at preventing COVID-19 transmission and proliferation.[55].Within these pathways is HCQ's potential to: (i) avoid viral entry by interfering with the ACE2 receptor's terminal glycosylation with the help of HCQ cell become basic that reduce acidity it make less permeable to enter into the cell (ii)switch spike S protein glycosylation and ACE2 cell adhesion, ACE2 are the receptors which are used to binding virus to connect with them S protein, this binding is disrupt by HCQ it make enough changing in ACE2 receptor that this binding capacity is reduce, virus like to enter inside the cell organelle due to presence of HCQ cell less acidic environment virus cannot enter into the cell and cannot do replicate, the last one is enzyme present inside the cell do not perform proper in more basic environment so viral replication process go slow down [53, 56-58].

Chloroquine concentration and HCQ can inhibit receptor binding and membrane fusion, two main phases necessary for SARS-CoV-2 cell entry. SARS-viral CoV-2's spike (S) protein appears to be extremely glycosylated, according to structure–function studies [59]. SARS-CoV-2 spikes and poor glycosylation of ACE2 as per one interpretation, HCQ-mediated proteins might improve the binding mechanism among SARS-CoV-2 and ACE2 in host cells [60]. As being weak bases Chloroquine and HCQ clump together in intracellular acid organs (such as lysosomes, endosomes, and Golgi vessels), in which they bound to lose protons, boost ph, and depend on an acidic pH [61]. Inhibits the breakdown of proteins associated with endosomal proteases and ultimately increased coronavirus levelsand

integration of the outer membrane with the cytosol or endocytic membrane as a result [62, 63]. In terms of HCQ's immune system effects, an improvement in drug-mediated pH from the inside of the cell and preudence of lysozyme antigen-presenting cells' behavior resulted in TLR signalling, antigen display and antigen synthesis,most of which are manipulated by MHC class II molecules in the major Histocompatibility complex [56, 64].

Through all of these conflicting interpretations, in vivo proof of this drug's potency, because due to lack of treatment for either prophylaxis for Covid-19 [65]. Duplicate and upper rash of SARS-COV-2 Clinical effects could not be significantly improved nor did SARS-CoV-2 proliferation and rashes reduce discharge of macaque into upper/lower respiratory tract disease models [66]. Significantly, at the time of nephropathy, HCQ was observed in respiratory tract, and serum HCQ levels have also been assessed. were used for human-to-human treatment of diseases such as malaria (15 to 100 mg / ml plasma) fell within or near the relevant boundaries [65]. Hydroxylchloroquine/chloroquine, [47] Remdesivir [67] Ivermectin [68] Dexamethosome and Azomax[69] are observed to being practices as chemoprophylaxis by many physicians around the world, but the lack of insufficient clinical trials they are not recommended and proved by WHO [70].

The majority of clinical trials on the use of HCQ have been conducted on hospitalized patients. HCQ's possible effectiveness in promoting viral clearance was first indicated by a brief case review performed in HCWs with reported COVID-19 disease [71].On July 4, 2020, the WHO approved the proposal of the Solidarity Trial's International Steering Committee to avoid using HCQ in hospitalized COVID-19 patient [55]. Individuals at high risk of sudden SARS-CoV-2 exposure have also been recommended to use HCQ against COVID-19as a feasible pre- or post-exposure treatment [72]. In high-risk individuals, the Indian Council of Medical Research (ICMR) suggests using HCQ as a preventative measure [55]. All non-seeking health care workers agreed to participate in theCOVID-19 restraint and care, along with undiagnosed HCWs working in domains which aren't secured by COVID-19 of COVID fields / blocks as well as asymptomatic front line workers HCQ 400 times double dose Administered 1 day a day, and then 400 mg once

a week for the next 7 weeks [73]. Some studies in China suggest clear efficacy of chloroquine as a treatment in COVID-19 [74-76]. COVID-19 patients should be treated with chloroqunine, according to Chinese experts [71]. Another survey found that Pakistan's HCWs had indeed used the drug and suggested it to others as a preventative measure, despite lack of evidence as an effective prophylactic agent [77].

HCQ is alternatively recommended as a in greater -risk individuals as a safety measure, such as HCWs the immuncompromised individuals and infected folk's household contacts people [78].

2.3 Remidivisir as Chemoprophylaxis Against COVID-19

Remdisivir has a wide range of antiviral activity, inhibiting wireless RNA synthesis as a counterfeit raw material for the remediation virus, and it will try to create a new virus that will contain counterfeit raw materials that will cause viral destruction [79]. Remdisivir has been shown to be effective, in the combat against certain coronaviruses including the Middle East Respiratory Syndrome (MERS) virus, Mercury-Coyo in vitro, and mice and monkeys in vivo [80-82]. The dose of Remidivisir was evaluated in randomized controlled trials in some Ebola patients with limited efficacy [83], and in a compassionate use in COVID-19 patients. The treatment of COVID-19 is interesting, with a wide range of doses affecting antivirals related to synergism against SARV-CoV2, which remains low in reported plasma remedial therapies [84]. Remdisivir prevents SARS COV-2 replication, lowers viral load, and protects infected animals from SARS COV-2 infection [85]. Remdisivir also reduces pathological processes, in SARS-2, it helps reduce mild symptoms and enhances pulmonary lesions in infected animals[85]. Remdisivir is used as a sympathetic drug to treat COVID-19 patients [85].

Remdisivir is a nucleoside analogue that take on the role of a competitive inhibitor of viral RNA-dependent RNA polymerase, according to the researchers (RdRp)

[86]. Remidsivir antiviral activity on RdRp has been made a grievance against the Ebola virus, MERS , C0VID-2 SARS-CoV-2as well as several other coronaviruses included CoV-OC43 [87].

In Ebola-infected cells including HALA, HFF-1, and Huh-7, the drug's concentration, that mostly, after a given dose, responds partly towards baseline and peak, varies between 0.07 and 0.14 μM [79]. Seven virus families, phyllo, pyramico, pneumococcus, bony, rabido, and flavirus, were used to test the hindering attributes of Remdisivir in resistance to different viruses [88].

A further analysis was conducted which shows that phosphorylated GS441524, molecule that is particularly active of Remdisivir, inhibits phylline infectious peritonitis in CRF cells, which has a half-maximum inhibitory metabolites (IC50 the specific viral, the inhibitory effect of half of the drug against has been achieved 0.78 Mm function) EC50 of the Remdisivir against Morin hepatitis virus is 0.03 Mm [89].

In 2016, in-vivo studies were performed using different doses of Ebola-infected rhesus monkeys and Remdisivir IM (Intra Muscular) injections. After exposure, it was revealed that Remdisivir acts as a protective barrier by halting viral replication [79].

Remdisivir was used in a "solidarity" international clinical trial by the WHO in a quest to trace an appropriate cure for COVID-19, in a prompt response to an outbreak, treating COVID-19 patients with Remdisivir [90]. The first patient of COVID-19 treated with 35-year-old Washington-based Remdisivir in emergency protocol, after 7 days of treatment, the pneumonia had healed [91, 92].

In Seattle, USA, Remdisivir was treated as a sympathetic medication to treat seven critically ill patients, with 68 percent of COVID-19 patients (36 out of 53) showing clinical improvement after receiving 200 mg of anesthesia after that 100 mg daily. In this analysis, however, there was no control groups [93, 94]. The first randomized, double-blind, placebo-controlled, multi-center clinical trial took place on April 29, 2020 in China [95].The researchers discovered that Remdisivir therapy did not substantially reduce the time it took to achieve clinical progress.

Furthermore, in patients with extreme COVID-19, the timing of mortality and viral clearance did not vary significantly from that of the placebo community, meaning that Remdivisir has minimal clinical benefits [96]. This shows that viral transmission is not the main cause of disease severity in COVID-19 [97, 98]. Cytokine release storms are linked to the intensity of COVID-19 [99].

2.4 Role of Vitamin C

Vitamin C, commonly known as ascorbic acid, is a water-soluble vitamin that can be contained in massive quantities in a range of fruits and vegetables[100]. It is a valuable nutrient that play an active role in the immune system indifferent enzymatic processes and has some bodily acts in the human body as well [101]. Fragility of connective tissue will be more if body has less collagen, tissue having less collagen started bleeding blood vessels not support cuts [102]. In the beginning stage pro-collagen is hydroxylized by an enzyme which need vitamin C necessary to NADPH [103].

Vitamin C also acts as an epigenetic co-factor for enzymatic hydroxylation, which controls DNA and histone methylation [104]. It neutralizes the Reactive Oxygen species, our body produce a lots of ROS(Reactive oxygen species) in the form of ATP [105]. Furthermore, because of it's an enhancing impact on the synthesis of interferons, emergence of lymphocytes, neutrophil phagocytosis potential, Such a vitamin is marked as an immunosuppressant [106].

Vitamin C is said to minimize time span, intensity of flu symptoms, when we are infected our immune system needs Ascorbic acid to neutralized these ROS in abundance, it help to regulate immune system by maintain cell membrane stability [107]. Orally take of vitamin C goes in GIT(Gastro intestinal tract) which is less effected as compared to IV dose, IV vitamin C infusions at a higher dosage 200 mg/kg/day, split in four doses which minimize duration of stay in the intensive care unit (ICU) by 7.8% [108], along with a noteworthy decrease in death ratio by 31.9% [109]. There are no known major side effects from intravenous injection of heavy

dose vitamin C or orally. As a consequence, vitamin C could be recommended for COVID-19 treatment and prevention [110].

One providing recommendations was designed to evaluate the effectiveness of existing medication and nutrition remedies, along with vitamin C 20 mg/10 ml nutraceutical syrup with sufficient vitamins and minerals, in inhibiting SARS-CoV-2 replication from spreading in other people at the time of division [111]. Patients were given 10 ml of multivitamin nutraceutical syrup orally twice a day for four days then a single dose of 10 ml on days 5, 6, and 7, this treatment protocol successfully controlled SARS-CoV-2 illness during the time of replication in addition to other medications and nutrition [111]. Patients of COVID-19 with respiratory illness like diabetes, cardiovascular disease, immunocompromised or any painful situation, were unable to take advantage from this protocol [112].

2.5 Vitamin D

Vitamin D lipid-soluble micronutrients are produced through transferring 7 dehydrocholesterol into our skin by UVB exposure or from other products that contain beef and egg yolk mushrooms along with fatty fish liver oil [113]. 76 patients having acute respiratory infection are examined in two group result was very shocked a group of 50 patients with vitamin D only 1 patient went to ICU with zero death while in other group having 26 patients without vitamin D 13 patients went to ICU and with 2 deaths are reported [114]. Due to increased autoimmunity and infection susceptibility, it indicate there may have been a vitamin D deficit [115]. Vitamin D can cause the antimicrobial agents are set to release including cathelicidins and defensins, which could contribute to minimize SARS-CoV-2 infection and pro-inflammatory cytokines [106].

Vitamin D also works by maintaining cell junctions, which is one of the mechanisms by which it exists, enable autophagy of infected cell, BECLIN protein is responsible to kill the cell itself to cause suicide when it is infected, when the virus enter in cell by the help of spike protein it inhibit BECLIN protein, Vitamin D help to

produce protein KLOTHO which start the production of BECLIN protein which is blocked by virus [116], modulating adaptive immunity, by helping to regulate gene with the help of gene to make cell junction close tightly epithelial cells are too close that they do not allow viruses to enter in it, and vitamin D reduces Renin angiotensin system to reduce the inflammation [117]. Vitamin D reduces cytokine storm through its effects on tumor necrosis factor α TNF- α by macrophages and interferon-γ INF- γ by T-Helper toxic cells [118]. Its adaptive immunity modulatory effects occur,Th1 responses are inhibited by suppressing T helper cell type 1 responses stimulating the T regulatory cells are induced, and reducing the release of all of them, resulting in a more stable immune system [119]. Several studies have discovered a potential connection between COVID-19 fatalities and vitamin D deficiency[120].

Vitamin D has also been linked to a reduction in the risk and mortality of COVID-19 disease [121]. As observed in COVID-19 patients, the innate immune system develops both pro-inflammatory and anti-inflammatory cytokines in relation to viral and bacterial infections [122]. Vitamin D modulates both the adaptive and innate immune systems by cytokines at the cellular level and regulates cell signalling pathways [123]. The vitamin D receptor (VDR) is present on both T and B immune cells. The proliferation, inhibition and differentiation of these cells is modulated by vitamin D, Vitamin D also tries to enhance cathelicidin production, immune cell release of catheliciden is a protein that allows holes and pores, punctures the host cell and causes it to burst and stain[124] and also helps to increase surfactant production, surfactants are fluid in alveoli that hold them open, vitamin D helps the gene produce surfactants to keep the lungs open [125].

2.6 Role of Zinc

Micronutrient deficiencies, both clinical and subclinical, have been linked to impaired immune responses and maturity level diseases mostly in older [126]. Many enzyme like superoxide dismutase 1 and 3, require it [127]. Zinc reduces viral replication in our cell zinc does not reach the cell because it is charged Zn++ lipid

membrane does not allow any charge particle to enter the cell HCQ as ionophore channel to enter zinc within the cell [128]. Zinc is a trace metal that is required for immune and other cell development and maintenance [129]. In older age, deficit zinc level (serum Zn value 0.7 mg/L) has been associated of pneumonia [130]. Inflammation and inflammatory biomarkers are expected to enhance long-term zinc deficiency [131]. Zinc deficiency, notably the T-cell function, influences most component of the immune system Th17 response that is associated with increased inflammation is also induced by zinc deficiency [132]. Reduced circulating zinc concentrations were correlated with increased cytokine levels of IL-6 (interleukin-6), IL-8, and TNF-alpha in elderly patients [133]. Four COVID-19 outpatients between the ages of 26 and 63 were treated with zinc salt lozenges in a case study[134]. They were given lozenges multiple times a day for 10 to 14 days, at doses ranging from 115 to 184 mg Zn/day, and they all recovered [135]. In another research study, zinc sulphate (220 mg Zn daily for 5 days) was prescribed to three COVID-19 patients over the age 38-74 years with specific gut signs, along with Hydroxychloroquine and Azithromycine recovered by that last patients [136]. Dr. Zalenko treated 699 patients when he feel suspected any of them he gave them Zinc + HCQ with Azithromycin he reported that none of them get died and serious, the standard dose of zinc is 220mg daily for 5 days [137].

Acute respiratory infections can also be helped by zinc[138].Intracellular zinc concentrations with zinc-ionophores like pyrithione or chloroquine have been shown to inhibit the RNA polymerase activity of a variety of RNA viruses in vitro [128]. The combination of zinc and pyrithione inhibited SARS coronavirus (SARS-CoV) replication in vitro even at low concentrations [139]. Correspondingly, zinc supplements can have effects not only on over-active inflammation concerned with COVID-19, but potentially also on the SARS-CoV-2 agent itself [103].

2.7 Impact of Lifestyle on Health

Viruses cause infected cells to respond to stress [140]. HSPs (heat shock proteins) play a major role in physical activity as well as acting as signal transduction

under the impact of protein synthesis, sustaining the protein detected during the process, enhancing the survival of stress cells and, as a response, degradation[141]. HSPs, especially HSP70, are trying to revive the primary increase in viral gene expression via viral infections [142]. In essence, the response of 2/44 tool-like receptors expresses innate immunity when HSP70 is liberated from cells (TLR-2 and TLR-4) [141]. HSP production is important for pathogen survival [143]. Some viruses can infect HSPs in poor functioned cells and extreme virus replication. Some HPSs, particularly Hsp70 and HSP90, are linked to higher expressions [144]. In comparison, CD11B+ and natural killer (NK) cells that play a crucial role in the get rid of replicating agents, regularly exhibit HSP70 in the course of infection -especially the rise in replication of viruses [144].

The influenza virus Rhinocalo protein complex has identified HSP70 as a cellular interaction partner [145]. To this scenario, HSP70 and HSP 90 are found in pneumonia and various other viral diseases [146]. It is understood that sleep controls immune functions [147]. Sleep deprivation (SD) is associated to a major improvement in the immune system[148-150], and enhance synthesis of pro-inflammatory cytokines [151]. A slight raise in TCD4+, CD8+, and NK cell response lymphocytes is correlated with SD at 50-64 hour [150, 152, 153]. SD decreased NK cells, CD16+, CD56+, CD57+ and IL-2 levels [148, 154, 155], which play key role in the host defense against viral infection[156].The Th1 and Th2 axis have altered the immune balance that favors the Th2 function in insomniacs who regularly experience SD, with a decrease in interferon gamma IFN-γ and IFN-γ/IL-44 secretion [157], and reduce the TCD3+, TCD4+, TCD8+ and all lymphocytes [158].

During everyday activities, anti-inflammatory stimuli, hormones, and cytokines aid rapid responses to biological and other environmental threats during nighttime sleep, pro-inflammatory substances and immune cells are controlled to assist the recurrence of adaptive immunity [159]. A main predictor of health is sleep quality, good sleep quality not only allows healthcare personnel to perform well in treating patients, but also preserves optimum immune function to escape infection [160]. Sleep quality is therefore a significant health predictor [161]. Many of us have changed our lifestyles due to the recent pandemic [162]. In terms of social

contact, imagination, opportunities, and positive relationships, these reforms were often limiting [162]. The restriction has also been applied to physical activity, mobility and nutritious food availability [163]. Anxiety, which is a form of psychological stress, can lead to the formation of physiological events, lowering immunity [164]. Healthy lifestyle (HL) habits have been reliably linked to decreased all-cause mortality and improved well-being and lifespan[165]. Unhealthy habits imbalance diet, lack of exercise, Tobacco and alcohol consumption are crucial factors to the death globally [166].

In the management of the COVID-19 outbreak, the effectiveness of ensuring a balanced nutritious condition and regular physical activity at home has been reinforced in recent reviews with regard to lifestyle guidelines [167]. Similar suggestions were suggested during the 1918 influenza pandemic, as healthcare professionals followed the standards of proper hygiene, nutrition, natural ventilation, and resting [167].

Observational data are lacking and reflect a research discrepancy on how the general population and patients with mental conditions currently cope with self-care, diet, exercise, and good sleep during isolation [103, 168, 169]. At the individual level, the connection between diet and immunity is a common thread in most food and healthy recommendations for infectious diseases like COVID-19. [170]. The current study indicate healthy diet has huge effect on the immunity system and vulnerability of people to disease, It has been shown that by stimulating cells, changing the development of signaling molecules, gene expression, and nutrient combinations may influence the immunity system [171]. In addition, ingredients of diet are essential factors of the composition of microbes of the gut that could therefore alter properties' shapes of the body's immunity signals. Power, protein, and unique micronutrient nutritional deficiencies are correlated with lower defense function and increased virus risk [172]. For the maintenance of immunity, regular intake of iron, Zinc, vitamins A, E, B6, and B12 is mainly essential [173]. To the maintenance of an efficient immunity is to prevent nutrient imbalance which play an important function in activating, communicating, differentiating, or functional expression of immune cells [173, 174].

During the outbreak of COVID-19, the shifts in dietary habits could be motivated by anxiety of the people across the worldwide are feeling [175]. The evidence has shown that food preferences is effected of tension, anxiety and psychological disturbance factors, whereby elevated levels of distress are related to unhealthy dietary behaviors and poor diet quality [176]. Therefore, during COVID-19 pandemic, people are responsible for making an effort to choose a healthier life modification consuming food rich in fruits and vegetables, exercising at time when free, striving to keep a healthy body mass, and having a sufficient quality sleep, in addition to taking care of one's food consumption, individuals' mutual duty is to prevent the dissemination of nutritional and dietary misinformation and COVID-19 [177]. In vitro studies have shown that polyphenols like phenols, flavonoids along with cereals, beverages such as coffee, tea and wine, abundantly present in raw vegetables and fruits, could significantly impact on gut flora, favoring growth of potentially beneficial species like *Lactobacillus, Bifidobacteria, Akkermansia and Fecalibacteria,* Inhibition of production of pathogenic bacteria like Helicobacter pylori and Staphylococcus species at the same moment [178]. Zinc supplementation such as milk products, nuts and red meat was found to minimize harmful microbes in various preclinical trials, while increasing beneficial ones [179, 180].

Chapter 3

Materials and Methods

3.1 Study Design

In August 2020, an online survey was used to perform a cross-sectional analysis. The questionnaire link generated through Google form and link was shared with the different groups[181]. The objective of research study was clearly mentioned at start of the questionnaire. Questionnaire was filled by Teachers, students HCWs and all those who were agree the fill the questionnaire.

3.2 Sampling Strategy

The respondents were invited to participate in the study via social media Facebook, Twitter, Snap chat, Instagram and Whats-app.

The participants took part in the survey on a voluntary basis and were thus found to be exempted from written informed consent. At the beginning of survey, goals and objectives of research study was clearly explained. All the respondents shows positively and ethical response of the study questionnaires.

Respondents aged 18 years and over were the eligibility criteria and currently he/she has been recouped from COVID-19 or their family member has been healed.

3.3   Sample Size

The random sampling method was used to collect the data. For a fixed period of time in August 2020 link was shared and response acceptance was closed on 31st August [181]. Participants were permitted until they met the maximum responses

3.4   Research Instrument

A questionnaire was created to obtain data from the respondents in the survey. The questionnaire was based on concept of substantial studies reviews on application and potency of COVID-19 prophylaxis, preventive measures guidelines issued by NIH and the use of medicine in distinct nations [183-185].

The questionnaire tool was reviewed with pharmacy and medical professional to give their expert opinion on its relativity, relevance and adequacy of the question. The questionnaire was divided into three major parts part A about demographic characteristics, part B about different practices regarding COVID-19 and part C about infected patients with COVID-19 [186].

The questionnaire comprised twenty-four questions, including sociodemographic attributes, respondents' current health status, and the practice of COVID-19 preventive measurement and the use of dietary supplements. The first part of questionnaire has six questions about demographic characteristics of the participant's gender, age; residency, employment status and education were the demographic characteristics. The second part having 12 questions relating to the awareness and behavior of respondents to preventive measures adopted by healthy person, specifically hand washing, SOPs and dietary habit. Each question was responded as Yes, No and may I don't know. It also contains questions about people beliefs regarding to herbal products, food supplements, physical activity and drugs as effective protection against COVID-19 [186].

The third section was only filled by participants who suffered from this infection or their family member has ever caught this infection. The third section included

six questions, including the current health status of the Respondents who has been currently/previously infected with COVID-19 whether respondents or their family member. The different condition asymptomatic, mild and moderate was elaborated by mentioned symptoms to understand easily. The personal prophylaxis measure including drugs prescribed by physicians used by various age groups to keep them secure/recovered from this COVID-19 was asked them. Each question contained relevant, adequate and already familiar words which might generate interest among participants. Participants were asked to choose between the options offered. Questionnaire is attached in annexure 1.

3.5 Data Analysis

Data were entered in Microsoft excel and later imported into Statistical Package for Social Sciences (SPSS) version 21 for statistical analysis. Categorical variables were expressed as frequencies and percentages. Pie charts and Bar charts are plotted to represent the demographic characters of study population. Association between categorical variable age and current health status was measured. The Chi-square analysis was performed to determine the significance of the results based on demographic variables. Significance is defined as $p > 0.05$.

Chapter 4

Results and Discussions

4.1   Socio-Demography of Study Group

A total 150 participants completed the survey questionnaire. Majority of participants were female (n=104, 68.9%) and male (n=46, 30.5%). Out of total 32.5% were teachers, 13.9% HCWs and physicians, 43.7% students and 8.6% having others professions. This demographic section was also comprised by age group majority of the participants 48.3% were age between 16-29 years, 32.5% were 16-25. 11.3% having 36-45 and 6.7% were the age between 46-55.
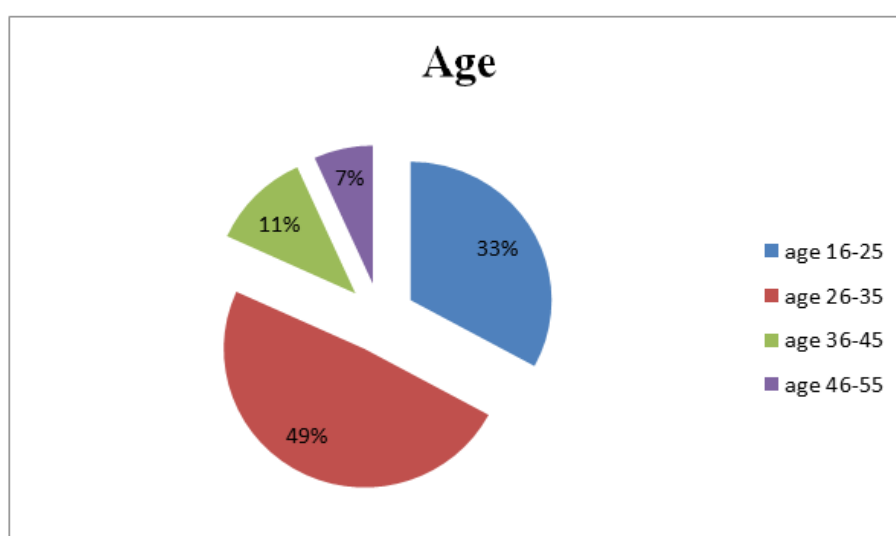
FIGURE 4.1: Age wise distribution of participants.
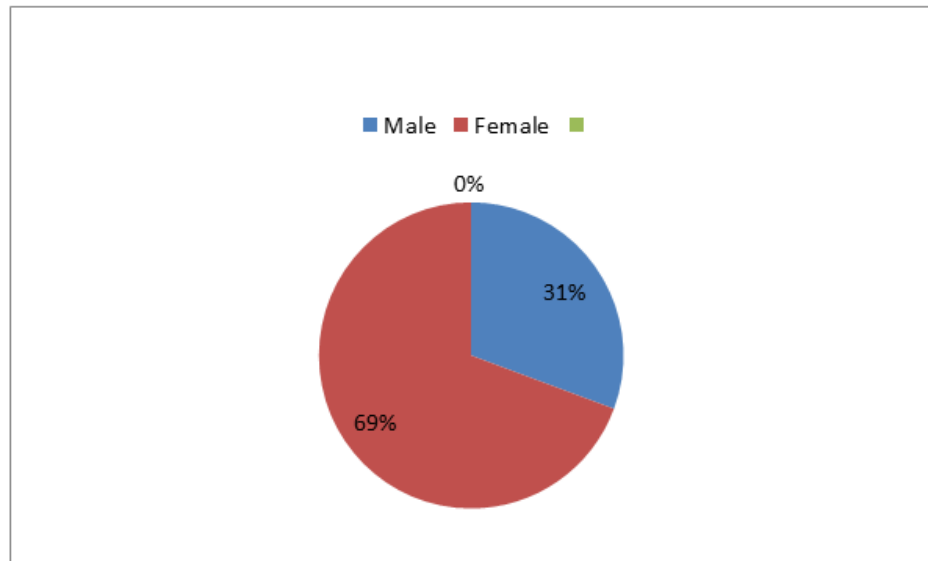
FIGURE 4.2: Gender wise distribution of respondents.
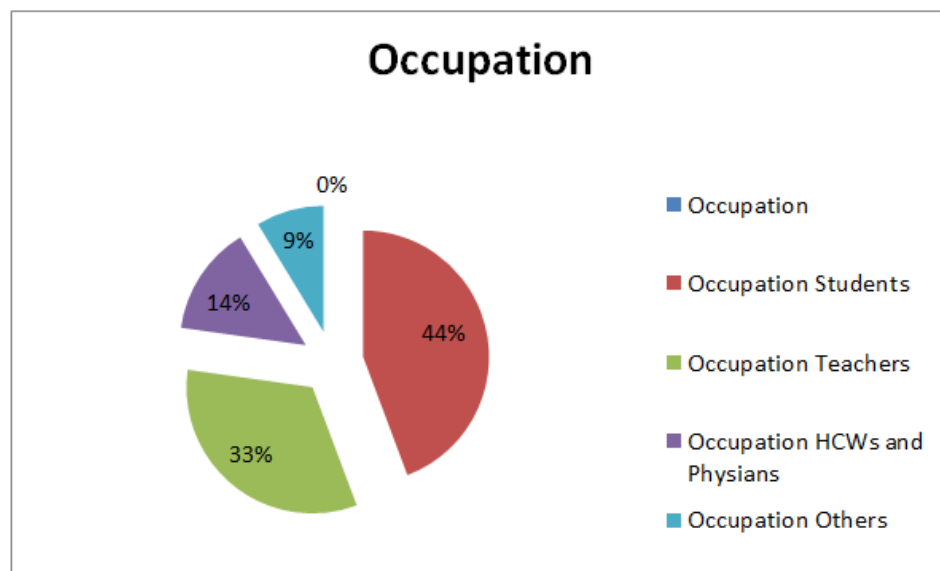
FIGURE 4.3: Occupation of participants.

4.1.1 Demographic Characteristics of Study Group Regarding to Residence, Level of Education and Current Health Status

The demographic section was also having the question about the residence of respondents. A total (82.8%) belonging to Punjab, (2.0%) to KPK, (6.6%) to Kashmir, (7.9%) from Sindh.
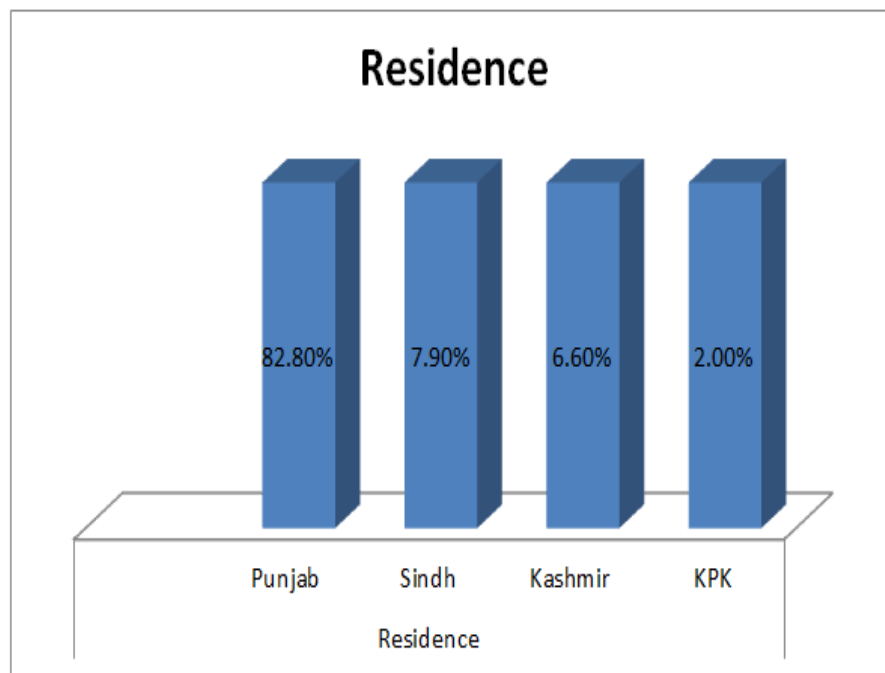
FIGURE 4.4: Showing Residence of Respondents

Educational level were also different among study population, 36.4% having Bachelor level of education 47.0% having Master & M.Phil level 0.7% PhD and 15.2% having other education level took part in this survey.
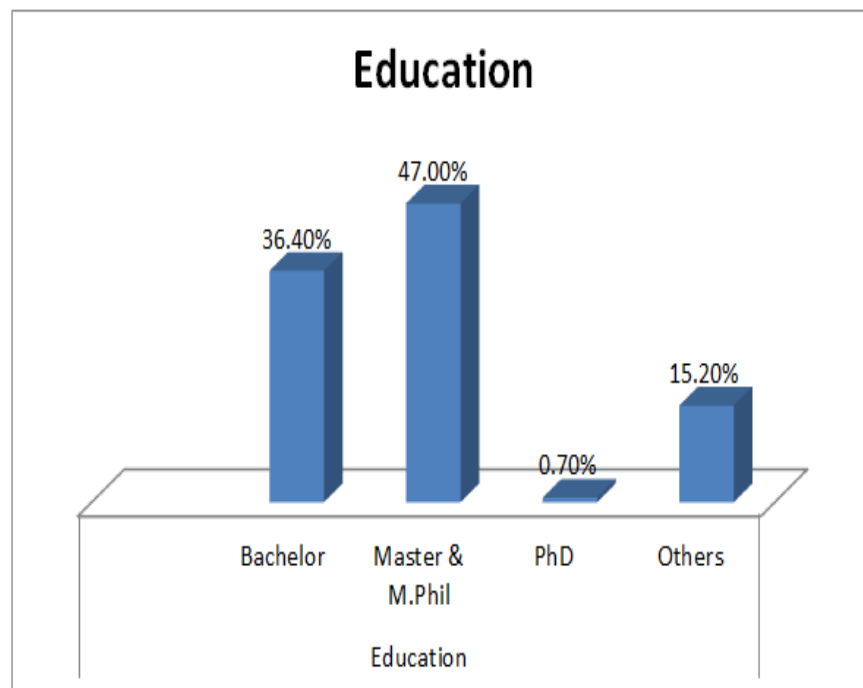
FIGURE 4.5: Educational Level of Participants

Question about Current health status of participants was asked in last of demographic section. 72.8% were healthy, 18.5% were recovered and 7.9% of total population was still infected by COVID-19.
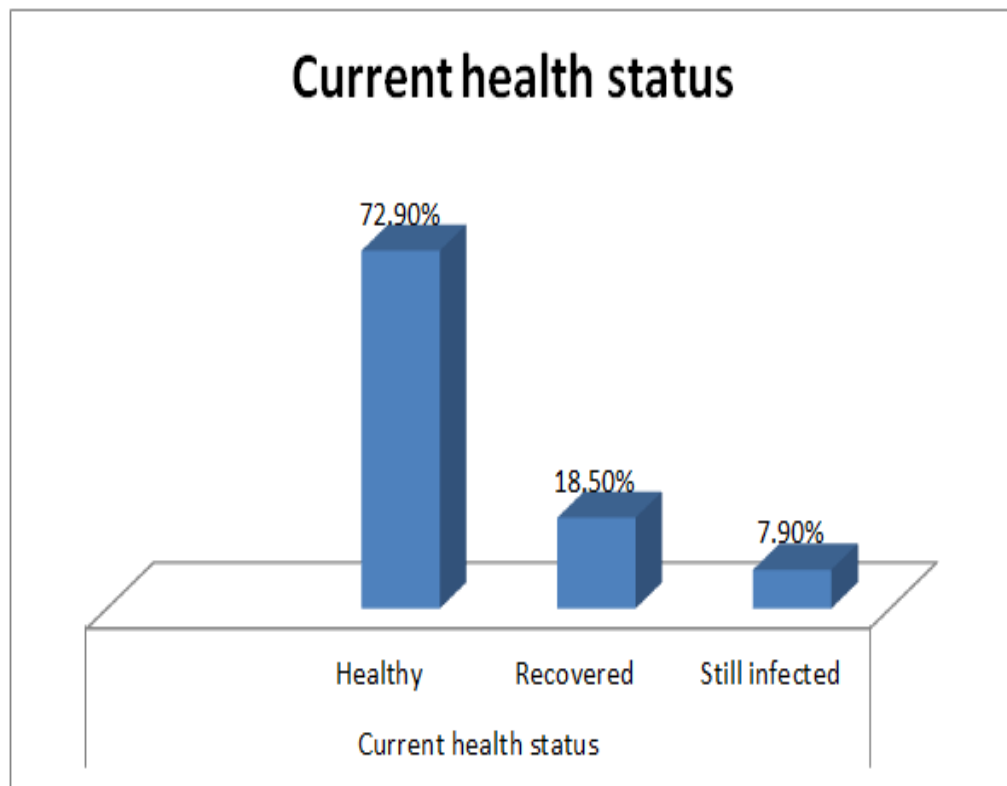
FIGURE 4.6: Showing current health status of participants.

In the view of rapid spread of COVID-19 and the increase in number of cases in Pakistan it is necessary to have clear picture of the state of public awareness, practices and belief in the context of precautionary measures. Pakistan is the populous country and is facing enormous pressure on non-communicable disease [181].

These factors increase the country's vulnerability to this deadly infection and result in higher mortality and morbidity. Moreover Pakistan's history of dealing with epidemic required a high level of preparedness by government as well as masses [182].

TABLE 4.1: Demographic Table of Participants ' Personal Information

Variable	*F*	Percentage
Gender		
Females	104	68.9
Males	46	30.5
Age		
16-25 Years	49	32.5
26-35 Years	73	48.3
36-45 Years	17	11.3
46-55 Years	1	0.7
No Response	10	6.7
Province		
Punjab	125	82.8
Sindh	12	7.9
Kashmir	10	6.6
KPK	3	2
Level of Education		
Bachelors	55	36.4
Masters/MPhil	71	47
PhD	1	0.7
Other	23	15.2
Occupation		
Student	49	32.5
Teacher	66	47.3
HCWs and Physicians	21	13.9
Other	13	8.6
Current Health Status		
Healthy	110	72.8
Recovered	28	18.5
Infected	12	7.9

According to the result of descriptive statistics, 69% of the individuals who participated in the study were females. The highest age category reported by the participants was twenty-six years of age to thirty-five years of age. Almost 83% of the participants belonged to province of Punjab. From a total of 150 participants, 55 were graduates and 71 were post graduates. Out of all the recruited participants, 32.5% were students and 47.3% were teachers. It was found out that the majority of the participants were healthy (72.7%) and 18.5% recovered from COVID-19 while 7.9% were still infected work.

TABLE 4.2: Demographics Table of Participants' Food and Intake Related Information

Variable		*F*	Percentage
Fresh Fruits Intake			
	Yes	103	68.6
	No	18	12
	Frequently	29	19.3
Dry Fruits Intake			
	Yes	43	28.7
	No	84	56
	No Role	23	15.3
Milk Intake			
	Yes	86	57.3
	No	33	22..0
	No Role	31	20.7
Intake of Qehwa and Herbal Teas			
	SannaMakki	51	34
	Lemon Grass	30	20
	Lemon	13	8.7
	Green Tea	29	19.3
	Ginger Tea	27	18

Regarding Food and intake habits, largest percentage of participants reported that they have started fruit intake (68.6%) and milk intake (57.3%). 28.7% participants reported the intake of dry fruits. 41.3% and 36% participants reported that ginger, and garlic and citrus fruits respectively to boost up their immunity. Largest number of participants reported the consumption of SannaMakki (34%), Qehwa. After SannaMakkiQehwa, Lemon Grass (20%), Green tea (19.3%) and Ginger tea (18%) were the highest reported herbal teas that were consumed by the research participants.

TABLE 4.3: Demographics Table of Immunity Boosting and Preventive Measures Related Information

Variable	*f*	Percentage
Steam/Boiled Water & Gargles		
Yes	83	55.3
No	40	26.7
Frequently	27	18
Intake of Supplements		
Zinc	23	15.3
Vitamin C & D	58	38.7
Exposure to Sunlight	46	30.7
None of These	23	15.3
Vitamins as Immunity Boosters?		
Yes	123	82
No	23	15.3
May be	4	2.7
Medicine Type		
HCQ/CW	27	18
Azomax	16	10.7
Redisivir	10	6.7
None of the Above	97	64.7
Followed SOPs		
Properly	132	88
Sometimes	9	6
Never	8	5.4
No Response	1	0.7

The above table shows that 73.3% of the participants were taking steam and were doing gargles and were drinking boiled water. 50% participants were taking supplements of some sort including zinc and vitamin C & D. 30.7% study participants were taking sunlight as well. Majority of participants (82%) reported that they have found vitamins as immunity boosters. Regarding olive oil intake, almost 59% participants reported that they do not take olive oil to prevent COVID-19. Similarly, almost 53% participants reported that they do not take medicines to prevent COVID-19. Whereas 88% participants conveyed that they properly followed SOPs as preventive measures.

The descriptive statistics regarding the awareness and perception of COVID-19 showed that wearing masks, hand washing and social distancing were all successful methods for preventing COVID-19 by the participants (82.7%).

TABLE 4.4: Demographics Table of COVID-19 Awareness and Perception Related Perception Variable

Variable	*F*	Percentage
Successful methods for preventing COVID-19		
Wearing mask	14	9.3
Hand washing/sanitizing	5	3.3
Social distancing	7	4.7
All these	124	82.7
Green Tea is important against COVID19		
Yes	75	50
No	18	12
May be	56	37.3
No Response	1	0.7
Sleep is important for Health in COVID time		
Yes	136	90.7
No	14	9.3
Can closed Institutions protect from COVID-19		
Yes	112	74.7
No	15	10
Maybe	19	12.7
No Response	4	2.7
Proper Solution to Pandemic		
Vaccine	122	81.3
Prevention	13	8.7
Supplements	11	7.3
No treatment	4	2.7

Green tea was reported to be important against COVID-19 by 50% of the participants. 90.7% participants reported sleep to be important as well. 74.7% participants stated that if educational institutions remain closed, there is a possibility that it can protect people from getting infected. Vaccine was reported to be the proper solution to pandemic by almost 82% participants.

4.2 Statistical Analysis

4.2.1 Gender and Different Variables

Distribution of responses according to different variable is shown in following tables. Chi-square values are showing its significance.

TABLE 4.5: Distribution of responses according to Gender.

Questions	Responses	Frequency/ Total (N=150)	Parentage Male (N=46)	of Groups Female (N=104)	X^2	Sig
1. Drug as	HCQ/CQ	10/6.7	2/4.3	8/7.7	1.04	0.79
Prophylaxis	Remdesivir	3/2.0	1/2.2	2/1.9		
	Supplements	130/86.7	40/87.0	90/86.5		
	Others	7/4.7	3/6.5	4/3.8		
2. Followed	Properly	132/88.6	43/95.6	89/85.6	4.35	0.11
SOPs during	Sometimes	9/6.0	0/0.0	9/8.7		
pandemic	Never	8/5.4	2/4.4	6/5.8		
3. Changed	Proper sleep	9/6.0	3/6.5	6/5.8	2.78	0.43
lifestyle in	Proper diet	47/31.5	18/39.1	29/28.2		
pandemic by	Supplements	85/57.0	24/52.2	61/59.2		

Continued Table: 4.5 Distribution of responses according to Gender.

Questions	Responses	Frequency/ Total (N=150)	Parentage Male (N=46)	of Groups Female (N=104)	X^2	Sig
	Nothing needed	8/5.4	1/2.2	7/6.8		
4. Started	Yes	103/68.7	31/67.4	72/69.2	.72	0.70
Fruits Intake	No	18/12.0	7/15.2	11/10.6		
	Maybe	29/19.3	8/17.4	21/20.2		
5. Started	Yes	86/57.3	24/52.2	62/59.6	.85	0.65
Milk Intake	No	33/22.0	12/26.1	21/20.2		
	Milk has no role	31/20.7	10/21.7	21/20.2		
6. Started Dry	Yes	43/28.7	12/26.1	31/29.8	.24	0.89
Fruits Intake	No	84/56.0	27/58.7	57/54.8		
	No Role	23/15.3	7/15.2	16/15.4		
7. Vitamin	Yes	123/82.0	38/82.6	85/81.7	13.5	0.03**
boosts	No	23/15.3	8/17.4	15/14.4		

Continued Table: 4.5 Distribution of responses according to Gender.

Questions	Responses	Frequency/ Total (N=150)	Parentage Male (N=46)	of Groups Female (N=104)	X^2	Sig
immunity	Maybe	4/2.7	0/0.0	4/3.8		
8. Special	Yes	95/63.3	25/54.3	70/67.3	2.33	0.31
Supplements	No	10/6.7	4/8.7	6/5.8		
boost immunity	Maybe	45/30.0	17/37.0	18/36.7		
& prevent corona						
9. Started	Yes	80/53.3	26/56.5	54/51.9	.49	0.78
taking boiled	No	45/30.0	12/26.1	33/31.7		
water/gargles	Frequently	25/16.7	8/17.4	17/16.3		

Continued Table: 4.5 Distribution of responses according to Gender.

Questions	Responses	Frequency/ Total (N=150)	Parentage Male (N=46)	of Groups Female (N=104)	X^2	Sig
10. Sleep important for health status	Yes	136/90.7	39/84.8	97/93.3	15.7	0.02**
	No	14/9.3	7/15.2	7/6.7		
11. Green Tea is beneficial in COVID	Yes	75/50.3	23/50.0	52/50.5	2.32	0.31
	No	18/12.1	3/6.5	15/14.6		
	Maybe	56/37.6	20/43.5	36/35.0		
12. Starting washing hands in this pandemic	Yes	43/28.9	15/32.6	28/26.9	.58	0.75
	No	88/58.7	25/54.3	63/60.6		
	Rarely	19/12.7	6/13.0	13/12.5		

Note. n = 150 Individuals

Responses to question were compared among gender. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.5. In response to query drug used as prophylaxis 86.7% individual responded that they take supplements, 6.7% HCQ, 4.7% responded to others while least one 2.0% responded towards Remdisivir. A p-value of 0.79 suggested that result were insignificant and the variable gender and drug as prophylaxis were not related. The third question was about lifestyle modification by adopting different options 57% said that they modify their life style by taking proper supplements while 31.5% by taking proper diet and 6% by taking adequate sleep. A p-value of 0.43 suggested that gender and life style modification during pandemic are not linked. There were insignificant variation in response to the query related the fruits intake, P-value of 0.70. From the total study population, 68.7% of people answered yes while 12% responded to no and 19.3% responded to uncertain. Concerning the query of milk intake insignificant result were obtained p-value 0.65. A total of 57.3% started to take milk 22% no and 20.7% responded that milk has no role. Regarding dry fruits intake 28.7% responded to yes 56% responded to no while 15.3% were uncertain about this query. These results indicate that people are uncertain about the use of dry fruits and their role. Significant data p-value 0.03 was obtained regarding knowledge about vitamins role in boosting immunity. A total 82% of individual knew the role of vitamins as immunity booster, 15.3% did not know while 2.7% were uncertain. Regarding the use of special supplements to boost up immunity and provide prevention from Covid-19, respondents were uncertain and the result obtained was not significant P-value 0.31. The 63% of total study population answer that special supplements can prevent from being infected, whereas 30% respondent's uncertainty was observed.

4.3 Age Base Practices

Responses to question were compared among different age group. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.6.

TABLE 4.6: Distribution of responses according to Age in Years.

Questions	Responses	Frequency/ Total (N=140)	Parentage 16-25 (N=49)	of Groups 26-35 (N=73)	36-45 (N=17)	46-55 (N=1)	X^2	Sig
1. Drug as	HCQ/CQ	9/6.4	4/8.2	5/6.8	0/0.0	0/0.0	52.19	0.00**
Prophylaxis	Remdesivir	3/2.1	1/2.0	0/0.0	1/5.9	1/100		
	Supplements	121/86.4	43/87.8	64/87.7	14/82.4	0/0.0		
	Others	7/5.0	1/2.0	4/5.5	2/11.8	0/0.0		
2. Followed	Properly	124/89.2	39/79.6	69/94.5	15/93.8	1/100	7.91	0.25
SOPs during	Sometimes	7/5.0	5/10.2	2/2.7	0/0.0	0/0.0		
pandemic	Never	8/5.8	5/10.2	2/2.7	1/6.3	0/0.0		
3. Changed	Proper sleep	8/5.8	3/6.1	4/5.6	1/5.9	0/0.0	7.25	0.61

Continued Table 4.6 Distribution of Responses According to Age in Years

Questions	Responses	Frequency/ Total (N=140)	Parentage 16-25 (N=49)	of Groups 26-35 (N=73)	36-45 (N=17)	46-55 (N=1)	X^2	Sig
lifestyle in	Proper diet	44/31.7	21/42.9	17/23.6	6/35.3	0/0.0		
pandemic by	Supplements	79/56.8	24/49.0	45/62.5	9/52.9	1/100		
	Nothing needed	8/5.8	1/2.0	6/8.3	1/5.9	0/0.0		
4. Started	Yes	94/67.1	31/63.3	52/71.2	11/64.7	0/0.0	6.64	0.36
Fruits Intake	No	18/12.9	8/16.3	9/12.3	1/5.9	0/0.0		
	Maybe	28/20.0	10/20.4	12/16.4	5/29.4	1/100		
5. Started	Yes	80/57.1	21/42.9	49/67.1	9/52.9	1/100	9.36	0.15
Milk Intake	No	30/21.4	12/24.5	13/17.8	5/29.4	0/0.0		
	Milk has no role	30/21.4	16/32.7	11/15.1	3/17.6	0/0.0		
6. Started Dry	Yes	39/27.9	9/18.4	24/32.9	6/35.3	0/0.0	7.02	0.32
Fruits Intake	No	79/56.4	28/57.1	41/56.2	9/52.9	1/100		
	No Role	22/15.7	12/24.5	8/11.0	2/11.8	0/0.0		

Continued Table 4.6 Distribution of responses according to Age in Years.

Questions	Responses	Frequency/ Total (N=140)	Parentage 16-25 (N=49)	of Groups 26-35 (N=73)	36-45 (N=17)	46-55 (N=1)	X^2	Sig
7. Vitamin	Yes	113/80.7	38/77.6	61/83.6	13/76.5	1/100	6.59	0.03**
boosts	No	23/16.4	10/20.4	11/15.1	2/11.8	0/0.0		
immunity	Maybe	4/2.9	1/2.0	1/1.4	2/11.8	0/0.0		
8. Special	Yes	87/62.1	24/49.0	50/68.5	12/70.6	1/100	7.57	0.27
Supplements	No	10/7.1	5/10.2	3/4.1	2/11.8	0/0.0		
prevent Corona	Maybe	43/30.7	20/40.8	20/27.4	3/17.6	0/0.0		
9. Started	Yes	75/53.6	22/44.9	43/58.9	10/58.8	0/0.0	8.90	0.18
taking boiled	No	42/30.0	21/42.9	16/21.9	4/23.5	1/100		
water/gargles	Frequently	23/16.4	6/12.2	14/19.2	3/17.6	0/0.0		
10. Sleep	Yes	126/90.0	43/87.8	68/93.2	14/82.4	1/100	2.30	0.51
important for	No	14/10.0	6/12.2	5/6.8	3/17.6	0/0.0		
health status								

Continued Table 4.6 Distribution of responses according to Age in Years.

Questions	Responses	Frequency/ Total (N=140)	Parentage 16-25 (N=49)	of Groups 26-35 (N=73)	36-45 (N=17)	46-55 (N=1)	X^2	Sig
11. Green Tea	Yes	67/48.2	14/29.2	44/60.3	8/47.1	1/100	13.30	0.04*
is beneficial	No	17/12.2	8/16.7	8/11.0	1/5.9	0/0.0		
in COVID	Maybe	55/39.6	26/54.2	21/28.8	8/47.1	0/0.0		
12. Started	Yes	41/29.3	12/24.5	21/28.8	8/47.1	0/0.0	10.10	0.12
washing hands	No	87/58.4	41.62.1	28/57.1	11/52.4	7/53.8		
properly	Rarely	19/12.8	6/9.1	9/18.4	2/9.5	2/15.4		

Note. n = 150 Individuals *. p< .05, ***. p< .001.

The responses to the question related to the taking boil water and gargles varied in senses of using it. A p-value 0.78 was insignificant and showing no link between variable gender and boil water intake. The question related sleep role was also significant p-value 0.02. A total 90.7% answered yes while 9.3% responded to no. 93.3% female were aware of role of sleep while 84.8% were aware about sleep role is important in immunity. The result regarding to beneficiary effect of green tea against Covid-19 were insignificant P-value 0.31. A total of 50.3% of respondents said that green tea has important role while 37.6% were not sure about its role. Highest uncertainty was observed in respondents regarding to olive oil intake, 58.7% respondents to no while 28.7% responded to role of olive against covid-19. P-value 0.75 suggested that results were insignificant and variable gender and hand washing practice were not related.

Responses to question were compared among different age groups. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.7. In response to query drug used as prophylaxis 86.4% individual responded that they take supplements, 6.4% HCQ, 5.0% responded to others while least one 2.1% responded towards Remdisivir. A p-value of .00** suggested that result were significant and the variable age and drug as prophylaxis are linked each other.

The second question posed was regarding to SOPs followed during pandemic, 89.2% of responded said that they properly followed SOPs while5.8% responded to never and 5.0% study population followed SOPs sometime. P-value of 0.25 suggest that the variable age and SOPs followed are not linked. The third question was about lifestyle modification by adopting different options 56.8% said that they modify their life style by taking proper supplements while 31.7% by taking proper diet and 5.8% by taking adequate sleep.

A p-value of 0.61 suggested that ager and life style modification during pandemic are not linked. There were insignificant variation in response to the query related the fruits intake, P-value of 0.36. From the total study population, 67.1% of people answered yes while 12.9% responded to no and 20.0% responded to uncertain.

Concerning the query of milk intake insignificant result were obtained p-value 0.15. A total of 57.1% started to take milk 21.4% no and 21.4% responded that milk has no role. Regarding dry fruits intake 27.9% responded to yes 56.4% responded to no while 15.7% were uncertain about this query.

These results indicate that people are uncertain about the use of dry fruits and their role. Significant data p-value 0.03 was obtained regarding knowledge about vitamins role in boosting immunity. A total 80.7% of individual knew the role of vitamins as immunity booster, 16.4% did not know while 2.9% were uncertain. Regarding the use of special supplements to boost up immunity and provide prevention from Covid-19, respondents were uncertain and the result obtained was not significant P-value 0.27. The 62.1% of total study population answer that special supplements can prevent from being infected, whereas 30.7% respondent's uncertainty was observed. The responses to the question related to the taking boil water and gargles varied in senses of using it. A p-value 0.18 was insignificant and showing no link between variable age and boil water intake.

The question related sleep role was also insignificant p-value 0.51. A total 90.0% answered yes while 10.0% responded to no. 93.2% having age 26-35 years were aware of role of sleep while 87.8% of age 16-25 years were aware about sleep role is important in immunity. The result regarding to beneficiary effect of green tea against Covid-19 were significant P-value 0.04**. A total of 48.2% of respondents said that green tea has important role while 39.6% were not sure about its role. Highest uncertainty was observed in respondents regarding to hand washing, 57.9% respondents to no while 29.3% responded to yes. P-value 0.12 suggests that results were insignificant and variable age and hand hygiene were not related.

4.4 Qualification Based Practices

Responses to question were compared among qualification of study population. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.8.

TABLE 4.7: Distribution of Responses According to Qualification

Questions	Responses	Frequency/ Total (N=150)	Parentage Bachelors (N=55)	of Groups MS/M.Phil (N=71)	PhD (N=01)	Other (N=23)	X^2	Sig
1. Drug as Prophylaxis	HCQ/CQ	10/6.7	3/5.5	3/4.2	0/0.0	4/17.4	7.58	0.58
	Remdesivir	3/2.0	2/3.6	1/1.4	0/0.0	0/0.0		
	Supplements	130/86.7	47/85.5	63/88.7	1/100	19/82.6		
	Others	7/4.7	3/5.5	4/5.6	0/0.0	0/0.0		
2. Followed SOPs during pandemic	Properly	132/88.6	47/85.5	63/90.0	1/100	21/91.3	1.60	0.95
	Sometimes	9/6.0	5/9.1	3/4.3	0/0.0	1/4.3		
	Never	8/5.4	3/5.5	4/5.7	0/0.0	1/4.3		
3. Changed lifestyle in pandemic by	Proper sleep	9/6.0	2/3.6	4/5.7	0/0.0	3/13	7.17	0.62
	Proper diet	47/31.5	21/38.2	19/27.1	0/0.0	7/30.4		
	Supplements	85/57	31/56.4	41/58.6	1/10	12/52.2		
	Nothing needed	8/5.4	1/1.8	6/8.6	0/0.0	1/4.3		
4. Started	Yes	103/68.7	34/61.8	54/76.1	0/0.0	15/65.2	15.32	0.02*

Continued Table: 4.7 Distribution of Responses According to Qualification

Questions	Responses	Frequency/ Total (N=150)	Parentage Bachelors (N=55)	of Groups MS/M.Phil (N=71)	PhD (N=01)	Other (N=23)	X^2	Sig
Fruits Intake	No	18/12.0	7/12.7	8/11.3	0/0.0	3/13.0		
	Frequently	29/19.3	14/25.5	9/12.7	1/100	5/21.7		
5. Started	Yes	86/57.3	31/56.4	43/60.6	0/0.0	12/52.2	7.53	0.28
Milk Intake	No	33/22.0	14/25.5	15/21.1	1/100	3/13.0		
	Milk has no role	31/20.7	10/18.2	13/18.3	0/0.0	8/34.8		
6. Started Dry	Yes	43/28.7	13/23.6	21/29.6	0/0.0	9/39.1	3.28	0.77
Fruits Intake	No	84/56.0	33/60.0	38/53.5	1/100	12/52.2		
	No Role	23/15.3	9/16.4	12/16.9	0/0.0	2/8.7		
7. Vitamin	Yes	123/82.0	47/85.5	61/85.9	0/0.0	15/65.2	15.24	0.02*
boosts	No	23/15.3	7/12.7	7/9.9	1/100	8/34.8		
immunity	Maybe	4/2.7	1/1.8	3/4.2	0/0.0	0/0.0		
8. Special	Yes	95/63.3	35/63.6	50/70.4	0/0.0	10/43.5	8.32	0.22
Supplements	No	10/6.7	4/7.3	3/4.2	0/0.0	3/13.0		

Continued Table: 4.7 Distribution of Responses According to Qualification

Questions	Responses	Frequency/ Total (N=150)	Parentage Bachelors (N=55)	of Groups MS/M.Phil (N=71)	PhD (N=01)	Other (N=23)	X^2	Sig
prevent Corona	Maybe	45/30.0	16/29.1	18/25.4	1/100	10/43.5		
9. Started	Yes	80/53.3	27/49.1	39/54.9	0/0.0	14/60.9	5.72	0.46
taking boiled	No	45/30.0	15/27.3	22/31.0	1/100	7/30.4		
water/ gargles	Frequently	25/16.7	13/23.6	10/14.1	0/0.0	2/8.7		
10. Sleep	Yes	136/90.7	50/90.9	67/94.4	1/100	18/78.3	5.44	0.14
important for	No	14/9.3	5/9.1	4/5.6	0/0.0	5/21.7		
health status								
11. Green tea	Yes	75/50.3	28/51.9	34/47.9	0/0.0	13/56.5	4.95	0.55
is beneficial	No	18/12.1	5/9.3	12/16.9	0/0.0	1/4.3		
in COVID	Maybe	56/37.6	21/38.9	25/35.2	1/100	9/39.1		
12. Started	Yes	43/28.7	15/27.3	20/28.2	0/0.0	8/34.8	2.15	0.91
washing hands	No	88/58.7	31/56.4	43/60.6	1/100	13/56.5		
properly	Rarely	19/12.7	9/16.4	8/11.3	0/0.0	2/8.7		

Note. n = 150 Individuals. *. p< .05

Responses to question were compared among study population according to their qualification. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.8. In response to query drug used as prophylaxis 86.7% individual responded that they take supplements, 6.7% HCQ, 4.7% responded to others while least one 2.0% responded towards Remdisivir. A p-value of 0.58 suggested that result were insignificant and the variable qualification and drug as prophylaxis were not related. The second question posed was regarding to SOPs followed during pandemic, 88.6% of responded said that they properly followed SOPs while5.4% responded to never and 6% study population followed SOPs sometime. The third question was about lifestyle modification by adopting different options 57% said that they modify their life style by taking proper supplements while 31.5% by taking proper diet and 6% by taking adequate sleep. A p-value of 0.62 suggested that qualification and life style modification during pandemic are not linked. P-value of 0.02**. From the total study population, 68.7% of people answered yes while 12% responded to no and 19.3% responded to uncertain. Concerning the query of milk intake insignificant result were obtained p-value 0.65. A total of 57.3% started to take milk 22% no and 20.7% responded that milk has no role. Regarding dry fruits intake 28.7% responded to yes 56% responded to no while 15.3% were uncertain about this query. Significant data p-value 0.02** was obtained regarding knowledge about vitamins role in boosting immunity. A total 82% of individual knew the role of vitamins as immunity booster, 15.3% did not know while 2.7% were uncertain. Regarding the use of special supplements to boost up immunity and provide prevention from Covid-19, respondents were uncertain and the result obtained was not significant P-value 0.22.

4.5 Profession Based Practices

Responses to question were compared among different profession. Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.9.

TABLE 4.8: Distribution of Responses According to Profession

Questions	Responses	Frequency/ Total (N=149)	Parentage Teacher (N=66)	of Groups Student (N=49)	HCWs (N=21)	Other (N=13)	X^2	Sig
1. Drug as	HCQ/CQ	9/6.0	2/30	3/6.1	2/9.5	2/15.4	6.87	0.65
Prophylaxis	Remdesivir	3/2.0	1/1.5	2/4.1	0/0.0	0/0.0		
	Supplements	130/87.2	59/89.4	42/85.7	19/90.5	10/76.9		
	Others	7/4.7	4/6.1	2/4.1	0/0.0	1/7.7		
2. Followed	Properly	131/88.5	59/90.8	42/85.7	18/85.7	12/92.3	15.5	0.03*
SOPs during	Sometimes	9/6.1	4/6.2	4/8.2	1/4.8	0/0.0		
pandemic	Never	8/5.4	2/3.1	3/6.1	2/9.5	1/7.7		

Continued Table: 4.8 Distribution of Responses According to Profession

Questions	Responses	Frequency/ Total (N=149)	Parentage Teacher (N=66)	of Groups Student (N=49)	HCWs (N=21)	Other (N=13)	X^2	Sig
3. Changed	Proper sleep	9/6.1	5/7.6	2/4.2	1/4.8	1/7.7	9.72	0.37
lifestyle in	Proper diet	47/31.8	22/33.3	19/39.6	5/23.8	1/7.7		
pandemic by	Supplements	84/56.8	36/54.5	26/54.2	12/57.1	10/76.9		
	Nothing needed	8/5.4	3/4.5	1/2.1	3/14.3	1/7.7		
4. Started	Yes	50/75.8	30/61.2	13/61.9	10/76.9	103/69.1	3.82	0.70
Fruits Intake	No	6/9.1	8/16.3	3/14.3	1/7.7	18/12.1		
	Frequently	10/15.2	11/22.4	5/23.8	2/15.4	28/18.8		
5. Started	Yes	85/57.0	43/65.2	24/49.0	10/47.6	8/61.5	5.18	0.52

Continued Table: 4.8 Distribution of Responses According to Profession

Questions	Responses	Frequency/ Total (N=149)	Parentage Teacher (N=66)	of Groups Student (N=49)	HCWs (N=21)	Other (N=13)	X^2	Sig
Milk Intake	No	33/22.1	14/21.2	12/24.5	5/23.8	2/15.4		
	Milk has no role	31/20.8	9/13.6	13/26.5	6/28.6	3/23.1		
6. Started Dry	Yes	43/28.9	20/30.3	11/22.4	7/33.3	5/38	4.29	0.64
Fruits Intake	No	83/55.7	38/57.6	29/59.2	9/42.9	7/53.8		
	No Role	23/15.4	8/12.1	9/18.4	5/23.8	1/7.7		
7. Vitamin	Yes	122/81.9	54/81.8	40/81.6	17/81.0	11/84.6	5.00	0.54
boosts	No	23.15.4	11/16.7	8/16.3	2/9.5	2/15.4		
immunity	Maybe	4/2.7	1/1.5	1/2.0	2/9.5	0/0.0		
8. Special	Yes	94/63.1	45/68.2	27/55.1	14/66.7	8/61.5	3.81	0.70

Continued Table: 4.8 Distribution of Responses According to Profession

Questions	Responses	Frequency/ Total (N=149)	Parentage Teacher (N=66)	of Groups Student (N=49)	HCWs (N=21)	Other (N=13)	X^2	Sig
Supplements	No	10/6.7	5/7.6	4/8.2	1/4.8	0/0.0		
prevent Corona	Maybe	45/30.2	16/24.2	18/36.7	6/28.6	5/38.5		
9. Started	Yes	80/53.7	39/59.1	24/49.0	10/47.6	7/53.8	4.68	0.59
taking boiled	No	44/29.5	15/22.7	17/34.7	9/42.9	3/23.1		
water/gargles	Frequently	25/16.8	12/18.2	8/16.3	2/9.5	3/23.1		
10. Sleep	Yes	135/90.6	59/89.4	45/91.8	19/90.5	12/92.3	.25	0.97
important for	No	14/9.4	7/10.6	4/8.2	2/9.5	1/7.7		
health status								

Continued Table: 4.8 Distribution of Responses According to Profession

Questions	Responses	Frequency/ Total (N=149)	Parentage Teacher (N=66)	of Groups Student (N=49)	HCWs (N=21)	Other (N=13)	X^2	Sig
11. Green Tea	Yes	75/50.7	34/51.5	20/41.7	15/71.4	6/46.2	7.64	0.27
is beneficial	No	17/11.5	8/12.1	5/10.4	3/14.3	1/7.7		
in COVID	Maybe	56/37.8	24/36.4	23/47.9	3/14.3	6/46.2		
12. Started	Yes	43/28.9	19/28.8	12/24.5	8/38.1	4/30.8	3.46	0.75
washing hands	No	87/58.4	41.62.1	28/57.1	11/52.4	7/53.8		
properly	Rarely	19/12.8	6/9.1	9/18.4	2/9.5	2/15.4		

Note. n = 150 Individuals.

A p-value 0.46 was insignificant and showing no link between variable qualification and boil water intake. The question related sleep role was also insignificant p-value 0.14.

A total 90.7% answered yes while 9.3% responded to no. 94.4% of study population having master qualification were aware of role of sleep while 90.9% having bachelors were aware about sleep role is important in immunity. The result regarding to beneficiary effect of green tea against Covid-19 were insignificant P-value 0.55. A total of 50.3% of respondents said that green tea has important role while 37.6% were not sure about its role. Highest negligence was observed in respondents regarding to hands hygiene, 58.7% respondents to no while 28.7% responded that they proper washed their hands in pandemic. P-value 0.91 suggests that results were insignificant and variable qualification and hand washing activity were not related.

Responses percentage in each group and their p values which were obtained using the Chi-square test are summarized in table 4.9. In response to query drug used as prophylaxis 87.2% individual responded that they took supplements, 6.0% HCQ, 4.7% responded to others while least one 2.0% responded towards Remdisivir. A p-value of 0.65 suggested that result were insignificant and the variable profession and drug as prophylaxis were not related. The second question posed was regarding to SOPs followed during pandemic, 88.5% of responded said that they properly followed SOPs while5.4% responded to never and 6.1% study population followed SOPs sometime. P-value of 0.03** suggest that the variable profession and SOPs followed are linked. The third question was about lifestyle modification by adopting different options 56.8% said that they modify their life style by taking proper supplements while 31.8% by taking proper diet and 6.1% by taking proper sleep. A p-value of 0.37 suggested that profession and life style modification during pandemic are not linked. There were insignificant variation in response to the query related the fruits intake, P-value of 0.70. From the total study population, 75.8% of people answered yes while 9.1% responded to no and 15.2% responded to uncertain. Concerning the query of milk intake insignificant result were obtained p-value 0.52. A total of 57.3% started to take milk 22% no and 20.7%

responded that milk has no role. Regarding dry fruits intake 28.9% responded to yes 55.7% responded to no while 15.4% were uncertain about this query. These results indicate that people are uncertain about the use of dry fruits and their role. Insignificant data p-value 0.54 was obtained regarding knowledge about vitamins role in boosting immunity. A total 81.9% of individual knew the role of vitamins as immunity booster, 15.4% did not know while 2.7% were uncertain. Regarding the use of special supplements to boost up immunity and provide prevention from Covid-19, respondents were uncertain and the result obtained was not significant P-value 0.70. The 63.1% of total study population answer that special supplements can prevent from being infected, whereas 30.2% respondent's uncertainty was observed. The responses to the question related to the taking boil water and gargles varied in senses of using it. A p-value 0.59 was insignificant and showing no link between variable profession and boil water intake. The question related sleep role was also insignificant p-value 0.97. A total 90.6% answered yes while 9.4% responded to no. The result regarding to beneficiary effect of green tea against Covid-19 were insignificant P-value 0.27. A total of 50.7% of respondents said that green tea has important role while 37.8% were not sure about its role. Highest negligence was observed in respondents regarding hand washing activities, 58.4% respondents to no while 28.9% answered that they started properly washing their hands. P-value 0.75 suggests that results were insignificant and variable profession and hand washing event were not related. The results of chi-square test revealed that there are non-significant associations of the variables with profession of the participants (p>.05).

4.6 Commonly Practicing Drugs Against Covid-19

The drug prescription by doctors is shown in table. 45.3% of participants got infection, 34.6% never while 10.6% of total population was uncertain about getting any infection. When question was asked about their family member that they ever

infected by this Covid-19, 73.3% respondents respond to yes, 4.0% to no, 2.0% to critical and 20.7% answer was that they were asymptomatic.

TABLE 4.9: Commonly Prescribed Medicine by Health Profession

Variable		F	Percentage
Have you got infected			
	Yes	52	34.6
	No	68	45.3
	May i know	16	10.6
Have your family member got infected			
	Yes	110	73.3
	No	6	4
	Critical	3	2
	Asymptomatic	31	20.7
Doctor's Prescription in Mild Condition			
	Azomax	128	85.3
	HCQ	13	8.7
	Any other	7	4.7
	None of these	2	1.3
Doctor's Prescription in Moderate Condition			
	Remdisivir	19	12.7
	Azomax	116	77.3
	HCQ	11	7.3
	Anyother	2	1.3
	No Response	2	1.3
Doctor's Prescription in Asymptomatic Condition			
	Stay in isolation	86	57.3
	Take supplements	58	38.7

Continued Table: 4.9 Commonly Prescribed Medicine by Health Profession

Variable		F	Percentage
	Wear facemask/-Disinfect	4	2.7
	Prescribed medicine	2	1.3
Supplements prescribed by Doctor			
	Vitamin C&D	112	74.7
	Surbex Z	22	14.7
	Physical Activities	11	7.3
Practices to relax yourself in Pandemic			
	Watching TV/Social Media	39	26
	Sleeping Most of the Time	39	26
	Engaging in religious practices	70	46.7
	No Response	2	1.3
	None of the Above	5	3.3

Majority of participants having mild (85.3%) and moderate condition (77.3%) reported to get a prescription of Azomax. Asymptomatic participants (57.3%) reported that they observed self-isolation. Regarding lifestyle modification made in pandemic, majority of the participants reported that they took supplement (57.6%) and proper diet (31.3%). The supplements which were prescribed to the participants by their doctors were vitamins C and D mostly (74.7%). Participants reported that they watched T.V./used social media (26%), slept most of the time (26%) and engaged in religious activities (46.7%) to relax themselves during the pandemic.

4.7 Discussion

In the view of rapid spread of COVID-19 and the increase in number of cases in Pakistan it is necessary to have clear picture of the state of public awareness, practices and belief in the context of precautionary measures. These factors increase the country's vulnerability to this deadly infection and result in higher mortality and morbidity. To control the pandemic, there is a need for continuous monitoring of implementation of preventive measures. According to the study results, individuals regularly followed SOPs and hand washing. The general population seems to be unconcerned about the COVID-19 protections to be implemented.

This survey improves the understanding of dietary habits and lifestyle behaviours in Pakistani during COVID-19. In these challenging times, eating a nutritious, nutritious diet and engaging in physical activity are suggested to help the immunity[12, 189]. According to result about lifestyle modification by adopting different options 57% said that they modify their life style by taking proper supplements while 31.5% by taking proper diet and 6% by taking adequate sleep. A p-value of 0.43, 0.37 suggested that profession, qualification and life style modification during pandemic are not linked. It's may be due to variables such as abrupt lifestyle changes, worry, fear, stress, and depression can have an impact on dietary choices and daily habits [177].

The result of survey regarding to SOPs followed during pandemic, 88.5% of responded said that they properly followed SOPs while5.4% responded to never and 6.1% study population followed SOPs sometime. P-value of 0.03** suggest that the variable profession and SOPs followed are linked and gender, qualification and age values were showing insignificant results. Analyses reveal that the Wuhan quarantine reduced COVID-19 cases from mainland China to other nations by 77% by early February in the current COVID-19 pandemic [190]. Other behavioral protective measures, in addition to social separation, use of face mask and avoid gathering have been found to be useful in the present pandemic's mitigation. Regular hand washing, for example, can reduce peak infection rates by up to 65% with a 2.7-month delay and a 29% reduction in total infection rates [191].

It has been reported that being physically active and getting proper sleep are helpful for improving the immune system [192]. The result related sleep role was also significant p-value 0.02**. A total 90.7% answered yes while 9.3% responded to no. 93.3% female were aware of role of sleep while 84.8% were aware about sleep role is important in immunity. During COVID-19, there was a significant decrease in the impact of physical activity, whereas time spent on sedentary activities increased, similar to the findings of Ammar et al [193]. This finding could be explained by the fact that quarantine can generate stress, which leads to sleep disruptions and irregular sleep patterns, or by changes in daily routine. This could have a harmful impact on the immune system [194].

In response to query drug used as prophylaxis 86.4% individual responded that they take supplements, 6.4% HCQ, 5.0% responded to others while least one 2.1% responded towards Remdisivir. A p-value of .00** suggested that result were significant and the variable age and drug as prophylaxis are linked each other. However, there is currently no proof to substantiate the use of these drugs for COVID-19 prophylaxis, and therefore we must wait for the outcomes of preclinical studies that include them as part of the trials [195].

Highest negligence was observed in respondents regarding to the hands hygiene, 58.7% respondents to no while 28.7% responded that they proper washed their hands in pandemic. P-value 0.91 suggests that results were insignificant and variable gender, profession; qualification and age were not related. In a Nigerian online survey, hand washing was shown to be more prevalent than other COVID-19 prevention strategies [196]. The results of this survey show that Pakistan has a unique public health problem, centered on the population's reaction to the COVID-19 breakout. During the latest challenge, there was a lack of infection protection. Citizens should be made aware of this extremely infectious virus through educational efforts using social and digital media. Staff training, rigorous adherence to rules and regulations, effective formulation of policies and particular guidelines pertaining to viral transmission are all necessary in all of these situations, and all organizations and hospitals must guarantee that government laws are followed. People awareness initiatives will be implemented to make the general public aware

of their own risks and to prevent the virus from spreading across the community. The findings revealed the necessity to begin capacity-building efforts in preparation for COVID-19 as a vital step in developing an efficient monitoring system in Pakistan.

Chapter 5

Conclusion

In the view of rapid spread of COVID-19 and the increase in number of cases in Pakistan it is necessary to have clear picture of the state of public awareness, practices and belief in the context of precautionary measures. These factors increase the country's vulnerability to this deadly infection and result in higher mortality and morbidity. To control the pandemic, there is a need for continuous monitoring of implementation of preventive measures. This quick online survey shows that more than half of Pakistani residents had keen awareness, and 82% had positive practices following precautionary steps. In regarding to practices of different prophylaxis against COVID-19 is satisfactory among Pakistani population. This is believed to have advantageous effects on the control of the outbreak in the country where number of active cases is increasing day by day.

Maintains a proper balance diet, energy in regular physical activities, getting enough sleep are some of the most important ways to help keep our immune system healthy and reduce our chance of infection and disease. Moreover there is no specific evidence to suggest that any of them can protect against COVID-19 even though some of them may have antiviral properties, supplements can take for improving immunity and not for treatment & prevention against COVID-19. Some clinical trials have been registered and are currently being conducted to determine the effectiveness and application of certain nutrients in patients with COVID-19. These findings are still initial, and more research in a wider population, including

persons with confirmed COVID-19, is needed to confirm them. Poor awareness combined with an unhealthy lifestyle can lead to major health issues. As a result, it's critical that the government examines the need for structured campaigns, workshops, and nutrition education programmes that teach the basics of nutrition, preventive measures planning, and how to adapt and ensure healthy lifestyle.

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Appendix A

Assessment of Awareness Concerning Prophylaxis Against COVID-19 in Pakistani Population

Section-A: Mandatory

1). Gender?

a. Male   b. Female   c. Other.

2). Age?

a.0-15   b.16-29   c.30-45   d.above 45

3) Profession?

a. Teacher   b. Doctor/Health care worker   c.   Students. d. Other

4). Currently residing in?

a. Punjab   b. Islamabad   c.   Kashmir   d. KPK   e. Sindh.

5). Educational level in case of students

a. Intermediate   b. Under Graduate   c. Post   Graduate   d. Any other.

6). Your current health status?

a. Healthy   b. Recovered   c. Still   infected.

Section: B (For Healthy Persons to Prevent COVID-19)

1) You took following drug as prophylaxis?

a.HCQ/CQ   b. Remdisivir   c.   Supplements   d. Others

2). You followed SOPs during this pandemic?

a. Properly   b. Sometimes   c.   Never   d. Others.

3). Do you change your lifestyle due to pandemic by applying?

a. Taking proper sleep   b. Taking proper diet   c. Taking supplements   d. Nothing needed.

4).Have you started taking fruits in this pandemic?

a. Yes   b.   No   c. May be

5) Have you started taking milk?

a. Yes   b. No   c. Milk has no role

6). Have you started taking dry fruits?

a. Yes   b. No   c. No role

7) Do you think vitamins boost immunity?

a. Yes   b.No   c. May be

8). Do you think special supplements(vit D, C, Zinc) boost immunity?

a. Yes   b. No   c. May be

9). Have you started taking boil water/Gargles?

a.Yes   b. No   c. Frequently

10.) Do you think sleep is important for health?

a. Yes   b. No   c. No role

11) Green tea is beneficial for covid-19?

a. Yes   b. No   c. May be

12) Started washing hands in this pandemic?

a. Yes   b. No   c. Rarely

Section: 3 (For to Treat COVID-19)

1) Have you got infected?

a.Yes   b.No   c.May i dnt know

2) Have you family member got infected?

a. Yes   b. No   c. Crictical   d.Asymptomatic

3) In an asymptomatic condition Dr. prescribe to do

a. Stay in isolation   b. Take supplements   c. Wear face mask/disinfect properly
d. Any other

4) Which supplements Dr. prescribed you to take?

a. Vit C/D   b. Surbex.Z   c. Physical activities   d. None

5) In mild case(positive+light symptoms) of infection which drug is prescribe by Dr?

a.Azomax   b. HCQ   c. None   d. Any other

6) Practices to relax yourself in pandemic?

a. Watching tv/social media   b. Sleeping most of time   c. Religious practices
d. None