

COVID-19 Vaccination Hesitancy And Government Implications For Future Pandemics: A Lesson Learnt

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Abstract

Countries around the globe have been affected by the outbreak of the COVID-19 pandemic, leading to thousands of deaths. Vaccines are a reliable and effective method to deal with the pandemic. Irrespective of the significant results of the vaccine, the World Health Organization (WHO) has identified vaccine hesitancy as a hindrance to the fight against COVID-19. Vaccine hesitancy is a major concern that has a huge impact on global health as it creates hindrances to eliminating and coping with infectious epidemics and gaining immunity. Therefore, this study explores the reasons and level of vaccine hesitancy towards COVID-19. It also intends to examine the government measures to cope with the situation and suggest the implications for future pandemics. The mixed methods research design was opted for the current study. The data was collected from the general public through a survey consisting of closed-ended questions. For qualitative data analysis, 11 interviews were conducted through purposive sampling from the targeted respondents who were either partially vaccinated or had non-vaccinated status. The findings indicate the reasons for vaccine hesitancy and imply future suggestions for the government to tackle the pandemic. The most frequently provided reasons for refusing the vaccine were the controversy over COVID-19 perceived side effects, reliance on natural immunity, lack of trust, and doubts about the efficacy of vaccines. Finally, suggestions were made to combat future pandemics based on the lessons learned after COVID-19.

Keywords: *Hesitation, Vaccinations, Government implications, COVID-19.*

INTRODUCTION:

In December 2019, an outbreak of unidentified sources was reported in Wuhan, China. This outbreak, named COVID-19, caused thousands of deaths around the globe, which led the World Health Organization (WHO) to announce it as a pandemic in March 2020 (Ciotti et al., 2020). Initially, numerous drugs were proposed for preventing and curing COVID-19 victims without effective vaccines. Subsequently, introducing effective vaccines is a substantial step in globally dealing with COVID-19.

After the entire world came out of the main effects of coronavirus, investigating people's perception of the positive steps and measures required to combat future pandemics is vital to understanding their psychology. It will help design better methodologies for counseling people in a way that promotes public safety and prevention of the spread of disease (Bavel et al., 2020).

Many factors raise doubts about the COVID-19 vaccine, including concerns about the safety and effectiveness of the vaccine and its side effects (Menezes, Simuzingili,

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Debebe, Pivodic, & Massiah, 2021). However, misinformation is crucial (Masele & Daud, 2022; Sharpe et al., 2020). Claims about blood clotting causing death due to the vaccine indicate fear of vaccine side effects (Muhammad, Ibrahim, Yarube, & Bello, 2021). Therefore, the role of public governance in creating awareness and proper information spreading is vital (Chen et al., 2020).

Vaccine hesitancy affects vaccination coverage and ultimately reduces vaccination rates. Many reasons for vaccine hesitancy have been identified. However, understanding the reasons for vaccine hesitancy and avoidance can be used to achieve significant results in vaccinating the general public. The most common reasons are safety concerns, lack of confidence in the level of protection, declared fears and risks, lack of knowledge and awareness about the epidemic, distrust in medical companies, and political and economic intentions. These factors lead to vaccine hesitancy (Dhama et al., 2021; Griffith, Marani, & Monkman, 2021). There is a need for collective efforts to create awareness among the public to get immunity by COVID-19 vaccination (Arlı, Ang, & Wei, 2021; Paul, Steptoe, & Fancourt, 2021). However, there still needs to be more evidence on the relationship between the role of governance and countries' readiness to vaccinate promptly to address negative effects on society.

Many other factors frustrate the public, such as closures, falling economic activity, and loss of jobs and loved ones. The government had to make important decisions and choices at the same time. During the outbreak, the government had to stop economic activities, leading to a severe economic recession by allowing people to stay home. It is affecting the economies of many countries (Pak et al., 2020).

Our study strives to fill this gap in the literature and verify through statistical evidence the reasons for vaccine hesitancy and what initiatives should be taken by the government for timely and effective campaigns that mitigate the negative social impact of vaccination to combat future pandemics.

Objective: This study aimed to (1) examine the reasons and perceptions of the public for COVID-19 vaccine hesitancy and (2) explore government interventions through secondary data to control these reasons in case of future pandemics.

Empirical findings from the mixed methods approach can improve understanding of the underlying reasons for vaccine hesitancy and recommend developing pandemic management strategies for the future.

2. Literature Review

2.1 Covid-19 Pandemic

The word pandemic relates to a particular situation where a disease occurs over a very wide area, typically across the country, and affects many people around the globe (Taylor, 2022). After the Influenza pandemic in 1918, the human coronavirus disease COVID-19 became the largest fifth reported pandemic, which caused a million casualties. It was first reported in the Chinese city of Wuhan and then spread worldwide. COVID-19 was officially named Severe Acute Respiratory Syndrome Corona-virus (SARS-Cov) by the International Committee on Taxonomy of Viruses (Y.-C. Liu, Kuo, & Shih, 2020).

This virus was contagious and rapidly spread and grew in the human body. It is usually caused by mild upper respiratory disease. Infected cases of COVID-19 and the rates of mortality vary in different developed and developing countries, including China, USA, Australia, Italy, India, South Korea, Pakistan, and Taiwan. Initially, it started in China; in other countries, habitants were there for earning purposes for study, and it gradually spread from country to country (Platto, Wang, Zhou, & Carafoli, 2021). COVID-19 has a greater economic and social impact across the world.

Moreover, it disrupted many international sectors, including sports value chain, Port, Construction, automotive, and civil aviation (Gazzeh, Abubakar, & Hammad, 2022). The hospitality and travel sector was the top of the hardest hit among many affected industries. Hotel hubs, restaurants, and different types of clubs had been forcefully shut

down their gates for guests to prevent virus exposure. Consequently, millions of jobs were cut down along with the closure of companies, and billions of US dollars were lost due to canceled flights, vacations, and business trips or tours (Khan, Hassan, Fahad, & Naushad, 2020).

The pandemic hit the world economy and caused threats among low-income countries like Pakistan. An event study method was investigated by (Khan et al., 2020) (2020). His study proves that 26 industries listed in the Pakistan Stock Exchange (PSX), out of which the textile sector, research, and technology, insurance, and banking were negatively affected, whereas the announcement of lockdown had more than the adverse effect on the real estate investment, and the working of the commercial bank. Apart from affected sectors, unemployment rose to 25 million people, leading to hunger and poverty; hence, this was the major economic damage in several sectors of Pakistan. The hardest affected sectors of Pakistan by the COVID-19 pandemic are tourism, the financial market, entertainment, and manufacturing. Adversely affect Gross Domestic Product (GDP) (Abbass et al., 2022).

Apart from the inconvenience of overcoming the COVID-19 pandemic effects, Pakistan, like other countries, struggled to combat the situation with its limited resources and implementing corrective action. Specifically, in dealing with the lockdown, Pakistan chooses the best strategies and action plans for post-COVID-19 to ensure a speedy recovery and avoid threats (Mehta & Ali, 2020).

2.2 Hesitation towards COVID-19 vaccination

According to the World Health Organization (WHO), the pandemic appeared in December 2019 in China Wuhan City. It has negatively impacted social and economic activities and health (Jadoo, 2020). After one year of the outbreak, many developed and developing countries took corrective measures such as social distancing, wearing masks, travel restrictions, and maintaining hygiene in the workplace, public places, and at home. However, these measures bring adverse reactions in people's psychology and physical health and threats of COVID-19 reoccurring (Canet-Juric et al., 2020). Hence, vaccination was considered a long-term action to combat the pandemic. There is an overall perception that vaccines are appropriate against diseases of people and communities (Schoch-Spana et al., 2021).

The study of COVID-19 vaccination has been implemented as an intervention against the pandemic since the end of 2020. COVID-19 vaccination was the only hopeful rescuer to overcome the pandemic. Therefore, developed nations sought to vaccinate their citizens on a priority basis to prevent disease. Approximately 4,619,976,274 vaccine doses have been delivered in August 2021 (Van Nguyen & Nguyen, 2022). There were many doubts about vaccines' effectiveness and safety issues due to the different variants of vaccines being injected. People decide which vaccine they should apply or which one will suit them. As every person has an immunity level, a variant of vaccination may affect his body. Although they know they should be vaccinated as soon as possible, the negative information on the vaccine's side effects makes them more hesitant to get vaccinated (Longchamps et al., 2021). The hesitation of vaccination was due to the perception of the possibility of infection and its side effects. Moreover, there was a conspiracy theory in Pakistan that the COVID-19 vaccine would cause infertility, so people delayed the vaccine until more authentic data were available. (Islam et al., 2021).

In Pakistan, hesitancy was high among old age males and females because they thought that after taking the vaccine, they would not live more than one year (Salman et al., 2022). In addition, their perception was high that these vaccines were introduced to lower the percentage of old age people in the world. Many scholars (Suran, 2022; Tibbels et al., 2022) discussed that hesitancy of the COVID-19 vaccine still exists as people hesitate to take the vaccine against childhood vaccinations like Polio, hepatitis, and measles. Different social, economic, and religious factors contribute to this trend. Moreover, the intention of taking the vaccine differed in different ethnicities and social groups. It was found by (Soares

et al., 2021) that people with lower income levels were more hesitant, compared to university graduates, to delay the intake of vaccines.

2.3 Government Intention and Implications

After the declaration of COVID-19 by the World Health Organization (WHO) on March 11, 2020, governments of developed countries, including the USA, Australia, Sweden, and the United Kingdom, have taken a variety of measures (stay-at-home orders, wearing masks, not rushing at place) to combat the COVID pandemic (Trent, Seale, Chughtai, Salmon, & MacIntyre, 2022). Many developed countries have achieved a level of control over the pandemic just due to the higher confidence level of the people in their governments. By November 1, 2020, the United Kingdom and the United States reported 15,000 and 20,000 cases yearly. However, Australia only reported 1000 cases per million people (Dong et al., 2022). At the national level, government perception differed in different cities regarding belief and trust. Hence, a lack of interest and confidence in government authorities increases people's refusal and hesitancy. In Sydney and Melbourne, people's willingness was associated with a higher trust rate and confidence in government intentions and policies regarding controlling COVID-19. In the USA, routine public health measures such as cleansing, wearing masks, and social distancing were more politicized (Michie & West, 2020).

Government guidelines towards preventing COVID-19 were one of China's most important and influential factors when it was started in 2019. People were afraid of accepting this pandemic due to the higher rate of deaths and were ready to cooperate with their government measures in any case (Q. Wang & Zhu, 2022). There were three major factors concerning the importance of prevention: risk perception, government guidelines to prevent COVID-19, and epidemic knowledge, which played an important role in preventing barriers or hesitancy in taking vaccines (Ahmad, Iram, & Jabeen, 2020). Moreover, the worldwide spread of the COVID-19 vaccine was the first important step in fighting against this disease. However, the Pakistani government has successfully implemented policies to overcome the pandemic. As per the study of Irfan et al. (2022), there were three considerations: risk perception, perceived benefits of the vaccine, and unavailability of vaccine, which has helped to have a better understanding of influencing factors that either motivate or discourage getting the COVID-19 vaccine. In this regard, the government of Pakistan used all of its resources with maximum capabilities to ensure the citizen's health.

The significant number of victims increased because it was an extremely transmissible infection (Samui, Mondal, & Khajanchi, 2020). Hence, this situation worsens due to the spreading of carriers' unavailability of vaccines. Also, there was no medicine found to fight against this disease. This way, the Pakistan government established campaigns and awareness sessions for the general public. It emphasized that they should adopt these measures (washing hands, sanitizing their hands, social distancing, and wearing masks) (Soomro & Shah, 2021). Besides the fear of COVID, people used the theory to stay at home and safe, quarantine at home, and strictly adopt the standard operating procedure (SOPs). These strategies became helpful in eliminating the spread of COVID in the community. According to Mukhtar (2021), strict quarantine is required for suspected cases, and self-isolation would be the better alternative to stop the widespread pandemic before the lockdown is imposed. Furthermore, the government took other strong measures like temperature screening at the airports, public places, and railway stations to identify the infected and suspected cases.

2.4 Survivals for Future Pandemics

A pandemic is an infectious epidemic that spreads worldwide, affects many people, and can befall any time. So, it would not be surprising to expect the next pandemic in the coming year (Narayan, 2021). Countries are designing the procedures, executing and transforming them into national and sub-national plans for future pandemics. In order to overcome human and financial losses, countries periodically revised their plans per the changes in

worldwide strategies. Societies have already adjusted their minds that the world after COVID-19 will be on a different dimension (Chen et al., 2023).

Health experts and scientists from different disciplines coordinate with the policymakers and design strategies to fight future uncertain events. They share their past experiences, discoveries, research, possible methodological approaches, and medicines to overcome any pandemic (Roche et al., 2020). Most governments have already presented public health guidelines and strategies to face the after effects of a pandemic. Healthcare institutions are providing telehealth services to avoid any future pandemic. Organizations have made plans to shift to a remote workforce and work with them by connecting with their devices (Pee, Pan, Wang, & Wu, 2021).

Moreover, suppliers would be more in action to strengthen their supply chain process with digital access, which would be helpful in any inconvenience of future connection with the dealers. Pandemics never respect boundaries. International travel by land, sea, or air will cause rapid spread of disease. So, it makes sense to close borders for any travel.

As per COVID-19 haphazard situations, it has been observed that well-equipped medical health institutions are important (Goswami, Goswami, Nautiyal, & Prakash, 2021). Healthcare professionals (Doctors, Nurses, and Paramedical staff) should be well-trained to tackle any uncertain situations. Governments must ensure they have CPA (Continuous pressure airway) masks, which are the lowest cost and help in breathing as a less invasive aid. Moreover, severe cases would need well-equipped ventilators (Fairgrieve, Feldschreiber, Howells, & Pilgerstorfer, 2020). Overall, by considering the previous practices of pandemic prevention, it is noted that nations must adopt some of the following preventions to beat

- Be prepared for the pandemic, not just confined to paperwork but in action plans.
- Take serious actions regarding public health because healthy nations can better defeat any disease.
- Do not wait and watch; respond quickly and close the borders to stop the spread of the pandemic.
- Maintain and build public confidence.
- Awareness and dissemination of proper information are vital for any unforeseen pandemic.

Methodology:

For quantitative analysis, this study used the convenience sampling technique, which is the non-probability sampling method. For quantitative data, a survey consisting of closed-ended questions was performed. The structured questionnaire was adopted from the study of (Danabal, Magesh, Saravanan, & Gopichandran, 2021).

For qualitative data collection, 11 respondents who were not vaccinated or partially vaccinated were chosen to gather information through semi-structured interviews till the saturation of information (Guest, Namey, & Chen, 2020). Semi-structured interviews were guided by a flexible structure of open-ended questions at the beginning. Then, the interviewer can diverge from the main focus to examine the reasons for vaccine hesitancy in more detail. The respondents were given pseudonyms (R-1, R-2, R-3...R-11) to maintain the anonymity (Hassan, Ansari, & Rehman, 2022). Questions intended to explore the reason for the hesitancy regarding the vaccine for COVID-19 were asked from the respondents. Then, a thematic analysis was performed using NVivo 12 by generating the coding list, sub-themes, and themes.

Demographics Summary

Table-1

Demographic Analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Male	248	38.9	38.9	38.9
Female	389	61.0	61.0	99.8
Total	638	100.0	100.0	
Marital status				
Married	270	42.3	42.3	42.3
Single	355	55.6	55.6	98.0
Others	11	1.7	1.7	99.7
Total	638	100.0	100.0	
Age				
12 years to 20 years	158	24.8	24.8	24.8
21 years to 30 years	250	39.2	39.2	63.9
31 years to 40 years	136	21.3	21.3	85.3
41 years to 50 years	56	8.8	8.8	94.0
51 years to 60 years	32	5.0	5.0	99.1
61 years and above	6	.9	.9	100.0
Total	638	100.0	100.0	
Vaccine type				
Sinovac	198	31.0	31.2	31.3
Sinopharm	199	31.2	31.3	62.7
Pfizer	161	25.2	25.4	88.0
AstraZeneca	21	3.3	3.3	91.3
Moderna	31	4.9	4.9	96.2
Sputnik	10	1.6	1.6	97.8
Others	14	2.2	2.2	100.0
Total	638	100.0	100.0	
Status of vaccine				
Fully Vaccinated	511	80.1	80.1	80.1
Partially Vaccinated	22	3.4	3.4	83.5
Booster	36	5.6	5.6	89.2
Not Vaccinated	62	9.7	9.7	98.9
Total	638	100.0	100.0	
Qualification				
Undergraduate	240	37.6	37.7	37.7
Graduate	178	27.9	27.9	65.6
Postgraduate	202	31.7	31.7	97.3
Others	15	2.4	2.4	99.7
No Schooling	2	.3	.3	100.0
Total	638	100.0	100.0	

Employment				
Govt.				
Employee	89	13.9	13.9	13.9
Private Job	184	28.8	28.8	42.8
Business	298	46.7	46.7	89.5
Others	43	6.7	6.7	96.2
Health workers/ Frontline officer	23	3.6	3.6	99.8
Total	638	100.0	100.0	
Got COVID 19 Vaccination				
Yes	376	58.9	58.9	58.9
No	248	38.9	38.9	97.8
Total	638	100.0	100.0	

Table 1 demonstrates the demographic traits of the study. Most respondents were females, leading to in-depth insights into the COVID-19 vaccination. The targeted population is mainly female respondents, as shown in the table, i.e., 55%. Most respondents were in the age bracket of 21-30 years. The young population is highly availed of vaccination opportunities. 24% of the respondents fall within the 12-20 years range. Results demonstrate that this frequency decreases with age, as only 0.9% of the population is 61 years and above. They were considering the type of vaccine, and a similar ratio was observed regarding the type of vaccine. Respondents were vaccinated for Sinovac and Sinopharm in the same proportion, i.e., 31%. Only a few respondents availed of the Sputnik vaccine. A huge range of respondents was fully vaccinated; this ratio was 81%. Some availed booster shots (5.6%), and just 9.7% were not vaccinated. The education level of respondents was satisfactory. 28% were graduates, and 32% of them were postgraduate.

Regarding employment status, many respondents were operating their businesses, as shown by 47%. Only 14% of the study population is associated with the government job. The interesting point to be observed here is the involvement of health workers/frontline workers, which was only 3.6%. The common trend in society is that health workers were prioritized to be vaccinated first. Considering the vaccination, 58% of the respondents availed the vaccination facility, whereas 38% were not vaccinated.

Table-2

Frequency Analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
COVID-19 is NOT a real disease				
Strongly disagree	303	47.5	47.5	47.5
Disagree	178	27.9	27.9	75.4
Neutral	43	6.7	6.7	82.1
Agree	82	12.9	12.9	95.0
Strongly agree	32	5.0	5.0	100.0
Total	638	100.0	100.0	
COVID-19 is a new disease, and vaccines have not been tested thoroughly				
Strongly disagree	54	8.5	8.5	8.5
Disagree	143	22.4	22.4	30.9
Neutral	164	25.7	25.7	56.6
Agree	225	35.3	35.3	91.8

Strongly agree	52	8.2	8.2	100.0
Total	638	100.0	100.0	

Feeling safe after being vaccinated against COVID-19

Strongly disagree	37	5.8	5.8	5.8
Disagree	69	10.8	10.8	16.6
Neutral	135	21.2	21.2	37.8
Agree	283	44.4	44.4	82.1
Strongly agree	114	17.9	17.9	100.0
Total	638	100.0	100.0	

Relying on vaccines to stop severe COVID-19 disease

Strongly disagree	23	3.6	3.6	3.6
Disagree	122	19.1	19.1	22.7
Neutral	130	20.4	20.4	43.1
Agree	269	42.2	42.2	85.3
Strongly agree	94	14.7	14.7	100.0
Total	638	100.0	100.0	

Family protection after getting vaccinated against COVID-19

Strongly disagree	25	3.9	3.9	3.9
Disagree	80	12.5	12.6	16.5
Neutral	149	23.4	23.4	39.9
Agree	281	44.0	44.1	84.0
Strongly agree	102	16.0	16.0	100.0
Total	638	100.0	100.0	

Although most COVID-19 vaccines are safe, sometimes there may be problems

Strongly disagree	22	3.4	3.4	3.4
Disagree	60	9.4	9.4	12.9
Neutral	164	25.7	25.7	38.6
Agree	319	50.0	50.0	88.6
Strongly agree	73	11.4	11.4	100.0
Total	638	100.0	100.0	

COVID-19 vaccines can cause serious problems in children

Strongly Disagree	54	8.5	8.5	8.5
Disagree	189	29.6	29.6	38.1
Neutral	176	27.6	27.6	65.7
Agree	142	22.3	22.3	87.9
Strongly agree	77	12.1	12.1	100.0
Total	638	100.0	100.0	

Worriedness about serious unknown long-term effects of the COVID-19 vaccine in the future

Strongly disagree	39	6.1	6.1	6.1
Disagree	159	24.9	24.9	31.0
Neutral	145	22.7	22.7	53.8

Agree	212	33.2	33.2	87.0
Strongly agree	83	13.0	13.0	100.0
Total	638	100.0	100.0	
COVID-19 vaccines are a source of revenue for pharmaceutical companies				
Strongly disagree	28	4.4	4.4	4.4
Disagree	89	13.9	13.9	18.3
Neutral	116	18.2	18.2	36.5
Agree	236	37.0	37.0	73.5
Strongly agree	169	26.5	26.5	100.0
Total	638	100.0	100.0	
Authorities promote COVID-19 vaccine for political gain and financial gain, not for people's health				
Strongly disagree	77	12.1	12.1	12.1
Disagree	207	32.4	32.5	44.6
Neutral	167	26.2	26.2	70.8
Agree	115	18.0	18.1	88.9
Strongly agree	71	11.1	11.1	100.0
Total	638	100.0	100.0	
COVID-19 vaccination programs are a big controversy				
Strongly disagree	44	6.9	6.9	6.9
Disagree	167	26.2	26.2	33.1
Neutral	172	27.0	27.0	60.0
Agree	179	28.1	28.1	88.1
Strongly agree	76	11.9	11.9	100.0
Total	638	100.0	100.0	
Natural immunity lasts longer than vaccination				
Strongly disagree	17	2.7	2.7	2.7
Disagree	82	12.9	12.9	15.5
Neutral	134	21.0	21.0	36.5
Agree	240	37.6	37.6	74.1
Strongly agree	165	25.9	25.9	100.0
Total	638	100.0	100.0	
Natural exposure to germs and viruses for the safest protection				
Strongly disagree	24	3.8	3.8	3.8
Disagree	87	13.6	13.6	17.4
Neutral	209	32.8	32.8	50.2
Agree	226	35.4	35.4	85.6
Strongly agree	92	14.4	14.4	100.0
Total	638	100.0	100.0	

Table 2 depicts the frequency breakdown of the significant elements of the study. Respondents were inquired about the nature of COVID-19, i.e., whether it is a real disease. Surprisingly, around 3/4th of the respondents, i.e., 74%, negated this statement. Respondents were of the view that COVID-19 is not a critical disease. Quite a few

respondents believed that COVID-19 is a dangerous disease. Considering the status of COVID-19 as a novel disease and the satisfactory testing of vaccines, almost 43% of the respondents supported this perception. Individuals believe that COVID-19 is a novel virus and will take time to complete the vaccine testing. The opinion of the people regarding the effects of vaccination was quite satisfactory.

61% of the respondents contend that they felt safe after the vaccination. In other words, the contentment level of respondents was quite high after they got vaccinated. 57% of the population argued that the vaccine is the best protective measure to be safe from the disease to prevent the spread of COVID-19 disease. As far as family protection is concerned, 60% of the targeted sample claimed that their family remains safe after the completion of the vaccination process. The side effects of the vaccine also matter to the respondents. 61% said that there is no doubt that the vaccine is safe. However, some problems may arise after vaccination, and 26% remained neutral. When taking people's responses regarding their children, similar responses were found, i.e., respondents were agreed, disagreed, and neutral at the same pace. They could not give a solid justification of vaccine effects for their children. Almost half of the respondents (45%) perceived that the vaccines may cause unknown long-term effects. On the other hand, 22% were neutral, and 31% were against this perception.

From the earnings point of view, especially concerning the pharmaceutical companies, 63% of respondents explained that COVID-19 vaccination is a source of revenue for the pharmaceutical companies. The companies can increase the revenue stream through the production of vaccines. The majority of the respondents, i.e., 44%, professed that it is not the case that the government uses COVID-19 vaccination for political gain and not for public health. Some of them admitted that the government compels people to get vaccinated for the sake of state benefits. Whether the COVID-19 vaccine program is a myth or reality, the respondents were unclear about this dimension. An equal approach was seen, i.e., a similar proportion was examined. As per respondents' perception, vaccines can boost the immunity of individuals. Again, 63% of the respondents believed that the vaccine could be the source of increasing natural immunity. Mixed responses were observed regarding vaccines protecting against natural exposure to germs. 50% of respondents acknowledged this statement, almost 16% negated it, and the rest remained neutral.

Qualitative data analysis

A thematic analysis of qualitative data was performed using NVivo 12. The thematic analysis aims to identify, analyze, and interpret the pattern of data called themes. The open content was then digitally transcribed and imported into NVivo 12. According to Clarke (2006), data transcription is time-consuming but induces a high understanding of the depth of the content under investigation. The content was re-read many times to create familiarity with the data obtained. At first, a coding list was generated to capture the important pieces of data pertinent to the research questions. These open codes were then connected with sub-themes to find the main themes that appear in the primary data. Respondents' views about hesitancy regarding COVID-19 were reported below regarding major themes evolving in the content.

Findings of Qualitative Data Analysis

The following patterns emerged in response to the open-ended questions investigating the hesitancy regarding COVID-19. The first subtheme that emerged is controversy about the Covid-19 pandemic.

Controversy about COVID-19

When respondents asked if they were hesitant to receive the COVID-19 vaccine. If yes, what are the fears behind not getting vaccinated? The respondents have many reasons for their hesitancy. One of the respondents replied: "COVID-19 does not exist; it is just a political gain or controversy between parties" (R-9). Another respondent said: "Vaccines

may stop our coming population, or life ends soon” (R-8). One of the respondents responded: “I fear the vaccination itself causes the disease and is a big controversial program for the financial gain of the government” (R-6). Another respondent commented: “I think this vaccine itself is a virus, and there is no reality of Covid-19 disease” (R-5). A response belongs to a health public organization answered the question in such a way: “I was hesitant because I have heard from many resources that vaccination was causing chronic diseases in humans and is planted to overcome the population” (R-4). People’s reluctance to admit that a vaccine is safe, effective, and accessible for their protection against an infectious disease is vaccine hesitancy (MacDonald, 2015). This hesitancy is not new; therefore, vaccine hesitancy related to COVID-19 is not novel and surprising.

Another subtheme that emerged is related to health issues. Most respondents believe the COVID-19 vaccine aggravates the diseases patients already suffer from the same disease. One of the female respondents stated that:

“Being a pregnant woman, I hesitate to get the vaccination shot because no one is sure about its side effect on pregnancy” (R-2). Another respondent answered: “Being an old age diabetic patient, I think COVID-19 vaccination for my life and health can be dangerous.”

Again, a respondent replied:

“I am little hesitant because I am suffering from Asthma and people said that COVID-19 vaccine effects Asthma patients” (R-1).

Again, one respondent said: “I am a bit confused due to different controversies” (R-3).

Another respondent stated that his fear turned to be in a positive way:

“I am a heart patient and I was feared of having blood clots but later on due to my research and self-study positive aspects of vaccine dominated negative aspects” (R-11).

Perceived Side effects

When respondents were asked about any side effects after receiving the COVID-19 vaccine? The respondent elaborated on the side effects as follows.

A respondent said: “I got fever, body pain and nausea, my arm got numb” (R-10).

Another respondent stated: “I got fever, diarrhea, muscle pain, headache and chills that lasted for a few days” (R-8).

Again, a respondent replied: “I observed pain in right leg with pain in joints and Yes stiffed shoulder” (R-6).

One respondent said: “I have felt my memory weak. I don’t remember things the way I remembered before the vaccination” (R-3).

Another report for: “Breathing difficulty, fever and higher blood pressure” (R-).

One respondent said: “A little restlessness, redness on the arm where shot was given, muscle pain, headache was observed after vaccinating” (R-2).

One respondent reported: “loss of sense of smell and taste and coughing.”

Vaccination is believed to be one way to eradicate or curb COVID-19 solidly. In this sense, numerous vaccines have varying effectiveness and side effects. Different vaccines were reported to have different side effects, the most common being flu, pain, headache, tiredness, and injection site reactions (Ghiasi et al., 2021).

Natural Immunity vs. Vaccine Acquired Immunity

When respondents’ perception was sought regarding their belief that either natural immunity is better than vaccine-acquired immunity? It appeared from the primary data of

this study that natural immunity is better than vaccine-acquired immunity. However, some respondents were believed to have vaccine-acquired immunity to combat pandemics.

One respondent said:

“I think being naturally immunized keep you away from dangerous side effects of these medical things” (R-9).

Another stated:

“Quality of food and the natural immunity is better because by having a proper balanced diet we can avoid all sorts of effects of any virus and the proper diet helps to enhance immunity in a proper way as compared to the artificial means” (R-7).

Again, one respondent said:

“Naturally immunity is better than vaccine acquired Immunity because vaccines can protect you for the limited time period” (R-11)

One respondent replied:

“No vaccine creates more effective and long-lasting immunity than natural immunity from infection” (R-5).

Therefore, the current study highlights that natural immunity is better than vaccines and medications. However, the prevalence of COVID-19 is difficult to quantify due to the lack of significant and extensive studies that confirm its true reflection (Sciscent et al., 2021).

Discussion:

The research elaborates the findings of this study concerning the research objectives and the questions formulated based on the literature review. The conceptual framework that emerged in light of the quantitative and qualitative analysis of the primary data is also discussed.

There is no doubt that people around the world are reluctant to get vaccinated against COVID-19. However, healthcare providers encourage people worldwide to get vaccinated to avoid deadly diseases; this hesitancy remains an obstacle to a smooth vaccination process (Wang et al., 2021). The current research findings detailed that collaborative efforts are needed to raise awareness among people to get vaccinated against COVID-19 and develop immunity (Liu et al., 2022). This study investigates the factors that affect people's reasons for not receiving the COVID-19 vaccine.

The demographic traits of the respondents are crucial in conducting any research. It has been observed that most respondents were females with the age bracket of 21-30 years, and most of them were post graduated. The young generation was the highly vaccinated population, and they were vaccinated with the Sinovac and Sinopharm vaccines. Most of the targeted respondents availed of the vaccination facility and were fully vaccinated and running their businesses.

Frequent analysis was performed to have an in-depth idea about respondents' perception regarding COVID-19 vaccine hesitation, and diverse opinions were observed. Respondents explained that COVID-19 is not a real disease. Moreover, it is a novel virus, and testing will take some time. However, respondents reported no side effects of the vaccine and claimed that their families remained safe. On the other hand, they doubted about the long-term effects of the vaccine. The vaccine was the source of earnings for the pharmaceutical companies. The government's concern for the vaccine was not for political gain but to protect the citizens. The core aim of vaccinating people was to boost their immunity and to keep them safe from germs.

In order to gain an insight into the people's perspective concerning vaccine hesitation, semi-structured interviews were carried out with participants who were not or partially vaccinated. Respondents were asked about their perception of the reasons not to get vaccinated. The qualitative data analysis of the present study has revealed several reasons in the respondents' opinion that influence their opinion and lead to doubts about the vaccine. The most common are Controversy against COVID-19, Perceived side effects, and Natural versus acquired immunity. The thematic analysis of the current study finds that, in the opinion of most respondents, COVID-19 does not exist, and there is some controversy to

gain political and economic gain. Moreover, the perceived side effects of the vaccination make this pandemic more vulnerable to convincing people of its benefits. Most respondents believed that the world is moving towards organic and that natural immunity is much better than artificially created medicines and vaccines.

Vaccination and treatment of COVID-19 may still be questionable; however, the main challenge for the government is to make future pandemic management strategies. Some of the following suggestions were made in the light of literature and interviews:

Role of Government in Curbing Pandemics

The government faces extraordinary challenges in uncovering the gaps between it and its policy-making wings, which will affect the measures adopted to combat crises and their consequences. These challenges have led to quick solutions and agile responses, which must be evaluated when the worst crisis has passed. The following suggestions were made in light of the literature review and extant studies to tackle the future pandemic more appropriately.

- There is a need for coherent and effective communication between the government and the public to create awareness and avoid misconceptions.
- Appointment of specialized coordinators or government representatives to combat crisis management.
- Seek reliance on scientific and technical expertise (scientists, public health professionals, and doctors) to overcome the pandemic.
- Policy coordination across the country.
- Build trust with the public and ensure transparency.
- International collaborations and exchange of information.
- Implementation of E-governance at the doorstep.
- Reliable and free testing is the step to curb the pandemic promptly.
- Provide clear guidelines to curb the pandemic and provide educational institutions and small businesses resources to make it through.
- Establish funds at local level to help poor communities.
- Provide treatment and vaccines on the equity basis.
- Public officials and Media alliances must be created for proper public awareness.

Conclusion:

The study claims a high hesitancy regarding COVID-19 vaccination in Pakistan. This hesitation is due to many reasons. The most common reason is that the healthcare system and vaccines are unreliable. Furthermore, the biggest dilemma is ignorance of the pandemic and listening to what others say without investigating. The current study provides sound reasoning and understanding of people's behavior towards COVID-19 hesitancy, and the findings help in designing effective solutions to face future pandemics.

The three waves of COVID-19 hit Pakistan differently, with erratic degrees of illness and death. The Pakistani government efficiently managed the COVID-19 pandemic despite the lack of an efficient healthcare system and the resources needed to control the pandemic. However, collective efforts need to be made by various public and government departments to come together and pool resources to create awareness among citizens and avoid controversies, miscommunication, and misconceptions. Additionally, to address vaccine hesitancy, a cross-sector approach can involve various stakeholders, such as the government, private sector, healthcare departments, and religious groups, to develop and build public trust in the institutions. Moreover, the role of the media in creating public awareness is essential at every stage. The media acts as a link between policymakers and citizens (Aslam, Azhar, Ali, & Manzoor, 2023). Public officials should involve the media and initiate public awareness campaigns about any pandemic and ways to deal with it.

Limitations and Future Implications:

The scope of this study is limited because the data was collected only from the major metropolitan city regarding vaccine hesitancy. Therefore, the findings cannot be generalized to the total population. However, future researchers can expand the opportunity by adding rural and urban areas and making comparisons based on qualifications and other demographic characteristics. Various social media tools can be used for a broad understanding of the opinions expressed by people through public pools and Google forms.

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