Original Research Article

Knowledge, Attitude and Practices of the General Population towards COVID-19 Vaccinations: A Cross-sectional Study

ABSTRACT

Aims: This study aims to evaluate the knowledge, attitude, and practices of the general population towards coronavirus vaccinations in Pakistan.

Study design: A cross-sectional study

Place and Duration of Study: Sample: Department of Dental Surgery, Altamash Institute of Dental Medicine, Pakistan, between March 2021 and June 2021.

Methodology: A cross-sectional study was carried out among 500 individuals who were above 18 years of age. A well-constructed questionnaire consisting of 4 parts (Demographics, Knowledge, Attitude, and Practices) was constructed containing informed consent and distributed online. Spearman correlation test was used to analyse knowledge, attitude, and practices towards coronavirus vaccinations.

Results: A total of 500 responses were collected from the participants. Most of the participants had adequate knowledge regarding the availability of the vaccines. About 116 (23.2%) participants had contracted the virus. The majority of 308 (61.7%) participants agreed on vaccines to be effective against the virus. Most of the 401 (80.4%) participants were willing to get themselves vaccinated when their turn comes. 265 out of 500 (53.1%) people have been vaccinated against coronavirus. The minority of people assumed a chip inside the vaccine and religious factors as reasons not to get vaccinated. Those residing in urban locations and with increasing age had better knowledge and attitudes towards vaccinations.

Conclusion: To control and contain the ongoing pandemic, vaccination against the coronavirus is a must. There is still scope in evaluating and improving the general population's knowledge regarding the vaccination programs especially in the rural areas where resources and socioeconomic status is weaker.

Keywords: Vaccination, COVID-19, KAP, Public Health

1. INTRODUCTION

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) or Coronavirus currently is continuing to affect the entire world. Ever since the

disease started in Wuhan, China, it continues to spread globally with some countries being affected massively and while others having some sort of control over it [1]. On 11th March 2020, World Health Organisation (WHO) declared it as a pandemic [2]. At the present moment, worldwide there are 170,263,742 active cases, with 3,540,537 deaths and 152,151,666 individuals recovered from it. The incidence of COVID-19 in Pakistan continues to rise and affect the entire population due to the recently developed third wave along with acquired multiple strains from outside. As of today in Pakistan, there are 916,239 active cases, with 20,680 deaths and 836,702 patients successfully recovering from it.

When such public health challenges are being faced, vaccination is the first major tool that is thought and worked upon [3]. With the catastrophic damage incurred by the COVID-19 pandemic, different organisations and scientists immediately started to work upon formulating a vaccine against this virus, as this is the most vital tool to control and even eliminate such a global public health challenge. Previously, many global health challenges have been faced such as measles, smallpox, polio, and so on, for which vaccination proved to be the ultimate intervention [4]. With the need for a vaccine against coronavirus, competition to develop an effective vaccine is ongoing with some vaccines currently being administered to the individuals on the basis of emergency authorization, some still being in clinical trials and some waiting for approval from the regulatory bodies, respectively. On 8th December 2020, the first-ever person to receive the COVID-19 vaccine was 91 years old female living in the United Kingdom, after which the vaccine was administered throughout the country [5].

In Pakistan, however, the first person who received the vaccine was a healthcare worker on 2nd February 2021 [6]. Thereafter, the vaccination drive started throughout the country targeting the frontline healthcare workers first along with those at risk of developing severe coronavirus infection. Then gradually onwards the vaccine program was further extended to different age groups, respectively. Due to various social and personal beliefs, not everyone in the population was happy or even agreed to get themselves vaccinated. Although organisations such as WHO have declared COVID-19 vaccines to be effective against contracting and even if contracted the virus, the mortality and morbidity rates to be significantly low, various myths have been a controversial factor [7].

A global survey currently reports that the general public's acceptance rate for the coronavirus vaccine to be ≥70%.(8) Countries like Ecuador (97.0%), China (91.3%), Indonesia (93.3%), and Malaysia (94.3%) report the highest acceptance rate of the vaccine with few middle east and European countries with the least acceptance rate [8]. Literacy rates of the countries tend to play

a vital role in the acceptance of the vaccine as many disbeliefs mainly arise from it [9]. Moreover, a lack of acceptance also emerges from improper knowledge of the vaccines and the benefits related to them. This then further predisposes the general population to be the target of the coronavirus infection despite the availability of different coronavirus vaccines made by different organisations, respectively.

So, for better performance of the vaccination drive throughout the country, it is important to know about the knowledge, attitude, and practices of the people of Pakistan about COVID-19 vaccinations. So, in this study, we aim to assess the knowledge, attitudes, and practices of the general population about the coronavirus vaccine, which during these times is a must in order to make every possible effort to control and contain the global health challenge.

2. MATERIAL AND METHODS

A cross-sectional survey-based study was conducted in Pakistan amongst individuals who were above 18 years of age. The survey was conducted from March 2021 to June 2021, keeping in mind the vaccination program being carried out in Pakistan in accordance with the standard set guidelines to be strictly followed. To assess the knowledge, attitudes, and practices of the individuals, a well-structured questionnaire was formulated using Google Forms, along with sociodemographic characteristics of the participants. The generated link was distributed using a simple random sampling method to different social media platforms such as Facebook, WhatsApp, Emails, and Twitter. The data collected from the participants was based totally on an online platform keeping in mind the current pandemic and social distancing protocols. To calculate the sample size for this study, OpenEpi software was used keeping the confidence interval at 95% and 50 as the desired percentile. The sample size was calculated to be 368 (n= [Z12-α/2. p. q]/d2) [10]. The data collection process was started after being granted ethical approval from the Ethics Review Committee (2021/073).

The questionnaire constructed consisted of 4 sections along with the consent statement for the participant to agree to before participating in the study. Firstly, sociodemographic data were collected from the participants, then questions assessing knowledge, next with attitudes, and finally practices being followed regarding the coronavirus vaccinations. All of the data collected from the participants was kept online, anonymous and confidential. Questions regarding sociodemographic characteristics consisted of age brackets to which the participants belonged, followed by gender, level of education, residence, occupation, and history of previous vaccinations. To evaluate the knowledge, attitude, and practices of the participants, a total of 23 questions were present in the questionnaire. For assessing knowledge, this section consisted of 8 questions such as: the availability of coronavirus

vaccines, whether they have contracted the virus, and beliefs regarding the vaccine. Attitudes towards the coronavirus vaccine were evaluated by 7 questions such as: the vaccine protecting against the virus, the importance of the vaccine, will the individual get themselves vaccinated or not, and myths regarding the vaccine. The last section assessed the practices towards the vaccine program with 8 questions such as: has the individual has gotten vaccinated, reasons for not getting vaccinated, who should get vaccinated first, and do they have any preference of which vaccine to get themselves administered.

The participation in this study was based on the inclusion criteria which consisted of: i) individuals being a Pakistani resident, ii) belonging to adulthood (above 18 years of age), iii) being able to read and write and, iv) participation being voluntary. Those who were unlettered and below 18 years of age were excluded from this study.

Statistical Analysis:

For data analysis, Statistical Packages for Social Sciences (SPSS) version 25.0 was used. Descriptive statistics such as frequencies, means, and standard deviations were calculated. Spearman's Correlation test was used to analyze the relation of age, gender, education, and residence with Knowledge, Attitude, and Practices towards COVID-19 vaccinations. A p-value of ≤0.05 was considered to be statistically significant.

3. RESULTS

In this study, 680 questionnaires were received. After scrutiny, data of 180 participants were excluded on the basis of irrelevance and being partially filled. A total of 500 completed survey were included in this study. Of the 500 participants, there were 224 (44.9%) males and 275 (55.1%) females. Regarding age, 137 participants belonged to both 18-30 years and 31-40 years old age bracket equally, with 74 (14.8%) in 41-50 years age bracket, 77 in 51-60 years age bracket, and 74 in Above 60 years old age bracket. Mostly the individuals had graduate (35.5%) and postgraduate (31.7%) levels of education. The majority of the individuals belonged to an urban (81.4%) class of families, of which 138 had Business (27.7%), 61 had Healthcare Workers (12.2%) and 59 (11.8%) had Students as their occupation. When asked about the history of previous vaccinations, 243 (48.7) participants said "Yes" to have gotten the necessary vaccinations done, as shown in **Table 1.**

Table 1: Sociodemographic characteristics of the participants (n=500)

Variables	n	%

Age	18-30 years	137	27.5
	31-40 years	137	275
	41-50 years	74	14.8
	51-60 years	77	15.4
	Above 60 years	74	14.8
Gender	Male	224	44.9
	Female	275	55.1
Education	Undergraduate	87	17.4
	Graduate	177	35.5
	Postgraduate	158	31.7
	Below undergraduate	77	15.4
Occupation	Student	59	11.8
	Business	138	27.7
	Healthcare Workers	61	12.2
	Engineer	25	5.0
	Teacher	53	10.6
	Unemployed	66	13.2
	Others	97	19.4
History of Previous Vaccinations?	Yes	243	48.7
	No	166	33.3
	Maybe	90	18.0

Knowledge regarding COVID-19 Vaccinations

About 116 (23.2%) participants reported having contracted the coronavirus, with 321 (64.3%) not being exposed to it, as shown in **figure 1**. The majority of 375 (75.2%) individuals knew someone close to them to have contracted the virus. Now about the availability of different vaccines against the coronavirus, most of the 424 (85.0%) participants were aware of it. Furthermore, many of the 429 (86.0%) individuals knew someone to be vaccinated against the virus. About the effectiveness of the vaccine against the virus, 308 (61.7%) participants agreed it to be effective with a minority of 35 (7.0%) denying it. Now, mostly 379 (76.0%) people believed that the coronavirus vaccine not to be dangerous to them with 263 (52.7%) also believing it not to have any adverse/harmful effects were getting vaccinated. Lastly, the majority of the 321 (64.3%) people concluded that the vaccine itself does not further lead to other diseases which they previously did not have. With increasing age and high socioeconomic status, the increase in the knowledge of the participants was noted.

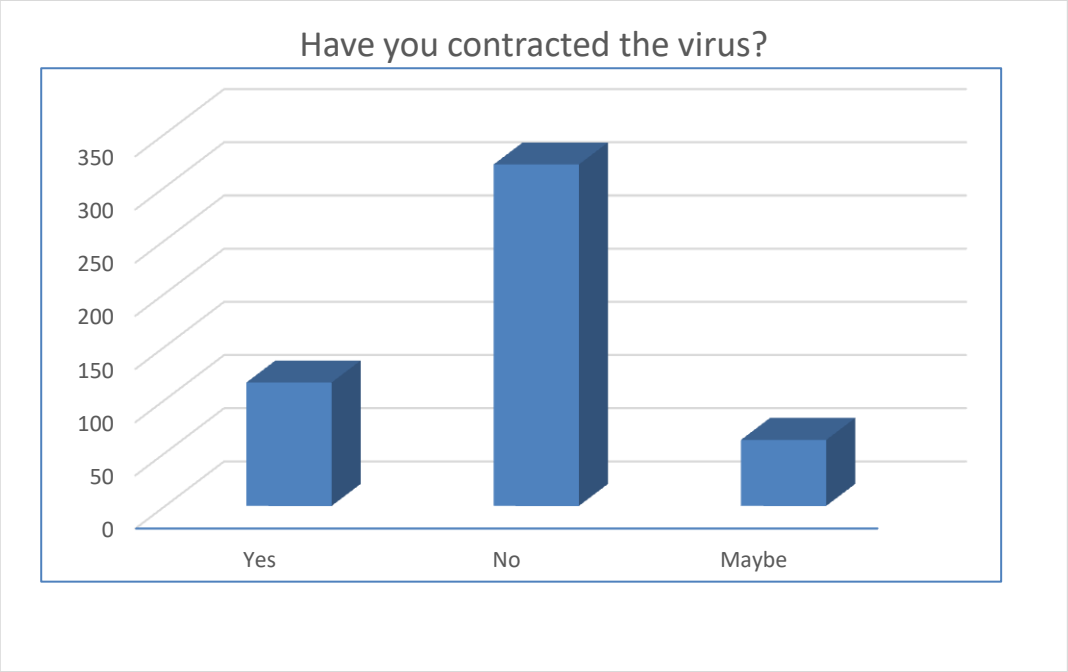

Fig 1: History of contracting the coronavirus.

Attitudes about COVID-19 Vaccinations

About the safety of the recently developed vaccines, 301 (60.3%) participants considered it to be safe when being administered. A majority of 350 (70.1%) people believed vaccination to be essential in order to eliminate coronavirus and end the ongoing pandemic. Most of the 401 (80.4%) participants were willing to get themselves vaccinated when their turn comes, with a few 24 (4.58%) opting not to get vaccinated, with further 410 (82.2%) also encouraging their friends and family to get themselves vaccinated as well. Regarding the reduction of contracting the virus after getting vaccinated, mostly, 319 (63.9%) considered the risk to be reduced. The majority of 434 (87.0%) individuals denied that religious factor is not for consideration when it comes to getting themselves vaccinated. Predominantly, 442 (88.6%) people disagreed that they would not get vaccinated because it being a foreign object. Lastly, there was no significant difference in attitudes of the participant's gender was noted about COVID-19 vaccinations.

Practices about COVID-19 Vaccinations

Presently, 265 (53.1%) of the people have been vaccinated against coronavirus as shown in **figure 2**. A majority of 319 (63.9%) participants believed vaccination to be important and social distancing not being the only solution to stop the pandemic. Being afraid of needles as to not getting

vaccinated was not the factor of not getting vaccinated for most of the 450 (90.2%) of the population. Regarding the belief of the vaccine having a chip inside it, many of 453 (90.8%) individuals denied such beliefs circulating around them. Furthermore, the belief of vaccination leads to death was also discarded by many of the 453 (92.6%) people. Moreover, the general consensus agreed by the majority of 370 (74.1%) participants is that Healthcare Workers should be the first ones to get vaccinated. The majority of 300 (60.1%) of the population would themselves pay to get vaccinated if they didn't get vaccinated from government sources. Nearly, half of the population had a preference such to which specific vaccine they would want to get from the variety of vaccines available against the coronavirus.

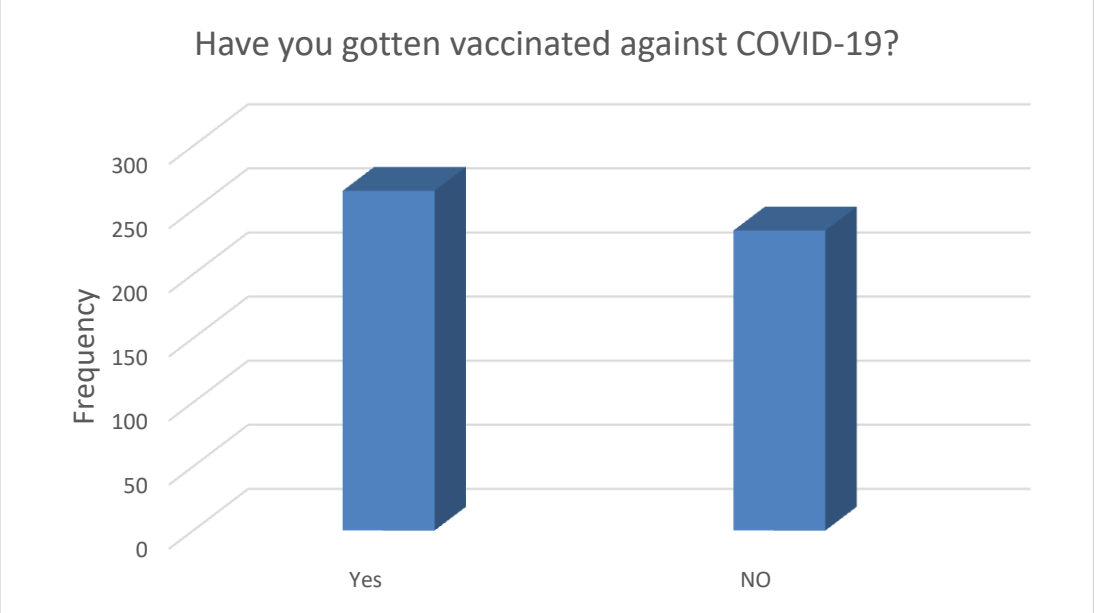

Figure 2: Number of people that received the coronavirus vaccine.

Spearman's correlation was used to analyze the relation of sociodemographic characteristics of the population with knowledge, attitude, and practices towards COVID-19 vaccinations. Age was found to have significant relation with knowledge (p-value=0.03), attitude (p-value=0.04) and practices (p-value=0.00). For gender, a significant relation was noted with practices. Level of education had a significant relation with knowledge (p-value=0.00) and attitudes (p-value=0.03). Occupation had a significant relation with knowledge (p-value=0.01), attitudes (p-value=0.00) and practices 0.04). The residence had significant relation with all three variables, as shown in **table 2.**

Table 2: Correlation of sociodemographic characteristics with knowledge, attitude and practices.

Variables	Correlations	Age	Gender	Education	Occupation	Residence	Attitude	Knowledge	Practices
Age	Correlation Coefficient	1.000	-.120**	.230**	-0.027	.174**	.092*	.093*	.118**
	Sig. (2-tailed)		0.007	0.000	0.542	0.000	0.040	0.038	0.008
Gender	Correlation Coefficient	-.120**	1.000	0.045	.404**	-0.085	-0.033	0.058	.094*
	Sig. (2-tailed)	0.007		0.319	0.000	0.057	0.461	0.196	0.035
Education	Correlation Coefficient	.230**	0.045	1.000	.120**	-.119**	-.094*	-.165**	-0.046
	Sig. (2-tailed)	0.000	0.319		0.007	0.008	0.035	0.000	0.307
Occupation	Correlation Coefficient	-0.027	.404**	.120**	1.000	-.102*	-.116**	-.108*	.128**
	Sig. (2-tailed)	0.542	0.000	0.007		0.022	0.009	0.016	0.004
Residence	Correlation Coefficient	.174**	-0.085	-.119**	-.102*	1.000	.413**	.506**	.375**
	Sig. (2-tailed)	0.000	0.057	0.008	0.022		0.000	0.000	0.000
Attitude	Correlation Coefficient	.092*	-0.033	-.094*	-.116**	.413**	1.000	.563**	.469**
	Sig. (2-tailed)	0.040	0.461	0.035	0.009	0.000		0.000	0.000
Knowledge	Correlation Coefficient	.093*	0.058	-.165**	-.108*	.506**	.563**	1.000	.438**
	Sig. (2-tailed)	0.038	0.196	0.000	0.016	0.000	0.000		0.000
Practices	Correlation Coefficient	.118**	.094*	-0.046	.128**	.375**	.469**	.438**	1.000
	Sig. (2-tailed)	0.008	0.035	0.307	0.004	0.000	0.000	0.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4. DISCUSSION

In order to tackle the ongoing pandemic worldwide, many organisations and pharmaceutical companies have formulated vaccines as being the ideal and

vital solution. Currently, many vaccines have been developed and approved by World Health Organisation and different drug regulatory bodies, with some being in clinical trials. This had led to many countries approving different vaccines and implementing them according to the standard set guidelines. Presently in Pakistan, the government in early February started rolling out the vaccination program in the country, starting with frontline healthcare workers and those at risk of getting severe coronavirus infection. Although the government and different organisations are working towards promoting people to get themselves vaccinated but there is a difference in knowledge and attitudes of different individuals which are acting as hindering factors for the vaccination program. In this study, we assessed the knowledge, attitude, and practices of the general population towards COVID-19 vaccinations. Regarding knowledge, more than half of the population were aware of the coronavirus and the vaccines that are available. The primary reason for this is that around 3 quarters of the participants belonged to higher socioeconomic status. These results correspond to previous studies which concluded similar findings [11,1]. Although females tend to be more health-conscious and visit their doctors more frequently, but in this study, males and females both showed no difference regarding their knowledge of the ongoing pandemic [12]. Since the current world of modernization makes everyone aware of everything, most individuals are well aware and have adequate knowledge.

As being granted approval of the vaccines by different well-known authorities, generally, most of the people did agree to the vaccines being effective against the coronavirus. However, a minority of the people did believe in some disbeliefs circulating around such as vaccine might lead to death, the chip is inserted with the vaccine and vaccine might predispose to other diseases which the individuals previously did not have. Such beliefs have been discarded by studies in the literature stating the vaccine is beneficial largely for individuals [13].

As learned from the previous pandemics in the past, vaccination has been the most vital tool against such pandemics as proven [14]. Such is the case with the current devasting pandemic of coronavirus. Similarly in our study, many individuals believed that the vaccine is essential to eliminate the ongoing health challenge. Furthermore, social media and different organisations have been continuously disseminating information regarding the ongoing pandemic. This has triggered psychological disorders such as anxiety in many because of the fear of the coronavirus [15]. Not only the adults, but the paediatric population also tends to experience anxiety if anything frightening is happening around [16]. This has led to the eagerness of people to get themselves vaccinated to order to save themselves from this deadly virus. Moreover, the majority of the participants believed that the risk

of getting a severe infection from coronavirus and even a decrease in risk of contracting the virus was possible only after getting themselves vaccinated. Such similar findings have been concluded in the literature by the Center for Disease Control and Prevention [17]. However, very few people did not prefer to get themselves vaccinated primarily because of the religious factor, where they considered they did not need protection from the vaccine. Such beliefs have also been discarded by many authorities in the literature [18,19].

Since it has been stressed upon the essentiality of the COVID-19 vaccine to end the pandemic, myths such as a chip is in the vaccine and it is a foreign object have also been debunked by many studies and clinical trials carried out [20]. Needle phobia has also been an issue for many people which is why they avoid getting themselves any sort of injections [21]. In contrast to this, such finding was not present in our study as very few people were afraid of needles as to be the reason for not getting or hesitating in getting vaccinated. Since the healthcare workers working on the frontlines are in direct contact with patients, they should primarily be the first ones to get vaccinated as recommended by the World Health Organisation and Centre for Disease Control and Prevention [22]. Such has been agreed by the participants of this study. Moreover, the literature also states that old-aged people and with co-morbidities should also be vaccinated along with the healthcare workers [23]. Since different information regarding the side effects and benefits has been surfing around the internet, many people have no preference as to which vaccine they would want to get. Although guidelines have been established as to which vaccine would be beneficial to which age group and other factors considering about each individual [24].

The vaccine currently being administered under the vaccine program by the government is free of cost, which acts as a major contributing factor to getting oneself vaccinated, as found in our study. In contrast to these findings, some study reports that individuals are willing to pay for the vaccine even if it is not available for free [25]. This difference between our and this study is primarily could be because of the difference in socioeconomic status between the two countries.

Limitations

In our study, while interpreting the results, we were met with some limitations. Firstly, since this study was an online self-administered questionnaire-based, the responses might have memory biases associated. Secondly, further studies might be needed as the vaccination program in the country continues to diversify. Lastly, the inclusion of a greater number of people from rural areas would give a better perspective of the perception towards the coronavirus vaccinations.

4. CONCLUSION

At the present moment, mass vaccination is the only and most vital tool to counter against the coronavirus pandemic. Although the vaccinations programs are being conducted throughout the world, but there are various disbeliefs and lack of knowledge regarding the vaccine and the virus itself which is hindering the process of vaccinations. Special attention is to be given to the rural areas where people should be motivated and educated regarding the vaccination program and how to protect themselves.

CONSENT

All authors declare that 'written informed consent was obtained from the patient preserved.

AUTHORS CONTRIBUTION

HA: Drafting the manuscript, literature review, data analysis and data collection.
FKA: Initial review of the manuscript and data collection
MM: Final review of the manuscript
ZH: Critical review of the manuscript
AL: Drafting the manuscript, conceptualization, study design and data analysis.

ETHICAL APPROVAL

This study was approved by ethical review committee of Sir Syed College of Medical Sciences

COMPETING INTERESTS

The authors declare that there are no competing interests.

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