

Infodemic as subsequent defiance to manage pandemic: Assessing the reasons behind COVID-19 vaccine refusal

Syeda Maryam Fatima¹, and Sana Tariq Rajput^{2*}

¹Department of Medicine and Surgery, Karachi Medical and Dental College, Karachi, Pakistan

²Department of Public health, SZABIST Karachi, Pakistan

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Abstract:

Introduction: COVID-19 is a pandemic, which originated in 2019 and is continuing to spread with new variants. It is believed that the use of vaccines can help bring better outcomes, however, the people of Karachi have serious reservations about the vaccines because of the widespread myths.

Methodology: The data has been collected in a sample size of 550 participants to find out the correlation between the acceptances of the COVID-19 vaccine. It shows the association between exposure to the virus, administration of a vaccine, reasons behind acceptance and rejection of vaccine, and feared outcomes from May 2020 to June 2021. **Results:** The results show that 401 people were vaccinated while people received vaccination for better protection, and to retain their salary and travel nationally or internationally. For those who refused to get vaccinated, the majority feared that the rumor about infertility may be true while some did not consider it important. The types of rumors included planting chips, death in two years, infertility, and side effects. Some people feared side effects such as body pain, infections, and infertility. **Discussion:** As compared to previous researches, the strong anti-vaccine sentiments in the people of Pakistan may be reducing as more people continue to get vaccinated every day. However, there is still a need to educate the mass population about the benefits of vaccines to combat the myths and increase the ratio of the overall vaccinated population.

Keywords: Corona Virus, Vaccination, Pandemic, Refusal of vaccine

***Correspondence:** Sana Tariq Rajput, Department of Public health, SZABIST Karachi, Pakistan, Tel: +92-333-1225034, Email: sanatariqrajput@gmail.com

Introduction:

As the pandemic continues to expand, it is now known that variants of coronavirus, “SARS-CoV-2”, are responsible for causing COVID-19. It was first discovered in the province of Wuhan, China in December 2019. It has affected 136.6 million people globally and has claimed the lives of 2.94 million people [1]. The first case was reported in Pakistan in February 2020. Currently, 969,476 cases have been reported in Pakistan with 911,383 recovered cases [2]. It is believed that COVID-19 vaccines can play a vital role in reducing mortality [3]. Pakistan has a poor history in terms of response to vaccines and other preventive measures for diseases. While certain diseases such as polio has been eradicated from the world, Pakistan continues to report polio cases from different parts of the country. [4] Even though official efforts to start eradication of polio began in the year 1994, over 84 polio cases were reported in the country in 2020 and one case has been documented in 2021 [5]. The reasons of immunization failure include lack of confidence in government, poor law and order situation faced by immunization staff, staff misconduct [6], and lack of knowledge among people.

As of July 2021, there are multiple types of COVID-19 vaccines available in Pakistan, with varying efficacy, extending from China originated vaccines; Sinopharm, Sinovac, Cansino Bio to European originated vaccine AstraZeneca [6]. American originated vaccine Moderna, German originated vaccine Pfizer, and Russian originated vaccine Sputnik V is also available in Pakistan. Out of these, Sinopharm, Sinovac, AstraZeneca, and Cansino Bio are available nationally for free while the rest of

the vaccines can be purchased privately. Pfizer and Moderna have an efficiency of 95% while Sputnik V is 91.6% efficiency, Cansino Bio is 90% effective, Sinopharm 79.34%, and AstraZeneca has 70% efficacy [7].

The process of immunization for COVID-19 started in Sindh with a mass vaccination program to achieve herd immunity. On 1st February 2021, the first batch of COVID-19 vaccines arrived in Sindh. The vaccines first became available for healthcare workers and were then gradually made available for the local public, according to descending order of age groups, free of cost. At present, Pakistan has a population of 216.6 million people, out of which 1.9 million people are vaccinated, making up 0.8% of the total population. To make it accessible for everyone, the government has set up vaccination centers in a lot of private and public hospitals, as well as, educational institutions and shopping malls. Despite the efforts of the government to ensure that every citizen gets vaccinated, there is a strong prevalence of myths among people that have resulted in refusal to get the shot. With a massive ‘infodemic’, a lot of information about these vaccines has been circulating, making it difficult for people to decide if they want to get vaccinated [8]. The official website of WHO defines an infodemic as “an overabundance of information and the rapid spread of misleading or fabricated news, images, and videos.” [9]. The most common myths about COVID vaccines revolve around their impact on psychological and physical health as well as religion. The political, social, and cultural reservations restricting the administration of the COVID-19 vaccine are also responsible for the refusal of this vaccine. It is a common belief that COVID vaccines may cause side effects on physical health, such as flu and fever, which ultimately may become a cause of mortality. A Pakistani political leader claimed that this vaccine was anti-Islam propaganda, intended to degrade Muslims as to make Jews more powerful and insert nano trackers to control Muslims through 5G towers [10]. Some people fear that the vaccine would make them infertile as a side effect. Other common perceptions included a shorter life span, long-term side effects, and weak immunity as a result of vaccine administration [11]. Other factors included people having a lack of trust in government and believing that this is a political stunt [12]. Many Muslims believe that this vaccine has been developed by the usage of pork and other forbidden ingredients as per their religion [13]. They consider it as a strategy to reduce the Muslim population and make their religious belief weaker. Some political leaders of Pakistan have disregarded coronavirus as an artificially-made virus, produced, and spread by Israel, the US, and the UK as some conspiracy [14]. With multiple conspiracy theories and hesitance towards COVID vaccines, it has been found that resentment against the vaccine has risen from “2% to 4%” because of religious, cultural, and social reasons [15]. A lot of female healthcare professionals and undergraduate women are skeptical about the administration of vaccines because of the misconceptions regarding fertility and its impact on the menstrual cycle. As for people who have agreed to get vaccinated, they believe that vaccine is the only solution to survive the pandemic and even if they get infected, their symptoms will be mild. The government of Pakistan is now trying to convince the citizens of Pakistan to get vaccinated by offering privileges to those having a vaccination certificate. These privileges include unrestricted entry to public places such as parks and restaurants and permission to travel within the country and attend social events.

A few types of research have been conducted regarding the vaccine hesitancy and myths related to them, especially in Karachi but this research paper analyses the different causes of refusal of vaccine and the impact it may have on the upcoming COVID waves. The rising mortality rate of COVID has highlighted the need of getting vaccinated and the myths should be handled by the government to combat the spread of this virus.

Methodology:

This is a cross-sectional, observational study conducted with the help of a questionnaire-based survey form circulated within the general population of Karachi, Capital city of Sindh, Pakistan. Non-probability, continent sampling was done, sample size was calculated with the help of WHO sample size calculator and minimum 385 was calculated after putting 16,093,786 population size with 95%

confidence interval and 5% margin of error. All the participants were above the age of 18 years and legally allowed to give consent. An informed consent form was signed or presented to the participants for reading before getting the data. A total of 550 participants were enrolled in the study, online edata was collected from participants due to travelling and social gathering restrictions.. The study included people of all age groups above 18, irrespective of their gender. The data was gathered between April 2021 to June 2021. The questionnaire contains two different sections; section A has demographic questions including age, gender, city, education, profession, and occupation. Section B contains the first two questions about whether the participants have been infected by the COVID-19 virus in the past two years and did they have the vaccination shot yet. Then we have asked whether they have taken the shot or not, and what was the reason behind it. Another question was about the platform from which they have heard the rumors about COVID-19 vaccines, what type of rumors they have heard the most, and what kind of adverse outcomes do they fear might happen after the shot. The data was assessed in “statistical packages of social sciences (SPSS) version 21”, demographic details were analyzed as descriptive variables and interpreted in mean and standard deviation values.

Results:

A total of 550 participants were included in the study. The gender distribution of participants was 355 males and 195 females. Maximum participants 175 were in the age group 21-25 years of age while minimum participants 79 belonged to 35-40 years of age group. 328 people had completed graduation while 222 people had done masters. Maximum participants, 187 people belonged to the profession of medicine while a minimum number of participants. 62 belonged to marketing. 461 people had a private occupation while 89 people had government jobs. (Table 1)

Table 1: Demographic details of participants.

Variables		Results	P-value
Gender	Male	355 (64.4%)	0.09
	Female	195 (35.5%)	
Age	21-25	195 (35.4%)	0.82
	26-30	170 (30.90%)	
	31-35	106 (19.3%)	
	35-40	79 (14.4%)	
Education	Graduation	328 (59.6%)	0.04
	Masters	222 (40.4%)	
Profession	Teaching	86 (15.6%)	0.01
	Medicines	187 (34%)	
	Bio-tech	143 (26%)	
	Finance	72 (13.1%)	
	Marketing	62 (11.3%)	
Occupation	Private	461 (83.8%)	0.1
	Government	89 (16.2%)	

127 people had been infected with COVID-19 in the past two years and 401 people were vaccinated.

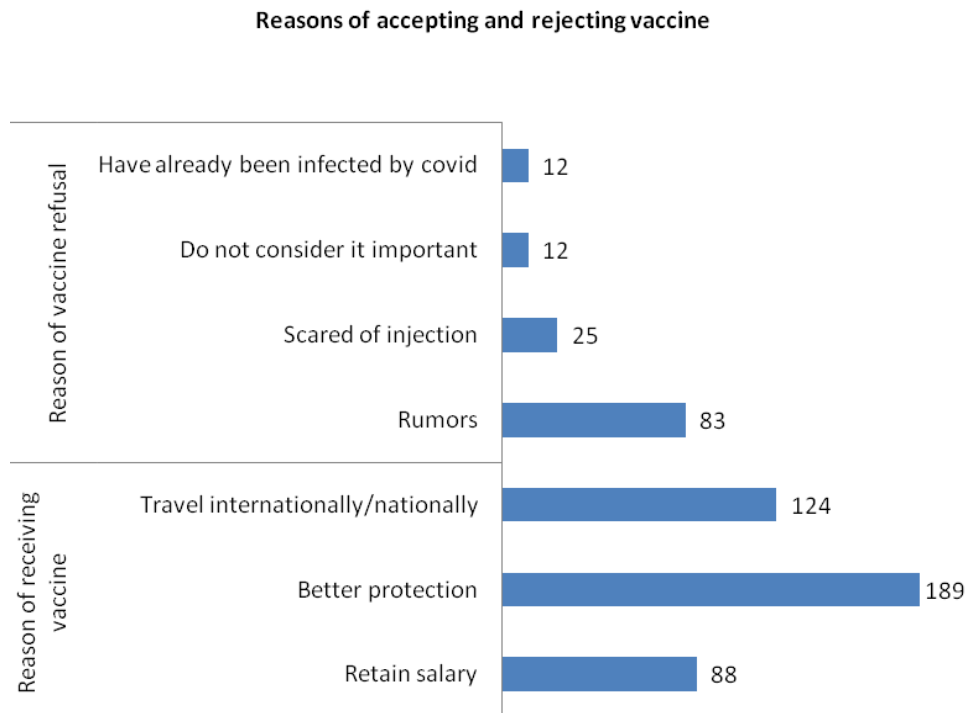


Figure 1: This figure shows the reasons for acceptance and denial of the COVID vaccine.

The reason for getting vaccinated was 88 people wanted to retain their salary, 189 wanted better protection, 124 people wanted to travel nationally and internationally while 132 remained unvaccinated. Upon asking the reasons for denial, 83 people reported rumors about the vaccine, 25 people were scared of injections, 12 people believed that vaccination is not important, 12 people believed that since they have already been infected, they do not need the vaccine. (Figure I) Sources of hearing rumors indicated that 41 people had heard it from Whatsapp, 81 people from Facebook, 34 from blogs, 20 from other people, and 374 from all the above-mentioned platforms. 78 people had heard that chips will be implanted in their bodies, 58 people had heard that they will die within two years, 223 people had heard that they will get infertile, 109 people had heard about side effects, while 84 people had heard all of the above rumors. (Figure II)

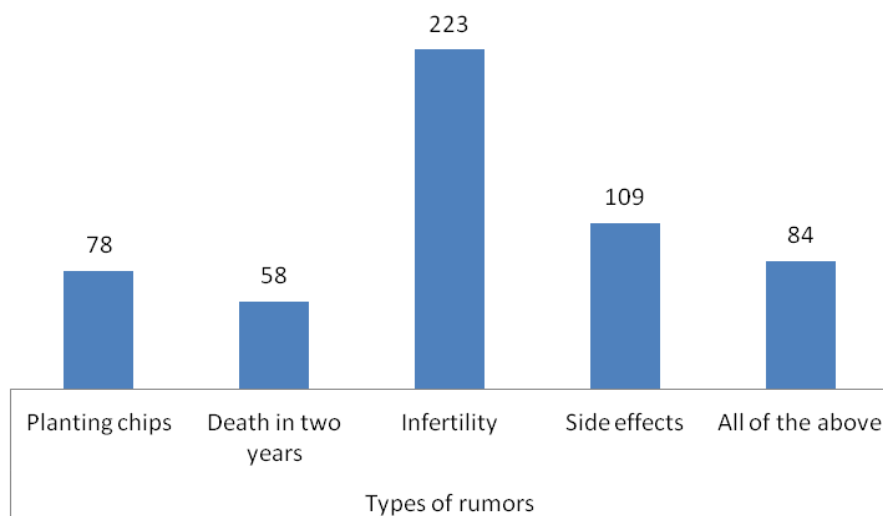


Figure 2: This figure shows the types of rumors and the number of people who have heard them. The people were asked about the expected adverse effects, 256 people feared getting infertile, 16 people expected to get infections, and 278 were afraid of body pains.

Table 2: This table shows cross-tabulations between education and profession with the types of rumors heard.

		Types of Rumors					P value
		Planting Chips	Will die in two years	Infertility	Side effects	All of the above	
Education	Graduation	16	37	102	97	76	0.002
	Masters	60	21	121	12	8	
Profession	Teaching	20	13	41	0	12	0.004
	Medicines	25	0	101	49	12	
	Bio-tech	31	37	19	0	56	
	Finance	0	8	0	60	4	
	Marketing	0	0	62	0	0	

Cross tabulations were checked between gender and types of rumors, out of which 48 males believed in planting chips, 0 males believed in dying within two years, 171 males believed in infertility, 60 males believed in side effects, while 76 males believed in all of the above. 24 women believed in planting chips, 58 females believed that they will die within two years, 52 females feared infertility, 49 were scared of side effects, while 8 females believed in all of these. The P-value was <0.005 for this significant correlation with R value of +1 (positive correlation)

Another cross-study showed that 238 graduation students had taken the shot while 90 graduation students denied the administration of a vaccine. 163 master's students have taken the vaccine while 59 master's students did not take the vaccine. The value of P is >0.005 which is insignificant.

The correlation between profession and acceptance and denial of a vaccine has shown that 73 people have accepted the vaccine while 13 have rejected the vaccine belonging to the profession of teaching. As for people belonging to the sector of medicine, 110 people have taken the vaccine while 77 have denied its administration. The value of P for this correlation is <0.005 which is significant with R value of +1 (positive correlation).

The correlation between profession and feared adverse outcomes shows that from the profession of teaching, 49 people fear getting infertile and 37 fear suffering from body pains. From the field of medicine, 81 people fear infertility and 106 are afraid of body pains. From the field of biotechnology, 8 people fear infertility, 16 people fear infections, and 119 people are scared of body pains. From the field of finance, 64 people fear infertility, while 8 people fear body pains. From the marketing sector, 54 people fear infertility while 8 are scared of body pains. The value of P for this correlation is <0.005 which is significant. (Table 2).

Discussion:

This study elaborates the reasons why people have rejected vaccines and why those who have agreed to get vaccinated have accepted vaccines. Comparing to the study conducted in 2020 which stated that 49% of Pakistanis were hesitant to get vaccinated [16] this study shows that 27.1% of Pakistanis are currently hesitant to take the vaccine in 2021. Another study claimed that 42.3% of people belonging to Pakistani and Bangladeshi ethnicity had rejected the vaccine [17]. Similar to a study that showed that the major source of rumors for COVID-19 vaccination was social media [18], this study also supports the claim that most of the rumors are spread by Facebook (14.7%) and Whatsapp (7.5%). As for 72 (13.1%) people who believed that microchips will be implanted in their bodies through the COVID vaccine, another study conducted in 2021 supported the spread of the same rumor. The most common rumor revolves around people, both men, and women 223 (40.5% people), getting infertile after the administration of the COVID vaccine. A similar study supports this rumor that this vaccine is seen as a strategy to cut down the Muslim population [19]. The similar effect has been evaluated in western countries including France and the United kingdom endorsed the negative impact of social media rumors on an adaptation of vaccine [20-22]. while the techniques used by

western countries to overcome hesitancy are not applicable in developing countries like Pakistan [23, 24]. The core problem lies in the spread of rumors and the inability to filter the platforms that are being used to spread them. As the data shows, most people refuse to take the vaccine because of the widespread rumors, reaching them through social media sources. At the same time, it is important to eradicate the rumors especially those associated with fertility and shortened lifespan as they do not have a solid base.

Conclusion:

This study concludes that even though a majority of the Pakistani population is getting vaccinated, there is still a very large group of people that are getting affected by the rumors. A high quantity of respondents mentioned that they have accepted the vaccine to retain their salary although they are scared of adverse outcomes. Therefore, better counseling regarding vaccines and reduced complications should be advertised. Mass media usage, advertisement, social mobilization, and involvement of respected community members and religious scholars may increase the acceptance of the COVID vaccine.

The results indicate that most rumors spread through social media and informal platforms. Therefore, it is important to check the authenticity of news and rely on formal and authentic sources of information such as recommendation from health authorities and government officials. This will help in the containment of disease and significantly reduce mortality, bringing better outcomes.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. The study on humans was conducted in accordance with the ethical rules of the Helsinki Declaration and Good Clinical Practice.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

None.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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