

Association Of Socio-Demographic Characteristics With The Perception Of COVID-19 Vaccine Among The General Population Of Lahore, Pakistan

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ABSTRACT

Objective: To identify the socio-demographic characteristics associated with the perception among the general population regarding the COVID-19 vaccine in Lahore, Punjab.

Methodology: A quantitative analytical cross-sectional study design was applied. A sample of 384 people were selected by using convenient sampling. A self-structured tool on perception was used. The percentage, mean and standard deviation were calculated. Further, the chi-square test was applied to measure the association among socio-demographic variables¹ with perception of the COVID-19 vaccine. The study was conducted in the district of Lahore.

Results: Most respondents (59%) perceived that the COVID-19 vaccine is useful. Regarding the association between the socio-demographic characteristics of the respondents and their perception of the COVID-19 vaccine, age is the main predictor of good perception (p -Value= 0.006).

Conclusion: It can be concluded that the perception regarding the COVID-19 vaccine is good among the general population. Still, there is a need to educate the people and disseminate accurate information to raise the acceptance status of COVID-19.

Keywords: Covid-19 vaccine, Perception, Socio-demographic.

1. Introduction

The COVID-19 pandemic underscored the urgent need for rapid development, distribution, and deployment of safe, effective, and accessible vaccines to protect vulnerable populations and prevent severe illness, hospitalization, and mortality.¹ In response to the COVID-19 pandemic, the global scientific community united in an unparalleled collaboration to rapidly develop, test, and distribute safe and effective coronavirus vaccines.² According to WHO global statistics, the COVID-19 pandemic persisted with a significant mortality rate, despite the development and widespread recommendation of various effective vaccines for public use.³ The introduction of COVID-19 vaccines in late 2020 and early 2021 represented a crucial turning point in the

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global battle against the pandemic. Nevertheless, maximizing their impact hinges on achieving extensive population coverage, underscoring the imperative of widespread vaccination to realize optimal public health outcomes.⁴

In Ethiopia, a significant majority of the population has a positive perception of the COVID-19 vaccine, with approximately 60.5% of study participants believing it's effective in saving lives. This is a promising sign, especially considering the global efforts to combat the pandemic. However, it's also important to note that vaccine hesitancy remains a challenge, with around 64.4% of participants expressing concerns about getting vaccinated.⁵ Colombia's COVID-19 response saw a notable improvement in public perception of coronavirus vaccines, with a significant majority now embracing vaccination as a crucial tool to prevent the spread of the virus and protect public health.⁶

A 2021 study by Wouters et al. revealed the top countries for COVID-19 vaccine acceptance, with Vietnam leading at 98%, followed closely by India, China, Denmark, and South Korea, all exceeding 87% acceptance rates.⁷ The study revealed varying levels of COVID-19 vaccine acceptance worldwide, with notable concerns in countries such as Serbia (38%), Croatia (41%), France (44%), Lebanon (44%), and Paraguay (51%), where acceptance rates remained disconcertingly low. Conversely, Africa faced a stark contradiction: despite a shortage of licensed COVID-19 vaccines, several countries, including Sierra Leone and Malawi, were forced to discard expired vaccine doses due to insufficient demand and low population acceptance. This paradox highlights the complex challenges hindering global vaccine uptake, emphasizing the need for targeted interventions to address vaccine hesitancy, enhance access, and ensure effective distribution.⁸

Hence, this study was conducted to find out the perception and associated socio-demographic characteristics with the COVID-19 vaccine among the general population in Lahore so that measures be adopted to curtail the disinformation and disseminate the correct information to increase the acceptance rate of the COVID-19 vaccine.

2. Methodology

This quantitative analytical cross-sectional study was conducted at four tertiary care hospitals in Lahore - Jinnah Hospital, Mayo Hospital, Services Hospital, and Lahore General Hospital - from April 15, 2022, to February 2023. The study targeted the general population visiting the outpatient departments of these hospitals. Using Cochran's formula, a sample size of 384 participants was determined. A convenient sampling technique was employed to select respondents, providing a representative snapshot of the population's characteristics and experiences during this period.

A self-structured questionnaire, adapted from the World Health Organization's (WHO) SAGE Vaccine Hesitancy Matrix, was utilized to assess COVID-19 perception among the general population. The questionnaire, translated into Urdu for clarity, comprised 45 questions evaluating contextual, individual, and group influences, as well as vaccine-specific issues. Responses were scored on a Likert scale (1-5), with total scores ranging from 0 to 225. Perception was categorized as poor (<50% of total score) or good (\geq 50% of total score). This tool enabled a comprehensive understanding of COVID-19 perception, facilitating the identification of factors influencing vaccine acceptance among the study participants.

Good Perception = \geq 50% and Poor Perception = <50%

This study adhered to ethical standards outlined in the 2008 Helsinki Declaration of the World Medical Association, ensuring informed consent from participants. They were free to withdraw at any time without conditions. Confidentiality and exclusive use for research purposes were guaranteed. Data analysis was conducted using SPSS 20 software. Descriptive statistics (mean, standard deviation, and percentages) summarized COVID-19 vaccine perception. Chi-square tests assessed associations between socio-demographic variables and perception, with p-values \leq 0.05 considered statistically significant.

3. Results

Table 1. Socio-Demographic Characteristics of the respondents

Socio-economic variables		Frequency	Percentage (%)
Gender	Male	166	43
	Female	219	57
Age (years)	18-25	121	31.4
	26-33	93	24.2
	34-41	70	18.2
	42-49	42	10.9
	50-57	39	10.1
	58-65	20	5.2
Average Household Monthly Income	<30,000	210	54.54
	31000-60,000	125	32.46
	60,001-90,000	30	7.80
	>90,000	20	5.20
Marital Status	Unmarried	126	33
	Married	259	67
Education Status	Illiterate	97	25.2
	Primary	22	5.7
	Middle	29	7.5
	Matric	72	18.7
	Intermediate	50	13
	Under-Graduate	3	0.8
	Graduate	77	20
	Master	29	7.5
	Postgraduate	1	0.3
	Not mentioned	5	1.3

The study's demographic breakdown revealed a majority of male participants (57%), with females comprising 43%. The age distribution showed a significant proportion of young adults, with 31.4% between 18-25 years, 24.2% between 26-33 years, and 18.2% between 34-41 years. The remaining participants fell into older age groups, with the smallest representation (5.2%) in the 58-65 years range.

In terms of socioeconomic status, the majority (54.54%) had very low income, followed by 32.46% with average income, 7.8% with medium income, and 5.2% with high economic status. Marital status indicated that 67% were married, while 33% were unmarried.

The education profile revealed a concerning proportion of illiteracy (25.2%). Among literate participants, 13% had intermediate education, 0.8% were undergraduates, 20% were graduates, 7.5% held Master's degrees, and a sole participant (0.3%) reported post-graduation.

Table 2. Perception Status Regarding COVID-19 Vaccine among Participants

Perception		Frequency	Percentage (%)
Perception Regarding COVID-19 Vaccine among Participants	Good	228	59
	Poor	157	41

According to Table 2, the majority of participants (59%, n=228) held a positive perception towards COVID-19 vaccination, while 41% (n=157) had a poor perception. This classification was based on the scoring criteria, where a score of $\geq 50\%$ indicated a good perception and $< 50\%$ indicated a poor perception.

Table 3. Association of Socio-economic Characteristics with the Perception Regarding Covid-19 Vaccine

Association of Socio-economic Characteristics with the Perception Regarding Covid-19 Vaccine					
	Socio-economic Characteristics	Perception Regarding COVID-19 Vaccine		Total	P Value
		Yes	No		
Gender	Male	130	8 9	21 9	0.948
	Female	9 8	6 8	16 6	
Age	18-25	8 0	4 1	12 1	0.006
	26-33	4 9	4 2	7 0	
	34-41	5 1	4 2	9 3	
	42-49	1 2	8	2 0	
	50-57	1 4	2 5	3 9	
	58-65	2 2	2 0	4 2	
Monthly Income	<30,000	127	8 3	21 0	0.811
	31000-60,000	7 0	5 5	12 5	
	60,001-90,000	1 8	1 2	3 0	
	>90,000	1 3	7	2 0	

Table 3 reveals the relationship between socio-economic characteristics and COVID-19 vaccine perception. Notably, gender showed no significant association (p-value=0.948), although males had slightly higher perception scores than females. Conversely, age

demonstrated a significant association (p -value=0.006), with younger participants exhibiting better perception compared to older adults. Regarding socioeconomic status, no significant correlation was found (p -value=0.811), indicating that perception of the COVID-19 vaccine is independent of economic standing.

4. Discussion

The current study revealed that a majority (59%) of participants held a positive perception towards the COVID-19 vaccine, while 41% had a poor perception. This finding aligns with a similar study conducted in Saudi Arabia, which also reported a predominantly favorable perception among participants. The consistency between these studies suggests an encouraging trend in public attitudes towards COVID-19 vaccination.⁹ Our study's findings are consistent with a Nepalese study, which also reported a favorable COVID-19 vaccine perception among the majority of its participants. Specifically, both studies found that over half of the respondents held positive views, with 59% in our study and 54% in the Nepalese study, demonstrating a similar trend in public attitudes towards COVID-19 vaccination.¹⁰

In contrast to our findings, several studies conducted in other countries have yielded divergent results, revealing a significantly higher prevalence of negative attitudes towards COVID-19 vaccination. Notably, some studies reported a substantial proportion of participants (up to 62%) holding poor perceptions of the vaccine, highlighting a stark disparity in public opinion compared to our study's 41% poor perception rate.¹¹⁻¹³

5. Conclusion

This study concludes that the general population holds a positive perception towards COVID-19 vaccination, with 59% viewing it as a protective measure. However, a notable 41% remain hesitant, emphasizing the need for improved vaccine acceptance. To address this, targeted interventions are crucial, including:

- Effective campaigns for widespread coverage
- Equitable vaccine distribution within available resources
- Policy planning to maximize reach
- Health-promoting behaviors through education and awareness campaigns via mass media

By addressing vaccine hesitancy and promoting health awareness, public perception can be further improved, ultimately enhancing vaccine uptake and protecting the community.

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