Original Research Article

COMMUNITY INSIGHTS REGARDING COVID-19 VACCINE UPTAKE

INTENTION VERSUS HESITANCY

ABSTRACT

Background: It is widely believed that vaccine hesitancy is prevalent. Achievement of COVID-19 vaccination depends upon public willingness towards immunization against this disease. This study aimed at revealing the underlying situation regarding community hesitancy for COVID-19 vaccine. This study was conducted to determine the level of acceptance of COVID-19 vaccine uptake among community and to seek association between socio-demographic factors and various perceptions about COVID-19 vaccine.

Methods and material: A cross-sectional study was carried out on 390 health-care providers and general Pakistani people of age 20 years and above through non probability snowball sampling. An online questionnaire was used to gather data. The socio-demographic variables along with various concepts regarding intentions to take vaccine as well as hesitancy for the same were tried to bring on the surface. The p-value ≤ 0.05 was considered statistically significant.

Results: This study reveals that 61.28% of participants desired to get vaccinated**.** There was significant association between the desire to get vaccination with participant's age & occupation (p-value < 0.01). The significant association between the positive views of the health-care providers and the other study subjects (p<0.00) is highly encouraging. The other socio-demographic variables have varied effect on vaccine uptake intentions and hesitancy and require further research on this subject.

Conclusion: The study conducted on three hundred & ninety respondents consistently reveals the significant association between the positive views of the health care providers and the other study subjects with the p-values lesser than 0.001. The study concludes that other socio-demographic fabric of the community showed varied effect on COVID 19 vaccine uptake intentions and hesitancy.

Recommendation: 1. The broad based qualitative research is strongly recommended in order to better seek the community insights & perceptions regarding this public health issue.

2. The large number of Community people although want to get vaccinated against covid-19, still there is a widespread prevalent doubts about this vaccine as being not so safe for them. Such type of doubts among community necessitate that some counselling sessions be conducted in order to remove uncertainties among common people. Motivations of people need to be raised so as to increase the coverage of covid-19 vaccination.

KEYWORDS: COVID-19 vaccination, intensions, vaccine hesitancy, vaccine uptake

1. INTRODUCTION:

The corona virus disease 2019 (COVID-19) pandemic has imposed a serious disease burden throughout the world in an unfortunate background of unavailability of any specific antiviral treatment for this disease [1-2]. Immunization is the most successful and cost-effective health intervention for controlling the infectious diseases. Similar is the case with vaccines against COVID-19 which remain of great importance to prevent and control COVID-19 [3-4-5]. However, the achievement and coverage of COVID-19 vaccination program depends on consumers' willingness and acceptance for the vaccination [6]. Therefore, it is very important to know the consumers' perceptions regarding vaccination against a newly emerged disease. However, public perception towards COVID-19 vaccine uptake is not available. Generally, consumers have queries regarding the safety and efficacy of the vaccine, adverse health outcomes etc. Besides

this, there are prevailing myths and misconceptions about the need for vaccination and lack of trust in the health system [7-8]. Compliance for immunization against a novel strain of influenza altogether changes due lack of knowledge among the community regarding vaccine-preventable diseases [9]. Misinformation leading towards vaccine hesitancy could put public health at risk in responding to the current crisis [10]. Vaccine hesitancy is characterized by unwillingness or delay in acceptance and even refusal of vaccination although the service of vaccination is available. This could be due to failure of effective public health messaging because people who are hesitant can be convinced towards the vaccines' safety, efficacy, and necessity [11].

With the surge of post marketing phase of COVID-19 vaccines in different countries, community reservations regarding uptake of this vaccine is highly expected. This situation is more serious in the scenario of using imported vaccines in Pakistan. This situation necessitates that researcher should come forward to have an insight into perceptions of common people regarding this vaccine.

This study helps in finding out false perceptions regarding COVID-19 vaccine; this will in turn help in designing simple health education messages to motivate common peoples about COVID-19 vaccine and ultimately it will increase the vaccine uptake rate in developing countries.

2. OBJECTIVES:

1.To determine the level of acceptance of COVID 19 vaccine uptake among community.

2 To seek association between socio-demographic factors & various perceptions about covid-19 vaccine among study subjects.

3. METHODOLOGY: This Cross-sectional study was carried out among 390 health care providers and general Pakistani people above age 20 years via non probability snowball sampling. An online predesigned close ended Google form questionnaire was used to gather data about the community perceptions regarding COVID 19 vaccination. The study was completed in 4 months after the approval of ERC. Respondents of either gender, above 20 years of age were included in the study. The data was analyzed by using SPSS 23.00 and the associations between variables were sought by applying chi-square test, with $p< 0.05$ set as cut-off for level of significance.

4. RESULTS: The demographic characteristics of three hundred & ninety respondents are summarized in Table I. There was slight males' preponderance in comparison to females i.e.52.31% males against 47.69% females. The age distribution of respondents was40.89 ± 3.54 years. The gender wise segregated age distribution was observed as 39.40 ± 4.34 years in males as compared to 42.39 ± 4.85 years in females. Majority of the respondents (95.90%) belonged to Sindh province and the participation from other provinces was only 4.10%. The 43.08% participants were health care providers while 56.92% were related to other occupations as shown in table 1.

TABLE 1: DEMOGRAPHIC DISTRIBUTION OF STUDY PARTICIPANTS

DEMOGRAPHIC CHARACTERISTIC		
AGE	**Age Groups**	**Frequencies (%)**
	20 - 30 years	228(58.46%)
	31- 40 years	55 (14.10%)
	41-50 years	54(13.84%)
	51 - 60 years	32 (8.20%)
	> 60 years	21(5.40%)
GENDER		
	Male	204(52.31%)
	Female	186(47.69%)
PROVINCE		
	Sindh	374(95.90%)
	Punjab	11(2.82%)
	Balochistan	5(1.28%)
OCCUPATION		
	Health care providers	168(43.08%)
	Other than health care providers	222(56.92%)

Table No: 2 shows that61.28% of participants said that they want to get COVID 19 vaccination**.**31.28% of participants said that COVID-19 vaccine provides full protection while others 68.72% said it doesn't provide full protection.46.2% said COVID-9 vaccine safe for all ages. The 42.56% participants were of opinion that COVID-19 vaccine cause severe side effect. The 12.56% respondents were afraid thatCOVID-19 vaccine cause infertility; while 16.56% thought that these vaccines contain microchips. The 27.44% showed their desire to get vaccinated after recovery of COVID -19.

TABLE 2: COMMUNITY INSIGHTS REGARDING COVID-19 VACCINE
n =390

Variable		Frequency (390)	%
Want to get COVD-19 vaccination	**Yes**	**239**	**61.28%**
	No	**151**	**38.72%**
COVID-19 vaccine provides full protection	**Yes**	**122**	**31.28%**
	No	**268**	**68.72%**
COVID-9 vaccine is safe for all ages	**Yes**	**180**	**46.15%**
	No	**210**	**53.85%**
COVID-19 has undergone adequate test	**Yes**	**153**	**39.23%**
	No	**237**	**60.77%**
COVID-19 vaccine causes severe side effects	**Yes**	**166**	**42.56%**
	No	**224**	**57.44%**
COVID-19 vaccine causes infertility	**Yes**	**49**	**12.56%**
	No	**145**	**37.18%**
	Not sure	**196**	**50.26%**
	Yes	**117**	**30.00%**
COVID 19 vaccine causes death	**No**	**273**	**70.00%**
COVID-19 vaccine contains a microchip	**Yes**	**63**	**16.15%**

	No	**327**	**83.85%**
COVID-19 vaccine can make sick with corona virus	**Yes**	**166**	**42.56%**
	No	**224**	**57.44%**
Still need to get vaccinated after recovery of COVID -19	**Yes**	**107**	**27.44%**
	No	**34**	**8.72%**
	Not had COVID 19	**249**	**63.84%**

Table No:3 shows the significant associations between the desire to get vaccination with participants age & their occupation (p- value < 0.01). Gender of participants revealed consistent in significant association with desire to get vaccination (p= 0.35), vaccine providing complete protection against COVID-19 (p = 0.52), vaccine safety for all ages (p= 0.13) and participants opinion about prior adequate testing of vaccine (p= 0.23). Contrasting to this, segregation of study participants into health care providers & other occupations consistently depicted significant associations with all the variables related to their opinion regarding uptake of vaccine i.e. p= < 0.01.

TABLE NO 3: SSOCIATION BETWEEN SOCIO-DEMOGRAPHIC PROFILE AND VIEWS ABOUT COVID-19 VACCINE SAFETY

SOCIO-DEMOGRAPHIC PROFILE	**Do you want to get COVID-19 vaccination? n=390**		**p-values**
AGE	Yes	No	
20 -30 years	160 (70.18%)	68 (29.82%)	
31 – 40 years	30 (54.55%)	25 (45.45%)	
41 -50 years	27 (50.00%)	27 (50.00%)	**< 0.01***
51 -60 years	12 (37.50%)	20 (62.50%)	
> 60 years	10 (47.62%)	11 (52.38%)	
GENDER			
Male	120 (58.82%)	84 (41.18%)	0.35
Female	119 (63.98%)	67 (36.02%)	
OCCUPATION			
Health care providers	136 (80.95%)	32 (19.05%)	**< 0.01***
Other than health care providers	101 (45.50%	121 (54.50%)	
	Do you think COVID- 19 vaccine provides full protection?		
AGE			
20 – 30 years	75 (32.89%)	153 (67.11%)	
31 – 40 years	17 (30.91%)	38 (69.09%	
41 – 50 years	19 (35.18%	35 (64.82%)	0.24
51 – 60 years	9 (28.12%)	23 (71.88%)	
> 60 years	2 (9.52%)	19 (90.48%)	
GENDER			
Male	64 (31.37%)	140 (68.63%)	0.52
Female	58 (31.18%)	128 (68.82%)	
OCCUPATION			
Health care providers	66 (39.28%)	102 (60.72%)	

Other than health care providers	56 (25.23%)	166 (74.77%)	**< 0.01***
	Do you think COVID- 19 vaccine is safe for all ages?		
AGE			
20 – 30 years	112 (49.12%)	116 (50.88%)	0.41
31 – 40 years	24 (43.63%)	31 (56.36%)	
41 – 50 years	25 (46.29%)	29 (53.71%)	
51 – 60 years	13 (40.63%)	19 (59.37%)	
> 60	6 (28.58%)	15 (71.42%)	
GENDER			
Male	100 (49.02%)	104 (50.98%)	0.13
Female	80 (43.01%)	106 (56.99%)	
OCCUPATION			
Health care providers	102 (60.72%)	66 (39.28%)	**< 0.001***
Other than health care providers	78 (35.13%)	144 (64.87%)	
	Do you think that COVID-19 has undergone adequate test?		
AGE			
20 – 30 years	100 (43.85%)	128 (56.15%)	0.10
31 – 40 years	23 (41.82%)	32 (58.18%)	
41 – 50 years	15 (27.78%)	39 (72.22%)	
51 – 60 years	10 (31.25%)	22(68.75%)	
> 60 years	4 (19.05%)	17 (80.95%)	
GENDER			
Male	76(37.25%)	128(62.75%)	0.23
Female	77 (41.39%)	109(58.60%)	
OCCUPATION			
Health care providers	85 (50.59%)	83(49.41%)	**< 0.001***
Other than health care providers	68(30.64%)	154(69.36%)	

Table No 4 shows that associations between nature of occupation & perceived health hazards of COVID -19 vaccine ere all statistically significant ($p < 0.001$) except the perception that COVID-19 vaccines contain the microchip for population tracking ($p=0.38$). the gender of the respondents showed no significant association with any of the perceived health hazards; while age of the respondents revealed significant results with perceptions of the respondents that the vaccine may lead to death ($p< 0.001$).

TABLE NO 4: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC PROFILE AND VIEWS ABOUT PERCEIVED HEALTH HAZARDS OF COVID-19 VACCINE

SOCIO-DEMOGRAPHIC PROFILE	**Do you think that COVID_19 vaccine cause severe side effect? n=390**		**p - value**
AGE	**Do you think that COVID_19 vaccine cause severe side effect? n=390**		
	YES	**NO**	
20 – 30 years	84 (36.85%)	144 (63.15%)	

31 – 40 years	23 (41.81%)	32 (58.19%)	0.33
41 – 50 years	28 (51.85%)	26 (48.15%)	
51 – 60 years	19 (59.37%)	13 (40.63%)	
> 60 years	12 (57.15%)	9 (42.85%)	
GENDER			
Male	89 (43.62%)	115 (56.38%)	0.65
Female	77 (41.39%)	109 (58.61%)	
OCCUPATION			
Health care providers	47 (27.97%)	121 (72.03%)	**< 0.001***
Other than health care providers	119 (53.61%)	103 (46.39%)	

Do you think that COVID-19 vaccine causes infertility?

AGE	**Yes**	**No**	**Not sure**	
20 -30 years	20(8.78%)	95 (41.66%)	113(49.56%)	0.14
31 – 40 years	10 (18.19%)	15 (27.27%)	30 (54.54%)	
41 -50 years	9 (16.66%)	20 (37.05%)	25 (46.29%)	
51 -60 years	5 (15.62%)	11 (34.37%)	16(50.01%)	
> 60 years	5 (23.82%)	4 (19.04%)	12 (57.14%)	
GENDER				
Male	26 (12.75%)	74 (36.27%)	104 (50.98%)	0.92
Female	23 (12.36%)	71 (38.17%)	92 (49.47%)	
OCCUPATION				
Health care providers	10 (5.95%)	80 (47.63%)	78 (46.42%)	**< 0.001***
Other than health care providers	39 (17.58%)	65 (29.27%)	118(53.15%)	

Do you think that COVID - 19 vaccine can cause death ?

AGE	Yes	No	
20 -30 years	42 (18.43%)	186 (81.57%)	**< 0.001***
31 – 40 years	24 (43.63%)	31 (56.37%)	
41 -50 years	24 (44.45%)	30 (55.55%)	
51 -60 years	16 (50.00%)	16 (50.00%)	
> 60 years	11 (52.38%)	10 (47.62%)	
GENDER			
Male	68 (33.34%)	136 (66.66%)	0.13
Female	49 (26.35%)	137 (73.65%)	
OCCUPATION			
Health care providers	24 (14.28%)	144 (85.72%)	**< 0.001***
Other than health care providers	93 (41.89%)	129 (58.11%)	

Do you think that COVID-19 vaccine contains a Microchip to track population?

AGE	**Yes**	**No**	
20 -30 years	32 (14.04%)	196 (85.96%)	0.42
31 – 40 years	10 (18.19%)	45 (81.81%)	
41 -50 years	12 (22.22%)	42 (77.78%)	
51 -60 years	7 (21.87%)	25 (78.13%)	
> 60 years	2 (9.53%)	19 (90.47%)	
GENDER			
Male	32 (15.68%)	172 (84.32%)	0.79
Female	31 (16.66%)	155 (83.34%)	
OCCUPATION			

Health care providers	24 (14.28%)	144 (85.72%)	
Other than health care providers	39 (17.56%)	183 (82.44%)	0.38

Table No 5 consistently reveals significant associations with occupational status of participants and their views regarding COVID-19 vaccine uptake ($p < 0.001$) while other demographic variables consistently show insignificant results for the same outcome variables.

TABLE NO 5: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC PROFILE AND VIEWS ABOUT COVID-19 VACCINE UPTAKE

SOCIO-DEMOGRAPHIC PROFILE	**Do you think that COVID-19 vaccine can make you sick with corona virus? n=390**			**p - value**
AGE	Yes		No	0.10
20 -30 years	80 (35.08%)		148 (64.92%)	
31 – 40 years	28 (50.91%)		27 (49.09%)	
41 -50 years	30 (55.55%)		24 (44.45%)	
51 -60 years	18 (56.25%)		14 (43.75%)	
> 60 years	10 (47.2%)		11 (52.38%)	
GENDER				
Male	82 (40.19%)		122 (59.81%)	0.32
Female	84 (45.16%)		102 (54.84%)	
OCCUPATION				
Health care providers	46 (27.38%)		122 (72.62%)	**< 0.001***
Other than health care providers	120 (54.06%)		102 (45.94%)	
AGE	**If you have already had COVID-19 and recovered, do you think you still need to get vaccinated?**			
	Yes	**No**	**Not Had COVID-19**	
20 – 30 years	69 (30.26%)	17 (7.46%)	142 (62.28%)	0.27
31 – 40 years	16 (29.09%)	2 (3.64%)	37 (67.27%)	
41 – 50 years	11 (20.37%)	6 (11.11%)	37 (68.52%)	
51 – 60 years	6 (18.75%)	6(18.75%)	20 (62.50%)	
> 60 years	5 (23.81%)	3(14.28%)	13 (61.91%)	
GENDER				
Male	55 (26.96%)	18(8.83%)	131 (64.21%)	0.97
Female	52 (27.95%)	16(8.61%)	118(63.44%)	
OCCUPATION				
Health care provider	67(39.88%)	12 (7.15%)	89 (52.87%)	**< 0.001***
Other than health care providers	40(18.01%)	22(9.91%)	160(72.07%)	

5. DISCUSSION:

Vaccines are the most optimal public health strategy to prevent infectious diseases [12]. The study aimed to link vaccine hesitancy with related conspiracy thinking of consumers. Despite the fact that vaccination is considered as successful contributor to improvement of health and prevention of diseases, vaccine hesitancy contributes towards reduced uptake [13].

Encouragingly, the current study showed that 61.28% of total population wants to get COVID-19 vaccination. Increased vaccine acceptance in relation to vaccine effectiveness was found in other studies. [14] Among them 70% (p<0.001) of young population wanted to get vaccination; Salam et al in their study conducted in eleven counties also endorsed the same findings reporting age of study subjects as being significant factor contributing towards desire to get vaccinated [15]. In this study female (63.97%) participants were found willing to get vaccination than male while males were the most common recipients of COVID-19 vaccine in another study [15].

This study shows that majority of the health care providers i.e. 80.95% wanted to get COVID 19 vaccination that revealed statistically significant difference in distribution of health care providers and particpants related to other occupation (p<0.001) as they are at higher risk of get infected with COVID 19. Study of indonesia(Harapan) also support this study [16]. Another systematic review involving eight studies regarding acceptancce of COVID 19 vaccine conducted on healthcare workers and three surveys reported vaccine acceptance rates below 60%, with the highest rate being among doctors in Israel (78.1%) and the lowest vaccine acceptance rate (27.7%) reported among healthcare workers in the Democratic Republic of the Congo (DRC). Among the three studies conducted on parents/guardians, the vaccine acceptance rates were more than 70%. Similarly, two studies conducted in Malta on the university students revealed the vaccine acceptance rate as 57.3%; in this study the university staff was excluded. The study conducted by Salam et al however showed the vaccine acceptance rate as 86.1% in Italy [15]. The wide spread continuum of any vaccine uptake largely depends upon the level of acceatability of latter by the community [17].

Widespread online misinformation has been observed during current pandemic period and could seriously intimidate vaccine acceptance in countries where accurate evidence-based information is not readily accessible [18]. To combat this situation, it is necessary to have a complete knowledge about the demographics of those who pose refusal towards a newly introduced vaccine [19].

Encouragingly, the prevalence of belief towards the COVID 19 vaccine providing full protection was 31.28%; overall concern towards vaccine causing side effects was 42.56%. Among study subjects 58.18 % participant of age group 31 years to 40 years, 56.38 % males, 58.61% females and 72.03% of health care providers ere of the opinion that COVID-19 vaccine does not cause severe side effects. While 36.27 % males38.17% female and 47.42% health care providers stated that COVID-19 vaccine does not cause infertility. The views of health care providers however were statistically significant (p<0.001). Responding to the query regarding microchip attached with the COVID-19 vaccine for tracking the population, 84.32% of males and 85.72% of the health care providers rejected this perception. Contrasting to this another study conducted in Jordon and Kuwait by sallam et al showed that around one-quarter of the study subjects dealt it as misinformation that COVID

19 vaccines causes infertility and it is used to implant microchips into humans or as a population-control scheme [20].

Concerning the claim that the vaccine can cause death, 81.57% of subjects of 20-30 years of age, 66.66% males,73, 65% female and 85.72% health care providers rejected this claim with the p-values as p <0.001, p=0.13 and p< 0.001 respectively. This is a very important piece of information arising from current study because it has been observed that understanding who will take up a vaccine, who plans not to or are uncertain, and why, is critical to designing a successful vaccination programme [21].

The current study showed 42.60% prevalence of the perception thatCOVID-19 vaccine can cause or enhance the disease in which 35.08% participants were younger than thirty years (p= 0.10), 40.19% were males against 45.16% females (p=0.32), 27.38% health care providers (p<0.001).

Another study with similar objectives showed 82.7% respondent thought about possibility of being re-infected after recovering from a previous COVID-19 infection and 1.1% respondent said they already had COVID-19, so they think they are immune to the disease [14]. Vaccine-associated enhanced disease has been rarely encountered with existing vaccines. [22].

Taken as a whole, the main reasons given for vaccine hesitancy among community are fears about side effects (infertility) and future adverse effects (i.e. death, microchip installation for tracking population) of a COVID-19 vaccine. Study on international survey among low and middle countries The main reasons of vaccine refusal were fear of side effects (41.2%) and participants from Asian countries (Malaysia, Thailand, and Bangladesh) recorded a high percentage for fear of COVID-19 vaccine side effects [14]. Study of Lucia VC et all also showed the similar contributing factors to vaccine hesitancy that were concerns about serious vaccine side effects and lack of the information [23]. The results relating to uncertainty and misconceptions about COVID-19 point to areas that could be usefully targeted by public information campaigns [24].

6. **STRENGTH:**

This is the first large representative study conducted in Pakistan about vaccine uptake or hesitancy and the reasons about why a COVID-19 vaccine has been accepted or refused. The results inferred from this study may be utilized in formulation of behavior change strategies in community so as to enhance the COVID-19 uptake.

7. CONCLUSION:

The study conducted on three hundred & ninety respondents consistently reveals the significant association between the positive views of the health care providers and the other study subjects with the p-values lesser than 0.001. The study concludes that other socio-demographic fabric of the community showed varied effect on COVID 19 vaccine uptake intentions and hesitancy.

8. Recommendations:

1. The broad based qualitative research is strongly recommended in order to better seek the community insights & perceptions regarding this public health issue.

2. The large number of Community people although want to get vaccinated against covid-19, still there is a widespread prevalent doubts about this vaccine as being not so safe for them. Such type of doubts among community necessitate that some counselling sessions be conducted in order to remove uncertainties among common people. Motivations of people need to be raised so as to increase the coverage of covid-19 vaccination.

Institutional Review Board Statement

Ethics approval was obtained from Liaquat University of Medical and Health Sciences Institutional Review Board.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, RAFAINA SHAH., upon reasonable request.

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