

To vaccinate or not Against Covid-19: A Cross Sectional Survey Among Dental Health Care Workers of Pakistan

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ABSTRACT

Objective: Therefore this study was conducted to assess the awareness status, acceptability and apprehensions associated with corona virus vaccine among dental health care practitioners.

Method: The Multicenter cross sectional survey was conducted on 350 respondents from March 1st till March 31st 2021 based on non-probability consecutive sampling technique after confirming their eligibility. The sample size of 318 respondents was calculated. Binary logistic regression analysis was used to assess the determinants (Gender, Income level, Designation, History of self/family member for COVID-19 infection and Apprehensions) of vaccine acceptability.

Results: Binary logistic regression analysis suggested 3.6 times more acceptance of COVID-19 Vaccination in males compared to females (OR=3.594, 95% CI, 1.96-6.59, p<0.001), Participants who were not apprehended about the vaccination showed 5.75 times more acceptance (OR=5.745, 95% CI, 2.826-11.628, p <0.001), However being dental students showed negative prediction for the acceptance level (OR=0.172, 95% CI, 0.31-0.965, p value=0.045).

Conclusion: In conclusion, findings of the Current study suggested low overall acceptance of COVID-19 Vaccination among dental healthcare workers (40.6%). The highest acceptance was found in Postgraduate residents (70.7%). The vaccine acceptance was greater in males (OR=3.594) and respondents who were not apprehended about the vaccine (OR=5.75).

Keywords: COVID-19, Dental healthcare workers, Vaccination, Coronavirus

INTRODUCTION

The COVID-19 infection due to SARS-COV 2 virus emerged in 2019. With its rapid transmissibility across the globe, it has been declared as pandemic by World Health Organization (WHO).¹ The COVID-19 infection poses great threat to the human race physically, mentally and socio-economically.^{2,3} Symptoms of the disease include acute respiratory distressing general with varied presentation in different age groups and ethnicities.⁴

Rapid transmissibility of virus and its mortality rate in some countries have exceeded more than 15%,⁵ thus requires drastic measures for either its prevention or cure.⁶ Vaccines against corona-virus have been developed by various companies with efficacy ranging from 50% to 95%.⁷ Evidence suggested that healthcare workers were among the most prone individuals (RR 7.43) for contracting COVID-19.⁸ Provision of the vaccine to the frontline healthcare workers on priority basis is an utmost requirement for their greater risk of exposure and also for the stability of healthcare systems.⁹ Awareness and acceptance of immunization by the healthcare workers become even more important as advocacy group for the general public.¹⁰ However the opinion about the acceptability of vaccine against corona virus seems divided in the reporting literature for both the general public and healthcare workers.^{11, 12,13}

Hesitation in acceptance of vaccines is a worldwide phenomenon and remains always an obstacle against the viral diseases prevention programs especially in underdeveloped countries.^{14, 15} The primary concerns reported in the literature behind apprehension about the acceptance of the vaccine against COVID-19 infections are, the use of terms such as emergency measures, authorization by political personals, a highly accelerated approval rates, safety issues and lack of effectiveness.^{16, 17}

To date no study has been conducted in Pakistan to identify the perception of Dental healthcare workers towards COVID-19 vaccination. Therefore this study was conducted to assess the awareness status, acceptability and apprehensions associated with corona virus vaccine among dental health care practitioners.

METHODOLOGY

The Multicenter cross sectional survey was conducted on 350 respondents from March 1st till March 31st 2021 based on non-

probability consecutive sampling technique after confirming their eligibility. Participants completed the survey forms manually on printed questionnaires. Survey items were based on reported literature with modifications according to the local context.¹⁸ The survey aimed to measure the aspects related to demographics, professional, socioeconomic status, previous exposure of COVID-19 virus, awareness and attributes related to apprehension about COVID-19 vaccine among dental healthcare workers.

Sample size: The sample size of 318 respondents was calculated by expected 70.25%¹⁹ acceptability rate of corona virus vaccine in healthcare workers of the local population. The sample was increased by 10% for missing responses, thus including 350 participants.

Inclusion exclusion criteria: The eligibility criteria for the respondents were age range 18 to 55 years. Dental healthcare professionals who were directly involved in the patient care were recruited from three private and one government dental institute, that include consultants, postgraduate residents, general dentists, third and final year BDS students. Survey forms with one or more missing answers were excluded from the study.

Data analysis: The Data was compiled using SPSS version (25.0). Demographic data such as age, gender and designation were assessed using descriptive statistics. Responses as subjects already vaccinated, willing to get vaccinated were considered as acceptance of the vaccine with vice versa answers for the non-acceptance. Acceptance rate of the vaccination was described in terms of frequency and percentages. Likelihood ratio (Chi-square test) was used to evaluate association between vaccine acceptability and studied factors. Thematic recoding was done for open ended question about reason of apprehension behind non acceptance of corona virus vaccine. The data was presented in terms of frequency and percentage. Binary logistic regression analysis was used to assess the determinants (Gender, Income level, Designation, History of self/family member for COVID-19 infection and Apprehensions) of vaccine acceptability.

RESULTS

Three hundred and fifty survey forms were included in the study out of which 8 forms were excluded due to one or more missing

values thus including 342 responses. Demographic characteristics of the sample were tabulated in Table 1.

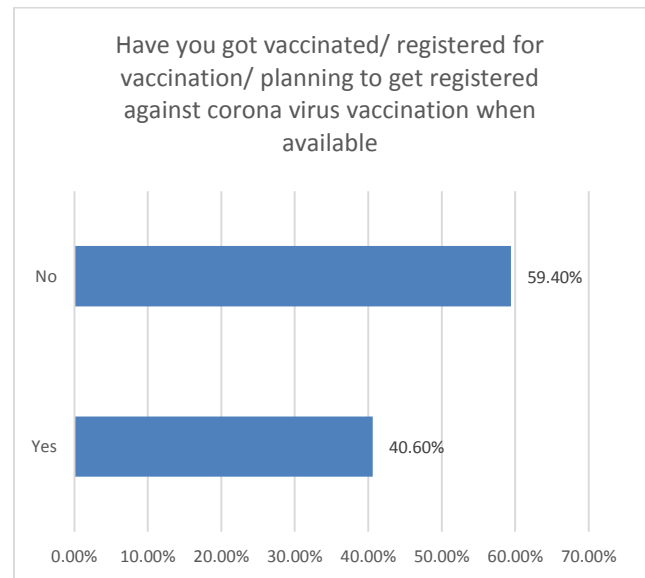
Table 1: Demographics of the study sample.

Sociodemographic characteristics		N=342(%)
Gender	Male	129 (37.7)
	Female	231 (62.3)
Age	18-25 years	219(64.0)
	26-35 years	108(31.6)
	36-45 years	13(3.8)
	46 years- above	2(0.6)
Designation	dental students	151(44.2)
	dental surgeons	112(32.7)
	Post graduate students	58(17.0)
	specialist/ consultant	21(6.1)
Income level	below 40,000	39(11.4)
	40,000-70,000	73(21.3)
	71,000-1lac	51(14.9)
	Above 1 lac	26(7.6)
	Not Earning	153(44.7)

Among 342 subjects, 40.6% showed acceptance of the vaccine.

Which was found highest in Post graduate residents (70.7%) followed by Consultants/ specialists (66.7%) while Dental surgeons showed (47.3%) acceptance rate, lowest acceptance (20.5%) was found in Dental undergraduates (p <0.001) (Table 2). There was greater level of vaccine acceptance by males (Male= 55%, Female=31.9%, P<0.001). Negative prior history or lack of knowledge about COVID- 19 exposure to the one's self or the family member was associated with the non-acceptance of the vaccine (Positive history= 51.8%, No History=66.3%, I don't know=

75%, p = 0.018) Respondents who did not reported any apprehension about the COVID-19 vaccine has greater acceptance level. (Apprehended but accepted :(32.5%), Apprehended and not accepted (67.5%), p <0.001)



Graph 1: Acceptance rate of Vaccine among Dental Health care workers

Table 2: Association of Vaccine acceptance with variables.

Variables		Yes N=139(%)	No N= 203(%)	Sig.
Gender	Male	71(55.0)	58(45.0)	<0.001
	Female	68(31.9)	145(68.1)	
Age	18-25 years	59(26.9)	160(73.1)	<0.001
	26-35 years	67(62.0)	41(38.0)	
	36-45 years	11(84.6)	2(15.4)	
	46 years- above	2(100)	0(0)	
Designation	Dental students	31(20.5)	120(79.5)	<0.001
	Dental surgeons	53(47.3)	59(52.7)	
	Post graduate students	41(70.7)	17(29.3)	
	Specialists/ consultants	14(66.7)	7(33.3)	
Income level	below 40,000	17(43.6)	22(56.4)	<0.001
	40,000-70,000	32(43.8)	41(56.2)	
	71,000-1lac	38(74.5)	13(25.5)	
	Above 1 lac	15(57.7)	11(42.3)	
	Not Earning	37(24.2)	116(75.8)	
History of COVID-19 infection (Self/ Family member)	Yes	81(48.2)	87(51.8)	0.018
	No	56(33.7)	110(66.3)	
	I don't know	2(25.0)	6(75.0)	
Would you accept the vaccine if considered mandatory by your institution	Yes	117(47.6)	129(52.4)	<0.001
	No	17(26.6)	47(73.4)	
	I don't know	5(15.6)	27(84.4)	
Apprehension	Yes	82(32.5)	170(67.5)	<0.001
	No	57(63.3)	33(36.7)	

Binary logistic regression analysis suggested 3.6 times more acceptance of COVID- 19 Vaccination in males compared to females (OR=3.594, 95% CI, 1.96-6.59, p<0.001), Participants who were not apprehended about the vaccination showed 5.75 times more acceptance (OR=5.745, 95% CI, 2.826-11.628, p <0.001), However being dental students showed negative prediction for the acceptance level (OR=0.172, 95% CI, 0.31-0.965, p value=0.045).

Table 3: Binary logistic regression analysis.

Variables in the Equation									
	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)		
							Lower	Upper	
Gender									
Male	1.279	.309	17.106	1	<0.001**	3.594	1.960	6.590	
Female	Reference								
Income Level			4.461	4	.347				
below 40,000	-.238	.636	.140	1	.708	.788	.226	2.742	

40,000-70,000	-.619	.602	1.056	1	.304	.539	.166	1.753
71,000-1lac	.393	.708	.307	1	.579	1.481	.370	5.934
Above 1 lac	-.974	.754	1.671	1	.196	.378	.086	1.654
Not Earning	Reference							
Designation								
Dental students	-1.759	.879	4.002	1	0.045*	.172	.031	.965
Dental surgeons	.194	.793	.060	1	.806	1.215	.257	5.745
Post graduate students	.377	.885	.181	1	.670	1.458	.257	8.262
Specialists/ Consultants	Reference							
History of COVID-19 infection (Self/ Family member)								
Yes	.697	.959	.528	1	.467	2.008	.306	13.155
No	-.272	.961	.080	1	.778	.762	.116	5.016
I don't Know	Reference							
Acceptance of vaccine after Institutional mandatory requirement								
Yes	.876	.570	2.364	1	.124	2.401	.786	7.332
No	-.274	.652	.177	1	.674	.760	.212	2.728
I don't know	Reference							
Apprehension								
Not Apprehended	1.748	.362	23.325	1	<0.001**	5.745	2.826	11.678
Apprehended	Reference							

a. Variable(s) entered on step 1: GENDER, age group, income level, designation, family member, institution, no reason.

Apprehension about the vaccine was reported mainly because of the mistrust on government approved vaccine (36.5%), disbelief on the authenticity of the corona virus vaccine (34.5%) followed by concerns over adverse effects (29.4%), while (6.8%) respondents considered that corona virus vaccine couldn't be having same efficacy against different strains. Least percentage of apprehension was about effect of vaccine in co-morbidities (1.6%) and cost issues (2.4%).

Table 4: Reasons associated with apprehensions of COVID-19 vaccine.

Reasons for apprehension N=252(73.7%)	Responses		Percent of Cases
	N	Percent	
1. I don't believe in the authenticity/ Efficacy of corona virus vaccine	87	26.9%	34.5%
2. Anxiety issues	27	8.3%	10.7%
3. Cost issues	6	1.9%	2.4%
4. Serious adverse effects	74	22.8%	29.4%
5. Mistrust on government approved vaccine	92	28.4%	36.5%
6. Different strains couldn't be having same efficacy and results	22	6.8%	8.7%
7. Lack of long term evidence	12	3.7%	4.8%
8. Adverse effect of vaccine due to co-morbidities	4	1.2%	1.6%
Total	324	100.0%	128.6%

DISCUSSION

The present study aimed to evaluate the acceptance of and the reasons associated with the apprehension found against the Corona-virus vaccination among dental health care professionals of Pakistan. Till to date no such study has been reported in the country evaluating the perception of the dental practitioners. Vaccine hesitancy among dental healthcare professionals is a crucial issue that needs to be addressed on urgent basis as their greater risk of exposure due to close proximity to the patient's mouth.²⁰ Positive perception and increased awareness of Dental healthcare workers can play a vital role in influencing the vaccine acceptance by general public.²¹

The current study showed 40.6% acceptance rate of the COVID -19 vaccine among dental healthcare workers. Even though the results of the current study were very much similar to the findings reported for the dentists in Malta, where the likelihood of COVID-19 vaccine acceptance was 44.2%.²² Our results were inconsistent with the studies done by Zigron A, et al.²³ and Belingheri M²⁴, who reported 85% and 82% acceptance level among dentists respectively. The variation in the results could be

due to the difference in the age groups distribution of the sample compared to the current study. Furthermore, both the earlier studies were representing intention as an indicator of acceptance of the vaccine while the evidence suggested that estimated intention to get vaccinated could be higher than the actual acceptance level.²⁵

It was found that 79.5% dental students were hesitant and negatively associated with the acceptance of the vaccine. (OR 0.172, 95% CI, 0.31-0.965, p=0.045). Whereas Kelekar AK.²⁶ and Mascarenhas AK²⁷ reported that 45% and 44% dental students were hesitant regarding the vaccine. A possible reason for the inconsistent findings of these studies with ours might be the non-response bias as the response rate for both these online surveys were just 18%.

The current study reported increased acceptance of COVID-19 vaccine among males (55.0%, OR=3.594) that is in line with the previously reported findings.^{25, 28}

The present study determined absence of apprehensions as major determinant of vaccine acceptance (OR=5.745, 95% CI, 2.826-11.628, p <0.001), that is in agreement with the past evidence.^{29, 30}

Determinants of increased apprehension about the COVID-19 vaccine concluded following reasons, "Mistrust on the government approved vaccine" (36.5%) followed by the low confidence on the "authenticity and efficacy of the available vaccine" (34.5%) and serious adverse effects of the vaccine (29.4%). Literature have reported similar concerns about the available vaccination against SARS-Cov2 virus in both the general public and the healthcare workers, pointing out towards socio-political context, efficacy and safety reports regarding available vaccines as major considerations for successful vaccination campaigns in the current pandemic.³¹⁻³⁴

Strengths and limitations: The strength of the present study was that it was conducted after the official availability of the COVID-19 vaccine with efficacies and possible adverse effects of the vaccines has been reported thus giving more authenticity to the responses and need of awareness related to the apprehensions still found in dental healthcare workers.

The limitation of the study was the small sample size that leads to wide confidence Intervals (CIs) for few variables. Future studies with greater sample size are recommended.

CONCLUSION

In conclusion, findings of the Current study suggested low overall acceptance of COVID-19 Vaccination among dental healthcare workers (40.6%). The highest acceptance was found in Postgraduate residents (70.7%). The vaccine acceptance was

greater in males (OR=3.594) and respondents who were not apprehended about the vaccine (OR=5.75).

The primary concerns of apprehension was “mistrust on government approved vaccine”, “authenticity and efficacy issues of the vaccine” followed by “fears of Adverse effect associated with the vaccine”

Vaccine hesitancy was listed as one of the major threat to global health by WHO.³⁵ The control of this pandemic required strategic information delivery by trusted sources with scientific evidence to alleviate the concerns associated with the vaccine among dental health care workers, for their own safety and likely recommendation to general public.

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