(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 4, Issue 4, Page No: 253-260
July-August 2021

IJMSCR

Assessment of Anxiety and Confidence in Orthodontic Patients to Visit Dental Clinic Before and After COVID-19 Vaccination- A Cross Sectional Study

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Aim: To assess the anxiety and confidence levels in orthodontic patients to visit Dental clinic before and after COVID-19 vaccination

Materials and methods: It were a cross sectional study. Dental and medical students who are vaccinated are included in this study. Questionnaires were distributed to vaccinated orthodontic patients via Google forms. The questionnaire assessed knowledge of patients about COVID 19, anxiety and confidence levels of patients to visit orthodontist before and after vaccination by using 5-point Likert anxiety and confidence scales.

Results: A total of 211 responses were obtained. 31 males (14.69%) and 180 females (85.31%) with a mean age of 21.2 years. Statistically significant decrease in anxiety levels were observed after vaccination (P value<0.001). Patients demonstrated statistically significant increase in confidence levels after vaccination. (P value<0.001)

Conclusions: COVID 19 Vaccination has decreased the anxiety levels and increased the confidence levels in orthodontic patients to visit orthodontist.

Keywords: COVID-19, Vaccine, Anxiety, Confidence

INTRODUCTION

Corona virus disease 2019 is caused by a new strain of corona virus SEVERE ACUTE RESPIRATORY SYNDROME CORONA VIRUS 21. In the absence of any disinfection procedures SARS-CoV-2 has a half-life of 6.2 hours on plastic surfaces and 5.6 hours on stainless steel surfaces. The mode of transmission of COVID 19 is primarily via droplet and aerosol spread by coughing, sneezing, talking and direct contact with droplet and aerosol contaminated surfaces2,3. COVID 19 pandemic has significant impact on orthodontic treatments. Many Orthodontic procedures such as bonding, debonding, interproximal reduction, replacement of broken brackets are capable of generating aerosols. This issue possesses a consequent risk of cross infection patient to patient, patient to dental health care provider and dental health care

provider to another dental health care provider. If meticulous infection control measures are not employed, there is a fear of contracting the virus during orthodontic appointment among the orthodontic patients4,5. Patients receiving orthodontic treatment require multiple check-up visits to their orthodontist to adjust their appliances over a long-lasting process which may take up to more than two years, therefore millions of orthodontic patients weren't able to receive the care they needed when this pandemic and the closing of clinics that took place. This led to higher level of anxiety and mental distress among orthodontic patients in comparison with patients receiving other types of dental treatment6. It is of utmost importance that orthodontic professionals must give importance to psychological wellbeing of patients apart from treating them physically. During the initial period of the COVID 19 disease, the efforts were concentrated on preventing and slowing down transmission. Global analysis of herd immunity in COVID-19 has shown the urgent need for efficacious COVID-19 vaccines. Free vaccination against COVID-19 commenced in India on January 16, 2021, and the Government is urging all of its citizens to be immunized, in what is expected to be the largest vaccination program in the world. Out of the eight COVID-19 vaccines that are currently under various stages of clinical trials in India, four were developed in the country. India's drug regulator has approved restricted emergency use of Covishield (the name employed in India for the Oxford-AstraZeneca vaccine) and Covaxin, the homegrown vaccine produced by Bharat Biotec7. The AIM of this study is to assess the anxiety and confidence levels in orthodontic patients to visit orthodontist before and after COVID 19 vaccination.

MATERIALS AND METHODS:

A cross-sectional study was carried out with a web-based questionnaire using docs.google.com/forms. Ethical approval was obtained from Ethical Committee of Government Dental College and Hospital, Kadapa, Andhra Pradesh, India. The target population was Dental and Medical students who were vaccinated and currently undergoing orthodontic treatment. The questionnaire was structured into four sections, the first section consisted of personal information (age, gender, and type of appliance), the second section was to assess the perception of COVID 19 infection, the third section consisted of vaccine details, the fourth section was to assess anxiety levels and the fifth section was to assess the confidence levels. Anxiety is measure by Likert anxiety scale. This one-item scale consisted of five evenly spaced numbers each anchored to a level of anxiety (1 = not at all anxious, 2 = a little anxious, 3 = moderately anxious, 4 = very anxious, 5 = extremely anxious). Confidence levels are measured with Likert confidence scale. This one-time scale consisted of five evenly spaced numbers each anchored to a level of confidence (1 = not confident at all, 2 = slightly confident, 3 = somewhat confident, 4 = fairly confident, 5 = somewhat confident). To validate the questionnaire, first it was sent to an experienced orthodontist, pedodontist and community and preventive dentist to evaluate whether the questions effectively captured the purpose of the study. The questionnaire was uploaded to the website and the generated link was sent to class representatives in each college and was asked to share in class groups via mobile phone application (wats app messenger).

The responses were obtained over a period of three weeks. This was an open voluntary questionnaire and all questions were mandatory. Consent was obtained if the respondent clicked on YES for the question, Do you consent to participate in this study? Statistical analysis is performed by SPSS software. Comparison of anxiety and confidence levels before and after COVID 19 vaccination was done by Wilcoxon matched pair test.

RESULTS:

The demographic characteristics of study showed 211 participants aged 19-23 years with a mean age of 22 and SD is 1.49. There were 31 males (14.69%) and 180 females (85.31%) suggesting a higher female predominance. Most of the respondents were undergoing fixed orthodontic treatment 142 (67.30%) and 48 (22.75) were undergoing removable orthodontic treatment (Table 1). The risk assessment and attitude of patients to orthodontic treatment was assessed. 107 participants (50.7%) perceived COVID 19 to be very dangerous infection. 89 (42.18%) participants considered orthodontic patients are moderately vulnerable to COVID 19 and 36 (17.06%) participants considered orthodontic patients are severely vulnerable to COVID 19 infection. 163 (77.25%) participants had the fear that they may get infected from COVID 19 from contaminated surfaces

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while visiting orthodontist and 145(68.72%) participants had the fear of getting infected while travelling to dental clinic (Table 2). All the participants were vaccinated. 159(75.36%) participants were vaccinated with COVISHIELD and 51(24.64%) participants were vaccinated with COVAXIN. 138(65.40%) received both first and second doses and 73(34.60%) received only first dose. 107(50.71%) participants felt the vaccine to be very effective against COVID 19 and 65(30.81%) felt the vaccine to be moderately effective (Table3). Anxiety levels of participants measured by Likert anxiety scale1-5 before and after vaccination to visit orthodontist. Before vaccination 7(3.32%) participants were extremely anxious, 16 (7.58%) were very anxious, 59(27.96%) were moderately anxious, 68(32.23%) were little anxious, 61(28.91%) were not at all anxious. After vaccination 144(68.25%) were not at all anxious, 39(18.48%) were little anxious, 13(6.16%) were moderately anxious, 11 (5.21%) were very anxious and 4 (1.90%) extremely anxious (Table 4). On comparison of anxiety before and after the vaccination by Wilcoxon matched pair test the mean score of anxiety levels before the vaccination was 4.75 and after the vaccination it reduced to 3.37 indicating the reduction in anxiety levels which was statistically significant with p- value <0.001(Table 5)

Confidence levels of participants measured by Likert confidence scale1-5 before and after vaccination to visit orthodontist. Before vaccination 54(25.59%) participants were not confident at all, 51 (24.17%) were slightly confident, 55(26.07%) were somewhat confident, 38(18.01%) were fairly confident, 13(6.16%) were completely confident. After vaccination 10(4.74%) participants were not confident at all, 41 (19.43%) were slightly confident, 40(18.96%) were somewhat confident, 77(36.49%) were fairly confident, 43(20.38%) were completely confident. Out of 211, 184(87.20%) participants were confident and 27(12.80%) were not confident to continue orthodontic treatment after vaccination (Table 6). On comparison of confidence levels before and after the vaccination by Wilcoxon matched pair test the mean score of confidence levels before the vaccination was 2.55 and after the vaccination it increased to 3.48 indicating the increase in confidence levels which was statistically significant with p- value <0.001(Table 7).

DISCUSSION:

The epidemic coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV2), is an international public health emergency, which through the exacerbation of mental health problems such as stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear raised a challenge to psychological resilience. Mental and general physical health is threatened, especially in terms of emotion and cognition9. orthodontics is a branch that deals with the treatment of malocclusions. Orthodontic treatment often takes longer period of time ranging from 12-18 months or even longer, which puts both the patients and orthodontists at greater risk of contracting COVID- 1910. Vaccines are a key strategy to stop the escalation of COVID-19 pandemic. This study aimed to assess the anxiety and confidence levels of orthodontic patients to visit orthodontist before and after vaccination.

Out of 211 participants 31 were males (14.69%) and 180 females (85.31%). The proportion of females in this study was more than that of males, which is in accordance with the trend that females are more likely to seek orthodontic treatment (Krey & Hirsch, 2012)11. In the present study 107 participants (50.7%) perceived COVID 19 to be very dangerous infection. 89 (42.18%) considered orthodontic patients are moderately vulnerable to COVID 19 and 36 (17.06%) participants considered orthodontic patients are severely vulnerable to COVID 19 infection. 163 (77.25%) participants had the fear that they may get infected from COVID 19 from contaminated surfaces while visiting orthodontist and 145(68.72%) participants had the fear of getting infected while travelling to dental clinic. Onyinye Dorothy umeh et al (May 2021) concluded that large percentage of respondents perceived COVID 19 as dangerous (55.6%)10. Stefano Martina et al (2021) studied perception of COVID 19 among Italian dental patients, an orthodontic point of view and concluded that a total of 866 participants (55.3%) believed that the dental practice is a place at greater risk of contracting the COVID 19 infection and 16% of patients undergoing orthodontic treatment would not return to the dental practice after lock down12. Orthodontists share a similar perception; as a study on the impact of COVID-19 among Nigerian orthodontists showed that the majority of them considered the infection dangerous. The present study

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was in accordance with the studies of. Onyinye Dorothy umeh et al (May 2021) and Stefano Martina et al (2021).

All the participants in the study were vaccinated. 159(75.36%) were vaccinated with COVISHIELD and 51(24.64%) were vaccinated with COVAXIN. 138(65.40%) received both first and second doses and 73(34.60%) received only first dose. 107(50.71%) participants felt the vaccine to be very effective against COVID 19 and 65(30.81%) felt the vaccine to be moderately effective. According to Qiao et al (2020) COVID 19 vaccine acceptance among college students in south California was found to be effective by the information resources. Students largely trusted scientists (83%), followed by health care providers (74%), and then health agencies (70%)13. Linda c carlson (2021) found that those perceiving COVID 19 as a severe disease were more intent on taking COVID 19 vaccine14. The present study was in correlation with findings of Qiao et al (2020) and Linda c Carlson (2021).

Before vaccination 7(3.32%) participants were extremely anxious, 16(7.58%) were very anxious, 59(27.96%) were moderately anxious, 68(32.23%) were little anxious, 61(28.91%) were not at all anxious to visit orthodontist. After vaccination 144 (68.25%) were not at all anxious, 39(18.48%) were little anxious, 13(6.16%) were moderately anxious, 11 (5.21%) were very anxious and 4 (1.90%) extremely anxious. On comparison the mean score of anxiety levels before the vaccination was 4.75 and after the vaccination it reduced to 3.37 indicating the reduction in anxiety levels which was statistically significant with p- value <0.001. Xin xiong et al (2020)15 studied mental distress in 558 patients and concluded that over one third of the orthodontic patients experienced mental distress during the pandemic. Maria jose Gonzalez- Olmo et al (2021)16 studied fear of COVID 19 in Madrid and concluded that a large percentage of citizens were anxious about contracting the virus in dental clinic and were avoiding dental care. Vaccination has reduced the fear and anxiety levels of orthodontic patients to visit orthodontist.

On comparison of confidence levels before and after the vaccination, the mean score of confidence levels before the vaccination was 2.55 and after the vaccination it increased to 3.48 indicating the increase in confidence levels which was statistically significant with p- value <0.001.

CONCLUSION: In conclusion COVID -19 pandemic had a negative impact on orthodontic patients and orthodontists. Orthodontic patients suffered from anxiety because of delayed appointments, increased duration of treatment. Patients had fear of contracting the disease while travelling to dental clinic, from contaminated surfaces in clinic and from overcrowded waiting area. To avert the pandemic COVID-19 vaccines were developed. In the present study COVID 19 Vaccination has decreased the anxiety levels and increased the confidence levels in orthodontic patients to visit orthodontist which were statistically significant.

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Table 1: Socio demographic characteristics.

Socio demographic characteristics	Number (Frequency)	Percent (%)
Age groups		
19-20yrs	42	19.91
21-22yrs	106	50.24
>=23yrs	63	29.86
Gender		
Male	31	14.69
Female	180	85.31
Type of orthodontic treatment you are undergoing		

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Removable appliance	48	22.75
Fixed appliance	142	67.30
Others	21	9.95
Total	211	100.0

Table 2: Risk assessment and attitude of patients to orthodontic treatment during pandemic.

What is your perception concerning COVID 19 infection?		
Very dangerous	107	50.71
Moderately dangerous	75	35.55
Not dangerous at all	0	0.00
Fatal	29	13.74
Not fatal	0	0.00
What is your perception concerning the vulnerability of Orthodontic patients to COVID 19 infection?		
Orthodontic patients are not vulnerable	17	8.06
Orthodontic patients are slightly vulnerable	34	16.11
Orthodontic patients are moderately vulnerable	89	42.18
Orthodontic patients are severely vulnerable	36	17.06
I don't know	35	16.59
Did you stop visiting Orthodontist during pandemic		
Yes	181	85.78
No	30	14.22
What is the reason you stopped visiting your Orthodontist		
Hospital was closed	103	48.82
I was afraid of COVID 19	108	51.18
What are your fears regarding the spread of corona virus while visiting orthodontist?		
I may get infected from contaminated surfaces	163	77.25
I may get infected from assistants and in office persons	131	62.09
I may get infected from overcrowded waiting areas	121	57.35
I may get infected while travelling to dental clinic	145	68.72
Total	211	100.00

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Table 3: Vaccine details.

Vaccine details	Number (Frequency)	Percent (%)
Which vaccine did you take?		
COVAXIN	51	24.64
COVISHIELD	159	75.36
Did you receive both 1st and 2nd dose?		
Yes	138	65.40
No	73	34.60
Do you feel vaccine is effective against COVID 19 infection ?		
Very effective	107	50.71
Moderately effective	65	30.81
Mildly effective	27	12.80
Not effective	12	5.69
Total	211	100.00

Table 4: Anxiety levels before and after vaccination

How anxious are you while visiting the orthodontist	Before vaccination		After vaccination	
	Number	Percentage	Number	Percentage
Not at all anxious	61	28.91	144	68.25
A little anxious	68	32.23	39	18.48
Moderately anxious	59	27.96	13	6.16
Very anxious	16	7.58	11	5.21
Extremely anxious	7	3.32	4	1.90
Total	211	100.00	211	100.00

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Table 5: Comparison of anxiety while visiting the Orthodontist before and after the vaccination by Wilcoxon matched pairs test.

Time	Mean	SD	Mean Diff.	SD Diff.	% of change	Z-value	P-value
Before the vaccination	4.75	2.79	1.38	2.54	29.01	7.1671	<0.001, S
After the vaccination	3.37	2.91					

Table 6: Confidence levels before and after the vaccination

Confidence	Before vaccination		After vaccination	
	Number	Percentage	Number	Percentage
Not confident at all	54	25.59	10	4.74
Slightly confident	51	24.17	41	19.43
Somewhat confident	55	26.07	40	18.96
Fairly confident	38	18.01	77	36.49
Completely confident	13	6.16	43	20.38
Total	211	100.00	211	100.00

Table 7: Comparison of confidence levels while visiting the Orthodontist before and after the vaccination by Wilcoxon matched pairs test.

Time	Mean	SD	Mean Diff.	SD Diff.	% of change	Z-value	P-value
Before the vaccination	2.55	1.22	-0.93	1.44	-36.62%	7.7979	<0.001, S
After the vaccination	3.48	1.16					

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