

How to Cite:

Shah, N., Patel, K., Kubavat, A., Upadhyay, P., Yogi, V., & Acharya, B. (2022). Psychological appraisal of orthodontic patient during COVID-19 pandemic: A questionnaire based study. *International Journal of Health Sciences*, 6(S1), 3026–3036. <https://doi.org/10.53730/ijhs.v6nS1.5300>

Psychological Appraisal of Orthodontic Patient during COVID-19 Pandemic: A Questionnaire Based Study

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Abstract---Objective: The Aim of this study was to check Psychological appraisal of orthodontic patient during COVID 19 outbreak, and whether the pandemic have affected the attendance of the orthodontic patients. Method: Total 500 patients participated in the survey. A questionnaire consisting of 11 multiple-choice questions was distributed. Upon receiving of the completed questionnaires, the data were statistically analyzed. Results: A total of 500 Orthodontic patients (232 M, 268 F) completed the survey. Participants between 20 and 29 years old were the most common (n=232) age group. Most participants were student (n=363). A total of 331 patients (66.2%) believed that there was a greater risk of COVID-19 at orthodontic practice, but 328 patients (65.6%) felt comfortable going back to the

orthodontist. 290 (58%) people willing to start orthodontic treatment if COVID-19 persists. Out of 500 orthodontic patients 450 (90%) were undergoing fixed treatment and 1(3.3%) patients were having removable appliances. Among the 484(96.8%) patients with orthodontic treatment, 466 (96.3%) return to the orthodontic practice, while 18(3.6%) patients were not able come back. In addition, 368 (73.6%) patients reported that not having been monitored by their orthodontist for more than 2 months caused them discomfort. Out of all 54(10.8%) people think that due to pandemic their treatment got delayed and it has worsen their malocclusion. Conclusions: Most of the participants believed that the orthodontic practice was a place at greater risk of COVID-19, even if they continue to go to the orthodontist. Age, and the level of anxiety were associated with the increase in the fear of going to the orthodontist due to COVID-19. Because of the COVID-19, 16% of patients undergoing orthodontic treatment would not return to the orthodontic practice to continue their orthodontic treatment after the lockdown.

Keywords---Psychological, orthodontic patient, COVID-19 pandemic.

Introduction

A Pandemic caused by a Novel Corona Virus (SARS-COV-2) broke out in China in December 2019 and has spread rampantly to almost every part of the world and has evolved very swiftly into a public health catastrophe. The genome sequence for this virus has a close similitude with other Beta Corona viruses such as SARS-COV and MERS-COV.¹

This virus belongs to a clan of single stranded RNA viruses group called CORONAVIRIDAE, known to be transferred from animals to human beings and include severe acute respiratory syndrome corona virus(SARS-COV)in 2002 and the middle east respiratory syndrome coronavirus(MERS- COV),reported in 2012. The World Health Organization (WHO) declared the wide spread of COVID-19 a global pandemic onJanuary 30 2020.²

Among all the dental branches, Orthodontics is one of the branches which produce less frequent aerosols compared to others, such as endodontic, prosthodontics. However we mainly treat children and young adults, who were indicated very frequently as asymptomatic carriers of the virus.²

COVID-19 causes a significant number of psychological effects. In one of the studies in China during initial phase of the pandemic more than 50% of the subjects reported moderate to severe anxiety, hence there is a current need to evaluate the effect of COVID-19 on the psychological status of patient.¹

Aim of this study was to investigate the psychological appraisal of orthodontic patients after first lockdown period, and whereas the pandemic affected the attendance of orthodontic patients to the Orthodontic practice.

Materials and Methods

A survey for assessing the psychological appraisal among orthodontic patient was organized after Phase 1 lockdown. The exemption for this survey was sought from primary author's institutional review committee as this was an anonymous survey with no personal identification collected out and carried out during a humanitarian emergencies and disaster, as per Indian Council of Medical Research guidelines. This self-reportable questionnaire in English (Table A) and Gujarati (Table B) was designed and the questionnaire shared among orthodontic patients with snowball-sampling technique.

Anonymity was ensured and no personal identification, such as IP address, Email Ids or details of COVID-19 exposures were collected. The basic demographics of gender, age group in years (10 to 19, 20- 29 and above 30), occupation (government employee, private employee, student & businessman) were collected.

All statistical analysis was performed using questionnaire. The items were all described in percentages. The questionnaire was comprised of 11 multiple-choice questions: 3 questions were about personal data (gender, age, occupation), 3 were about the anxiety over going to the orthodontist and 5 were about orthodontic treatment and the perception of the risk of continuing orthodontic treatment.

Statistical Analysis

Frequencies and percentages for categorical data were computed. A Chi-square test was used to assess the association between gender (male vs. female), group in years (10 to 19, 20- 29 and above 30). A standard statistical software package (SPSS, version 20.0) was used. The level of significance was set at $P \leq 0.05$.

Results

A total of 500 patients (232M, 268 F) completed the survey. Participants were asked to identify their age group, with those between 20 and 29 years old being the most common ($n=232$) (Table 1). Most participants were student ($n=363$). (Table 2)

A total of 331 (66.2%) patients believed that there is a greater risk of COVID-19 at a Orthodontic practice, but 328 (65.6%) patients felt comfortable going back to the orthodontist (Table 3). Male & Female were almost equally afraid to go to a orthodontic clinic. 290 (58%) people like to start orthodontic treatment if COVID-19 persist (Table 3).

Out of all ($n=500$) orthodontic Patients 450 (90%) were undergoing fixed treatment and 18 (3.6%) patients were having removable appliances. Out of all 479 (95.8%) people will return to the orthodontic practice, while 21 (4.2%) patients will not come back. In addition, 368 (73.6%) patients reported that not having been monitored by their orthodontist for more than 2 months caused them discomfort. 54 (10.8%) people think that due to delayed treatment due to pandemic is worsening their malocclusion. (Table 4)

Discussion

This study was carried out immediately after the end of the lockdown phase 1 in Gujarat, India (January, 2021). The aim was to understand through a survey how concerned patients were about the possibility of contracting an infection in the orthodontic practice and if this may affect their attendance at the orthodontist. The sample was a good representation of different age ranges, different jobs. Above half of the patients 331(66.2%) thought that the orthodontic practice is a place where there is a higher risk of COVID-19 infection; In 172(34.4) % of participants, COVID-19 increased their fear of attending the orthodontic practice, and 210(42%) did not feel safe to go back to the doctor. Among these, male and female both were almost equally scared (Table 3), which is contradictory with the data from a previous study by Cotrin et al,³ which found a greater level of anxiety among female patients compared to males. Regarding the elderly, it is quite obvious that they were more scared because COVID-19 affects them more frequently and more severely (Table 4). It must be considered that in orthodontic practices, there were already strict protocols for infection control of several infective diseases, such as hepatitis B, hepatitis C, human immune Deficiency Virus infection, tuberculosis, and herpes simplex, even before the COVID-19 pandemic⁴ therefore, orthodontist have always been prepared to face viruses. With the COVID19 pandemic, these protocols became even more stringent³ and in May 2020 the minister of health published national guidelines⁵. Patients not returning to the orthodontic practice could be considered an indirect harmful effect of the COVID19 pandemic. 21(4.2%) of respondents declared that they would not return to the orthodontic practice to continue orthodontic treatment. Among all, 331(66.2%) thought the orthodontic practice was a place with greater risk of contracting COVID-19 and 172(33.4%) were scared to go to the orthodontist due to the pandemic. These findings are consistent with previous studies, showing that patients who were willing to go to orthodontic office were more calm or indifferent. The orthodontist should explain to the more anxious patients that the practice is a safe place and that the damage resulting from a missed control of the orthodontic appliance could be serious. It should also be noted that orthodontic procedures have a low risk of infection because most of them do not require aerosols. Therefore, correct communication between patient and orthodontist is of fundamental importance. Meanwhile, orthodontists should re-organize their schedules for the following reasons: to reduce the number of patients per day, to prevent gatherings in the waiting room, and to perform the disinfection procedures provided in the guidelines. In addition, 368(73.6%) of patients reported that not having been monitored by the orthodontist for more than 2 months caused them discomfort (Table 4); those with fixed appliances in particular were more disturbed. This could be explained by the fact that removable appliances generally cause less discomfort to patients and result in a lower average number of emergency visits as compared with fixed appliances^{6,7}. Hence, it could be argued that for this reason the COVID-19 pandemic could accelerate the trend already occurring in orthodontics towards an increase in removable appliances, such as clear aligners or activators. This study presents some limitations: it is a survey based study; thus, information is self-reported, and the collection time was only 4 months. However, it also presents some strength, such as the high number of participants, the good representation of the population.

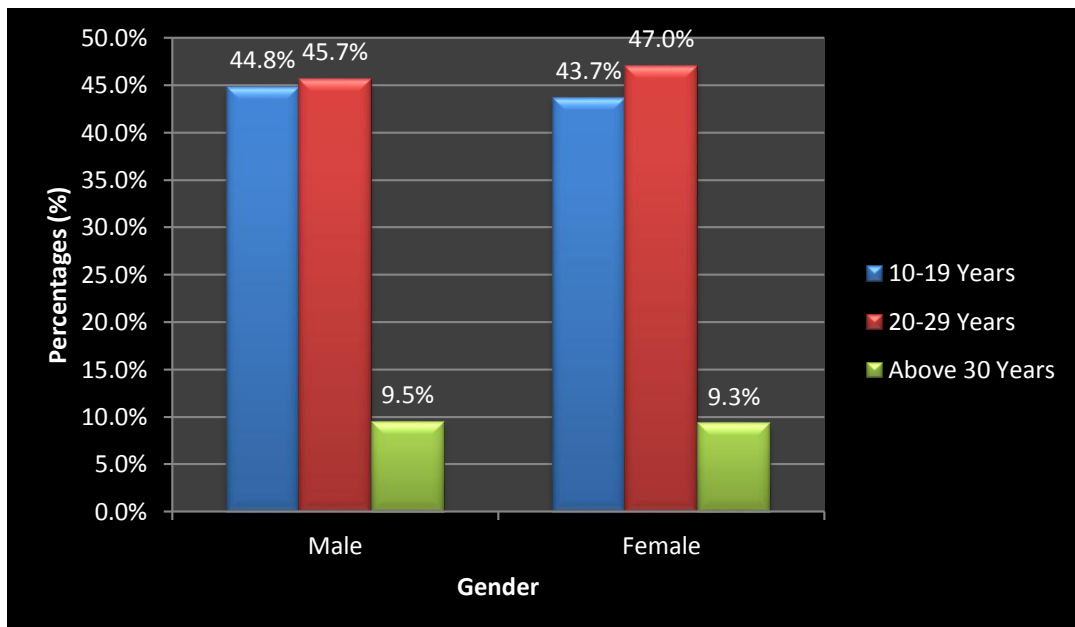


Fig: 1 Gender and Age group wise distribution of study subjects

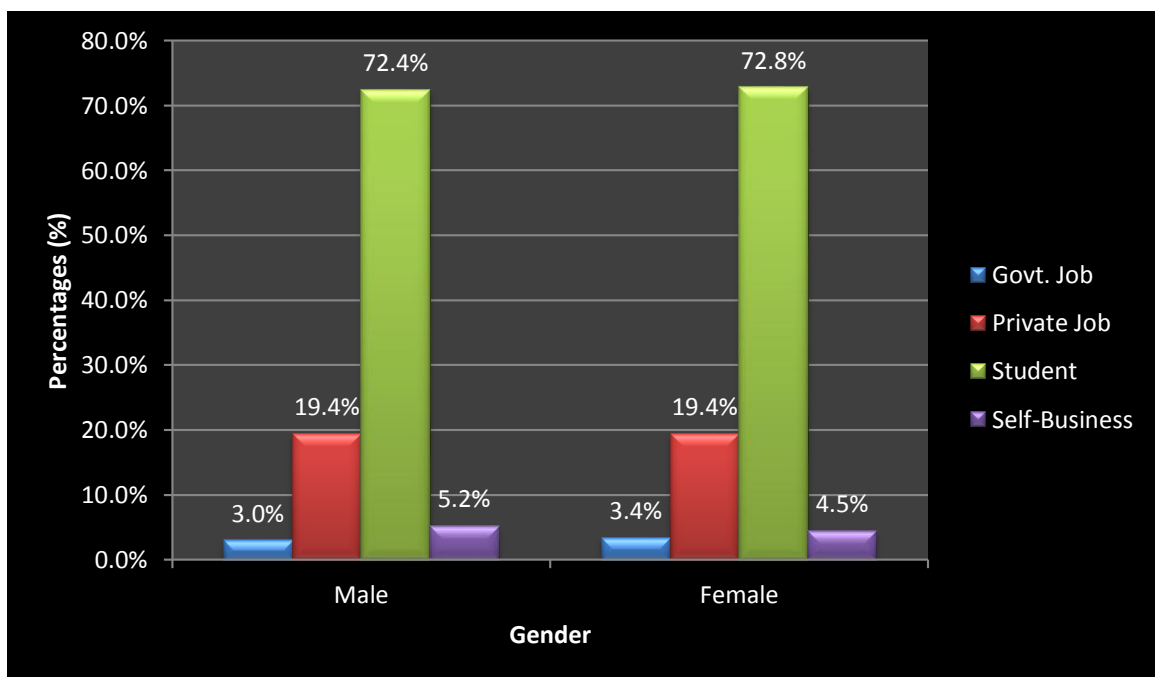


Fig: 2 Gender and work wise distribution

(Table : A)Questionnaire in English

What is your age	10-19 2)20-29 3)above 30
sex	Male 2) female
occupation	government servant /private employee/ student business
Do you consider orthodontic practice a place with higher risk of COVID- 19 contagion?	Yes/No
Over last 1.5 year do you feel anxious for going to orthodontist during this out break?	Yes/No
Would you like to start orthodontic treatment if COVID -19 persist?	Yes/No
Are you or your child undergoing orthodontic treatment?	Yes/No
The following questions appear only if the answer is yes to previous question	
What kind of appliance used in your mouth?	Fixed/removable/other
Do you consider that not having had orthodontic checkups for more than 2 months during lockdown have created discomfort to you or your child ?	Yes/No
Do you think delayed treatment due to this pandemic is worsening your malocclusion?	Yes/No
Will you come back to the orthodontic practice to continue the orthodontic treatment after the lockdown?	Yes/No

Table 1 Gender and Age group wise distribution of study subjects

Age Group	Gender N (%)		Total N (%)
	Male	Female	
10-19 Years	104(44.8)	117(43.7)	221(44.2)
20-29 Years	106(45.7)	126(47)	232(46.4)
Above 30 Years	22(9.5)	25(9.3)	47(9.4)
Total	232	268	500

Table 2 Gender and work wise distribution

Work	Gender N (%)		Total N (%)
	Male	Female	
Govt. Job	7(3)	9(3.4)	16(3.2)
Private Job	45(19.4)	52(19.4)	97(19.4)
Student	168(72.4)	195(72.8)	363(72.6)
Self-Business	12(5.2)	12(4.5)	24(4.8)
Total	232	268	500

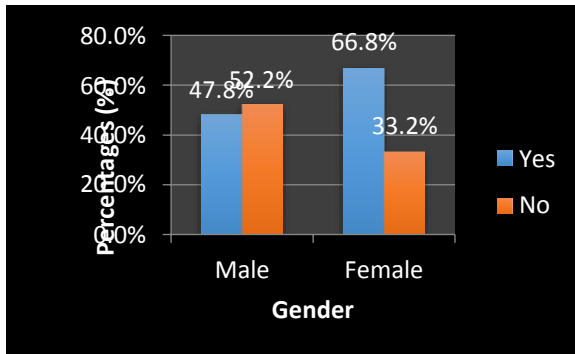


Fig:3A

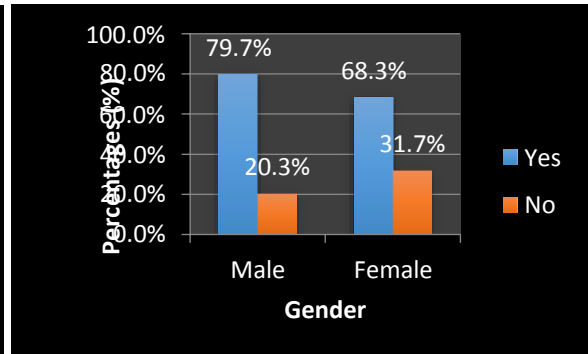


Fig:3B

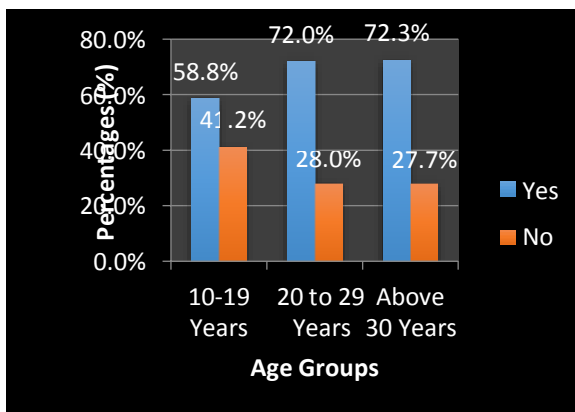


Fig:4A

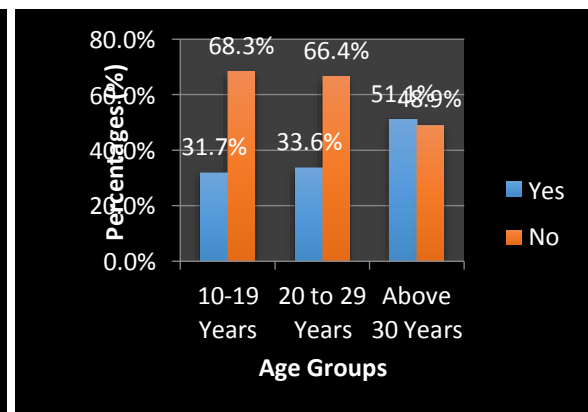


Fig:4B

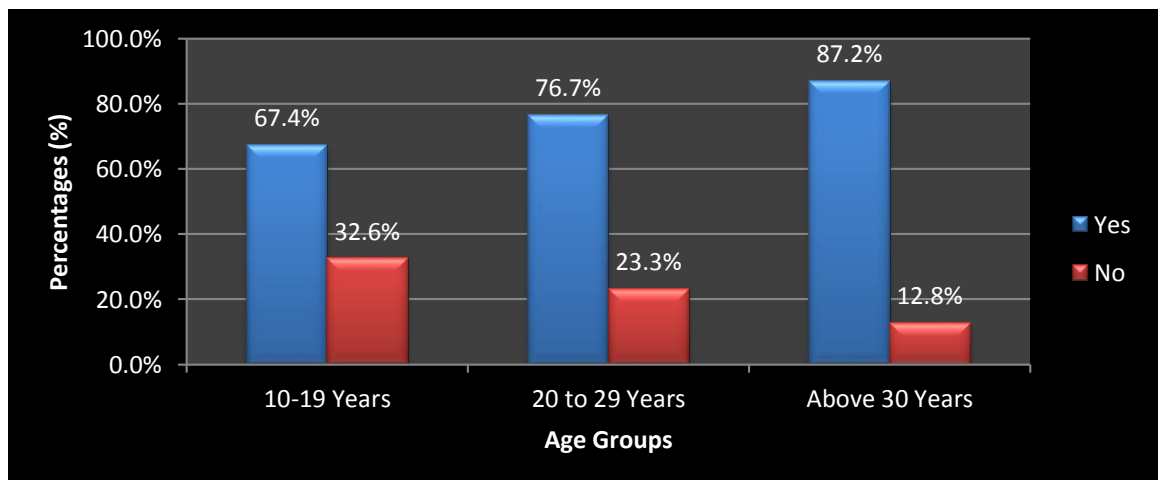


Figure 4C

Table 3 Gender and Questions wise distribution

	Gender N (%)		Total N (%)	P Value
	Male	Female		
Q4 do you consider orthodontic practice a place with higher risk of COVID 19 contagion?				
Yes	153(65.9)	178(66.4)	331(66.2)	>0.05**
No	79(34.1)	90(33.6)	169(33.8)	
Total	232	268	500	
Q5 over last 1.5 year do you feel anxious for going to orthodontist during this out break?				
Yes	80(34.5)	92(34.3)	172(34.4)	>0.05**
No	152(65.5)	176(65.7)	328(65.6)	
Total	232	268	500	
Q6 would you like to start orthodontic treatment if COVID persist? Fig:3a				
Yes	111(47.8)	179(66.8)	290(58)	≤ 0.05 *
No	121(52.2)	89(33.2)	210(42)	
Total	232	268	500	
Q7 are you or your child undergoing orthodontic treatment?				
Yes	232(46.4)	268(53.6)	500(100)	>0.05**
No	0(0)	0(0)	0(0)	
Total	232	268	500	
Q8 what kind of appliance used in your mouth?				
Fixed	212(91.4)	238(88.8)	450(90)	>0.05**
Removable	6(2.6)	12(4.5)	18(3.6)	
Other	14(6)	18(6.7)	32(6.4)	
Total	232	268	500	
Q9 do you consider that not having had orthodontic checkups for more than 2 months during lockdown have created discomfort to you or your child? Fig:3b				
Yes	185(79.7)	183(68.3)	368(73.6)	≤ 0.05 *
No	47(20.3)	85(31.7)	132(26.4)	
Total	232	268	500	
Q10 do you think delayed treatment due to this pandemic is worsening your malocclusion?				
Yes	21(9.1)	33(12.3)	54(10.8)	>0.05**
No	211(90.9)	235(87.7)	446(89.2)	
Total	232	268	500	
Q11 will you come back to the orthodontic practice to continue the orthodontic treatment after the lockdown?				
Yes	227(97.8)	252(94)	479(95.8)	>0.05**
No	5(2.2)	16(6)	21(4.2)	
Total	232	268	500	

Level of Significance $P \leq 0.05$, * Significant, ** Non Significant

Table 4 Age groups and Questions wise distribution

Work	Age group N (%)			Total N (%)	P Value
	10-19 Years	20 to 29 Years	Above 30 Years		
Q4 do you consider orthodontic practice a place with higher risk of COVID19 contagion? Fig:4a					
Yes	130(58.8)	167(72)	34(72.3)	331(66.2)	≤ 0.05 *
No	91(41.2)	65(28)	13(27.7)	169(33.8)	
Total	221	232	47	500	
Q5 over last 1.5 year do you feel anxious for going to orthodontist during this out break? Fig:4b					
Yes	70(31.7)	78(33.6)	24(51.1)	172(34.4)	≤ 0.05 *
No	151(68.3)	154(66.4)	23(48.9)	328(65.6)	
Total	221	232	47	500	
Q6 would you like to start orthodontic treatment if COVID19 persist?					
Yes	135(61.1)	129(55.6)	26(55.3)	290(58)	>0.05 **
No	86(38.9)	103(44.4)	21(44.7)	210(42)	
Total	221	232	47	500	
Q7 are you or your child undergoing orthodontic treatment?					
Yes	221(97.3)	232(95.7)	47(100)	500(100)	>0.05 **
No	0(0)	0(0)	0(0)	0(0)	
Total	221	232	47	500	
Q8 what kind of appliance used in your mouth?					
Fixed	192(86.9)	212(91.4)	46(97.9)	450(90)	>0.05 **
Removable	8(3.6)	9(3.9)	1(2.1)	18(3.6)	
Other	21(9.5)	11(4.7)	0(0)	32(6.4)	
Total	221	232	47	500	
Q9 do you consider that not having had orthodontic checkups for more than 2 months during lockdown have created discomfort to you or your child? Fig:4c					
Yes	149(67.4)	178(76.7)	41(87.2)	368(73.6)	≤ 0.05 *
No	72(32.6)	54(23.3)	6(12.8)	132(26.4)	
Total	221	232	47	500	
Q10 do you think delayed treatment due to this pandemic is worsening your malocclusion?					
Yes	28(12.7)	23(9.9)	3(6.4)	54(10.8)	>0.05 **
No	193(87.3)	209(90.1)	44(93.6)	446(89.2)	
Total	221	232	47	500	
Q11 will you come back to the orthodontic practice to continue the orthodontic treatment after the lockdown ?					
Yes	211(95.5)	225(97)	43(91.5)	479(95.8)	>0.05 **
No	10(4.5)	7(3)	4(8.5)	21(4.2)	
Total	221	232	47	500	

Level of Significance $P \leq 0.05$, * Significant, ** Non Significant

Conclusion

This survey-based study investigated the risk perception of orthodontic patients toward attending orthodontic practices during the COVID-19 pandemic. Most of the participants believed that orthodontic practices are places at greater risk of COVID-19 transmission, even if they will continue to go to the orthodontist. Gender and age were associated with the increase in the fear of attending orthodontic practices due to COVID-19. Because of the pandemic, 18% of patients undergoing orthodontic treatment would not return to the orthodontic practice to continue their orthodontic treatment after the lockdown. Patients with fixed appliances felt more discomfort in not having had orthodontic check-ups during the lockdown compared to patients with removable appliances.

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