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Impact Of Covid-19 Pandemic On Indian Orthodontic Practice-An Observational Study

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Abstract
The aim of study was to evaluate the resources and entities that best-aided orthodontists to remain informed on the COVID-19 situation. A randomized retrospective survey was conducted in which orthodontists across India were randomly selected, and a questionnaire was sent to them. Randomization was done by using Research Randomizer software provided by the Social psychology network. The same questionnaire was sent to each one of them and the responses were recorded by the Google forms. The response data was collected and all the statistical analyses were performed using the Statistical Package for the Social Sciences (IBMR SPSSR 23). 70.9% of respondents reported that alterations in their work routines necessitated increased financial costs. 83.4% describing an intermediate level of impact on their routine practice. A majority of practitioners in all regions reported increased financial costs, with the highest percentages in the North (74.4%) and West (78.5%) regions. The highest percentage (69.0%) of orthodontists in the North reported positive experiences with online appointments. While (63.0%) have positive experiences from south. In analyzing the significance of the primary information sources in the variable "Credibility assessment," participants showed varying preferences for different sources. For those who gave a rating of "3" on the credibility assessment, 25.0% relied on government websites, 50.0% on online forums, and 16.7% on professional associations. In terms of the effectiveness of guidance provided by government health agencies, there seems to be a trend suggesting that participants who found the guidance "Neutral" were more likely to rely on professional associations (27.8%), whereas those who found it "Effective" or "Very Effective" tended to favor online forums (100.0% and 33.3%, respectively) and conclusion of study was also concludes that various methods were introduced to active orthodontic patient and most believable was to guide patient how to manage problem by themselves.
As there is hike in armamentarium and there is one more staff needed in the clinic but prices were adjust with treatment cost.

Keywords; COVID-19, H1N1, SARS-CoV-2, Covaxin, covisheild

INTRODUCTION

In the big picture of global health, we're dealing with the ongoing worry of viruses jumping between species and the constant threat of pandemics. Remember those times when SARS and the flu took center stage? They were no small challenges. If we zoom into healthcare settings, the way infections move around and spread is pretty complex. And, yeah, history has a way of reminding us—the 1918 Spanish flu was a major deal, affecting the world in ways we can't forget.(1)

Now, fast forward to 2019, and we got hit with COVID-19, courtesy of the SARS-CoV-2 virus. That shook things up, leading to a global emergency and the World Health Organization officially calling it a pandemic. Amidst all this, we're talking about how we name things, trying to be respectful and avoiding causing unnecessary problems. Plus, the impact of COVID-19 on things like orthodontic practices is no joke.(2) Alam MK and the crew in 2023 did a deep dive, adding some valuable insights into how this pandemic is changing the game for orthodontic practices.(3)

So, here we are, navigating this wild mix of infectious diseases, global pandemics, and how healthcare practices need to adapt. It's like a puzzle, and we're all figuring out how to fit the pieces together. This introduction is just a glimpse into the complex dance of our global health, showing why we need smart and timely moves to handle the challenges that keep popping up.(4)

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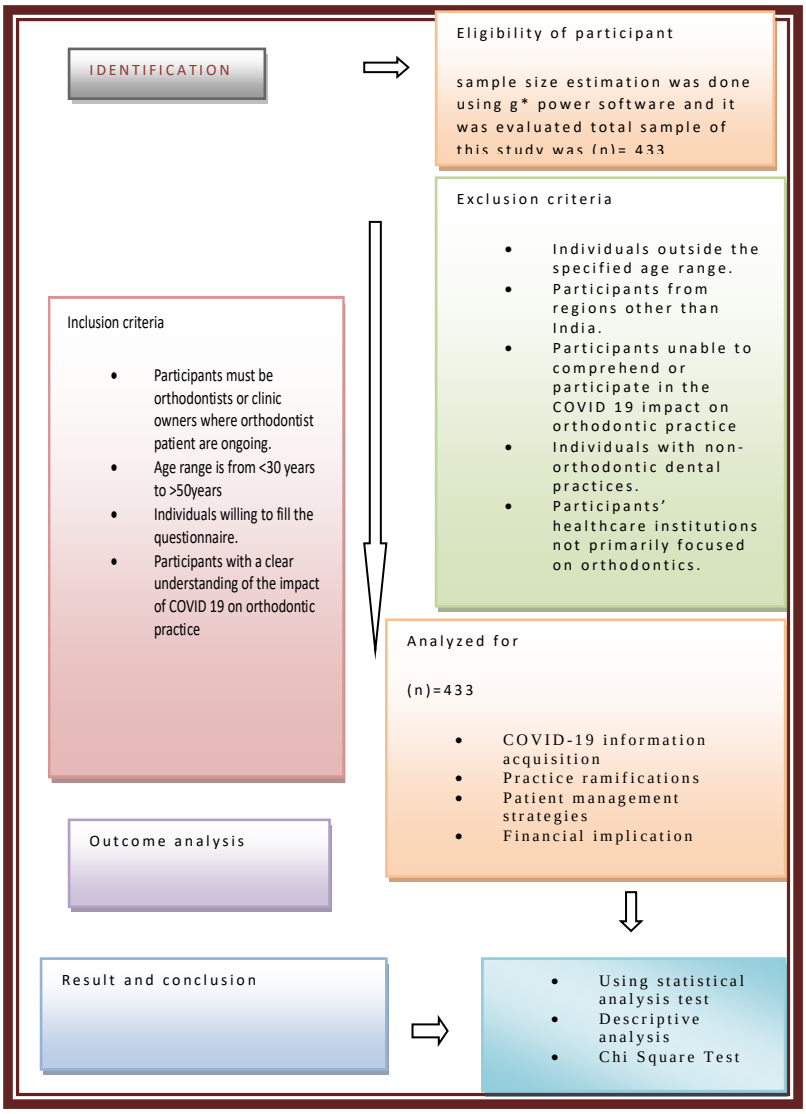
Materials and Method

The study was conducted on 241 male and 192 female after the institutional ethical committee approval. Then participant respond all over the India. A survey based on randomized study conducted by framing a questionnaire developed using Google forms, provided by Google LLC. A questionnaire was sent to practicing Orthodontists across India, via email, telephone, by post and visiting them personally. The objective is to determine orthodontists' primary COVID-19 information sources and evaluate their credibility. It also examines the impact of government health agencies on orthodontic guidance and explores the use of digital communication tools for information dissemination within the orthodontic society. Additionally, the research investigates strategies employed by orthodontists for business survival and methods for managing both current and future orthodontic patients.



The response data was collected and all the statistical analyses were performed using the Statistical Package for the Social Sciences (IBMR SPSSR). The minimum level of statistical significance was set at $P < 0.05$.

The questionnaire was divided into four parts that include the questionnaire pertaining to the influence of COVID-19 on orthodontic practices in India resembles an organized dialogue. The first question is concerning the identity and location of the orthodontists. Next, it delves into the specifics of patient visits, scheduling, and treatment plans, as well as their knowledge of the epidemic and how it influenced their job. The discussion shifts to comprehend how these professionals handled their patients throughout the pandemic: did they use virtual techniques, what safety precautions they took, and how did they keep patients interested? Even a section enquiring about the trainees' feelings and wellbeing during this period is devoted to them. At last, the conversation becomes serious as they talk about the financial issues: lost income, altered billing, and whether or not they need government assistance. All things considered, it's more than simply a survey; it's a means of giving a human face to the difficulties, adjustments, and tactics faced by Indian orthodontists in these trying times.

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Questions
1. Name of the Orthodontist
2. Address; zone of practice
3. Age
4. Gender
5. University education
7. Working experience
8. Current working status
9. Role in practice
10. In general terms, what is your level of confidence regarding the safety and efficacy of COVID-19 vaccines currently available in India?
11. On average, how many patients are being attended in a week?
12. Do you (or any other person) perform any type of patient screening concerning to COVID-19 before appointments in your main workplace?
13. How prepared do you feel today to assist patients with confirmed diagnosis of COVID-19?
14. Have you assisted patients with confirmed COVID-19 diagnosis?
15. Have you received any vaccine dose for COVID-19?
16. How often do you use a N95 mask in dental appointments?
17. How often do you use a face shield mask during patient care?
18. Primary information source.
19. Credibility assessment
20. Did you prefer guidelines or updates provided by the orthodontics professional association during the covid 19 pandemic?
21. How effective was the guidance provided by the government health agencies in assisting your practice during the pandemic.
22. To what extend did you use digital communication tools to stay informed about covid 19 in the orthodontic community
23. How accessible was the information you received in terms of formal and case of understanding
24. Have you ever assisted any patients via online appointment during the pandemic?
25. What is the most commonly encountered problem faced by the patient?
26. In case when your patient suffered from any emergency such as pain, swelling, laceration, cuts ertc, how did you manage?
27. What has been your main professional challenge during the pandemic?
28. Have you suspected or tested yourself for COVID-19?
29. Since May 2020, have work routine changes led to increased financial costs?
30. Is there any extra staff needed in clinic?
31. How do you rate the impact of COVID-19 in your clinical routine in the place you work most when compared to the period before the pandemic?

STATICAL ANALYSIS

The study included 433 Orthodontists and sample size calculation was performed using G*Power, aiming for 90% power with a significance level of alpha 0.05. The response data was collected and all the statistical analyses were performed using the Statistical Package for the Social Sciences (IBMR SPSSR 23). The minimum level of statistical significance was set at $P < 0.05$. The results were analyzed using descriptive statistics and making comparisons among various groups. Categorical data were summarized as proportions and percentages (%). Bar graphs and pi charts were made to visually summarize the data and findings. The Chi-Square Test of Association is a valuable statistical tool in the field of medicine, frequently employed to explore relationships between categorical variables. By organizing this data into a contingency table, they can apply the Chi-Square Test of Association to determine if there's a significant association between smoking status and lung cancer diagnosis. A two-sided ($\alpha=2$) $p<0.05$ was considered statistically significant. The analysis was done in IBM SPSS ver 23

Result

The global COVID-19 pandemic has showcased the complexity of our interconnected society, prompting a deep dive into its scientific, cultural, and societal dimensions. Governments worldwide have implemented diverse public health initiatives, from lockdowns to vaccine efforts, reflecting a proactive strategy to build resilient health infrastructures. Culturally, the pandemic has accelerated the integration of technology into daily life, reshaping norms in remote work and digital learning. Societal disparities and economic challenges have come to the forefront, emphasizing the need for inclusive policies. In the realm of orthodontic practices, the pandemic has impacted infection control, patient experiences, and technology adoption. India's contributions to vaccine research, with Covaxin and Covishield, exemplify resilience and global collaboration. A cross-sectional survey on orthodontic experiences during the pandemic, utilizing random sampling, reveals challenges faced during lockdowns, especially for patients requiring multiple visits. The lessons learned emphasize the importance of resilience, adaptation, and collaboration for a more equitable and sustainable future. In line with the recommendations made by Alam MK et al[3]., our thorough analysis carefully looks at the tactics and perceptive insights of Indian orthodontic practices both during and after Covid. Among the considerable 433 answers, the majority of respondents—mostly men—are mostly male and report struggling with declining patient

numbers, financial limitations, and difficulties obtaining necessary safety equipment. Online appointment use picks up steam, with 60.5% of users handling common problems with ease. There is diversity in the manifestation of virus exposure: 5.8% confirm a positive result whereas 41.3% test negative. 76% of people firmly believe that vaccinations are necessary. The majority of primary information sources (64.3%) favour professional organisations, and an astounding 96.4% of respondents said they would rather follow the rules issued by the Orthodontics Professional Association. Overall, our research highlights the industry's complex financial structures, diverse resiliency, and the critical role reliable sources of information have in influencing the public's perception of orthodontic practices in these difficult times.

Tables

Variable		Frequency	%
Patients attended in a week?	< 5	56	12.9%
	5 - 10	137	31.6%
	10 - 20	206	47.6%
	> 20	34	7.9%

Table–1; Patients attended in a week

Variable		Frequency	%
Suspected or tested Self for COVID-19	No	37	8.5%
	Tested negative for COVID-19	179	41.3%
	Tested positive for COVID-19	25	5.8%
	Test was inconclusive for COVID-19	123	28.4%
	Suspect without test	69	15.9%

Table–2; Suspected or tested self for COVID-19

Variable		Frequency	%
Main professional challenge during the pandemic	Difficulty in acquiring personal protective equipment	72	16.6%
	Difficulty in the clinical use of new personal protective equipment	125	28.9%
	Fear of contracting COVID-19	54	12.5%
	Increased material and equipment costs	75	17.3%
	Keep my health well cared for, including mental health	25	5.8%
	Reconciling work and household chores	8	1.8%

	Reduction in the number of patients	41	9.5%
	Reduction of financial gains or salary	33	7.6%

Table–3 Main professional challenge during the pandemic

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DISCUSSION

The COVID-19 pandemic, a worldwide upheaval of historic proportions, is a powerful witness to the complexities of our linked society. Exploring the virus's scientific intricacies broadens our understanding beyond its immediate health effects, emphasizing the importance of ongoing research. This investigation dives into the virology of SARS-CoV-2, including mutations, transmission patterns, and long-term consequences for public health. In line with global reactions, governments throughout the world have launched a wide range of public health initiatives, from early lockdowns and social distancing measures to extensive testing procedures and ambitious vaccine efforts. The emphasis on scientific collaboration, particularly in vaccine research, is consistent with the larger debate on the worldwide response to COVID-19. As countries struggle with the pandemic's enduring consequences, the lessons gained serve as important guideposts for navigating the complexity of our changing environment. The importance of resilience, adaptation, and collaboration remains a prominent topic, recommending a comprehensive approach to developing more egalitarian, sustainable, and resilient systems capable of withstanding and thriving in the face of unexpected difficulties. A study done by Kumar A and Sharma A [(5)] they found that 92% orthodontist believe that there is reduced number of patient due to pandemic a bit in our study we found that 31.7% of participants were attending 5-10 patient a week and 47.6% were attending a good number of patient that is 10-20 patient during a week but participants that are attending a very good number of patient are less that is only 7.9% attending more than 20 patient a week(Table-1). In their study kumar A and Shamra They also talked about the challenges faced during the COVID -19 and we also tried to cover this part in our study. They found that 78% participant indicate the changes in sterilization process and record keeping was difficult this is respond by 34% and 11% respond that patient education was affected and in our study we found that 28.9% participant faces difficulty in the clinical use personal protective equipment and 17.3% respond that there is increased material cost and equipment cost and 9.5% believe there is reduction in number of patient and also reduction financial gains or salary this was indicted by 7.6% the number in small but cannot be ignored that means dentistry was also greatly effect by the COVID-19. For most of the participant there is difficulty in acquiring personal protective equipment and the percentage was 16.6% (Table-2). A substantial majority, comprising 70.9% of respondents, reported that alterations in their work routines necessitated increased financial costs. Among those who experienced heightened financial burdens, 20.3% indicated that despite the increased costs, they did not adjust their prices, highlighting a financial challenge that practitioners faced while maintaining affordability for their patients. Conversely, 5.3% reported that their work routine changes did not lead to increased financial costs, indicating a level of adaptability or strategic financial planning in response to the evolving circumstances. On comparing to the period before the pandemic the responses reflected a varied spectrum of impact, with 83.4% describing an intermediate level of impact, 11.3% indicating a high impact(table 3) . The impact of these changes on financial costs revealed a notable association with the zone of practice. A majority of practitioners in all regions reported increased financial costs, with the highest percentages in the North (74.4%) and West (78.5%) regions. Adjusting prices to accommodate these costs was more common in the North (65.4%) and West (54.7%) compared to other regions regarding increased financial costs due to work routine changes, a clear trend emerges. A higher percentage of practitioners with 10-15 years (90.1%) and over 20 years (66.7%) of experience reported that changes led to increased financial costs, as well as adjusting prices in response to these changes. The difference was statistically significant. In contrast, practitioners with less than 5 years of experience were less affected, with 53.1% indicating increased financial costs. Concerning the financial implications of work routine changes, both male and female practitioners reported similar experiences. The majority, comprising 71.0% of males and 70.8% of females, faced increased financial costs.

According to a study done by Bustati N, Rajeh N.[(6)] they found that 98% of participant patient were connected with his/her doctor via voice call, video call, or through SMS in different interval of time in our study we found that a high number participants i.e.60.5% doctors also have assisted patient via online appointment. During these online appointments the most common encountered problem faced by our participant was little wire and elastic have came out that is reported by 78.1% of participant and most of problems were manage by guidance to the patient how to manage the problem that is 53.8%. Participant who schedules an appointment to fix the problem is very less only 4.8%. The highest percentage (69.0%) of orthodontists in the North reported positive experiences with online appointments. While 63.0% had positive experiences from south a noteworthy 14.8% were reluctant or unwilling to adopt online

appointments. Positive experiences were reported by 64.9% in east, but a considerable 16.1% were neither using nor willing to adopt this approach. If we discuss about west Similar to the North, the majority (59.1%) had positive experiences, but 28.3% were hesitant or unwilling.
Central zone had the highest percentage (28.3%) of orthodontists not using online appointments and not willing to do so. If we talk about the expose to the virus and regarding to the vaccination most of participant were tested negative among the respondent that was 41.3%. And only 8.5% doesn't go under any test of COVID, but 15.9% was think them suspected to COVID without undergoing formal testing. Only 5.8% indicated that they were positive for COVID -19 this indicate that participant were directly graped with the virus and on other hand noteworthy challenges included the "Fear of contracting COVID-19," acknowledged by 12.5% of participants, highlighting the personal safety concerns of dental professionals.
If we talk about the vaccination there are huge amount of participant that had undergone the vaccination that is 76% have two dose of co vaccine/covisheild only 4.6% state that they have not any kind of vaccination but 14.6% had undergone one dose of vaccine. After this we can say there is much number that believes vaccine is the solution of virus.
In our study we also tried to study about the determination of primary source of information that orthodontist relieved on to stay inform about the involving COVID-19 situation and also evaluate the precise credibility and reliability of the information source used by orthodontist during the pandemic. We assess the impact of government health agencies and authorities in providing guidance and update relevant to orthodontist practice during pandemic with investigation the use of digital communication tools such as newspaper, emails, social media for information dissemination within the orthodontic community.
In a study done by Motevasel H. et al in year 2020 [(2)] they found that primary information source was professional association with 75% of responses and in our study number was nearly equal with 64.3% state that primary information was professional association and 53% participant stated that most helpful source of information were state and dental association and in our study we found that 96.4% preferred guidelines or update provided by the Orthodontics Professional Association. They found that guidelines set by local and state government were necessary that is responded by 52%. In our study 53.6% participant believe guidance provided by government health agencies were effective and 28.6% state very effective but 17.9% were neutral.
On evaluating Credibility assessment 42.9% respond high rating on scale of 1 to 5 with 1 is being lowest and 5 highest credibility.
In analyzing the significance of the primary information sources in the variable "Credibility assessment," participants showed varying preferences for different sources. For those who gave a rating of "3" on the credibility assessment, 25.0% relied on government websites, 50.0% on online forums, and 16.7% on professional associations. In terms of the effectiveness of guidance provided by government health agencies, there seems to be a trend suggesting that participants who found the guidance "Neutral" were more likely to rely on professional associations (27.8%), whereas those who found it "Effective" or "Very Effective" tended to favor online forums (100.0% and 33.3%, respectively).

Conclusion

The survey underscores the profound impact of the COVID-19 pandemic on both patient care and financial aspects within Indian orthodontic practices. The orthodontic community, collectively affected and apprehensive, employed various survival strategies, notably embracing online consultations through video and voice calls. Active patient engagement saw innovative methods, with guidance on self-management being the most credible. Despite increased expenses and the need for additional staff, adjustments in treatment costs were made. Accessibility and effectiveness of information were influenced by participants' perceptions, aligning with preferences for professional associations or online forums. While crises pose challenges, they also present opportunities. The survey reveals a reliance on professional associations for guidance, emphasizing the importance of providing orthodontists with timely and robust information to navigate both challenges and opportunities amid the ongoing pandemic and into the future.

REFERENCES

1. **Ahmadi H, Ebrahimi A, Ghorbani F**. The impact of COVID-19 pandemic on dental practice in Iran: a questionnaire-based report. BMC oral health. 2020 Dec; 20:1-9.
2. **Motevasel H, Helms LR, Eckert GJ, Stewart KT, Albright DA**. The impact of the COVID-19 pandemic on US orthodontic practices in 2020. J Am Dent Assoc. 2022 Feb 1;161(2):198-207.
3. **Alam MK, Abutayyem H, Kanwal B, Alswairki HJ**. Effect of COVID-19 on orthodontic treatment/practice-A systematic review and meta-analysis. J. Orthod. Sci.2023;12.
4. **Cascella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R.** Features, evaluation, and treatment of coronavirus (COVID-19).
5. **Kumar A, Sharma A.** The impact of covid-19 pandemic on orthodontic practice in India: A questionnaire based study. Waste management. 2021;57(1.5):1-7.
6. **Bustati N, Rajeh N.** The impact of COVID-19 pandemic on patients receiving orthodontic treatment: An online questionnaire cross-sectional study. JWFO. 2020 Dec 1; 9(4):159-63.

7. **Turkistani KA**. Impact of delayed orthodontic care during COVID-19 pandemic: Emergency, disability, and pain. JWFO. 2020 Sep 1; 9(3):106-11.
8. **Kaur H, Kochhar AS, Gupta H, Singh G, Kubavat A**, Appropriate orthodontic appliances during the COVID-19 pandemic: A scoping review, J oral boil Craniofac res (2020),
9. **Naveda R, Seminario MP, Janson G, Garib D**. Concerns of orthodontic patients during the COVID-19 quarantine period. Dental Press J Orthod. 2022 Apr 11; 27:e2220229.
10. **Perillo L, Nucci L, Yitschaky O, Carrino G, Carrino R, Chaushu S.** Returning to the orthodontic practice amid COVID-19 crisis. Stoma Edu J. 2020 Sep 1;7(3):169-75.
11. **Caprioglio A, Pizzetti GB, Zecca PA, Fastuca R, Maino G**, Nanda R. Management of orthodontic emergencies during 2019-NCOV. Progress in orthodontics. 2020 Dec; 21:1-4.
12. **Guo F, Tang B, Qin D, Zhao T, Su YX, McGrath C, Hua F, He H.** The impact of the COVID-19 epidemic on orthodontic patients in China: An analysis of posts on Weibo. Frontiers in Medicine. 2020 Dec 8; 7:577468.
13. **Shetty SK.** Problems Faced by Orthodontic Patients And The Precautions Taken By Them For Its Prevention During National Lockdown Due to COVID-19 Pandemic among The Population of Sullia, Dakshina Kannada-A Questionairre Survey. Sch J Dent Sci. 2021 Jan;1:41-7.
14. **Suryasa IW, Rodríguez-Gámez M, Koldoris T**. The COVID-19 pandemic. Int. J. Health Sci. 2021;5(2).
15. **Sycinska-Dziarnowska, M., Bielawska-Victorini, H., Budzyńska, A. and Woźniak, K.,** 2021. The implications of the COVID-19 pandemic on the interest in orthodontic treatment and perspectives for the future. Real-time surveillance using Google Trends. Int. J. Environ. Res. Public Health INT J ENV RES PUB HE, 18(11), p.5647.
16. **Khan T, Jamal SM.** SARS-CoV-2 nomenclature: viruses, variants and vaccines need a standardized naming system. Future virology. 2021 Dec;16(12):777-9.
17. **Umeh OD, Utomi IL, Isiekwe IG, Aladenika ET.** Impact of the coronavirus disease 2019 pandemic on orthodontic patients and their attitude to orthodontic treatment. J Am Dent Assoc. 2021 May 1;159(5):e399-409.