Research Article

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Assessment of Impact of COVID-19 on the Orthodontic Practice in Nepal: An Online Form Survey

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ABSTRACT

Introduction: Since its outbreak in December 2019 in China, the coronavirus disease 2019 (COVID-19) has changed the world upside down. This study intends to observe the effect of the corona outbreak on Orthodontics and how the current situation is being managed in Nepal.

Objective: To assess and evaluate practice modification of Nepali Orthodontists during the COVID-19 outbreak

Materials and Method: After ethical approval from NHRC (Ref. 2263), a descriptive cross-sectional was conducted at department of Orthodontics, People's Dental College utilising convenience sampling. Self-administered questionnaire was distributed amongst seventy-two NMC registered Orthodontists all over Nepal through the mail from October 15, 2021 to November 20, 2021 which contained questions about changes they have faced before and after the outbreak.

Result: A total of seventy-two orthodontists responded, of which 43 (59.70%) were male of age group 30-35 years with clinic as their workplace. Majority of the replies (40, 55.60 %) were from inside Kathmandu valley. A total of 60 (8.30%) orthodontist had to completely shut down their department during the outbreak. But 39 (54.20%) of them maintained giving service to the patients with precautions. Almost all (67, 93.10%) respondents followed some guideline given by WHO, NDA, NMA, etc. to face the outbreak.

Conclusion: In conclusion, COVID-19 has had a very strong impact in field of Orthodontics all over Nepal. Nepali Orthodontists had to undergo practice modification during the COVID-19 outbreak regarding their practicing frequency, adopting of guidelines, personal protective equipment use, and management of their workplace.

Keywords: Coronavirus disease 2019; emergencies; orthodontics.

INTRODUCTION

The cities were locked down and the borders were sealed all across the world after the emergence of coronavirus disease 2019 (COVID-19).[1,2] Many workplaces were shut down including dentistry due to the high risk of the virus.[3] Orthodontics is that branch of dentistry which requires monthly adjustment of the braces, with the total treatment time of more than two years, compelling an orthodontist to see the patient even in the lockdown. Since most

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of the orthodontic patients are in their teenage, there will be at least one guardian accompanying the patient increasing the number of people visiting the clinic.

Thus, there is a high chance for an orthodontist to encounter suspected or infected patients. To combat with the virus, an orthodontist has to undergo many practice modifications in the clinics with the precautionary protocols set standard parameters to minimise the risk of contamination of the virus.[4-6]

This study aimed not only at collecting and analysing the data, but also assessing the changes and modifications needed in orthodontic practice to combat the COVID-19 which will be useful not only at present situation but will be useful as a reference in the future in a similar global threat.

MATERIALS AND METHOD

This is a descriptive cross-sectional study conducted at department of Orthodontics and Dentofacial Orthopaedics at People's Dental College from October 15, 2021 to November 15, 2021. Before the start of study, ethical approval (Ref. 2263) from Nepal Health Research Council was taken on 28th February 2021. An online self-administered questionnaire designed at www.forms.google.com was used to seek information from the participants. An informed consent was added in the home page of Google Forms and only after accepting the consent form, participants were allowed to fill the questionnaire. The online survey link with informed consent form were circulated through social media and an e-mail to Nepal Medical Council registered Orthodontists in all over Nepal and received a response through an online survey submission. Participants who were not willing for voluntary participation were excluded in the research. The sample size of 72 was calculated based on the population of the study. Convenient sampling was done for data collection. The sample size was calculated as:

$n_1 = Z^2pq/e^2$,

Where Z = confidence interval (1.96); p = 0.87 = (prevalence based on previous study, 87%); q = 1-p; e = expected error (5%). The sample size derived was 173.8. However, the population size (N) = the number of Orthodontist in Nepal were not more than 90 at the time of the research. The sample size was adjusted by using modified formula for sample size calculation for defined population.

$n_2= n_1/1+ [(n_1-1)/N]$. Where n^2 = new adjusted sample size. Now the total sample size derived was 59.52. After adding 20% of non-response rate, total sample size came to be 72.

The questionnaire was distributed among 76 Nepal Medical Council registered Orthodontists (ODOAN registered) all over Nepal through email and social media from October 15, 2021 to November 20, 2021, out of which 72 Orthodontists responded and participated in the study. Furthermore, the executive members of ODOAN (Orthodontic and Dentofacial Orthopaedics Association of Nepal) kindly allowed the survey to be circulated on their official Viber groups.

For pretesting, the questionnaire was first mailed to nine Nepali Orthodontists and their responses were recorded and analysed. There were around ninety Orthodontists in Nepal and 10% of total orthodontist population equals to nine. Thus, nine orthodontists were asked to fill the questionnaire for pretesting. After pretesting, reliability of the study was assessed. Validity was assessed by referring to various literature. This same tool was used before for assessment of Impact of COVID-19 on Maxillofacial surgery worldwide and has been published.[7]

The questionnaire comprised of a total of 22 multiple choice, open- and closed-ended questions. There were three types of questions present in the questionnaire. The first type was for general information about the respondents. The second type was structured for the glimpse of respondents practice before the outbreak. And the last being the scenario how a respondent handling the practice during the outbreak. The questions asked were focussed on the changes and modifications done in their workplace to combat COVID-19 outbreak in accordance with recent guidelines.

Data were analysed statistically using Microsoft Excel and the results were expressed as mean and standard deviation.

The questionnaire which was circulated comprised of the following questions.

1. Name

   _____

2. Age25- 30 years
   a) 31-35 years
   b) 36-40 years
   c) ≥4 years
3. Sex
   a) Male
   b) Female
4. Working place
   a) Province 1
   b) Province 2
   c) Province 3 (outside Kathmandu valley)
   d) Province 3 (inside Kathmandu valley)
   e) Province 4
   f) Province 5
   g) Province 6
   h) Province 7
5. Location of practice
   a) Private
   b) Private hospital
   c) Government hospital
   d) Medical/Dental college
   e) Others
6. Number of employees (all hierarchy levels) normally working in the department before the outbreak
7. Mark the boxes with the specialities performed in your department
   a) Removable appliances
   b) Fixed appliances
   c) Orthopaedic appliances
   d) Myofunctional appliances
   e) Orthognathic surgeries
   f) Lab procedures
   g) Aligners
   h) Others
8. Is your department still open during pandemic?
   a) Yes, and it is/was working normally
   b) Yes, with restrictions
   c) Yes, only on appointment basis
   d) No
9. What procedures were being done?
   a) Removable appliances
   b) Fixed appliances
   c) Orthopaedic appliances
   d) Myofunctional appliances
   e) Orthognathic surgeries
   f) Lab procedures
   g) Aligners
   h) Others
   i) Only emergencies (please mention)
      i. Loose bracket
      ii. Poking wires
      iii. Hurting loose band
      iv. Broken/lost retainers
      v. Others
10. Number of employees (all hierarchy levels) working in the department during the outbreak
11. Have any of them been assigned to another department with necessity?
    a) Yes
    b) No
    c) I don't know
12. As a percentage, how much do you think your department was active during pandemic?
    a) >90%
    b) 50 – 90 %
    c) 30 – 50 %
    d) <30 %

    What was the reason?
13. Did you follow any guidelines to face the outbreak?
    a) Yes
    b) No

    If yes, mention which one?

14. Were you satisfied with the guidelines?
    a) Yes
    b) No
    c) I don't know
15. Did you feel safe?
    a) Yes
    b) No
16. Were you equipped with protection? (One or more options)
    a) FFP1 masks
    b) FFP2 masks
    c) FFP3 masks
    d) Face shield
    e) Disposable suit
    f) Protection glasses
    g) None of these
    h) Other (Open-ended)
17. Did you experience outpatient clinic visits during the outbreak?
    a) Yes
    b) No
18. If yes, how did you manage them? (One or more options)
    a) Orthodontist were protected by PPE (personal protective equipment)
    b) Patient received PPE at the access to the hospital
    c) Furniture was moved to ensure a safe distance (1 meter or more)
    d) Waiting room was reorganised to avoid gatherings
    e) Pre-appointment by telephone or other media
    f) Access to the hospital/clinic through body temperature control
    g) Questionnaire for possible risk factors (interpersonal contacts and travel)
    h) Unnecessary physical contacts were avoided (handshakes, greetings)
19. Was the human specimen for SARS-CoV-2 screening or diagnosis collected before the procedure? (One or more options)
    a) Yes, for all patients
    b) Yes, for suspicious patients
    c) Yes, for all symptomatic patients
    d) No
20. Did your department/clinic face patients who were positive for the SARS-CoV-2 virus?
    a) Yes
    b) No
    c) I don't know

    If yes, how did you manage them?
21. Were the department/clinic workers being tested for SARS-CoV-2?
    a) Yes
    b) No
    c) I don't know
22. If yes, who funded the test?
    a) Self-funded
    b) Government-funded
    c) Hospital/clinic-funded
    d) Others

RESULT

A total of seventy-two orthodontists responded of which 43 (59.70%) were male. The majority of replies were from inside Kathmandu valley 40 (55.60%). Amongst the respondents, 27 (37.50%) orthodontists from different dental college, 64 (88.88%) from private clinic and hospital and 6 (8.33%) from different government hospital filled up the questionnaire. The orthodontists from the age group 31-35 years 33 (45.80%) were in majority (Table 1).

The result shows that 36 (50%) of the respondents thought the department was 30% less active than before pandemic. A significant decrease in the

Table 1: Demographic details of the participants.

Age	n (%)
25-30 years	3 (4.20)
31-35 years	33 (45.80)
36-40 years	24 (33.30)
≥40 years	12 (16.70)
Gender	**n (%)**
Male	43 (59.70)
Female	29 (40.30)
Working place	**n (%)**
Province 1	5 (6.90)
Province 2	4 (3.20)
Province 3 (outside Kathmandu valley)	40 (55.60)
Province 3 (inside Kathmandu valley)	9 (12.50)
Province 4	5 (6.90)
Province 5	7 (9.70)
Province 6	-
Province 7	2 (2.60)
Location of practice	**n (%)**
Private clinic	46 (63.80)
Private hospital	18 (25.08)
Government hospital	6 (8.33)
Medical/dental college	27 (37.50)

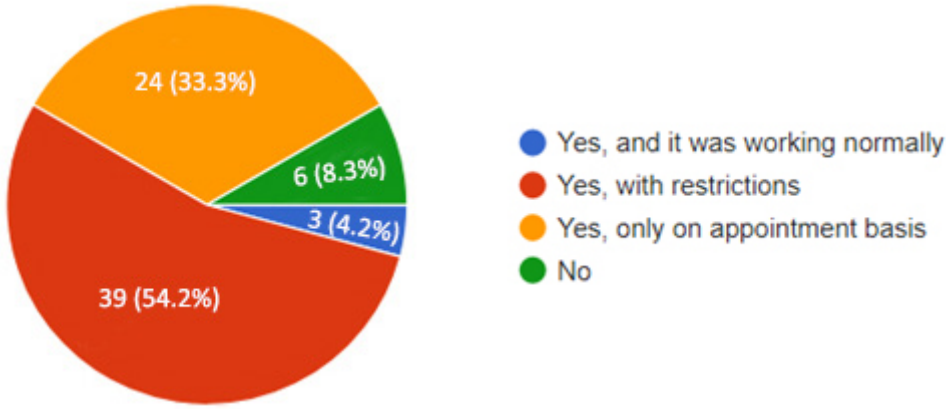

Figure 1: Status of department during pandemic.

number of employees working during the outbreak was seen. The average of six (8.30%) employees were working before the outbreak which reduced to an average of two employees. A total of 6 (8.30%) of the orthodontist had to completely shut down their department during the outbreak. But 40 (54.20%) of them maintained giving service to the patients but with precautions. Twenty-four (33.30%) of the orthodontist saw their patient on appointment basis (Figure 1).

Around 60 (83.20%) of the cases were only emergency cases mostly poking wires and hurting loose bands and brackets (Figure 2). The greatest reduction in fixed orthodontics (from 98.60% to 40.30%) was seen (Figure 3). Favoring the situation 7 (9.70%) saw the case of aligners during the pandemic (Figure 4).

Almost all 67 (93.10%) of the respondents followed a guideline to face the outbreak. Most

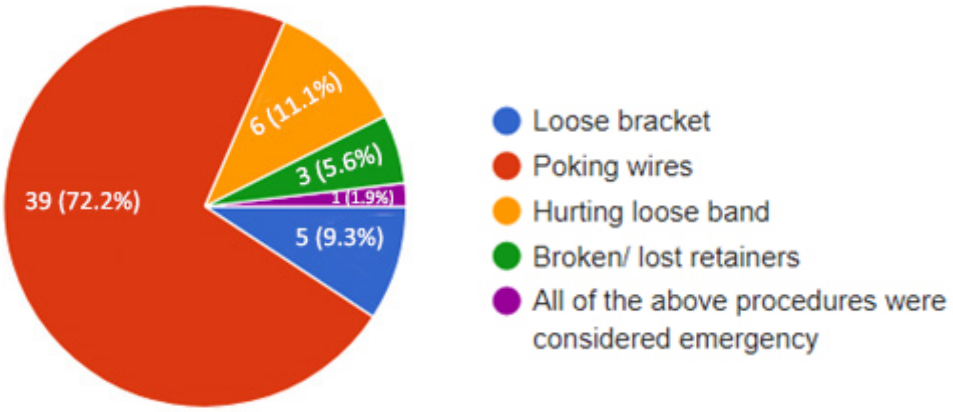

Figure 2: Emergency procedure done during pandemic.

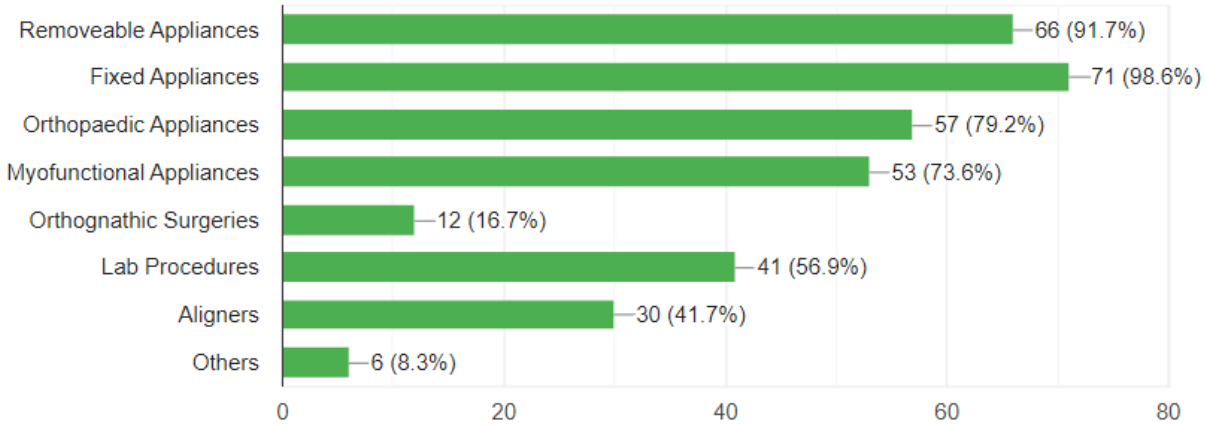

Figure 3: Specialities performed in department before pandemic.

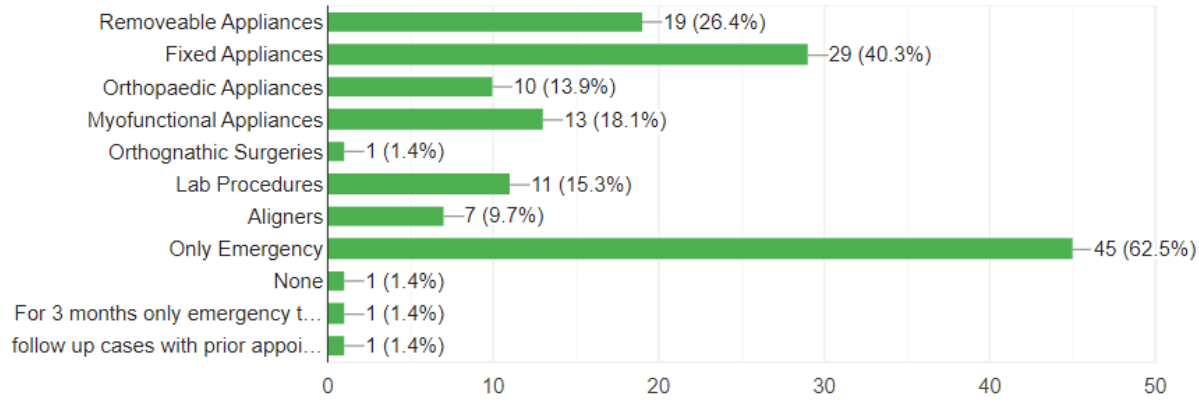

Figure 4: Specialities performed in the department during pandemic.

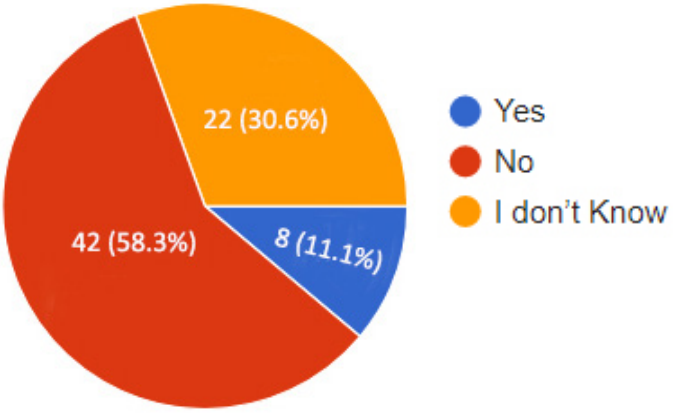

Figure 5: Covid Patient experienced in the department.

of them followed the guideline given by WHO. Even though 43 (59.70%) were satisfied with the guidelines, only 32 (44.40%) felt safe. Almost all of the clinicians working were equipped with at least a disposable suit with FFP1 mask, protection glass and a face shield.

Over half of them 38 (52.80%) experienced the outpatient clinic visit. Only 2 (2.80%) of the orthodontist made SARS-CoV-2 screening compulsory for the entire orthodontic patient seen, and 29 (40.30%) sent the suspicious patient for screening before the treatment. But 37(51.40%) did not ask for the screening. Even after such preparations, 8 (11.10%) of them faced the patients who were positive for the SARS-CoV virus (Figure 5).

Only 40 (55.60%) of the department/clinic workers were tested for SARS-CoV virus, of which only 27 (37.50%) were Hospital/clinic-funded. Unfortunately, almost half (31, 42.50%) of them were self-funded.

DISCUSSION

SARS-CoV-2, a positive-sense RNA virus belonging to the family Coronaviridae, is the aetiological agent responsible for (COVID-19) [8,9]. The CoV-2 is transmitted through aerosol particles.[10] This is the reason why oral health professionals are at the high risk of infection. Not only that but they can be a potential carrier of the virus. Most of the dental procedure needs the intervention of high-speed dental handpiece which imparts the splatters of aerosols.[11,12]

The risk of being exposed to and infected by SARS-CoV-2 is high on those who perform procedures in the head and neck region[13,14] and Orthodontics and Dentofacial Orthopaedics comes under this category.

The overwhelming participation of 72 respondents from all over the country was very encouraging. More than half of the respondents were from Kathmandu and rest from different provinces showing the density of the Orthodontist in the country.

The result shows that 36 (50%) of the respondents thought the department was less than 30% active. The fear of COVID cross infection could be the reason in decreased activity of the department. Only emergency management in some workplace may have also contributed in the decrease procedure. Moreover, the policy of government of lockdown has played the role.

A significant decrease in the number of employees working during the outbreak was observed. The number of employees was decreased to avoid crowding in the department. The patients were called on pre-appointment basis and only emergency cases were handled requiring less number employees. This virus had a very negative impact on orthodontics as 60 (8.30%) of the orthodontist had to completely shut down their department during the outbreak. But on other hand 39 (54.20%) of them maintained giving service to the patients with precautions.

Most of the emergency case found amongst the orthodontist was poking wires. The sharp end of the wire pokes the cheeks and other buccal mucosa causing cut which creates a pain. The poking wires along with hurting loose bands and brackets make eating and talking very uncomfortable demanding an emergency procedure for the ease of the patient. This result in reduction (from 98.60% to only 40.30%) was seen in fixed orthodontic treatment as it comes in non-emergency treatment. Only 1(1.40%) of the respondents saw the case of orthognathic surgery during the pandemic.

All responding orthodontists followed a guideline and most of them followed WHO guidelines. The working clinicians, along with other employees, were equipped with a disposable suit with FFP1 mask, a protection glass along with face shield.

Most of the patients were given a pre-appointment by telephone or other media. Access to the hospital/clinic through body temperature measurement and filling up a questionnaire for possible risk factors was done. Waiting room was reorganised to avoid gatherings but very few moved the furniture to ensure a safe distance (1 metre or more). The orthodontists were protected with PPE but the patients were not protected with PPE.

Very few of the orthodontists made SARS-CoV-2 screening compulsory for the entire orthodontic patient seen. Some of them sent only the suspicious patient for screening before the treatment. But most of them did not ask for the screening. 11.10% of the respondent encountered the patients who were positive for the SARS-CoV virus.

On the other hand, more than half of the department/ clinic workers were tested for SARS-CoV virus. Unfortunately, almost half 31 (42.50%) of them were self-funded and 27 (37.50%) were Hospital/ clinic- funded. Even after such precaution to face the pandemic, more than half of the respondents do not feel safe.

CONCLUSION

As a conclusion, the COVID has had an impact in the field of Orthodontic and Dentofacial Orthopaedics all over the Nepal. However, providing service to needy orthodontic patient even during the pandemic without any precise health care guideline was very admirable. All the experiences gained in the pandemic could be put together to form specific and effective speciality-based guideline for the protection of both the clinician and the patient. This could make us be prepared to face similar outbreak in the future.

Conflict of interest: None.

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