doi.org/10.32394/pe.77.48

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COMPARING THE EFFECTIVENESS OF TWO EDUCATIONAL METHODS FOR ORAL HEALTH MANAGEMENT IN COVID-19 PANDEMIC AMONG DENTAL PROFESSIONALS

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(Running title: Effectiveness of educational methods for oral health management in COVID-19)

ABSTRACT

AIM. The aim of this study was to train dentists on the different oral hygiene measures to be followed by COVID-19 patients via Webinar and Information Education Communication (IEC) Materials and compare the effectiveness of both.

METHODOLOGY. A total of 100 dental professionals were included by non-probability convenience sampling. Webinar and IEC Materials on oral hygiene measures, oral symptoms, and management strategies during COVID-19 were created and training was conducted for all dental professionals who registered themselves. An online version of the self-administered questionnaire (English) was created on the official Edantseva website and circulated to all the registered participants to obtain the pre and post-training data.

RESULTS. Out of the total 80 participants in the Webinar group, 47 were females and 33 were males. Comparing the mean total scores obtained by the participants in the webinar and IEC groups in the pre and post-test showed that there is a significant difference in the scores obtained by the participants in the two groups in the pre and post-test ($p<0.01$).

CONCLUSION. Educating dentists via IEC Materials was effective in improving their knowledge regarding oral health management during the COVID-19 pandemic. IEC materials being handy and referable at any time was found to be more effective.

Keywords: *COVID-19, Oral Health, Knowledge, Education, Dentists*

INTRODUCTION

Coronaviruses are a family of viruses causing respiratory infections in man including the novel COVID-19 which was discovered in China during December 2019 (1). It is the seventh known coronavirus till date to infect human beings (2). The rapid spread of COVID-19 has alarmed all the health professionals worldwide (1). The transmission of this virus from human-to-human is through the airborne droplets, direct contact with positive patients or surfaces contaminated with the virus. Maintaining social distancing and avoiding close or direct contact with people, especially those with flu like symptoms, is the most vital preventive measure one can take to prevent the spread of the infection (3).

As a healthcare professional, it is most relevant that a dentist is aware of all the social as well as the biological characteristics and also oral health considerations involved in this COVID-19 pandemic, to clarify the uncertainties of the population and to adopt the safest clinical measures to avoid unnecessary risks related to its transmission (1).

Currently, there is a necessity to modify both preventive and therapeutic protocols in dental settings due to the unanticipated spread of COVID-19 (4). Dental professionals will need adapt and adjust to this pandemic not just to treat suffering patients but also to avoid becoming a source of its transmission (5).

The oral cavity acts as a reservoir for certain respiratory pathogens. Oral hygiene maintenance can reduce the oral colonization of such pathogens thus reducing the risk of respiratory infections (6). Performing dental procedures on patients has become a problem amidst this pandemic, allowing focus on oral health maintenance and prevention (7).

Oral hygiene maintenance and oral care are the two crucial factors during COVID-19 times. A dentist is a person who can educate the public on good oral hygiene measures. Therefore it is necessary for a dental practitioner to be well informed and updated about the oral hygiene and oral care measures during COVID-19.

Learning is a complicated process. The five primary components of learning are the lecturer as the source, the students or patients as the receiver, the message (content), the channels (lecture, pamphlet, video), and the feedback (performance) (8). The channel in which the knowledge is acquired, is crucial. Even though previous research has been published comparing

of the effectiveness two educational methods in educating participants, none have focused on COVID-related oral health issues (9-11).

Although it has been more than 2 years since this pandemic has been hindering the dental profession and the dental health of the infected patients, proper training to improve the awareness of dentists in managing oral health-related issues among COVID-19-infected patients has not been done. There is a necessity to provide proper training and awareness among dentists, employing a combination of strategies to improve the oral health outcomes of COVID-19 patients. Hence this study aimed to train dentists on the different oral hygiene measures to be followed by COVID-19 patients via Webinar and Information Education Communication (IEC) Materials and compare the effectiveness of both.

METHODOLOGY

The present study aimed to train dentists on the different oral hygiene measures to be followed by COVID-19 patients via Webinar and IEC Materials, and compare the effectiveness of both by using a pretested questionnaire. This study was approved by the Institutional Review Board of AIIMS, New Delhi.

According to the pilot study conducted to test the feasibility of the study and to pre-test the questionnaire, we anticipate an inclination towards the webinar group, hence 4:1 ratio of participants in the webinar to IEC group was taken for sample size calculation. So, the minimum number of participants required to conduct this study was 80 in webinar and 20 in IEC group.

A total of 100 dental professionals were included in the study out of which 80 were allocated to the webinar and 20 to the IEC material group.

The sampling strategy was non-probability convenience sampling. The inclusion criteria were dental professionals such as academicians, practitioners and students who registered for the training programme. Those who were unwilling to participate or who did not give informed consent were excluded from the study.

Webinar and IEC Materials on oral hygiene measures, oral symptoms, and management strategies during COVID-19 was created and training was conducted for all dental professionals who registered themselves**.** Out of the total 100 participants, 80 attended the webinar and 20 participants read the IEC materials provided to them to gain knowledge regarding oral care during COVID-19.

A short, self-administered questionnaire was developed by a panel of experts consisting of fifteen members based on a thorough literature review and research. All the panel members were experts in the field of dentistry and were well-versed in oral care during COVID-19. They were chosen to be from the different specialties of dentistry to include all aspects of oral health in the questionnaire.

After diligent discussion and evaluation by the experts, the questionnaire was pretested and validated. The questionnaire's final version included 15 items grouped into two dimensions. The general information consisted of 5 items and rest 10 items were related exclusively to COVID-19 oral health. Nine out of the 10 questions were close-ended and one was open-ended.

An online version of the questionnaire (English) was created on the official Edantseva website and circulated to all the registered participants. The form contained requisite information on the ethical considerations followed by the choice of intervention by the participants. We anticipated an inclination towards the webinar group, hence a 4:1 ratio of participants in the webinar to IEC group was taken for sample size calculation. One participant was permitted to take part in any one of the interventions. The participants responded to the pre-test questions before administering the intervention. A post-intervention questionnaire was then administered to them which was the same as pre-intervention.

The training for dental professionals was carried out using validated manual and audio-visual aids created by authorized faculty members of the Center of Dental Education and Research, All India Institute of Medical Sciences, New Delhi. Intervention in the webinar group was in the form of a recorded video and in the IEC group was in the form of a poster. Both the group content was prepared under the supervision of two experts. The content was exhaustive of all necessary items required by the intended group of participants. The questionnaire was also carefully designed to judge the information gained through the proposed interventions.

The effectiveness of the training programme was assessed by comparing the mean total scores obtained by the participants of both the webinar and IEC groups in their pre and post-test. Descriptive statistics and SPSS version 23.0 were used to analyze the data. The level of significance was set to be p value ≤ 0.05. Repeated measures ANOVA was used to compare the mean total scores obtained.

RESULTS

A total of 100 dentists participated in the study (N=100). The results of the study are as below:

Table 1. Distribution of participants in two groups according to gender

Group	**Gender**		**Total**
	Female	**Male**	
Webinar	47 (58.75%)	33 (41.25%)	80 (100%)
IEC	9 (45%)	11 (55%)	20 (100%)
Total	56 (56%)	44 (44%)	100 (100%)

Table 2. Distribution of participants in two groups according to age

Group	**Mean age**	**Standard Deviation**	***p* value**
Webinar	35.81	7.97	0.026
IEC	31.45	6.52	
Total (Combined)	34.94	7.87	

Table 2 shows the distribution of participants in two groups according to age. It shows that there is a significant difference (p value <0.05) in the mean age of both the group participants.

Table 3. Comparison of mean total scores obtained by the participants in pre and post-test

	Webinar	**IEC**	***p* value**
Pre-test total	7.61 ± 0.15	6.6 ± 0.28	0.0027
Post-test total	7.61 ± 0.163	9.05 ± 0.25	<0.001
Difference	0 ± 0.20	2.45 ± 0.36	<0.001

Table 3 shows the comparison of mean total scores obtained by the participants in webinar and IEC groups in pre and post-test. It shows that there is a significant difference in the scores obtained by the participants between the two groups (Webinar and IEC) in the pre and post-test ($p<0.01$).

DISCUSSION

Recently, the association between the status of the oral cavity and systemic diseases such as cardiovascular disease, systemic infections and also respiratory diseases has been demonstrated in many studies (12,13). The impact of maintaining good oral hygiene and reduced acute respiratory diseases risk has also been reported in various studies (14,15). Dentists have professional knowledge in the field of oral disease prevention.. They play a key role in providing a positive attitude regarding self-care of the mouth and also teaching and encouraging patients regarding good oral health status (16).

During these COVID-19 times, dentists are the ones who can spread awareness regarding oral health management to patients. Hence as discussed above, this study aimed to train the dentists on the different oral hygiene measures to be followed by COVID-19 patients via Webinar and Information Education Communication (IEC) Materials and compare the effectiveness of both.

In the present study, among the total 100 participants, 56 were females and 44 were males. According to Iyer RR, Sethuraman R and Wadhwa M (17), there is an increasing number of enrolments by females in dental colleges due to which the turnover of female practitioners in dentistry has increased. This could be a possible reason for female participants being more in the study than males. A significant difference (p value <0.05) in the mean age of both the group participants was also observed.

Comparing the mean total scores obtained by the participants in the webinar and IEC groups in the pre and post-test, there was a significant difference in the scores obtained by the participants in the two groups in the pre and post-test ($p<0.01$). There is a significant difference in the score obtained by the IEC group participants in between the pre and post-test. This could be possibly due to the reason that the IEC group had a lesser number of participants and had concentrated learning through the materials, whereas in the webinar group, there were more participants and also there is a possibility of distractions during the presentation because of which there is no major difference in the scores.

Over time, all dentists worldwide are expected to adjust themselves to the norms of dental practice during COVID-19 infection. There is a need for them to accept and face these new challenges (18). For this every dentist not only needs to update themselves with the new guidelines but also the oral health characteristics of the COVID-19 pandemic to manage them efficiently.

CONCLUSION

Educating dentists regarding different oral hygiene measures to be followed by COVID-19 patients via IEC Materials effectively improved their knowledge. IEC materials being handy and referable at any time are more effective for educational purposes. Equipping dentists on oral health behavior during COVID-19 is not only beneficial for them but also for their patients.

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Received: 23.06.2023
Accepted for publication: 23.01.2024

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