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Whatsapp As A Communication Tool For Treating Patients: A Cross-Sectional Study Among Dental Practitioners

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ABSTRACT:
WhatsApp messenger is a new generation mobile application that allows easy exchange of text messages, images, audio and video files using internet connection. It is a simple, economical and effective means of communication tool. Dental practitioners are well trained to provide services that include preventive procedures for adults and children, restorative procedures like crowns, dentures, and dental implants. Private dental practice is blooming in India to cater to the increasing rate of population. It is quite conceivable that many dental practitioners might be using WhatsApp in their day-to-day practice for both general and 'dentistry related purposes'.
AIM : To assess the knowledge and extent of WhatsApp usage for dentistry related purposes among dental practitioners.
MATERIALS AND METHODS: A survey was conducted among dental practitioners in Chennai, India. The study involved 100 dental practitioners. The questionnaire was framed to assess: (a) Use of WhatsApp for taking second opinions; (b) Usefulness of dentistry related groups on WhatsApp and (c) Doctor-patient interaction on WhatsApp. Dental practitioners with either 'BDS' or 'MDS' degree were included in the present study. Data was collected and entered in spreadsheets and statistically analyzed using SPSS software.
RESULTS: 45% of the dental practitioners who participated in the survey had more than 10 years of experience. 88% of the dental practitioners have WhatsApp installed in their mobile phones. Oral surgery was the most common discipline that they usually obtain a second opinion. Clinical photographs are the most common kind of details that were sent in WhatsApp. The association between the year of experience and obtaining a second opinion through WhatsApp shows the highest percentage among dental practitioners who had more than 10 years of experience.
CONCLUSION: Majority of dental practitioners significantly use WhatsApp for dentistry related purposes and it has become an integral part of their day-to-day practice. All these findings suggest a positive impact of WhatsApp on good dental healthcare practice.

KEYWORDS: Communication tool, Dental practitioners, Whatsapp, innovative technology

INTRODUCTION

WhatsApp Messenger is a new generation communication tool that allows users to send instant messages, photos, video, voice messages and to make voice calls over an Internet connection [1]. The main feature of this mobile application is to help people stay connected by sending and receiving messages at no cost per message to the user unlike the original texting services like short message service, SMS[2]. In contrast, the requirement of Internet connection either a data plan or Wi-Fi connection, explains the widespread success [3,4]. Currently, WhatsApp Messenger is one of the most popular nonmedical mobile apps that has been downloaded across 40 countries in Europe, Asia, the Middle East, and the Americans. WhatsApp reached about 2 billion active users worldwide in the year 2021, WhatsApp is ranked as the most used mobile messenger app in the world. "WhatsApp messenger " is a cross-platform instant messaging application for smartphones. It is a simple, economical and effective means of communication tool [5]. Group chat is a popular feature in WhatsApp that further allows people to communicate and share images and videos over a common interface [6]. Smartphones and WhatsApp are now being used by doctors in health care delivery, for telemedicine and teledentistry services[7]. Dental practitioners are well trained to provide services that include preventive procedures for adults and children, restorative procedures like crowns, dentures, and dental implants[8–18]. Private dental practice is blooming in India to cater to the increasing rate of population [19–24]. It is quite conceivable that many dental practitioners might be using WhatsApp in their day-to-day practice for both general and 'dentistry related purposes' [25].

Although scientific studies on the use of WhatsApp Messenger remain scarce in the medical literature, increasing numbers of healthcare professionals have adopted it as a communication interface and for the exchange of images and videos [26]. WhatsApp image transfer does not reduce the image quality in the conversion from analog to digital formats, thus providing the ability to identify sufficient details for an adequate diagnosis and initial treatment with better efficacy than the other modalities used for the similar purposes[27]. Literature shows the use of WhatsApp as an adjuvant health care tool, as there is some evidence that this App can be used as an effective, safe and economical telemedicine tool for professionals from all fields of health care (nurses, psychologists, dentists, physical therapists and others)[28]. A nationwide survey was conducted in the United States in 2011 that included about 3306 medical providers and found that the majority of them used various apps in their clinical practice, while some of which had not been specifically developed for medical purposes[29].

As WhatsApp mobile applications have become an essential part of everyday life, there are only few studies that are available to provide evidence on its use among dental practitioners. The purpose of this study is to evaluate the extent of whatsapp usage among dental practitioners for treating patients through an epidemiological survey. The aim of the study was to assess the knowledge and extent of WhatsApp usage for dentistry related purposes among dental practitioners.

MATERIALS AND METHODS:

A survey was conducted among dental practitioners in Chennai, India. The study involved 100 dental practitioners. The questionnaire was framed to assess: (a) Usage of WhatsApp for taking second opinions; (b) Usefulness of dentistry related groups on WhatsApp and (c) Doctor-patient interaction on WhatsApp. Dental practitioners with either 'BDS' or 'MDS' degree were included in the present study. Data was

collected and entered in spreadsheets and statistically analyzed using SPSS software. The questionnaire was assessed by experts in the field of validity and reliability. Simple random sampling methodology was carried out to select the dental practitioners for the present study. The sample size was assessed by conducting a pilot survey in a smaller sample size. The questionnaire validity checking was done through standard manner. Data was entered into a spreadsheet using Excel Version Microsoft. The data tabulation in Excel was done accordingly. The data which was collected was analysed using Statistical Package for Social Sciences (SPSS) software. The data were assessed by being subjected to descriptive statistics analysis with the help of percentage, frequency and means. The data was represented by means of pie charts and bar charts. To test differences among variables, chi square test was done with a p value <0.05 considered statistically significant.

RESULTS AND DISCUSSION

Table 1: Knowledge and extent of WhatsApp usage for dentistry related purposes among dental practitioners.

QUESTIONS	ANSWERS	FREQUENCY (%)
Years of Experience of dental practice	Less than 10 years More than 10 years More than 20 years	32 45% 23%
Are you using WHATSAPP on your phone?	Yes No	88% 12%
Do you use WHATSAPP for seeking a second Opinion?	Yes No	68% 32%
What type of response does the receiver send?	Prompt reply Late reply No reply	45% 33% 22%
Do you use clinical photographs sent via WHATSAPP for a second opinion?	Yes No	80% 20%

How often do you use clinical photographs sent via WHATSAPP for a second opinion?	Daily Weekly Monthly Never	29% 19% 30% 22%
Does sending radiographs via WHATSAPP play an important role in obtaining a second opinion?	Yes No	83% 17%
How often do you use radiographs for obtaining a second opinion via WHATSAPP?	Daily Weekly Monthly Never	27% 23% 32% 18%
Do you take consent from the patient before sending clinical photographs for a second opinion?	Always Occasionally Never	33% 40% 27%
What type of consent do you obtain?	Verbal Written	40% 35%

	No consent	25%
Which is the most common discipline you usually obtain a second opinion from?	Endodontics Oral surgery Periodontics Oral pathology Prosthodontics Oral medicine Pedodontics Orthodontics	14% 23% 16% 12% 9% 11% 8% 7%
What do you usually share in WHATSAPP groups?	Case reports Radiographs Newer advances Articles Achievements	25% 28% 22% 12% 13%
Do your patients ask queries on WhatsApp?	Yes No	90% 10%
What kind of queries do your patients ask?	Treatment related Appointment Postoperative instructions Medicines Diet All the above	25% 18% 17% 15% 5% 20%
Do you respond to their queries?	Yes No	84% 16%
Do you think WHATSAPP is a good communication tool ?	Yes No	74% 26%
Do you find whatsapp useful for consultation during this pandemic?	Yes No	68% 32%

Do you think WHATSAPP is an adjuvant tool for telemedicine?	Yes No	70% 30%
Do you think WHATSAPP is a good communication modality that Is it revolutionizing in dental practice?	Yes No	70% 30%
What kind of details do you send on WhatsApp?	Clinical photos Radiographic images Biopsy reports Laboratory investigations Drug prescriptions All the details	19% 12% 16% 15% 17% 21%

Among 100 dental practitioners, 32% 0f the dental practitioners had less than 10 years of experience, 45% of them had more than and 23% of them had more than 20 years of experience (Graph 1). 88% of the dental practitioners had WhatsApp installed in their mobile phones and 12% of the dental practitioners did not have WhatsApp installed in their mobile phones (Graph 2).

The bar chart shows the association between the year of experience and dental practitioners obtaining a second opinion.Chi square test was done and the association was found to be statistically significant. p value = 0.270 > 0.05 statistically not significant. However it was noticed that the majority of dental practitioners who had more than 10 years of experience had used WhatsApp for obtaining a second opinion (Graph 3). 45% of the dental practitioners received prompt response, 33% of the dental practitioners received late response and 22% of the dental practitioners did not receive any response (Graph 4).

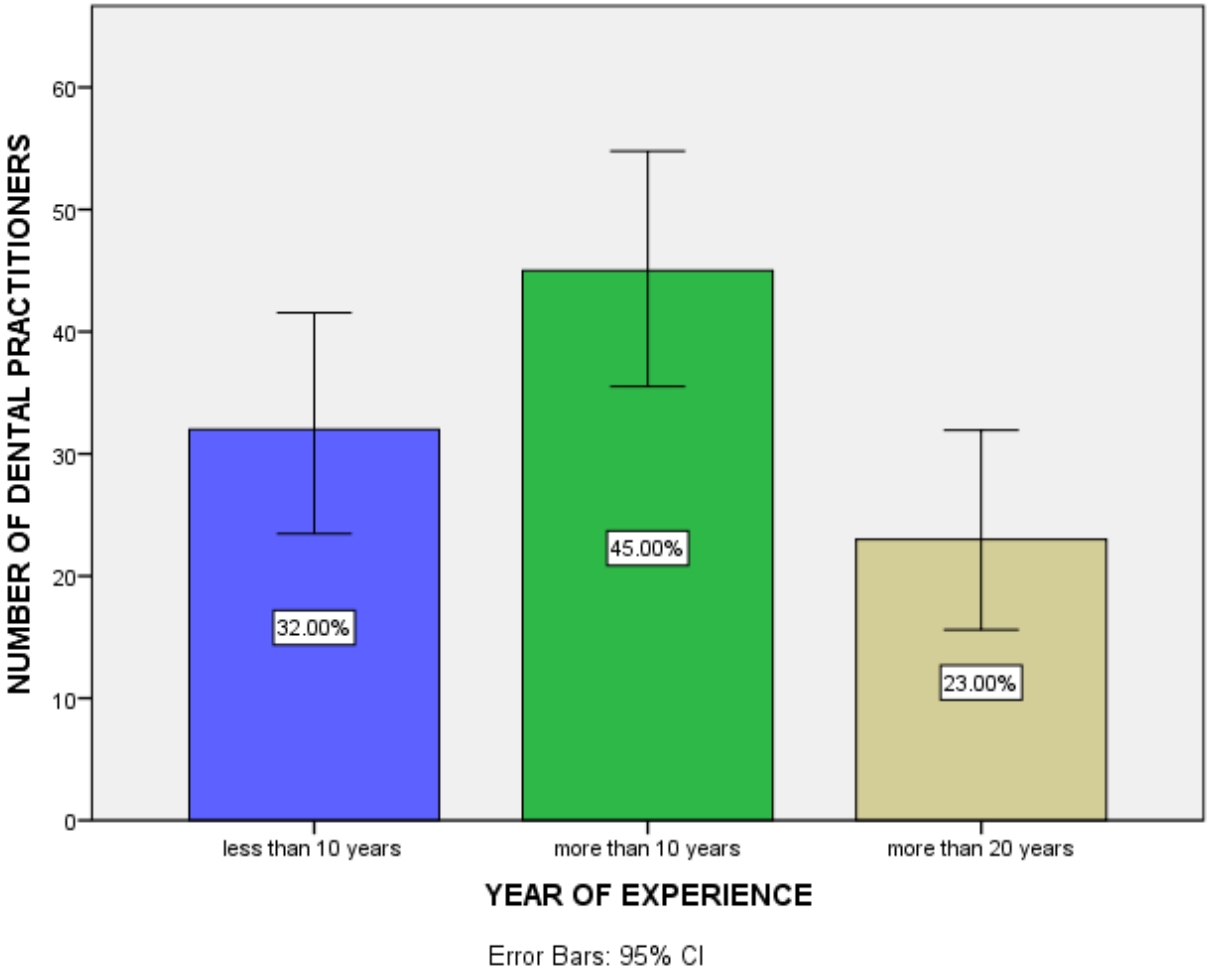
80% of the dental practitioners who send photographs via WhatsApp for obtaining a second opinion and 20% of the students who did not send photographs through WhatsApp for second opinion (Graph 5). 83% of the dental practitioners who sent radiographs via WhatsApp for obtaining a second opinion and 17% of the dental practitioners who did not send radiographs through WhatsApp for second opinion (Graph 6).

40% of the dental practitioners who received verbal consent from patients, 35% of the dental practitioners who received written consent and 25% of the dental practitioners who did not receive consent through WhatsApp (Graph 7). 14% of dental practitioners from endodontics, 23% of dental practitioners from oral surgery, 16% of dental practitioners from periodontics, 12% of dental practitioners from oral pathology, 9% of the dental practitioners from prosthodontics, 11% of dental practitioners from

oral medicine, 8% of dental practitioners from pedodontics and 7% of dental practitioners from orthodontics discipline of dentistry (Graph 8).

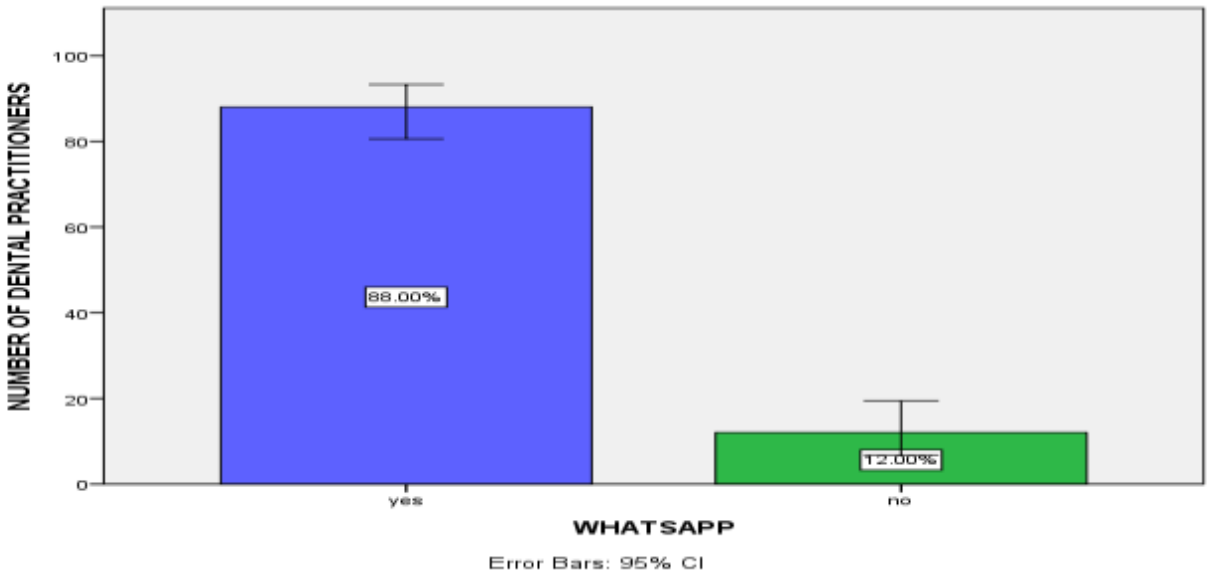
25% of dental practitioners shared case reports, 28% of dental practitioners shared radiographs, 22% of them shared newer advances, 12% of them shared articles and 13% of them shared achievements (Graph 9). 74% of dental practitioners thought WhatsApp as a good communication tool and 26% of them thought WhatsApp was not a good communication tool for treating patients (Graph 10).

70% of dental practitioners thought WhatsApp as a good telemedicine tool and 30% of them thought WhatsApp was not a good telemedicine tool for treating patients (Graph 11). The bar chart shows the association between the year of experience and dental practitioners obtaining a second opinion for various details. Chi square test was done and the association was found to be statistically significant. p value = 0.436 > 0.05 statistically not significant. However it was noticed that the majority of the dental practitioners of more than 10 years had shared all the details like radiographic images, biopsy reports, laboratory investigations and drug prescriptions (Graph 12).

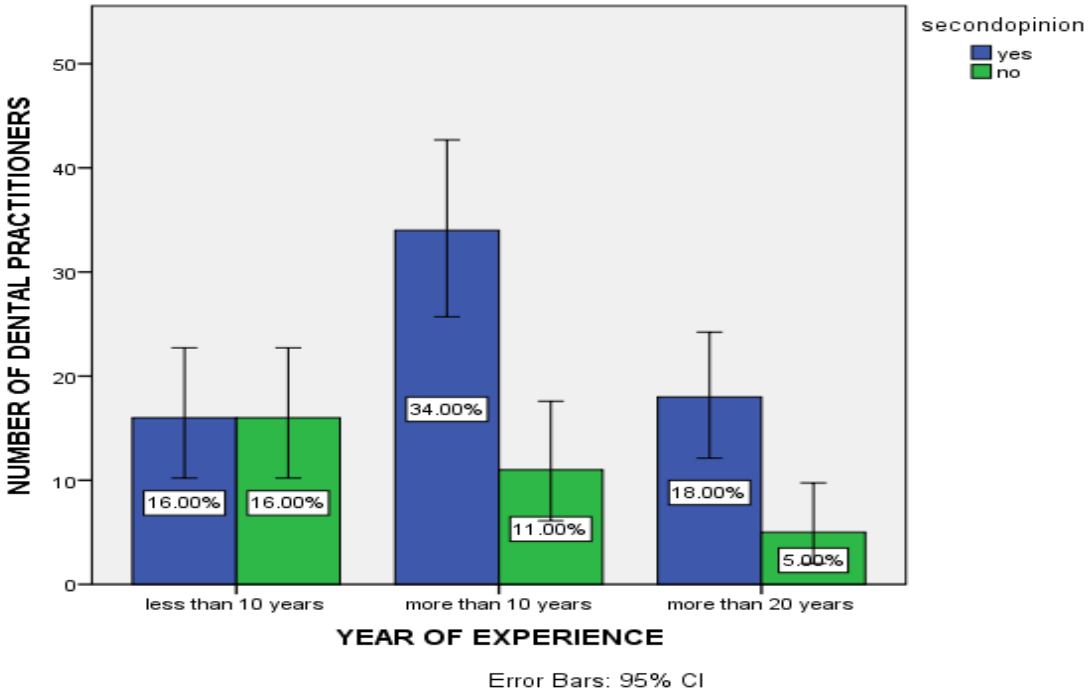


Graph 1: Bar chart showing the year of experience distribution of dental practitioners in sample population. Blue colour denotes less than 10 years of experience, green colour denotes more than 10

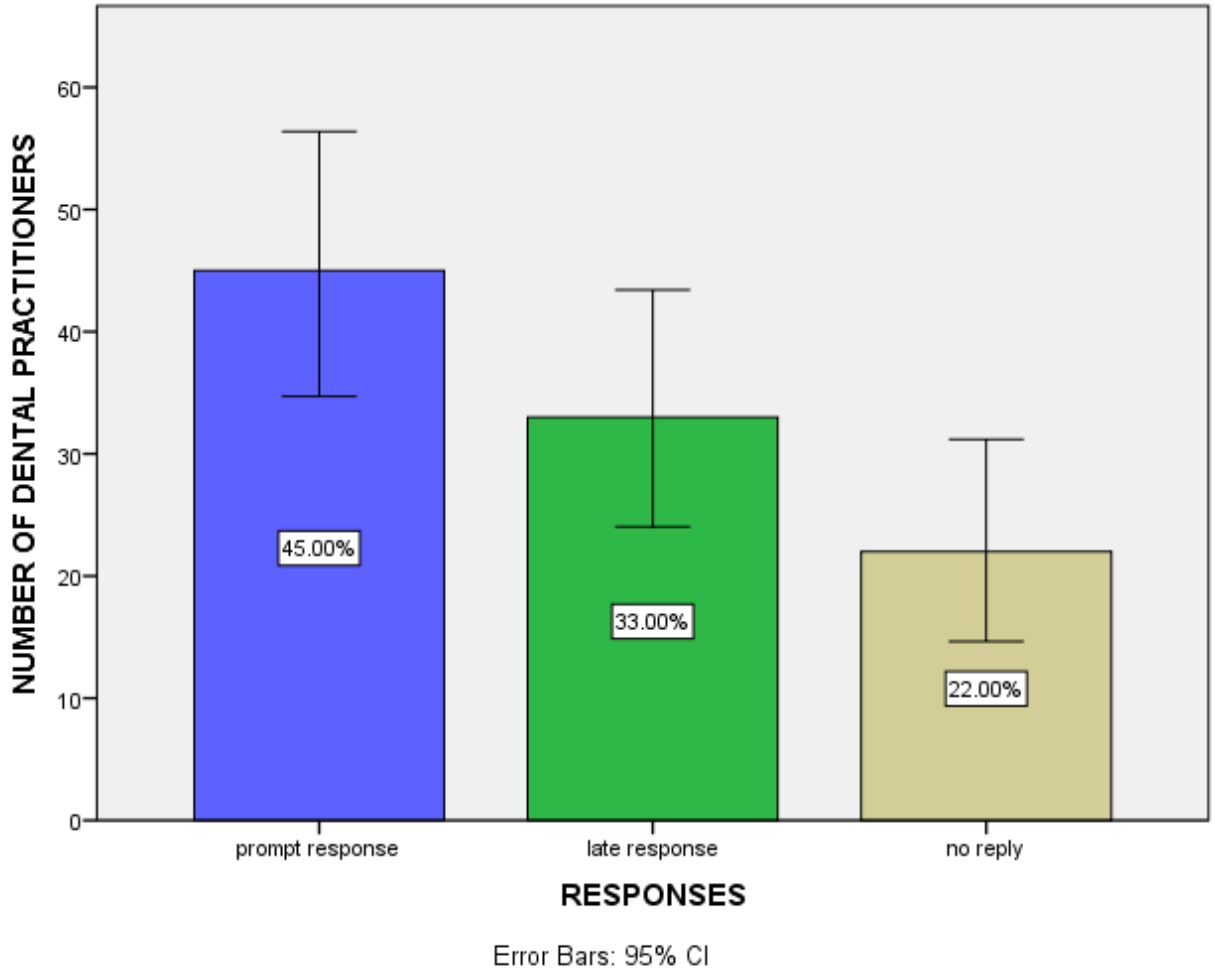
years of experience and dark yellow colour denotes more than 20 years of experience. 32% 0f the dental practitioners had less than 10 years of experience, 45% of them had more than and 23% of them had more than 20 years of experience.



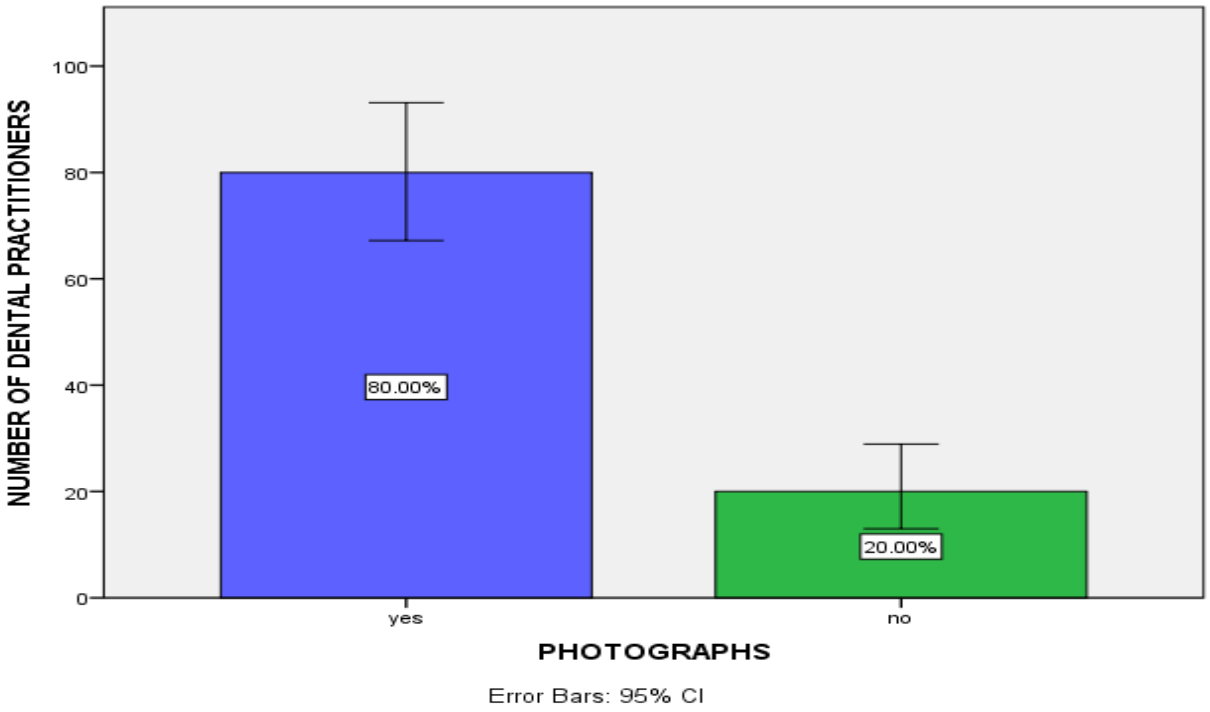
Graph 2: Bar Chart showing the distribution of WhatsApp installation among the dental practitioners. Blue colour denotes the dental practitioners who had WhatsApp installed in their mobile phones and green colour denotes the dental practitioners who had not installed WhatsApp in their mobile phones. 88% of the dental practitioners had WhatsApp installed in their mobile phones and 12% of the dental practitioners did not have WhatsApp installed in their mobile phones.



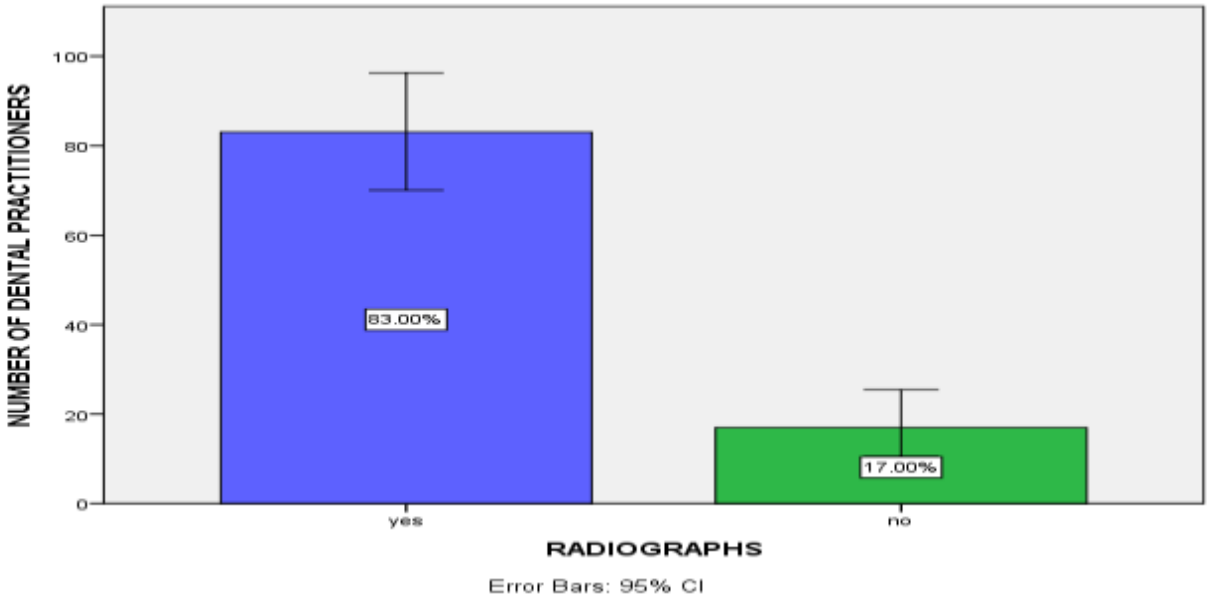
Graph 3: The bar chart shows the association between the year of experience and dental practitioners obtaining a second opinion. X axis represents the year of dental experience of dental practitioners and Y axis represents the frequency of distribution of dental practitioners obtaining a second opinion. Blue colour represents the dental practitioners who obtain a second opinion and green colour represents the dental practitioners who did not obtain a second opinion through WhatsApp. Chi square test was done and the association was found to be statistically significant. p value = 0.270 > 0.05 statistically not significant. However it was noticed that the dental practitioners who had more than 10 years of experience had used WhatsApp for obtaining a second opinion.



Graph 4: Bar Chart showing the distribution of WhatsApp response among dental practitioners. Blue colour denotes prompt response, green colour denotes late response and dark yellow colour denotes no response. 45% of the dental practitioners received prompt response, 33% of the dental practitioners received late response and 22% of the dental practitioners did not receive any response.

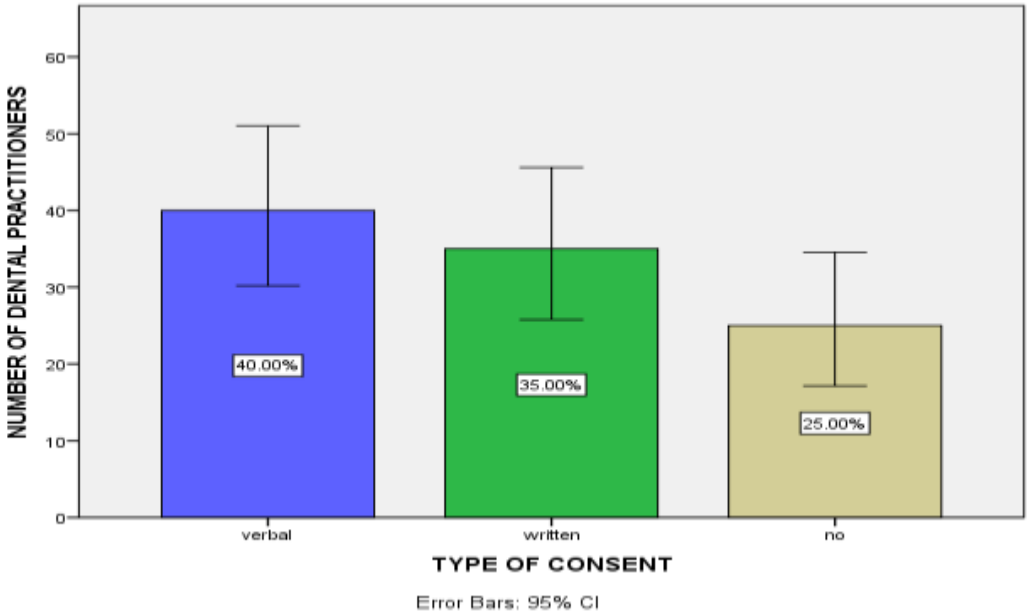


Graph 5: Bar chart showing the distribution whether dental practitioners send photographs through WhatsApp for second opinion. Blue colour denotes the dental practitioners who send photographs via WhatsApp for obtaining a second opinion and green colour denotes the students who did not send photographs through WhatsApp for second opinion. 80% of the dental practitioners who send photographs via WhatsApp for obtaining a second opinion and 20% of the students who did not send photographs through WhatsApp for second opinion.

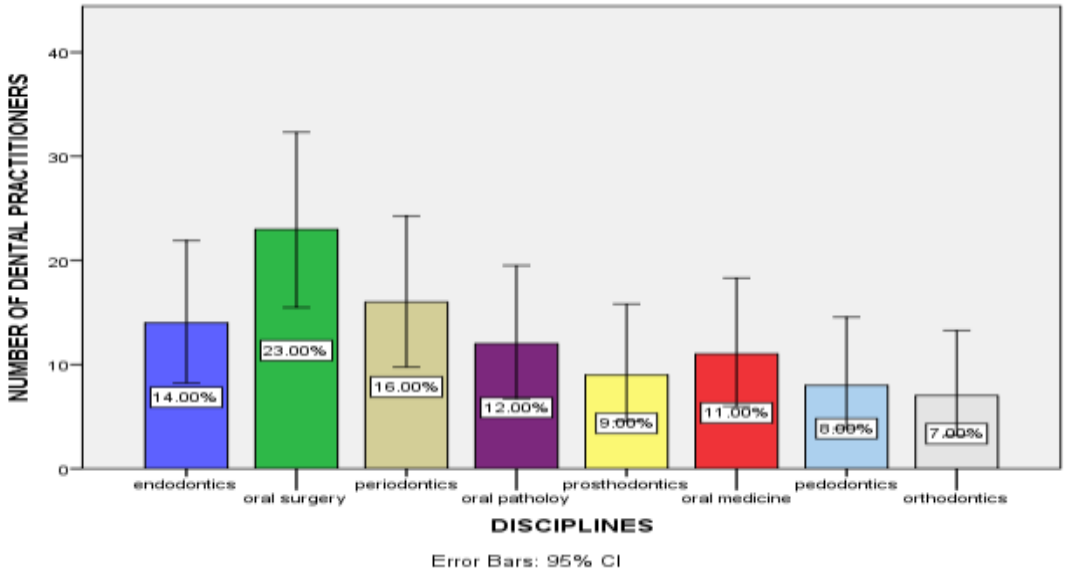


Graph 6: Bar chart showing the distribution whether dental practitioners send radiographs through WhatsApp for second opinion. Blue colour denotes the dental practitioners who send radiographs via WhatsApp for obtaining a second opinion and green colour denotes the dental practitioner who did not

send radiographs through WhatsApp for second opinion. 83% of the dental practitioners who sent radiographs via WhatsApp for obtaining a second opinion and 17% of the dental practitioners who did not send radiographs through WhatsApp for second opinion.

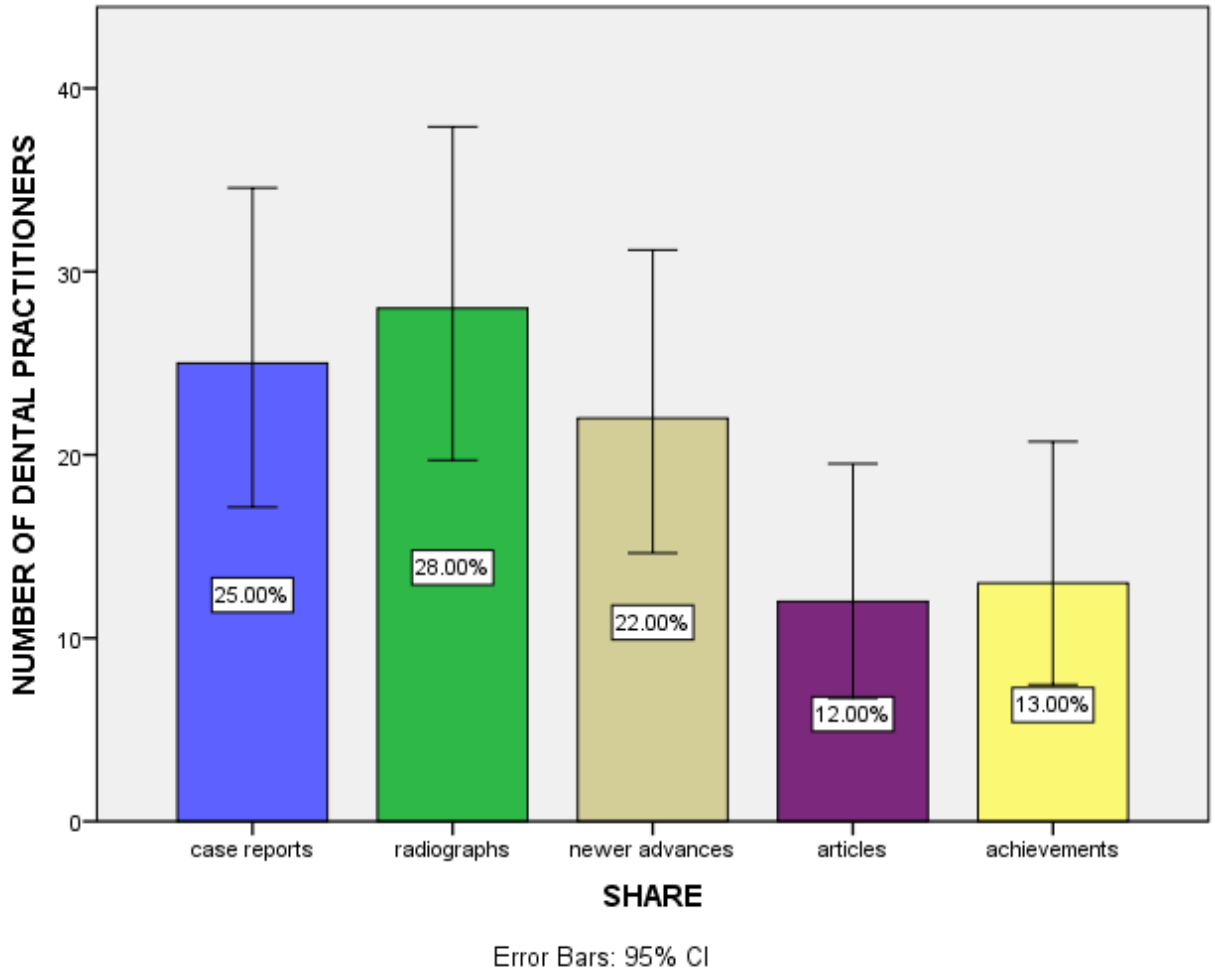


Graph 7: Bar chart showing the distribution of dental practitioners who have received different types of consent from their patients through WhatsApp. Blue colour denotes the dental practitioners who received verbal consent from patients, green colour denotes the dental practitioners who received written consent and dark yellow colour denotes the dental practitioners who did not receive consent through WhatsApp. 40% of the dental practitioners who received verbal consent from patients, 35% of the dental practitioners who received written consent and 25% of the dental practitioners who did not receive consent through WhatsApp.

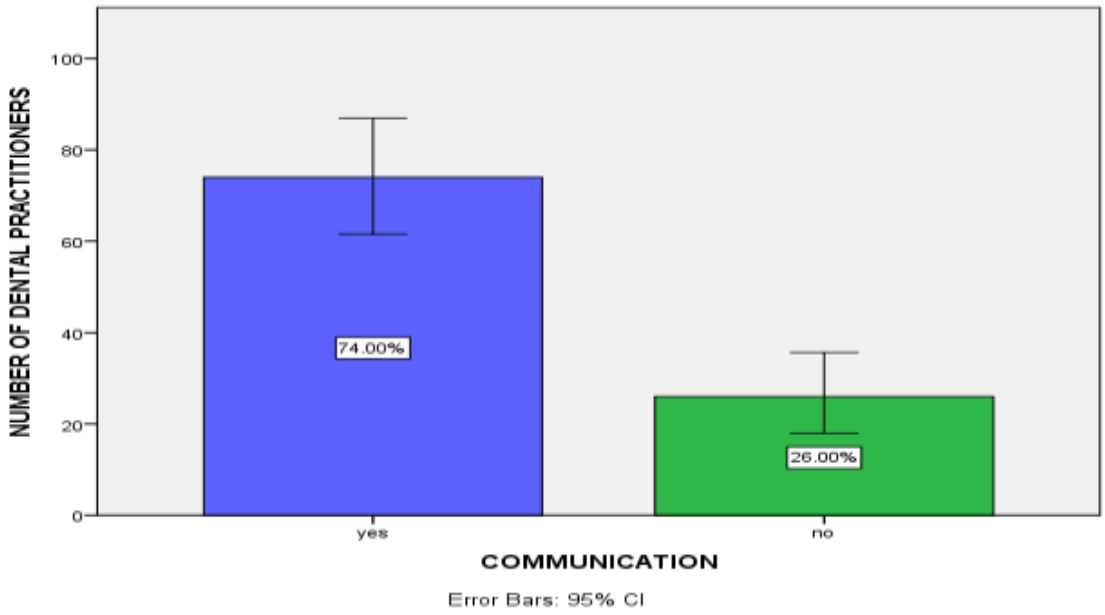


Graph 8: Bar Chart showing the distribution of dental practitioners who obtain a second opinion commonly from any particular discipline in dentistry. Dark blue colour denotes endodontics, green

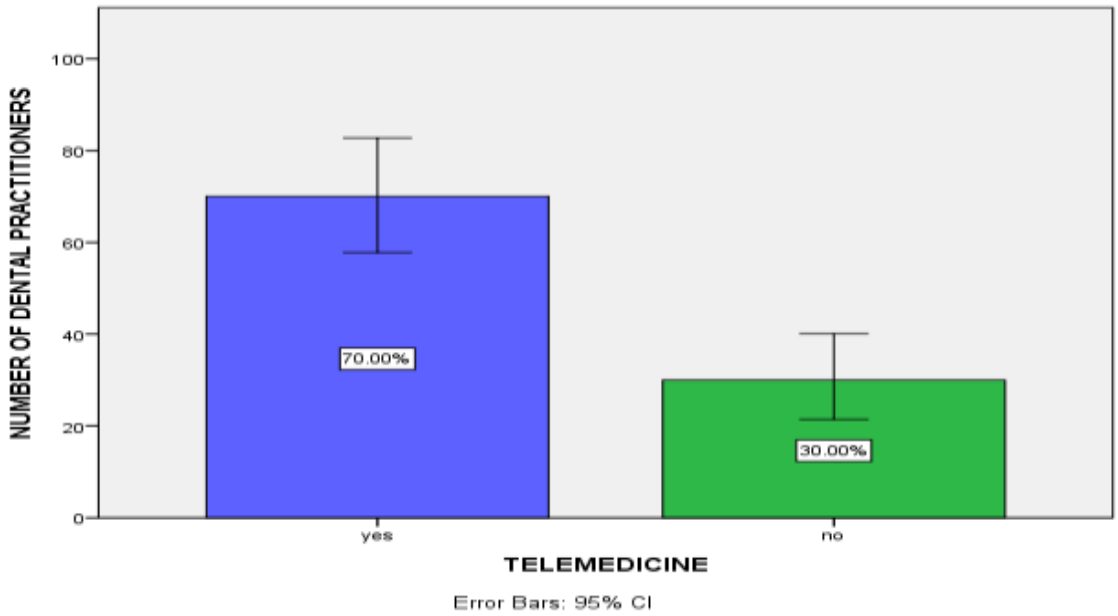
colour denotes oral surgery, dark yellow colour denotes periodontics, violet colour denotes oral pathology, light yellow colour denotes prosthodontics, red colour denotes oral medicine, light blue colour denotes pedodontics and grey colour denotes orthodontics discipline of dentistry. 14% of dental practitioners from endodontics, 23% of dental practitioners from oral surgery, 16% of dental practitioners from periodontics, 12% of dental practitioners from oral pathology, 9% of the dental practitioners from prosthodontics, 11% of dental practitioners from oral medicine, 8% of dental practitioners from pedodontics and 7% of dental practitioners from orthodontics discipline of dentistry.



Graph 9: Bar chart showing the distribution of dental practitioners regarding the content shared in WhatsApp group. Blue colour denotes case reports, green colour denotes radiographs, dark yellow denotes newer advances, violet colour denotes articles and light yellow colour denotes achievements. 25% of dental practitioners shared case reports, 28% of dental practitioners shared radiographs, 22% of them shared newer advances, 12% of them shared articles and 13% of them shared achievements.

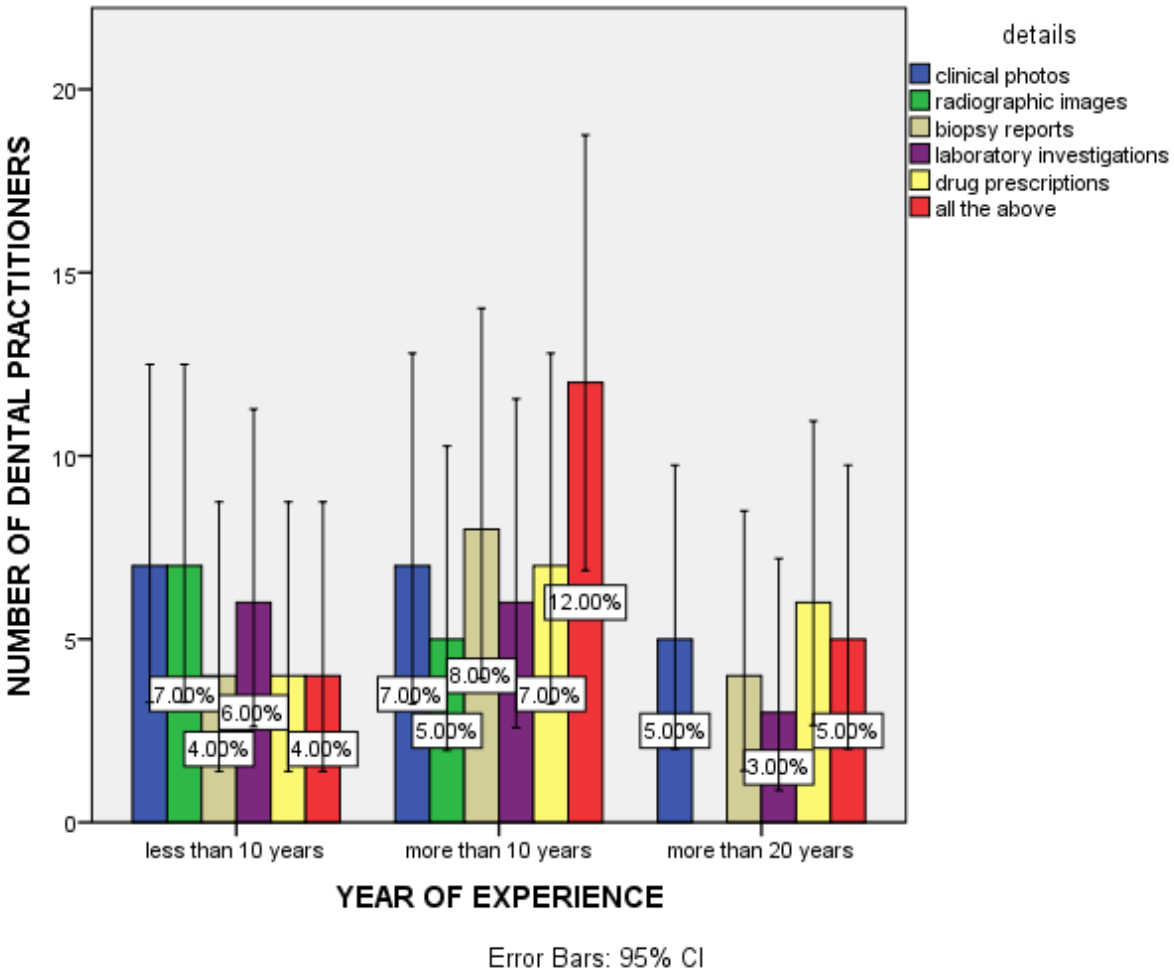


Graph 10: Bar chart showing the distribution of dental practitioners regarding their opinion on using WhatsApp as a good communication tool for treating patients. Blue colour denotes the dental practitioners who thought WhatsApp as a good communication tool for treating patients and green colour denotes the dental practitioners who thought WhatsApp was not a good communication tool for treating patients. 74% of dental practitioners thought WhatsApp as a good communication tool and 26% of them thought WhatsApp was not a good communication tool for treating patients.



Graph 11: Bar chart showing the distribution of dental practitioners regarding their opinion on using WhatsApp as a telemedicine tool for treating patients. Blue colour denotes the dental practitioners who thought WhatsApp as a good telemedicine tool for treating patients and green colour denotes the dental practitioners who thought WhatsApp was not a good telemedicine tool for treating patients. 70% of dental

practitioners thought WhatsApp as a good telemedicine tool and 30% of them thought WhatsApp was not a good telemedicine tool for treating patients.



Graph 12: The bar chart shows the association between the year of experience and dental practitioners obtaining a second opinion for various purposes. X axis represents the year of dental experience of dental practitioners and Y axis represents the frequency of distribution of dental practitioners obtaining a second opinion for various purposes. Blue colour denotes clinical photos, green colour denotes radiographic images, dark yellow colour denotes biopsy reports, violet colour denotes laboratory investigations, light yellow colour denotes drug prescriptions and red colour denotes all the details. Chi square test was done and the association was found to be statistically significant. p value = 0.436 > 0.05 statistically not significant. However it was noticed that the majority of the dental practitioners of more than 10 years had shared all the details like radiographic images, biopsy reports, laboratory investigations and drug prescriptions.

In the present study, 88% of dental practitioners had installed WhatsApp on their mobile phone (Graph 2). This provides the data of the popularity of this mobile application among dentists. In recent times, smartphone usage has become an integral part of life. It is not only used for day-to-day communication but also extensively used in medical practice for the purpose of patient care, monitoring, rehabilitation,

diagnosis, teaching, and also for research purposes. A large population of dental practitioners have reported using WhatsApp for obtaining a second opinion. Chi square test was done and the association was found to be statistically significant. p value = 0.270 > 0.05 statistically not significant. However it was noticed that the dental practitioners who had more than 10 years of experience had used WhatsApp for obtaining a second opinion (Graph 3).

The diverse clinical and operational experience could be the reason for not seeking the second opinion. Other reasons for not obtaining a second opinion could be the regular visits of expert consultants for challenging cases. In dentistry, smartphones have emerged as an effective tool in providing quality oral health to patients. Petruzzi and De Benedittis studied the use of WhatsApp as a telemedicine platform for facilitating oral medicine consultation and improving clinical examination in remote areas[5]. Majority of the dental practitioners obtained a prompt reply for their second opinion (Graph 4). This finding suggests that WhatsApp is an effective communication tool used among dental practitioners.

80% of the dental practitioners frequently send photographs for obtaining a second opinion (Graph 5). It was found that transfer of photomicrograph via WhatsApp is an effective and convenient approach in procuring second opinion on 'histopathological diagnosis of oral pathologies' which may be tricky on several occasions[30]. The involvement of multiple observers decreases individual error rate and increases the chance of correct diagnosis. 87% of the dental practitioners frequently send radiographs for obtaining a second opinion (Graph 6).

In the present study, we observed a good frequency of sharing clinical photographs and radiographs for obtaining the second opinion. 40% of dental practitioners received verbal consent from their patients (Graph 7). The most common discipline that required the second opinion by the dental practitioners was in oral surgery, followed by periodontics, endodontics, oral pathology, oral medicine, prosthodontics, pedodontics and orthodontics (Graph 8). This could be challenging for clinical diagnosis for challenging cases requiring expertise and orthodontics treatment are not routinely practiced. The systematic review by Dhuvad et al provided evidence that utilization of smartphones in oral and maxillofacial surgery facilitate in the differential diagnosis, treatment, follow up, prevention of the disease further and thereby improve the quality of patient care without requiring the presence of the maxillofacial surgeon in remote areas[31]. Recently, Sarode et al. studied the efficacy of WhatsApp application for obtaining the second opinion on histopathological diagnosis in oral pathology practice[32]. Zotti et al. studied the usefulness of WhatsApp in improving oral hygiene compliance in adolescent orthodontic patients[33]. In a recent study, Nayak et al. reported that WhatsApp can be a more effec- tive tool for providing dental education on tobacco and oral cancer as compared to conventional audio-visual aids[34]. Majority of dental practitioners shared radiographs on WhatsApp (Groups 9).

'Group formation' is very common and popular among users of WhatsApp. 74% of dental practitioners thought WhatsApp as a good communication tool for treating patients (Graph 10). 70% of dental practitioners thought WhatsApp as a good telemedicine tool for treating patients (Graph 11). Chi square test was done and the association was found to be statistically significant. p value = 0.436 > 0.05 statistically not significant. However it was noticed that the majority of the dental practitioners of more

than 10 years had shared all the details like radiographic images, biopsy reports, laboratory investigations and drug prescriptions (Graph 12).

Recent studies have reported the increased presence of WhatsApp in medical as well as other healthcare fields, which reflects the increased acceptance of its use. This attributes to the fact that WhatsApp is a cost-effective, quick, reliable, and user-friendly tool. The findings of the study proved that the majority of the dental practitioners had knowledge and extent of WhatsApp usage for treating patients. Limitations of this study were that a convenience sample was chosen, limited sample size, online platform for conducting the survey than direct interviews. The future scope would be diversity of WhatsApp usage for dentistry related purposes.

CONCLUSION:

Majority of dental practitioners significantly use WhatsApp for dentistry related purposes and it has become an integral part of their day-to-day practice. All these findings suggest a positive impact of WhatsApp on good dental healthcare practice.

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CONFLICT OF INTEREST:

The authors declare no potential conflict of interest .

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