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Teledentistry in Periodontal Diagnosis: A New Age Practice

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Abstract:-

➢ ***Background:***

Teledentistry is same as telemedicine. It has come out as a new diagnostic tool for different disciplines of dental care. As a part of teledentistry, teleperiodontics concentrates on the application of digital technology for communication and facilitate the innovative technology of telecommunications in the field of periodontics. The teleperiodontics has an infinite potential of access to the periodontitists from a distant rural area and thus enhance effective delivery of oral health care to the remote under privileged rural areas. It will make easier for early diagnosis of periodontal disease to treat it in its early stage. It allows the periodontitists and the patients to interact through video conferencing and data exchange system. But teleperiodentistry is in its infant stage and not much penetrated into the diagnosis and treatment field of periodontics. Hence, the objective of this survey study was to assess the attitude, knowledge, and application of teleperiodontistry in day to day practice among the periodontitists and other dental practitioners at different levels. Material and Method: A questionnaire comprising of 27 close ended questions to evaluate the attitude, knowledge, and practice of teleperiodentistry and teledentistry was circulated among the dental surgeons of dental colleges present in Karnataka. Result: A total of 120 responses were received. Majority of the responses were not aware about teleperiodentistry and also not agreed for diagnosing and prescribing oral hygiene practices and medicines for management of periodontal health. Conclusion: The potential of teleperiodentistry needs to be delved into by the periodontitists with an objective to deliver a better periodontal care to distant patients who are unable to visit them.

Keywords:- *Teleperiodontics, Oral Care, Teleconsultation Teledentistry.*

I. INTRODUCTION

To maintain overall quality of life the primary requisite is to maintain good health which only possible when the individual maintain a good oral health. A standard oral health can be maintained with early detection and diagnosis of a periodontal condition. With technological revolutions it is now possible for better oral health care delivery even if the patient is at a distant place. This system of diagnosing and providing treatment by a dentist from a distant location via digital technology is called teledentistry. Teledentistry, is a combination of telecommunication and dentistry. It helps the dental practitioners to deliver effective therapy to the patients located in a distant place specifically in rural and underprivileged areas.

As per Association of American Medical Colleges [1], the telemedicine is defined as; "telemedicine is the use of telecommunications technology to send data, graphics, audio, and video images between participants who are physically separated (i.e. at a distance from one another) for the purpose of clinical care". Due to the technological advancement, the branch of modern telemedicine has emerged to deliver remedial treatment to the patients of far off rural areas.

J. Cook used the term "teledentistry" in 1997. [2] He defined teledentistry as "the practice of using video-conferencing technologies to diagnose and to provide advice about the treatment over a distance". In 2019, Alawwad SM et.al. found that teledentistry has the potential to substitue the present system of practice of diagnosis and treatment of the oral problems because of the tremendous broadening of technological capabilities.[3] There are different branches of teledentistry; teleperiodontics, teleradiology, teleorthodontics and telepathology. Teleperiodontics is the branch which diagnose periodontal diseases and provide periodontal care at different levels.[3,4] This branch of teledentistry bridged the gap between patients and the periodontists and is useful to provide a better periodontal health care to the patients of far off rural areas.

Periodontitis is a disease of the oral cavity. It is root cause to many oral diseases and is the main reason for tooth loss among the adult population.[5] The treatment of periodontal disease is only available in the urban areas as because the periodontists prefer to confine themselves to the cities. Thus availability of periodontal care services at the rural areas is insignificant.[6,7] The gap of requirement and availability of periodontal care services in rural areas should be filled and an accomplishable system should be developed to provide proper oral health care in distant areas. However, teledentistry has not pierced into the treatment field of periodontics to a satisfactory level. Thus, this questionnaire study was taken up to measure the attitude, knowledge, and practice of teleperiodontics among the dental surgeons and also to assess its application in everyday practice at various levels.

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II. MATERIAL AND METHOD

A survey study was carried out among dental surgeons and professionals in different dental colleges in Karnataka to know the attitude, knowledge, and practice of teleperiodontics and teledentistry. Convenience sampling has been used. A total of 120 sample size has been taken considering 95% confidence level with 5% margin of error. The questionnaire was having the questions on attitude towards teledentistry and teleperiodontics; on knowledge about teledentistry and teleperiodontics; questions on periodontal diagnosis; questions on practice of teledentistry and teleperiodontics. A total of 27 close-ended questions were formulated based on available literature and validated for the present study. The validation was done on the basis of simplicity, clarity and relevance and the questions were formulated accordingly. The questionnaire was circulated using electronic media via e-mails and links on social media platforms.A total of 120 responses were received during the process. The data have been analysed and pie charts have been prepared for discussions.

III. RESULT

➢ *A Total Number of 120 Dental Surgeons and Professionals Participated in the Survey Study.*

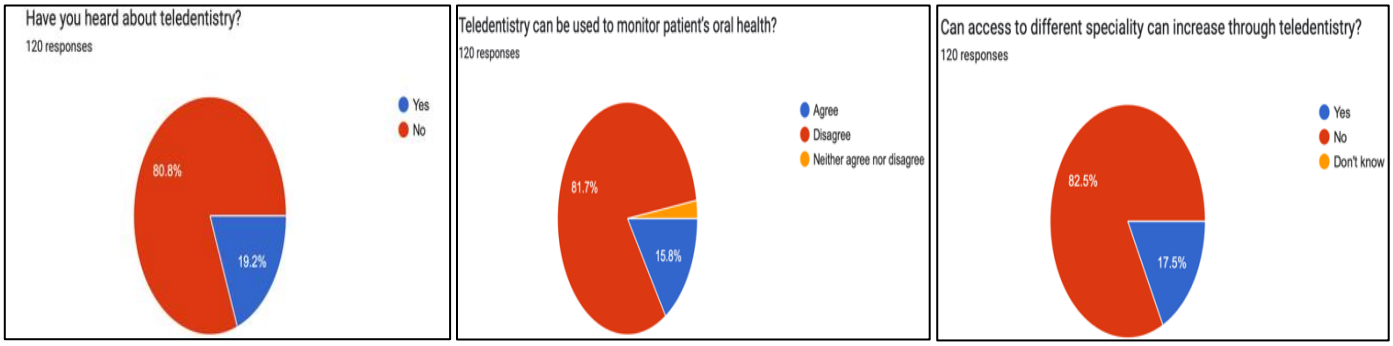

Fig 1: Knowledge about Teledentistry

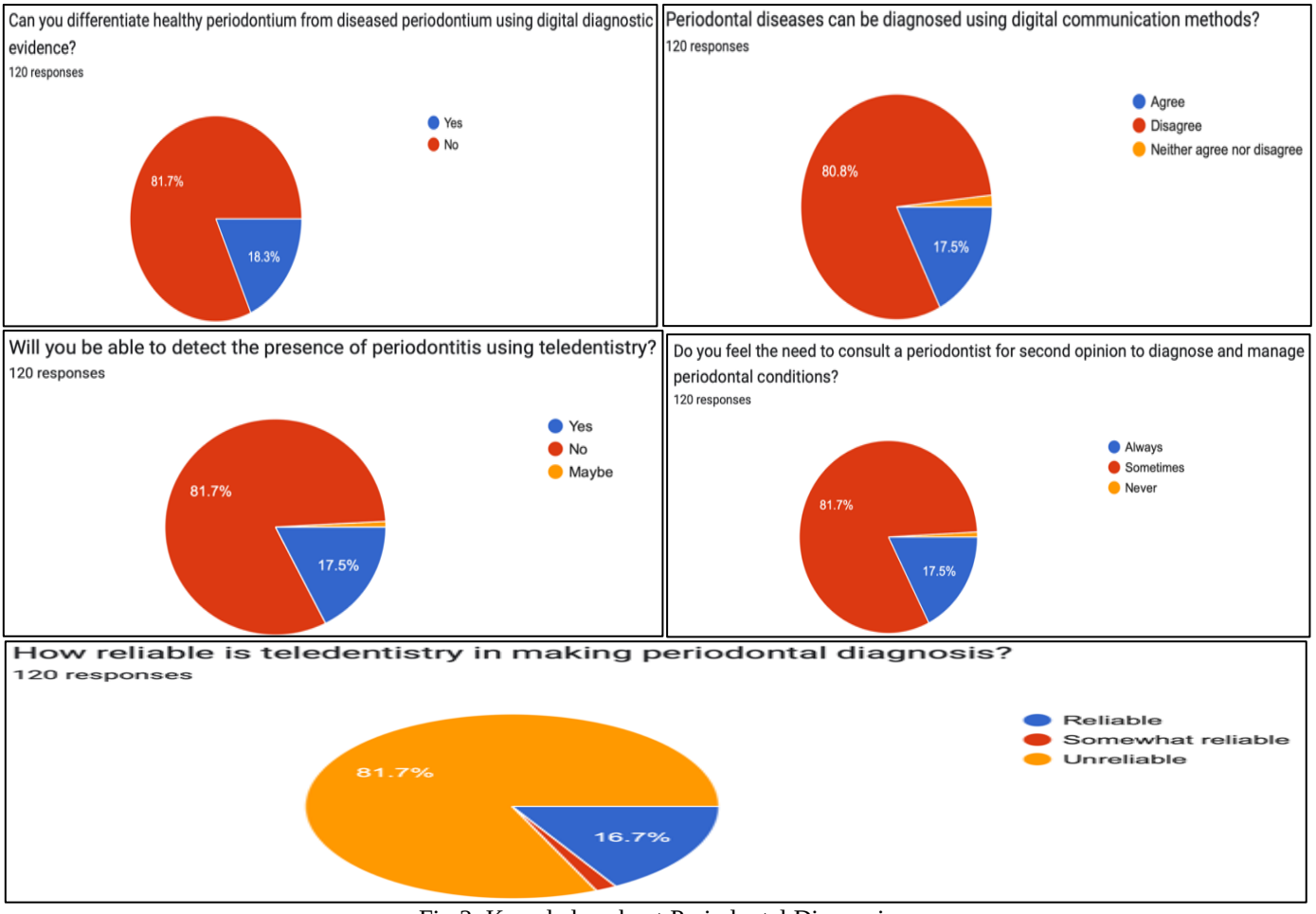

Fig 2: Knowledge about Periodontal Diagnosis

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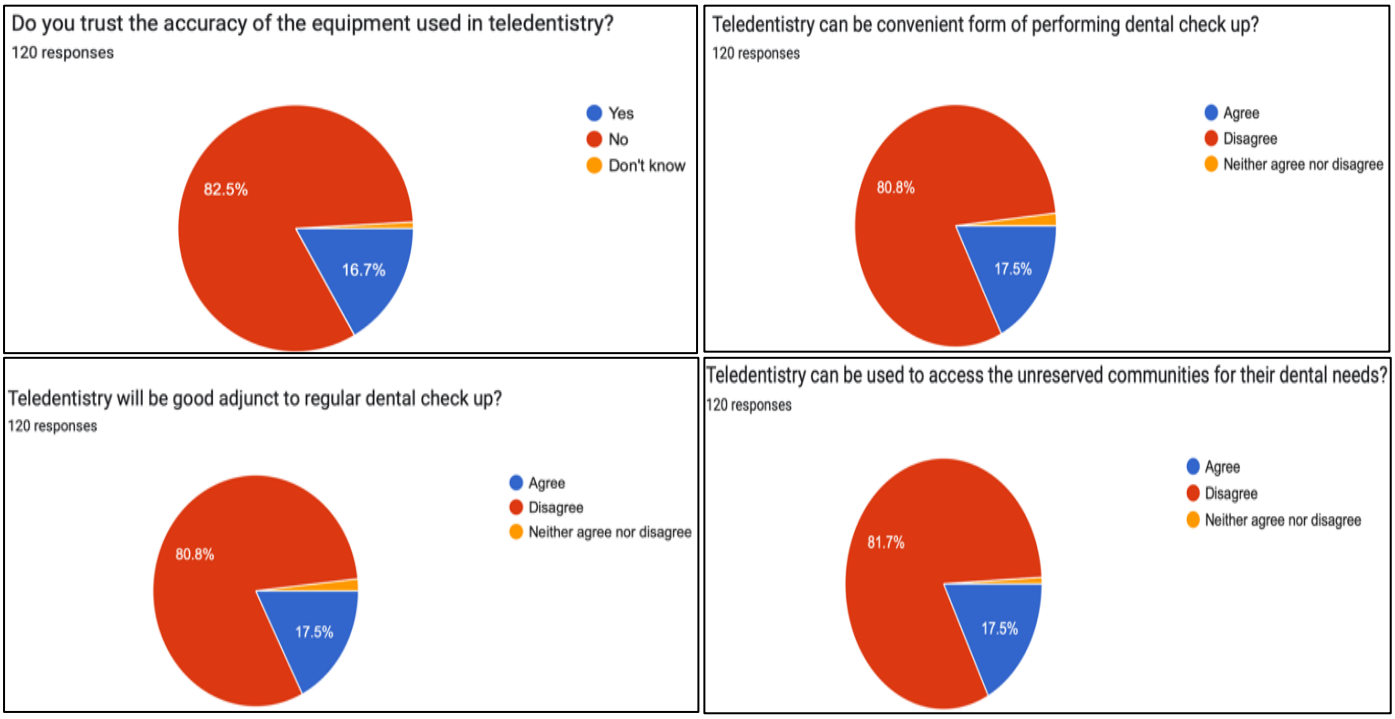

Fig 3: Attitude about Teledentistry

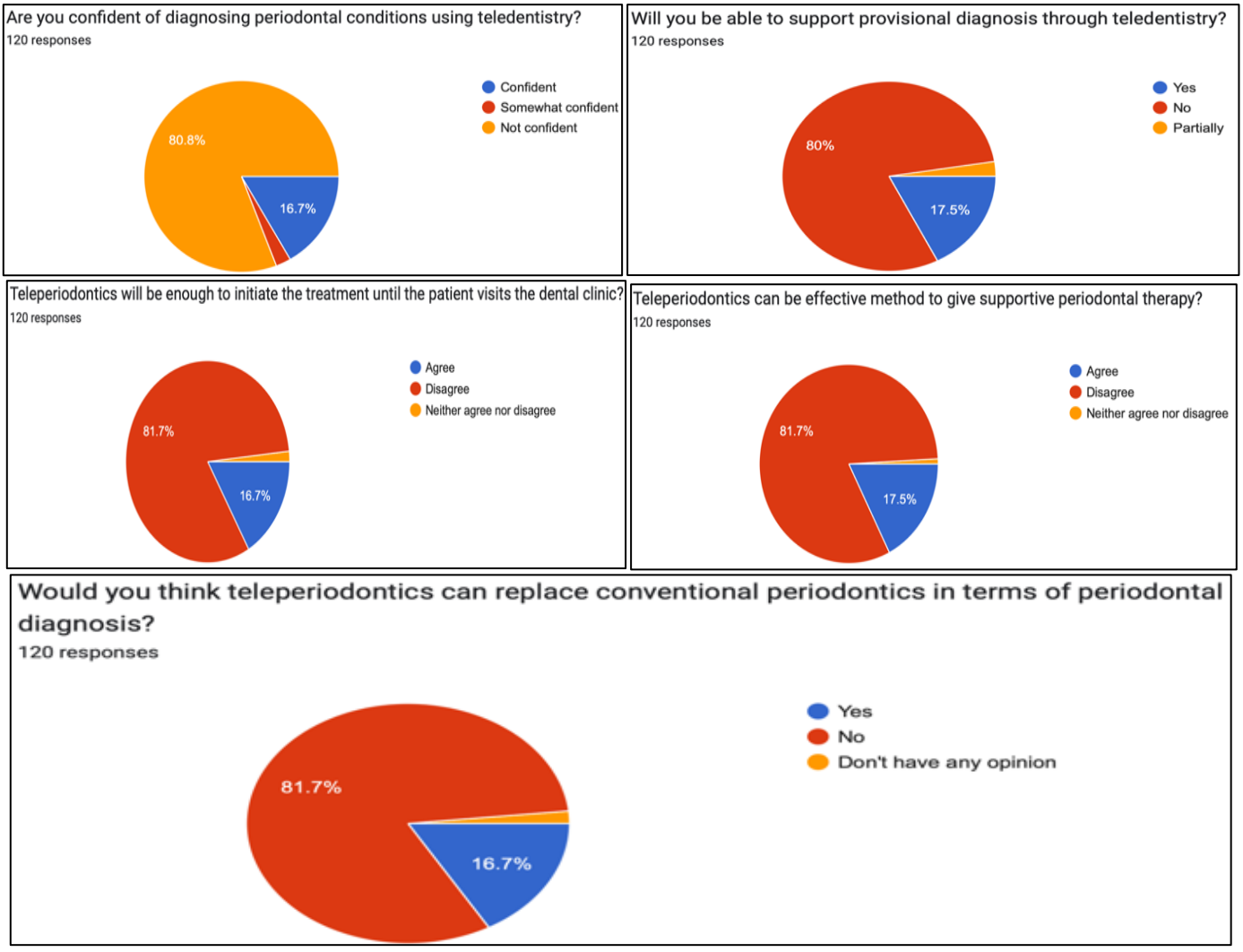

Fig 4: Attitude Towards Teleperiodontics

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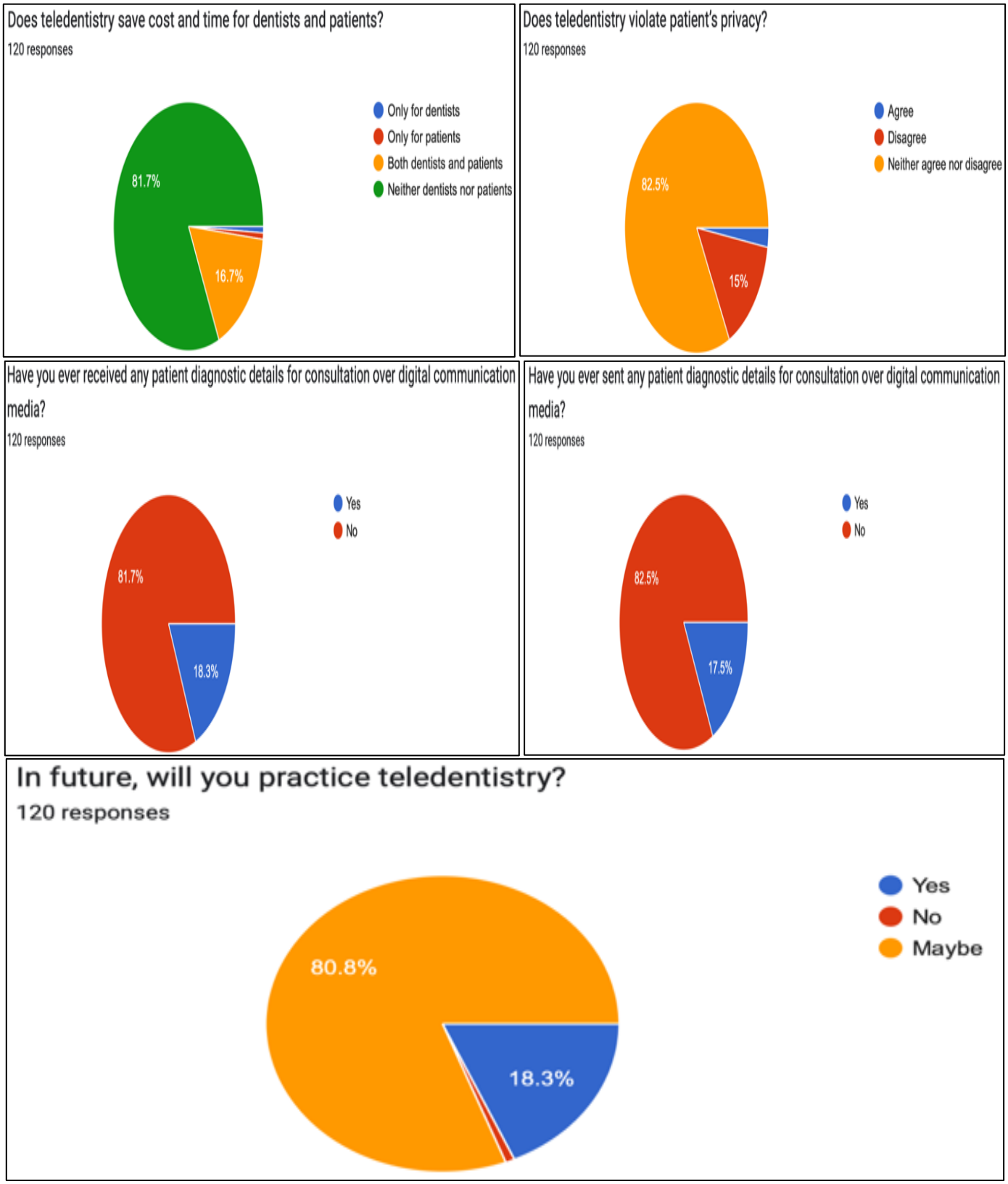

Fig 5: Practice of Tele Dentistry

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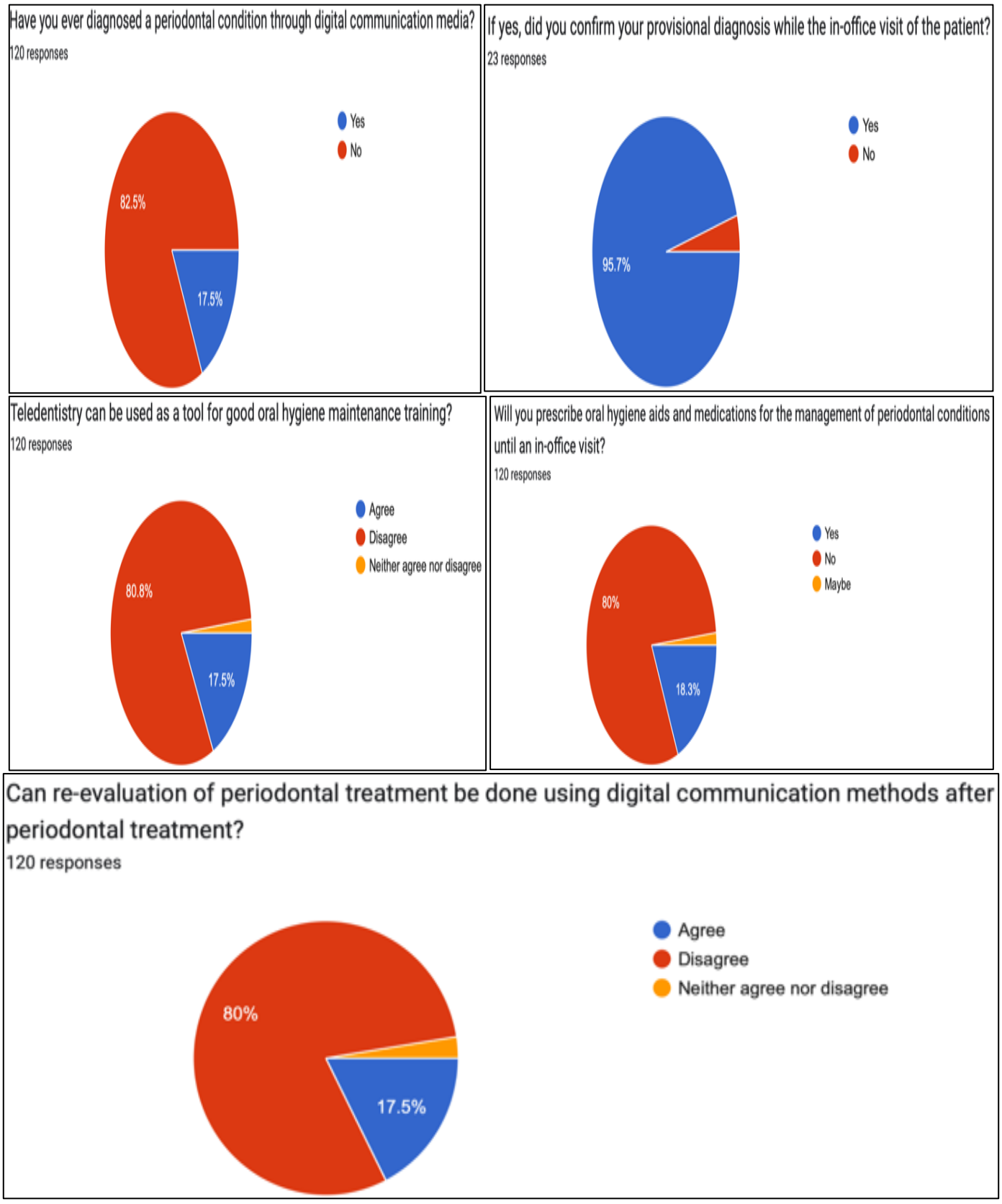

Fig 6: Practice of Teleperiodontics

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IV. DISCUSSION

Teledentistry in general and teleperiodontics in particular can be applied using two methods; (i) through videoconferencing (ii) by forwarding the available stored data. In case of forwarding stored data technology, the radiographs and intraoral images are utilized and to be sent to the periodontitists via email or through data sharing platforms. It is considered to be as less expensive. In the other technique, digital communication between the patients and periodontists are established through videoconferencing by using a display of digital screen. This leads to an interactive consultation as it allows in depth discussion between the patient and periodontitist about the periodontal problem. In the present survey study, out of 120 participants, majority of the participants in our survey (80.8%) were not aware about teledentistry. This is in line with the previously conducted studies which showed the results bring forth an impression of less awareness among the dental professionals. [3,9,10] A majority of the sample (81.7%) believe that, teledentistry would not be an effective tool to monitor patients' oral health. This also confirm the findings in previous studies with an understanding that there is little knowledge of teledentistry among the dentists.[10,11] A majority of sample (82.5%) agrees that it is less possible to access to different speciality through teledentistry. Only 16.7% of dentists were of the opinion that the equipment used in teledentistry can be accurate, which was found to be in contrast with the earlier studies.[11] Majority of the dentists (80.8%) do not believe in the convenience of teledentistry, which was in line with the findings in the earlier studies. [6] A majority of 80.8% thought that teledentistry could not be a good adjunct to dental practice, which was in contrast with the previous study results.[10,11] Similarly, only 17.5% of dentists agreed that teledentistry was a good way to reach the underserved communities and these results were not in consonance to the findings in the studies of Pradhan et al. and Mathivanan et al. [6,8] This study shows that about 81.7% dental professionals think teledentistry is neither cost-effective nor time saving for both dentists and patients, which do not in line with the previously conducted studies.[10,11] Only 2.5% of dentists in our study think that teledentistry will violate patient privacy in comparison with 92% of dentists in a previously conducted study.[6]

A majority of dental surgeons (80.8%) disagreed for using teledentistry for diagnosing periodontal conditions. This negative approach might be attributed to the lack of awareness on teleperiodontics. There was also a similar strong negative opinion of dental professionals to initiate treatment and to manage the periodontal condition of the patients unless and until a physical appointment is made. Whereas in a study conducted by Almazrooa et al., it was found that more than half of the participants opined that, diagnosis made through teledentistry was enough to start treatment. In the present study 81.7% of the participants agreed that teleperiodontics cannot be an effective tool to perform supportive periodontal therapy, and cannot completely replace conventional periodontics. 81.7% of the dentists opined that they will not be able to differentiate between a healthy and a diseased periodontium using digital diagnostic evidence. Majority of dentists felt a need to consult a periodontist physically, show that there is a lack of knowledge in the application aspect of teleperiodontics. This needs to be explored further. A majority of sample (80.8%) were not in favour of using teleperiodontics to provide oral hygiene maintenance training. This is opposite to the results obtained by previous other studies.[3,9,10] About 80.8% of dental surgeons did not agree that periodontal conditions can be disgnosed using digital photographs and radiographs. This is not similar to the findings by previously conducted studies which found a results of 71% of dentists agreeing for using digital communication.[3,9] More than three-fourths of dentists were not interested in prescribing oral hygiene aids for the management of periodontal conditions without an clinical visit and also not in favour of revaluating the patient after periodontal treatment using teleperiodontics.

The findings of this study projected that, there is not so encouraging positive attitude towards teledentistry among the dental professionals. This results in difficulties in introduction of teleperiodontics in the field of periodontics. About 80.8% of the population were not confident of diagnosing periodontal conditions using teledentistry and also will not be able to support provisional diagnosis through teledentistry. Though the application of teleperiodontics at present have a number of limitations, like its accuracy of the diagnosis and reliability of the digital data and clinical findings. The equipment setup for teleperiodontics should be affordable. A achievable futuristic concept of teleperiodontics to be looked into for a developing nation like India, where majority of the population dwell in rural and semi urban areas.

V. LIMITATIONS OF THE STUDY

The responders chosen were arbitrary through email, social media and online. However their demographic details were not obtained. For more insight to the study, the demographic variables like age, sex, area of practice etc may be obtained for correlation of data. The survey was taken up among dental practitioners and surgeons of the dental college and hospitals that are present in Karnataka. For a better conclusive inference, wider population must be considered.

VI. CONCLUSION

The dental practitioners may not have much knowledge about teledentistry. The applications of teledentistry in different fields are in early stage including the area of periodontics. Teleperiodontics has many limitations including legal complicacies. It has also security and technological problems. But it still bears a lot of potential and has bright future in management of dental patients present in different distant localities.[12] Dental surgeons are yet to be educated and aware about the practical formal applications of teleperiodontics. They have to get clear understanding and to gain sufficient knowledge about the same. In India, rural areas do not have specialised dental care hospitals and so also dental periodontitists. Therefore teleperiodontics will prove to be a smart tool to come up with a better dental care system in rural areas of India. To bring smile among rural population,

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this new approach of dental care will definitely prove to be a game changer. Considering the Indian rural population, millions will be benefited from teledentistry if properly implemented. Thought it may come across different initial problems, this concept definitely has an encouraging future in periodontal care across the geographical boundaries. The potential of teleperiodentistry needs to be delved into by the periodontitists with an objective to deliver a better periodontal care to distant patients who are unable to visit them.

- No financial support and sponsorship has been availed.
- Conflicts of Interest - Nil

REFERENCES

[1]. Washington: Association of American Medical Colleges Publications; 1998. Association of American Medical Colleges. Medical School Objectives Project: Medical Informatics Objectives; pp. 3–15s.

[2]. Cook J. ISDN Video Conferencing in Postgraduate Dental Education and Orthodontic Diagnosis. Learning Technology in Medical Education Conference 1997 (CTI Medicine) 1997:111–6.

[3]. Alawwad SM, Zakirulla M, Alasmari NM, Mohammed Alamr M, Alshahrani RA. Perceptions of teledentistry among dental professionals in Saudi Arabia. Ann Trop Med Public Health 2019;22:11-20.

[4]. Mandall NA, Qureshi U, Harvey L. Teledentistry for screening new patient orthodontic referrals. Part 2: GDP perception of the referral system. Br Dent J 2005;199:727-9

[5]. Avula H. Tele-periodontics – Oral health care at a grass root level. J Indian Soc Periodontol 2015;19:589-92.

[6]. Mathivanan A, Gopalakrishnan JR, Dhayanithi A, Narmatha M, Bharathan K, Saranya K. Teledentistry: Is it the future of rural dental practice? A cross-sectional study. J Pharm Bioallied Sci 2020;12:S304-7.

[7]. Sekhon TS, Grewal S, Gambhir RS. Periodontal health status and treatment needs of the rural population of India: A cross-sectional study. J Nat Sci Biol Med 2015;6:111-5.

[8]. PradhanD, VermaP, SharmaL, KhaitanT. Knowledge, awareness, and attitude regarding teledentistry among postgraduate dental students of Kanpur city, India: A questionnaire study. J Educ Health Promot 2019;8:104.

[9]. Almazrooa SA, Mansour GA, Alhamed SA, Ali SA, Akeel SK, Alhindi NA, et al. The application of teledentistry for Saudi Patients' care: A national survey study. J Dent Sci 2021;16:280-6.

[10]. Boringi M, Waghray S, Lavanya R, Babu DB, Badam RK, Harsha N, et al. Knowledge and awareness of teledentistry among dental professionals –A cross sectional study. JClin Diagn Res 2015;9:C41-4.

[11]. Beetstra S, Derksen D, Ro M, Powell W, Fry DE, Kaufman A. A "health commons" approach to oral health for low-income populations in a rural state. Am J Public Health 2002;92:12-3.

[12]. Golder DT, Brennan KA. Practicing dentistry in the age of telemedicine. J Am Dent Assoc. 2000;131:734–44.