Review Article

Current and Potential Use of WhatsApp in Oral Health Care - A Narrative Review

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ABSTRACT

Smartphones, internet and instant messaging applications have changed the telecommunication scenario since their advent, with immense benefits for healthcare providers and recipients across the globe. WhatsApp is one such instant messaging tool that has found favour with health care professionals working in diverse settings. Although WhatsApp has been extensively used in health care, the literature on its use in oral health care is sparse. This review explored the current and potential use of WhatsApp in the field of oral health care. The PUBMED database was searched for English language articles reporting the use of WhatsApp in dentistry, oral health care, dental education. Snowballing to find additional relevant articles was done by also using Google Scholar and grey literature. Tele-consultation, appointment booking, addressing queries from patients, treatment planning, referral, obtaining second opinions, emergency help in dealing with maxillofacial trauma be it in routine practice or sites of disasters and conflicts, oral health promotion, tobacco cessation, facilitating dental education through innovative teaching approaches, online follow up of patients, data collection for research are some of the possible uses of WhatsApp in oral health care. Addressing the concerns of privacy issues, by appropriate usage of smartphones and WhatsApp, oral health care professionals can expand the delivery of oral health care to remote and underserved areas as well as improve the quality of oral health care.

Key words: WhatsApp, oral health care, dentistry, mouth, smartphone.

INTRODUCTION

WhatsApp is reported to now have 1.5 billion monthly active users (MAUs), with over 200 million monthly active users in India. [1] "WhatsApp Messenger" is a cross-platform instant messaging application for smartphones. Cross platform means that the software is available for iOS, Blackberry OS, Android, Symbian, Series 40 and Windows Phone and allows seamless communication between the various devices, be it a Windows phone, Blackberry phone, Android phone or apple phone. In addition to text messaging, users can send images, video and audio media messages to each other. The entire process of sending the message/image is free. [2] Smartphones and WhatsApp are now being used by doctors in health care delivery, for telemedicine and teledentistry services. [3] A comprehensive systematic review of present literature on the use of the WhatsApp Messenger app as an adjunctive health care tool for medical doctors concluded that pooled data provided compelling evidence that the WhatsApp Messenger app is a promising system, whether used as a communication tool between health care professionals, as a means of communication between health care professionals and the general public, or

as a learning tool for providing health care information to professionals or to the general population. [4]

The WhatsApp business app is now actively used by over 3 million people. It was launched in January 2018 for Android users in six countries including India, Indonesia, Italy, Mexico, Britain and the US. Users can now download WhatsApp Business app for free from Google Play store but the new app, is yet to come on Apple App Store in India. [5] This tool can potentially be used by dental practices to communicate with patients regarding dental procedures, treatment costs, and most importantly, getting appointments over WhatsApp; [6] basically, interact with customers, patients, and dental labs easily by using tools to automate, sort, and quickly respond to messages. [7]

With improved encryption in the current version of WhatsApp, its use in the health sector is expected to grow. [3] For general communication, or for sending de-identified protected health information (PHI), WhatsApp could be safely used by healthcare professionals. [8] In the USA, the Health Insurance Portability and Accountability Act, commonly referred to as HIPAA, sets national standards for the confidentiality, security, and transmissibility of personal health information. Healthcare providers are required, under the HIPAA Privacy Rule, to protect and keep confidential any personal health information. [9] In order for WhatsApp to be HIPAA compliant, there would have to be a significant number of security mechanisms added to the software. [10] Till then, additional security controls may be installed on a smartphone to authenticate users before the device can be accessed, [8] and app locks may have to be used so that health information downloaded on the phone remains confidential.

Despite these concerns WhatsApp is being increasingly used in oral health care. This review explores the current and potential use of WhatsApp in the field of oral health care including dental education, oral health promotion/smoking cessation.

Literature search:

The PUBMED database was searched using the term "WhatsApp" yielding 156 articles; then a search for English language articles reporting the use of WhatsApp in dentistry, oral health care, dental education, using the search details: WhatsApp [All Fields] AND ("mouth"[MeSH Terms] OR "mouth"[All Fields] OR "oral"[All Fields]) was done and eleven articles were found. Snowballing to find additional relevant articles was done by also using Google Scholar and grey literature.

Reported uses of WhatsApp in oral health care
Use of WhatsApp in oral medicine and radiology

WhatsApp has been reported to be used for submitting clinical images and diagnostic questions by general dentists, dental hygienists, patients and physicians for telemedicine consultation reducing the geographic barriers to preliminary consultations. Telemedicine impression via WhatsApp agreed with the clinicopathologic impression in 82% of the cases in a study from Italy. [11] Another study carried out among Oral medicine and radiology (OMR) specialists across India, reported that WhatsApp was the most frequently used application for m-Teledentistry (mobile-Teledentistry) practice. Telediagnosis and treatment planning using patient images, videos and radiographs, accessibility of the specialists to rural areas, was positively considered. Many OMR specialists agreed that sharing patient information over WhatsApp may lead to breach of patient confidentiality; however, many concurred that they discussed diagnosis and treatment planning in WhatsApp chat rooms. The study reported that CBCT image quality transmitted over WhatsApp may be less. Most respondents felt that WhatsApp would be useful in improving dental practice,

patient management and patient satisfaction. [12]

Use of WhatsApp in oral pathology

Smartphones allow pathologists and other image dependent disciplines in low resource areas to transmit consultations to experts anywhere in the world. [13] Second opinion diagnosis of 34 different oral pathologies that had been captured as photomicrographs, using smartphones through compound microscopes has been reported to be effectively and conveniently accomplished by oral pathologists in India using WhatsApp to transfer the photomicrographs to 20 different oral pathologists. Considering that a second opinion diagnosis was obtained in nearly three hours, diagnostic delays can be minimised leading to better patient management. [14] WhatsApp can be used at the time of community surveys on oral cancer detection, wherein second opinion can be sought for suspicious cases of oral cancer. Faster second opinion will aid in early detection of oral cancer. [14]

Use of WhatsApp in Oral and maxillofacial surgery

A study from South India has reported that they have greatly eliminated the communication gap, reducing the possibility of arbitrary misdiagnosis/mismanagement in their Oral and maxillofacial unit, by using a WhatsApp protocol that is followed for communication between post graduate trainees and teaching faculty, junior and senior colleagues. WhatsApp is used to share patient photographs, radiographs between the first on-call post graduate trainee and all other seniors in the group; the theatre list along with the pre-operative and post- operative photos and radiographs, treatment plans and outcomes, are also reviewed, thereby keeping all members of the unit informed and also a creating a digital archive for future reference. [2] For night time consultations on maxillofacial traumas, in Turkey, emergency services have reported using Smartphones having a high definition camera, and WhatsApp as an image and video transfer program to send Computerised Tomography (CT) sequences. Views of CT images from a computer screen were sent as images and serial images were recorded as videos and sent through WhatsApp. [15] WhatsApp can also be used by surgically active dentists in structurally weak areas to seek guidance from experienced maxillofacial surgeons or emergency doctors to treat potentially life-threatening conditions, utilizing the real time video communication feature of WhatsApp. [16]

Use of WhatsApp in Orthodontics

A study that tested mobile applications for patient to orthodontist contact, compared WhatsApp and Telegram, found that: the majority of patients (75%) preferred WhatsApp; it enabled them to send pictures, and the most frequently reported messages were pertaining to bracket failures esp. of second molars, pain due to moving wires at the end, additional information on oral hygiene and using elastics, which prompted the adoption of protocols to improve the same, thereby increasing patient contact with the orthodontic practice and increasing patient compliance. [17] Another study that evaluated the influence of a WhatsApp-based approach in a protocol for domestic oral hygiene maintenance in a group of adolescent patients wearing fixed multibracket appliances, instructed the patients who were enrolled in a WhatsApp chat room-based competition to share monthly, with the other participants two self-photographs (selfies) showing their oral hygiene status. Improved oral health status during orthodontic multibracket treatment was observed by significantly lower values of both plaque index, and gingival index, and a lower incidence of new white spot lesions and caries, as compared with the control group. [18] Studies using messaging apps have reported their effectiveness in reducing the treatment duration and bracket

bond failure and improving the attendance in orthodontic patients besides being useful for outpatient education and management. [19] Therefore WhatsApp can be made use of similarly in the Indian scenario.

Use of WhatsApp in dental education

A study reported that WhatsApp was the most used instant messaging (IM) app among dental students of a university in U.K because of its popular features such as being able to check if recipients have read and received messages and group work. WhatsApp was used a lot to undertake group work and share files for their dental studies. [20]

WhatsApp was introduced as a teaching tool in an Oral Radiology course. Undergraduate dental students at the University of Brasília were provided with weekly quizzes via a WhatsApp discussion group over a 14-week period. The quizzes consisted of a tomographic or radiographic image from a real clinical case and a multiple-choice question. Students reportedly had a positive attitude towards the use of WhatsApp and considered it had helped them to learn about Oral Radiology although participation decreased over time. So, WhatsApp can facilitate participatory learning among dental students and further research can be carried out in this direction. [21]

Insufficient weekly hours to cover the extensive curricula of English for Dental Purposes (EDP) courses in Iran, led to the use of a WhatsApp based approach that the dental students believed enhanced their learning of English for Dental Purposes; this research showed that WhatsApp mobile language learning activities carry benefits for university students' achievement and attitudes towards blended learning and teaching. [22]

Use of WhatsApp in oral health promotion

A pilot cluster randomized controlled trial in Hong Kong developed and provided the first preliminary evidence that group discussion and reminders via WhatsApp social group were effective to reduce smoking relapse. [23]

Another study from Saudi Arabia reported that Twitter and WhatsApp users found it easier to quit smoking than those who did not take part in these social media groups. Social media provides a good platform to discuss smoking cessation treatment, and thus reduce smoking relapses. [24] WhatsApp can be a more effective tool for providing dental education on tobacco and oral cancer as compared to conventional audio-visual aids. [25] Social media can play an important role in strengthening the health care system to provide valuable information, educational programs and interventions to promote healthy life styles among the people. [26]

Potential uses of WhatsApp

Teleconsultation using WhatsApp can potentially be used in the dental setting to seek specialist opinions in rural areas, war torn areas, underserved areas, disaster sites and for various purposes such as: diagnosis and treatment planning for patients requiring prosthetic or oral rehabilitation treatment, video-consultation in dentistry; remote diagnosis of children's dental problems based on non-invasive photographs, identifying root canal orifices based on images of endodontically accessed teeth, diagnosis of periapical lesions of the front teeth, reducing the costs associated with distant visits and making urgent help available; The general dentist can send all the pertinent information (radiograph of the area, an intraoral photograph, all charting and health history information) of a patient via the internet to a periodontist/other specialists who would then evaluate and suggest the appropriate treatment plan. [27]

Oral teleconsultation could also improve the quality of oral care in prisons. [28] Other unique uses of WhatsApp in healthcare which can be applicable in the oral health care scenario are suggested by the experience of a Brazilian study that used WhatsApp for online follow up of patients

and concluded that the WhatsApp application was useful as a health care tool for people living with HIV, and a potential channel to clear doubts and promote treatment adherence. [29] Collecting credible data on violence against health services, health workers, and patients in war zones is a massive challenge. In Syria, WhatsApp was used to alert the Monitoring Violence against Health Care (MVH) alert network through a 293-member WhatsApp group that allowed alerts and requests to be shared rapidly. Within 24 hours, the MVH data team triangulated the information received and distributed a preliminary flash update of key information (location, type of service, modality of reported attack, deaths, and casualties) to their partners, the World Health Organization and the United Nations Office for the Coordination of Humanitarian Affairs, and donors. [30] Similar use of WhatsApp can be used to track the safety of health professionals including dentists who are working in areas affected by conflict, especially in the Indian subcontinent.

CONCLUSION

WhatsApp is emerging as a tele dentistry tool that can be utilized for various purposes in oral health care with increasing convenience to dental practitioners, patients, dental students and educators and in a wide range of settings thereby improving access to and quality of oral health care and further research exploring its usage in oral healthcare should be encouraged.

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