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Original Research Article

Assessment of oral hygiene practices in the rural population of gwalior district- A cross sectional study

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ABSTRACT

Background: Oral hygiene is the most essential factor in the prevention and therapy of many diseases, especially periodontal disease. The aim of this study was to evaluate the oral hygiene-related knowledge, traditional practices practiced in rural population, self-efficacy, and motivation of rural-based population, with their current oral hygiene practices. Increased emphasis is being given on spreading dental care facilities and awareness among the rural population, the target population is unfortunately less literate and is not financially equipped compared to their urban counterparts.
Materials and Methods: A Cross sectional study was carried out in Behat Village, Madhya Pradesh. Random Stratified Sampling Method was used with Sample size 126. A Questionnaire was designed and the subjects were questioned about their daily oral hygiene practices, traditional practices, dietary habits and also sugar score was calculated.
Result: Mean and Standard Deviation was found 39.48 + 15.39. 42.85% of individuals reported that they had suffered from some form of dental problem and has taken the treatment while 57.14% reported that they haven't taken the dental treatment due to some unveiling barrier like distance, financial condition, fear, etc.
Conclusion: Healthcare seeking behaviour among the rural population towards oral diseases was poor. So, efforts must be made to bring a change in this scenario and to make the rural population aware of the dental problems.

1. Introduction

The oral cavity is described as an integral part of the overall health of human being.[1] It is rightly said by Seymour that "Good general health cannot be achieved without good oral health."[2,3]

Oral hygiene is a fundamental aspect of overall health and well-being, yet it often remains overlooked, especially in rural communities. A comprehensive understanding of oral hygiene practices and their impact is essential for promoting public health. In this study, we embark on a journey through the realm of oral hygiene surveys, seeking to unveil the latest insights, trends, and challenges in this crucial domain. Inhabitants of these remote areas face

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unique challenges in accessing proper dental care, leading to a higher prevalence of oral health issues. This study delves into the critical topic of evaluating oral hygiene in rural populations, shedding light on the disparities, obstacles, and potential solutions that can improve the dental health of individuals residing in these underserved regions. As we explore the state of oral hygiene in rural areas, we uncover not only the existing problems but also the essential steps towards achieving better oral health equity for all.

Oral disease is a complex phenomenon and association with various elements leads to its increased occurrence.[4] The etiology of oral diseases is multifactorial. Various risk factors are also associated with increased risk of oral diseases; adverse habits such as smoking, tobacco, areca nut chewing, etc., prevail as the most important risk factor for the occurrence of oral diseases including cancer.

A significant portion of the population has no access to dental care, and often rural areas have worse indicators of income, sanitation and education levels than urban areas, constituting an important factor for worsening health problems. Considering the importance of these aspects, the aim of this study was to evaluate the oral hygiene habits (tooth brushing, flossing and alternative methods), the use of dental services and self-perception of oral health.[5]

Patient associated factors such as age, gender, and family background appear to be particularly significant components in the advancement of oral diseases while in rural populations risk seems to increase due to their geographical location, food habits, and oral hygiene practices. The most important determinant of oral disease is Socio Economic Status (SES).[6] Oral hygiene behaviours differ greatly among regions, countries, and even within countries. Different oral hygiene behaviours result in different oral health outcomes across the nation. For example, use of tobacco and areca nut for recreational and therapeutic purposes is widely prevalent in rural regions of central India resulting in high incidence of abrasions, dental caries, periodontal diseases, and oral lesions.

By shedding light on the state of oral health in rural areas, we hope to foster a greater awareness of the need for comprehensive oral healthcare services and promote initiatives aimed at improving the well-being of those who reside in these underserved regions. Rural populations, dispersed across vast landscapes and often lacking in healthcare infrastructure, confront numerous Unveiling barriers like financial problems, distance, transportation, lack of knowledge and awareness, etc. when it comes to maintaining good oral hygiene. Factors such as limited access to dental facilities, lower awareness of oral health practices, and economic constraints contribute to the challenging oral health landscape in these areas. Moreover, cultural norms and traditional practices like using neem twigs, babool sticks, alum rinses, etc. and dietary habits prevalent in rural communities can play a significant role in the prevalence of oral health issues.

The reasons for people to avoid visiting the clinicians and neglect the symptoms of oral diseases are economic instability, fear of cancer, or lack of faith in medical services. This is known as “patient delay” or “diagnostic delay.”[7] The early detection and prevention is an important key in stopping the progression of oral diseases and improving the quality of life of patients. The most affected population having oral diseases (dental caries) are children; hence, educating the parents is of utmost importance.[8]

Furthermore, this study underscores the importance of oral hygiene education, preventive measures, and the role of technology in shaping the future of oral healthcare. By highlighting the significance of oral hygiene survey, we aim to underscore the need for ongoing research, awareness, and action to ensure that individuals of all backgrounds can achieve and maintain optimal oral health.

2. Materials and Methods

A Cross Sectional study was Carried out from 21^{st} august 2023 to 25^{th} august 2023 after receiving the ethical clearance by the institute. The study was conducted in the Behat Village, Madhya Pradesh. Sampling was done by Random Stratified Sampling Method and Sample Size was 126. The study Performa consisted of Demographic information, Informed Consent and Questionnaire.

2.1. Inclusion criteria

Age - 5 years to 80 years

2.2. Exclusion criteria

Severely ill patients
Handicapped patients
Pregnant Patients
Non – residents

A questionnaire was designed to assess the oral hygiene practices in the rural population. Questionnaire was tested and Cronbach’s alpha value was 0.82. Training and calibration of the investigator was done before the study.

The Questionnaire consisted of six parts. The first part consisted of the Demographic Details which included name, age, sex, contact number, village, past medical history and past dental history. The second part involved the Informed Consent which was obtained by the patients. The third part was based on Daily Oral Hygiene Routine; it included four questions i.e., Type of cleaning, Frequency of cleaning, Method used and Frequency of changing the Toothbrush. The fourth part focused on the traditional practices practiced by the patients such as oil pulling, herbal rinses, charcoal brushing, neem twigs, babool sticks and more. The fifth part of the questionnaire was about the Dietary Habit and Sugar Consumption. The last part included questions like frequency of dental care visits and unveiling barriers.

The questionnaire was filled by interview method because of few illiterate patients.

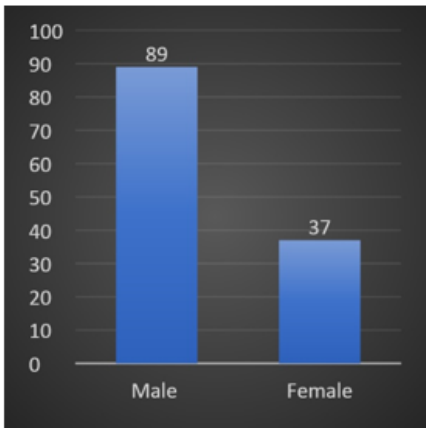
2.3. Statistical analysis

The main study was done on 126 participants. Data was recorded with an allotted time of minimum 6-8 minutes for each patient. Data was collected and transferred to the MS excel sheet for the analysis purpose. The p value was < 0.05 with 95% Confidence Interval.

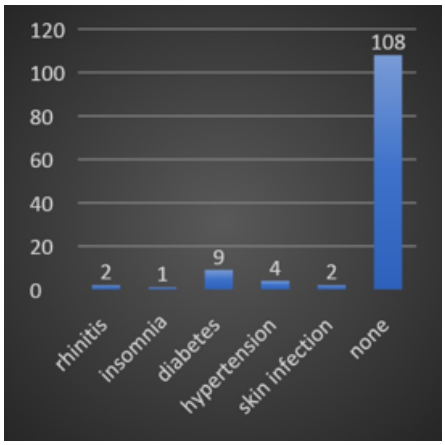
The analysis was done using Chi-square test by SPSS version 21.0.

3. Result

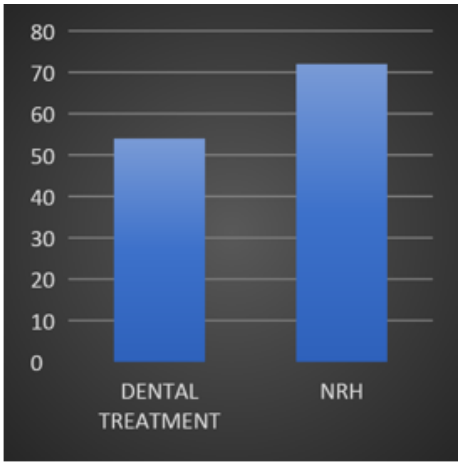
Total 126 people were screened. Mean age and Standard Deviation was found 39.48 + 15.39. Of these 89 were males (70.63%) and 37 were females (29.36%). Various questions were asked regarding the oral hygiene practices, such as how teeth are cleaned, what material is used to clean the teeth, etc.



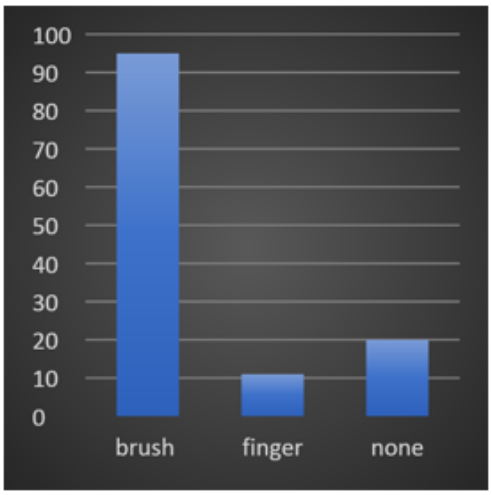
Graph 1: Gender distribution



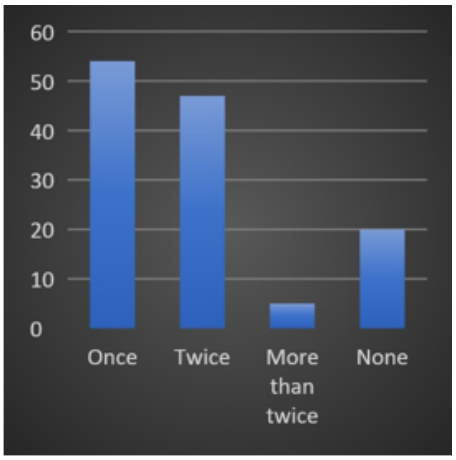
Graph 2: Medical history



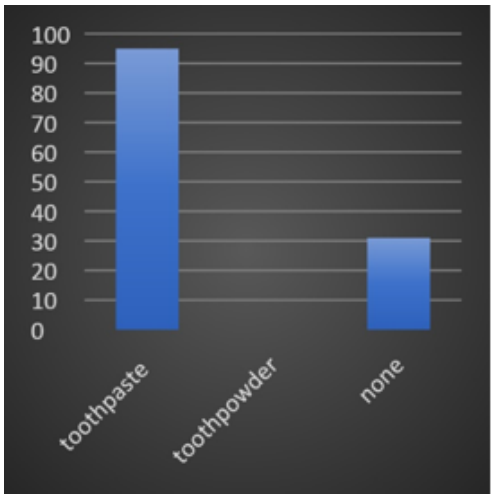
Graph 3: Dental care



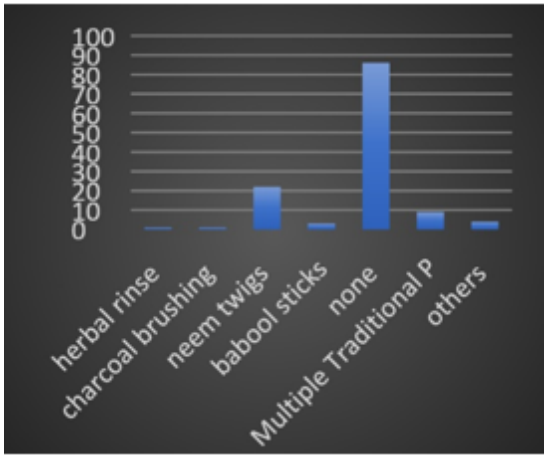
Graph 4: Type of cleaning



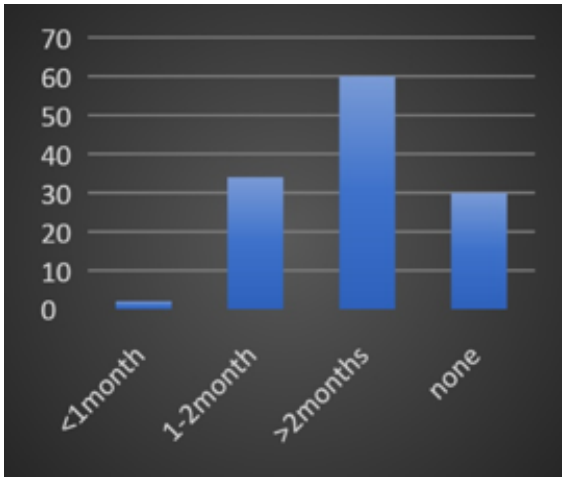
Graph 5: Frequency of cleaning



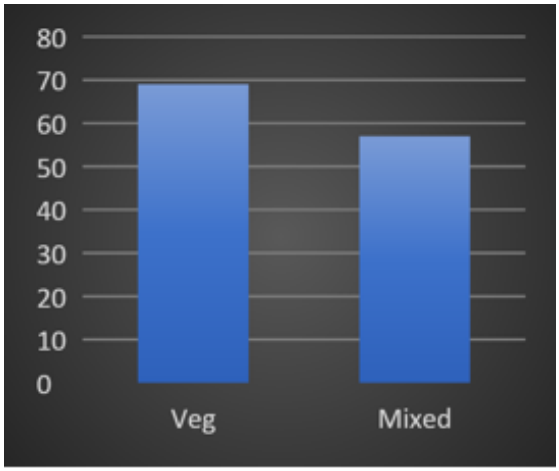
Graph 6: Material used for cleaning



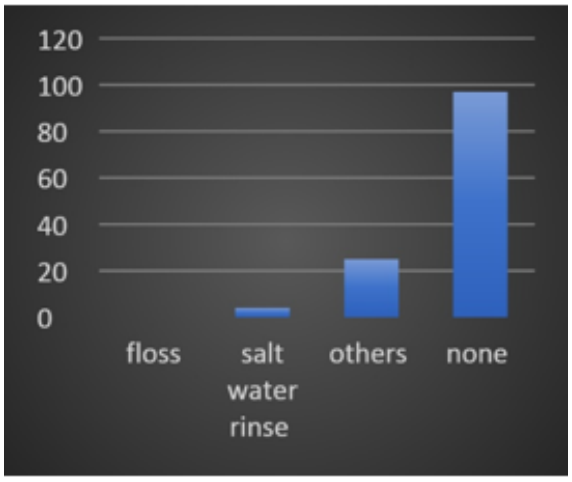
Graph 9: Traditional practices



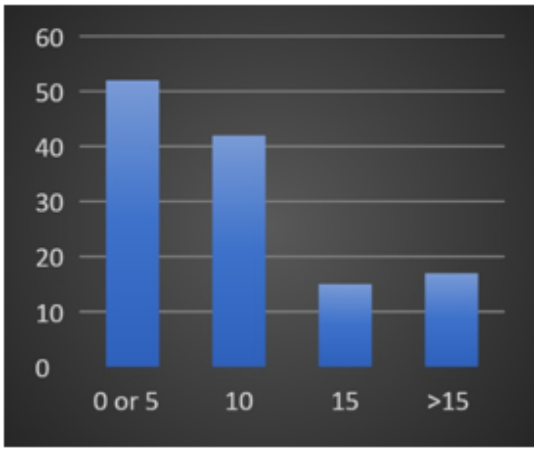
Graph 7: Frequency of changing toothbrush



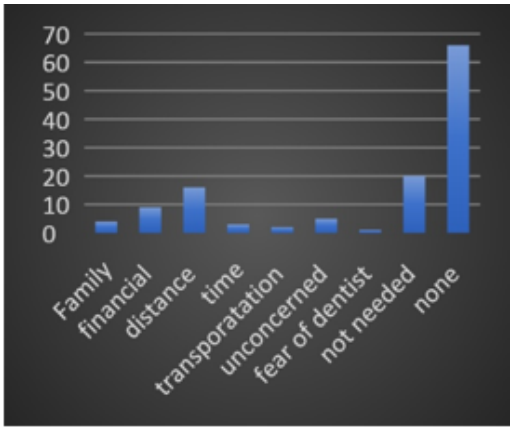
Graph 10: Dietary habit



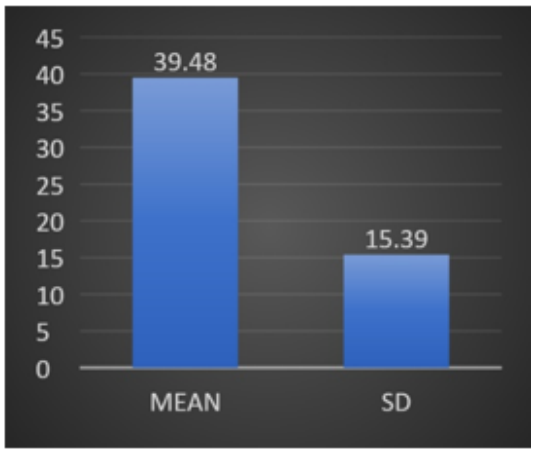
Graph 8: Other oral hygiene aids



Graph 11: Sugar score



Graph 12: Unveiling barrier



Graph 13:

The results indicated that 2 individuals had rhinitis, 2 had skin infection, 1 had a condition resembling insomnia, 9 had diabetes, 4 had hypertension and 108 individuals had no past medical history, as shown in Graph 2. Fifty- four (42.85%) individuals reported that they had suffered from some form of dental problem and had taken the treatment while seventy- two (57.14%) reported that they hadn't taken the dental treatment as shown in Graph 3. The Graph 4 indicates that 95 (75.39%) individuals were using brushes while 11 (8.7%) were using fingers to clean their teeth. It was seen that 54 (42.85%) were cleaning their teeth once a day, 47 (37.30%) twice a day and 5 individuals (1.58%) were found to clean their teeth more than twice a day as shown in Graph 5.

In Graph 6, it is shown that 95 people (75.39%) were using toothpaste and the rest 31 (24.60%) were not using any toothpaste or tooth powder. It was found that no one was using tooth powder to clean their teeth. Out of the 95 individuals who used brush, 2 individuals (2.10%) were found who change their brush in <1month, 34 individuals (35.78%) change their toothbrush in 1-2 months, 60 individuals (63.15%) change their toothbrush in >2 months as depicted in Graph 7.

Only 4 individuals (3.17%) were found to be using a salt water rinse, 25 individuals (19.84%) use other oral hygiene aids like water rinse, mouthwash & tongue cleaner to maintain their oral hygiene. It was found that 97 individuals (76.98%) were not using any additional aid and no one was using floss. (Graph 8)

The Graph 9 depicts the Traditional practices used by the villagers, 1 person (0.79%) was discovered to be using a herbal rinse, 22 people (17.46%) were using neem twigs,1 (0.79%) was doing charcoal brushing, 3 people (2.38%) were using babool sticks, 4 people (3.17%) were found to use other traditional practices like Nirala toothpowder, toothpicks, spirit cotton etc., 9 people (7.14%) were found to be using multiple traditional practices while 86 individuals (68.25%) were not using any traditional method to clean their teeth.

The Graph 10 shows that 69 individuals (54.76%) were vegetarian and 57 individuals (45.23%) were having mixed dietary habits.

The Graph 11 indicates about the sugar score which was found to be 0 or 5 for 52 individuals (41.26%), 10 for 42 individuals (33.33%), 15 for 15 individuals (11.90%) and more than 15 for 17 individuals (13.49%).

The Graph 12 shows information about the barriers preventing people from visiting the dentist so far, 4 individuals (3.17%) cite family as the barrier, 9 individuals (7.14%) have financial issues, 16 individuals (12.69%) cite distance as barrier, 3 individuals (2.38%) stated the time issues, 2 individuals (1.58%) have transportation problem, 5 individuals (3.96%) were unconcerned about their oral hygiene, 1 individual (0.79%) stated about the fear of dentist, 20 individual (15.87%) did not require treatment and rest 66 (52.38%) does not have any unveiling barrier.

4. Discussion

Oral hygiene awareness and practices may differ from country to country and community to com-munity depending on traditional beliefs and socio-economic development. A rural area in India may present a different picture from an urban one. Unfortunately, little such epidemiological data is available for India where village communities still comprise more than two-thirds of the country.The present work was carried out with the aim of collecting such data on oral beliefs, practices and awareness in rural India.[9] The rural-based population was selected as target in this study because of neglect of oral health practices mainly in such group, and they focus mainly on pain relief and emergency care leading to impairment of function and negative quality of life.[10]

Oral health is fundamental to overall health. The health of our mouth, teeth, and gums can affect our general health.[11] Our oral health might contribute to

various diseases and conditions, including endocarditis, cardiovascular disease, diabetes and pancreatic cancer, gum disease causes inflammation, which makes it harder for your body to use insulin properly.

In the present study, 75.39% of individuals were using brushes while 8.7% were using fingers to clean their teeth. The percentage of individuals using toothbrush was more when compared to the study done by Punitha VC, Sivaprakasam P.[12]

It was positive to discover that 37.30% of individuals brush their teeth twice a day, which was a significant increase compared to the study done by Punitha VC, Sivaprakasam P.[12] where only 7.40% brushed twice.

The study showed that the use of 'datoon' or tree twig chewing is still very popular in rural India as an oral hygiene measure. Its disadvantages include gingival trauma and occlusal wear.[13]

In the present study, it was observed that 19.84% of individuals were using tree twigs, whereas when we compared it to another study done by Singh SV and et al, 20.83% were found to be using tree twigs.

The study showed marked ignorance, lack of dental awareness and high prevalence of tobacco habits and dental myths in the study sample, more marked in older, less educated and female subjects. The high prevalence of dental myths would prevent such individuals from obtaining appropriate dental care, even if made available to them.[13] A concerted effort to achieve better dental education in rural ageing populations should be made by organising home-to-home and door-to-door awareness programmes, considering that such individuals may be incapable or unwilling to commute for economic, motivational and health related causes.[10]

Furthermore, it was reported by 7.14% of individuals that they face financial issues when seeking dental treatment due to the high cost of dental procedures. When compared to the study of Deolia SG and et al, it was revealed that 12.4% of people prefer government-sponsored treatments because of lower expenses.

Oral health importance in the maintenance of general health has been long acknowledged by the WHO.[14] There have been a lot of efforts toward raising awareness on oral health among the public by various local, national, and international bodies/organizations. Despite these efforts, oral health continues to be neglected by the people, especially in rural areas as observed in our study.[15]

National health authorities should actively take part to develop policies for oral health sectors. It is recommended that dental camps in the rural sector, mobile dental clinics, and oral health education and promotion should be conducted to spread awareness among the people. The cost of dental treatments should be revised and made affordable for the rural population. The health centre should have a complete oral health setup so that people do not have to travel long distances to get oral health care.

The current era, the 21st century, has emerged as a period characterized by groundbreaking technologies and advancements, encompassing digitalization and the implementation of industry. These digital innovations have now taken on a crucial role in virtually every facet of our day-to-day existence.[16] Integrating Metaverse, AR, and VR technologies could revolutionize oral hygiene practices in rural areas. For instance, creating immersive educational experiences through AR and VR could offer interactive tutorials on proper brushing techniques and oral care routines. These technologies could also simulate the consequences of poor oral hygiene, encouraging behavioral changes. Additionally, Metaverse platforms could facilitate virtual consultations with dental professionals, overcoming geographical barriers and increasing access to oral healthcare services. This holistic approach leverages technology to make oral hygiene education engaging, accessible, and impactful for rural populations.

5. Conclusion

Healthcare seeking behaviour among the rural population toward oral diseases was poor. Poor attitudes of people on the importance and awareness of oral health are quite evident, and efforts must be made to bring a change in this scenario. They often believe in dental myths and prefer traditional practices like using neem twigs for oral hygiene. Hence, there still is a need for awareness among the population. People should be told about the importance of primary prevention. To increase awareness campaigns should be conducted. Many people do not seek dental treatment due to financial issues, transportation problems, fear, and the distance to clinics. To address these issues, mobile dental vans should be deployed, and there should be dental clinics available in these areas. The services should be provided on the basis of felt needs of the rural population so that utilization of dental services can be increased, thereby improving the oral health status of the underprivileged population. Despite national goals for achieving health equity, persistent disparities in dental utilization remain for the underprivileged population of central India. Hence, dental camps, oral health education, and awareness camps should be conducted and dental services should be made readily accessible to the rural population.

The integration of Augmented Reality (AR) and Virtual Reality (VR) technologies represents a significant leap forward in the evolving field of dentistry, ushering in a more advanced and patient-centric healthcare approach.[17]Newer technologies like AR, VR, and the Metaverse not only empower individuals to take control of their oral health but also assist dentists in their work. Through AR and VR, dentists can visualize complex procedures in 3D, enhancing treatment planning and execution. Metaverse platforms

offer dentists opportunities for remote collaboration, knowledge sharing, and virtual training sessions, ultimately streamlining workflows and improving patient outcomes.

6. Source of Funding

None.

7. Conflict of Interest

None.

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