

Knowledge and Attitude towards Oil Pulling as an Oral Hygiene Maintenance Aid among the General Population - A Survey

Farhat Yaasmeen Sadique Basha¹, Parkavi. A.²

1 Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai-600077. Email: 151701032.sdc.saveetha.com

2 Senior lecturer, Department of Periodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical & Technical Sciences (SIMATS), Saveetha University, Chennai-600077. Email ID: parkavia.sdc@saveetha.com

ABSTRACT

Background and Aim: The increasing occurrence of side effects caused by modern medications and oral hygiene products has caused people to gradually revert back to the traditional methods of maintaining oral health and hygiene. Oil pulling is one such traditional practice that has existed in ancient India. It is believed to hold numerous health benefits apart from maintaining the gums and periodontal tissue. This survey was conducted to evaluate the knowledge and attitude of the general population towards oil pulling and its role in maintaining oral hygiene.

Methodology: This survey was conducted using a self-administered questionnaire consisting of 15 questions about the knowledge and attitude towards oil pulling that was circulated among the general population. Statistical analysis was done using SPSS software. Descriptive statistics were done and results were represented as graphs.

Result: 88.35% of the participants were aware of oil pulling as oral hygiene maintenance aid and 78.65% believed that oil pulling helps improve gum health. Despite this only 20% of them were willing to follow oil pulling every day.

Conclusion: Not many were aware of the mechanism of action and other benefits of oil pulling. More awareness needs to be created among the public regarding how oil pulling positively influences overall health and serves to be an affordable and less harmful alternative to chemical medication.

Keywords: Oil pulling, Oral hygiene, Traditional practices, Side effects, Health benefits, Innovative technique.

INTRODUCTION

The oral hygiene of a person mirrors the general health of his body (1). The oral cavity is known to host millions of microorganisms and some of them are responsible for the development of systemic diseases like cardiovascular diseases, diabetes mellitus etc.(2). The multiple side effects caused by modern medications has prompted the people to look for alternative means to maintain health. In ancient times people had adopted various traditional practices that involved the use of natural products which caused no harm to the body (3).

Oil pulling is an ancient traditional practice used to improve oral health. It was made popular by Dr. F Karach (4). In oil pulling, a small amount of oil is taken and swished around forcefully in the mouth for a specific period of time, mostly in the mornings on an empty stomach. This action results in a pulling force that causes the oil to move between the teeth and all around the mouth. This is generally done for 6-8 minutes. Finally, the oil is spit out and the oral cavity is washed with warm water (5). Among the benefits of oil pulling, excretion of toxic heavy metals is believed to be the most important outcome. It is believed to improve absorption of toxins from the blood thus detoxifying the body (6). They are also believed to remove bacteria from the mouth thus preventing cavities and improving gum health. Oil pulling has also

been shown to stimulate antioxidants production that destroy bacteria and other microorganisms (7). They also coat the teeth and gingiva to prevent plaque accumulation. This decreases overall chances of caries, gingivitis, periodontitis, bad breath etc. (8), (9).

Among the various oils that are used; coconut oil contains lauric acid and shows anti-microbial properties (10), Olive oil contains Oleic acid and Vit A,E,K; showing antioxidant properties (11), Sesame oil contains sesamin, sesamol, sesaminol; showing detoxifying properties (12). All these properties help in reducing the microbial load of the oral cavity and the antioxidants play a role in controlling the inflammatory process by scavenging the Reactive oxygen species produced. Hence oil-pulling plays an adjunct therapeutic role along with mechanical debridement in the treatment of periodontal infections. However, the oil used in oil pulling must not be swallowed as it is known to cause an upset stomach (13). It has also been reported to give a bad aftertaste. Already existing cavities cannot be cured by oil pulling as it is only a preventive practice (8).

The aim of this study was to determine the knowledge and attitude of the general population towards oil pulling and its role as an oral hygiene maintenance aid.

MATERIALS AND METHODS:

Study settings: This cross-sectional questionnaire-based survey was conducted among the general population of the city of Chennai. The online mode was chosen for the survey as it is time-saving, and a majority of the population can be covered. A total of 100 respondents participated in this study.

Data collection: A 15 point validated questionnaire in English language was posted for the online survey using google forms, of which 12 questions assessed the knowledge, 3 questions assessed the attitude of the participants. Anonymity was maintained, the purpose of the study was explained to the participants in detail and the questionnaire was filled with their consent.

Data analysis: The data obtained from the survey was tabulated and statistically analyzed in the software - SPSS. The descriptive data obtained were plotted in bar graphs. The statistical test used for analysis was done by Chi-Square test using SPSS software. Age and Gender were considered as independent variables.

RESULTS AND DISCUSSION

From the results obtained we found that 60.19% of the participants who took up the survey were women and 39.81% of them were men (fig 1). This can be attributed to the fact that women are comparatively more aware of such traditional remedies (14). Most of the participants were in the age group 35-44 years (37.86%) followed by 18-24 years (29.13%), 25-34 years (17.48%) and more than 45 years (15.53%) (fig 2). Among the participants 29.13% were high school graduates, 39.81% had a bachelor's degree, 20.39% had a master's degree, 6.79% had a doctorate and 3.88% had a diploma (fig 3).

About 88.35% of the participants were aware of oil pulling for maintaining oral hygiene (fig 4). But only 55.34% were aware that it produces antioxidants that help in getting rid of bacteria in the oral cavity (fig 5) and only 47.57% were aware that they help in removing heavy metal toxins from the saliva (fig 6). This shows that though the participants were aware regarding the practice of oil pulling, more information regarding its benefits needs to be disseminated to them. Oil pulling is believed to have an antioxidant effect, detoxifies toxins, potentiates action of Vitamin E, prevents lipid peroxidation and has an antibiotic effect (15). However, 78.65% agreed that oil pulling helps improve gum health (fig 7) and 75.73% believed that it helps detoxify the body and improve overall wellbeing (fig 8). A survey conducted by an Indian daily

newspaper (Andhra Jyoti 1996) reported that out of 1041 readers who responded, 927 (89%) claimed that oil pulling had healing effects on symptoms and illnesses (16). In our survey, when asked what oils can be used for oil pulling, 18.45% answered cold pressed oil, 18.45% answered sesame oil and olive oil, 4.85% answered sunflower oil and coconut oil while 58.25% answered all of the above (fig 9). This correlates with other studies, where in commonly used oils were edible oils derived from sunflower, sesame, and coconut (17). When asked how long the oil had to be swished in the mouth, most of them answered 3-5 minutes (60%), followed by 5-10 minutes (35.9%) and 20 minutes (3.88%) (fig 10). According to a few studies the recommended duration for swishing the oil was approximately 15-20 minutes. It was done until the oil changed its viscosity and turned milky white(18), (19). Among the benefits of oil pulling, most of them felt that it killed bacteria, prevented caries and improved gum health. A study conducted by Amith et al showed that oil pulling therapy was very effective against gingivitis both in clinical and microbial assessment (20). Another study done by Asokan et al showed a marked reduction in *Streptococcus mutans* count in the plaque and saliva after oil pulling, therefore reducing the chances of dental caries (19). When asked about the side effects of oil pulling, most of them said bad after taste, upset stomach and sore jaw. When asked if they felt oil pulling daily was costly, 62% admitted that it was expensive showing that it may be one of the deterrents for practicing oil pulling (fig 11). Finally, when asked if they were willing to practice oil pulling daily, 20% replied saying yes, 9.7% replied saying no and 69% said they might consider (fig 12). This indicates that though the study participants were considerably aware regarding the use and benefits of oil pulling, they did not have a positive attitude towards practicing oil pulling themselves. Significant differences were found among males and females in their knowledge and attitude towards oil pulling as an oral hygiene maintenance aid with $p < 0.05$. This survey shows that by creating awareness regarding oil pulling and teaching the correct practices might enable the general population to take responsibility for their oral health thereby improving their quality of life. Our team has extensive knowledge and research experience that has translated into high quality publications (21), (22–34),(35–39), (40), (41).

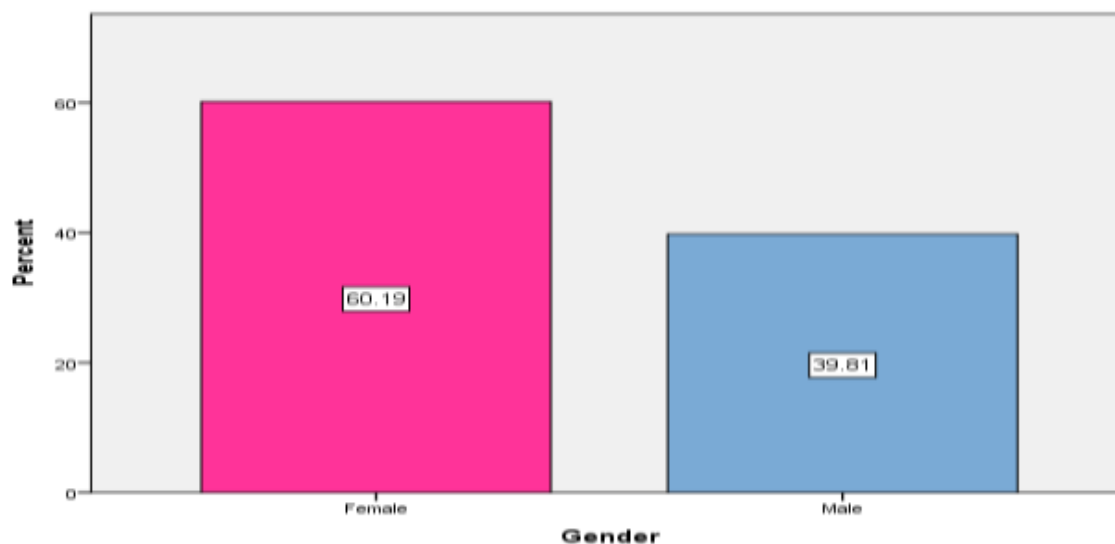


Fig 1: The bar graph represents the incidence of women (pink) and men (blue) that took part in the survey. It was observed that more than half the participants were females.

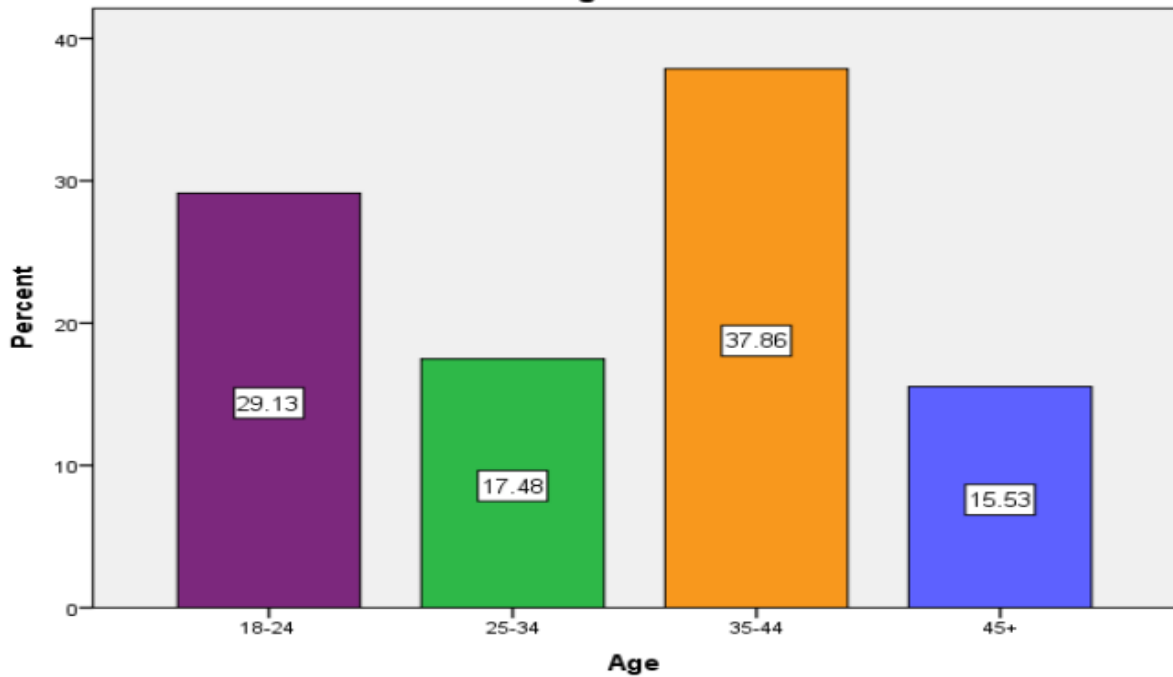


Fig 2: The bar graph represents the different age groups of the participants ranging from 18-24 years (violet), 25-34 years (green), 35-44 years (yellow) and above 45 years (blue). It was observed that most of the participants that took the survey belonged to the age group 35-44 years (37.86%).

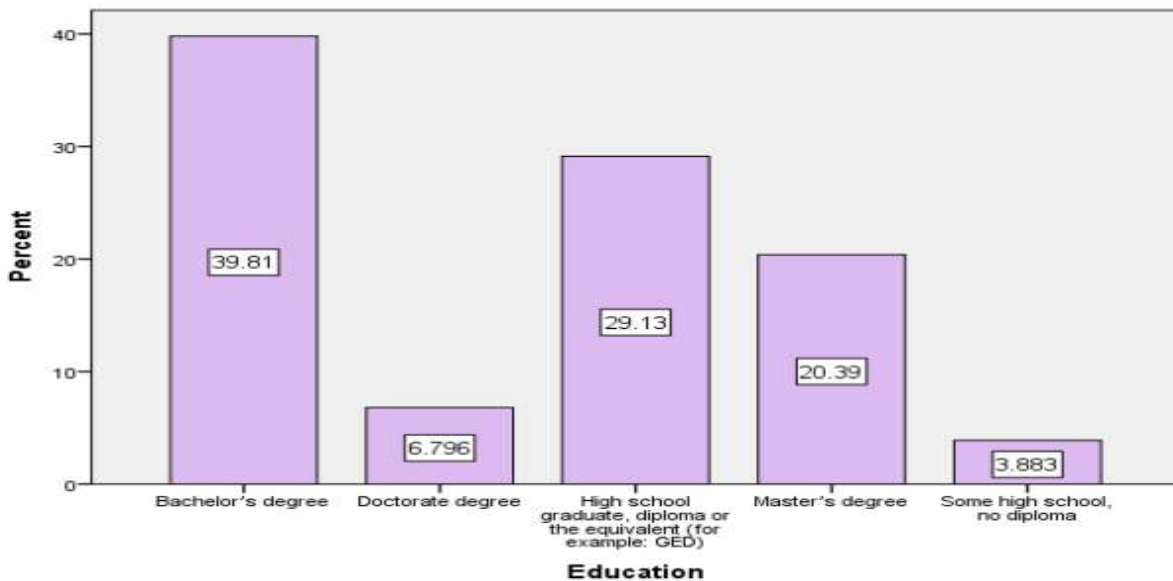


Fig 3: The bar graph represents the educational qualifications of the participants like high school (3.88%), Diploma (29.13%), Bachelor’s degree (39.81%), Master’s degree (20.39%) and Doctorate degree (6.79%). It was observed that most of the participants who took the survey had a diploma or bachelor’s degree.

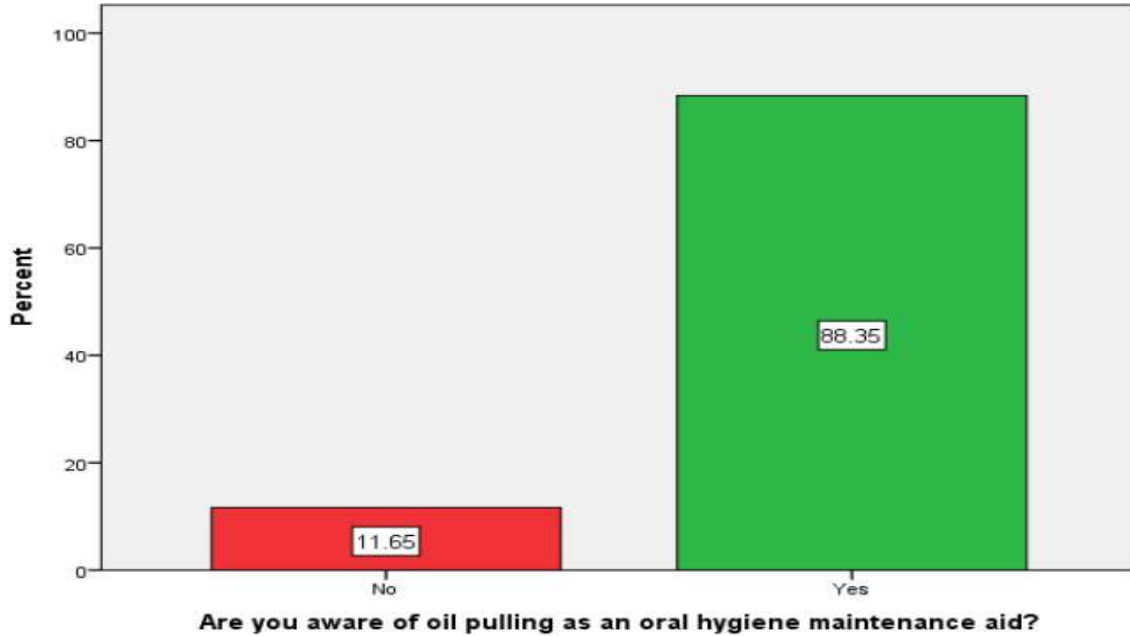


Fig 4: The bar graph represents the percentage of participants that were aware of oil pulling. Red depicts no and green depicts yes. It was observed that 88.35% were aware while 11.65% were not aware.

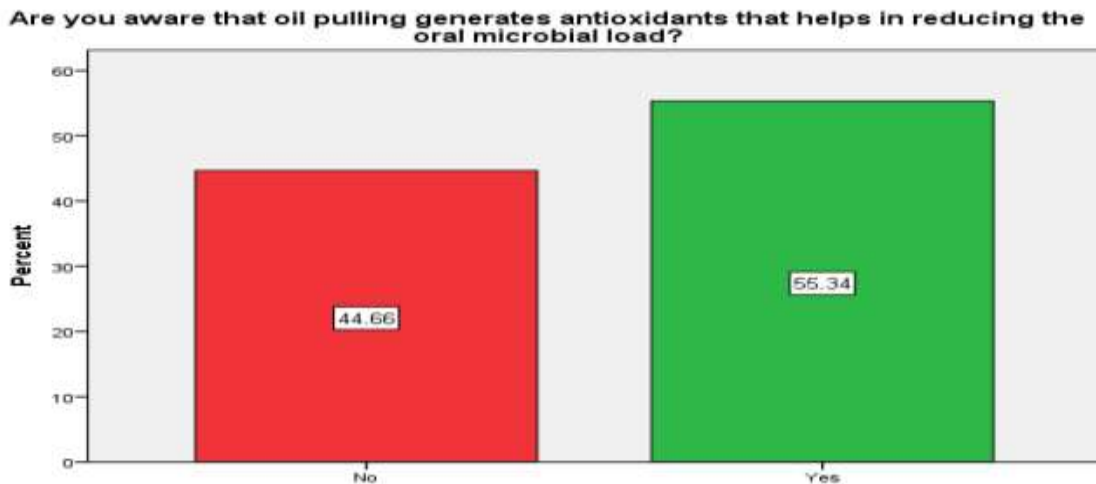


Fig 5: The bar graph represents the percentage of participants that were aware that oil pulling generated antioxidants to reduce bacterial load. Red depicts no and green depicts yes. It was observed that 56.34% were aware while 44.66% were not aware.

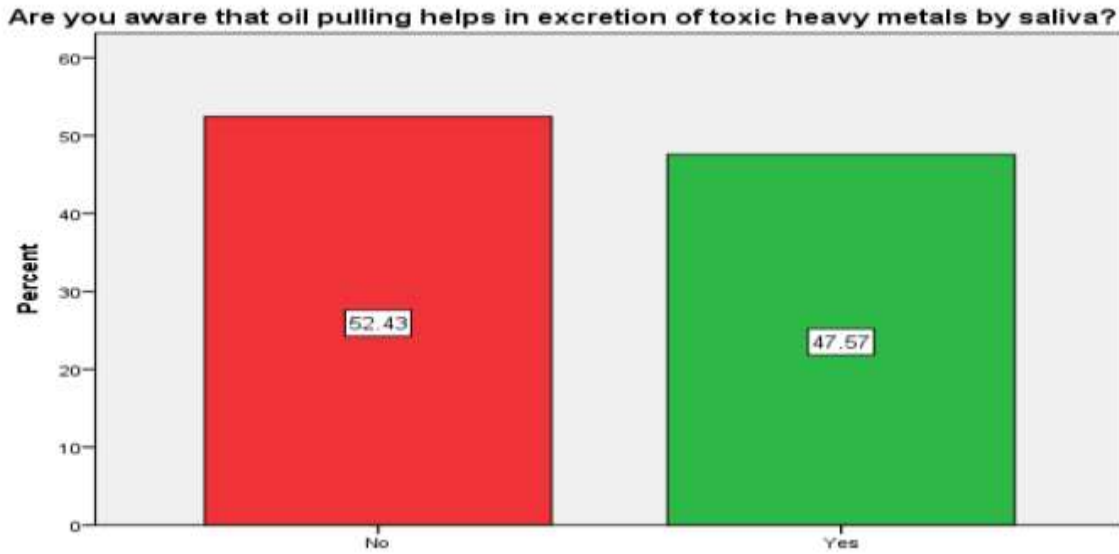


Fig 6: The bar graph represents the percentage of participants that were aware that oil pulling helped in excreting heavy metal toxins from the saliva. Red depicts no and green depicts yes. It was observed that 47.57% were aware while 52.43% were not aware.

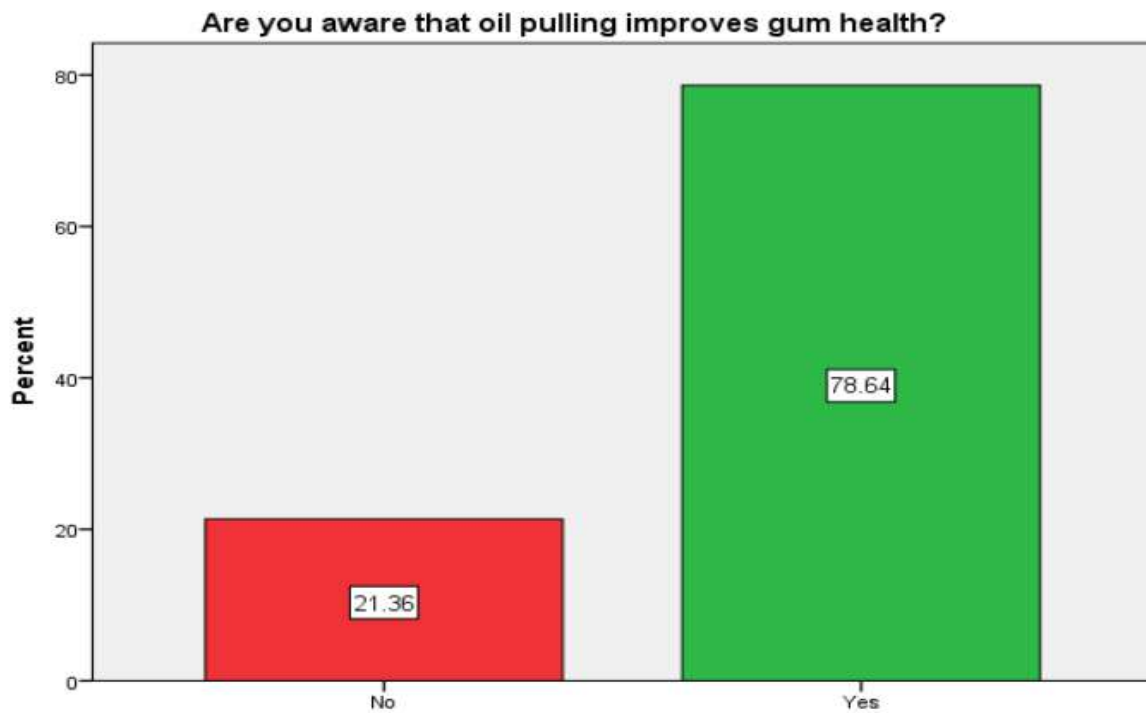


Fig 7: The bar graph represents the percentage of participants that were aware that oil pulling improves gum health. Red depicts no and green depicts yes. It was observed that 78.64% were aware while 21.36% were not aware.

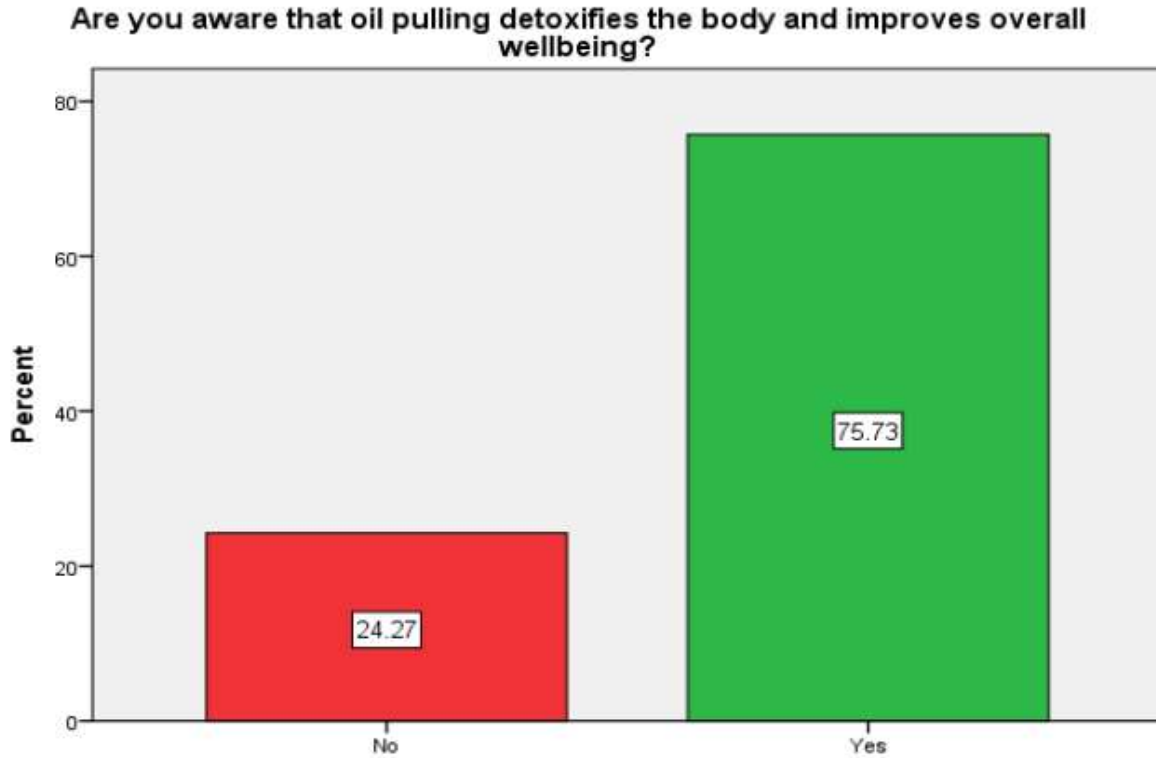


Fig 8: The bar graph represents the percentage of participants that were aware that oil pulling detoxifies and improves overall health. Red depicts no and green depicts yes. It was observed that among the participants, 75.73% were aware while 24.27% were not aware.

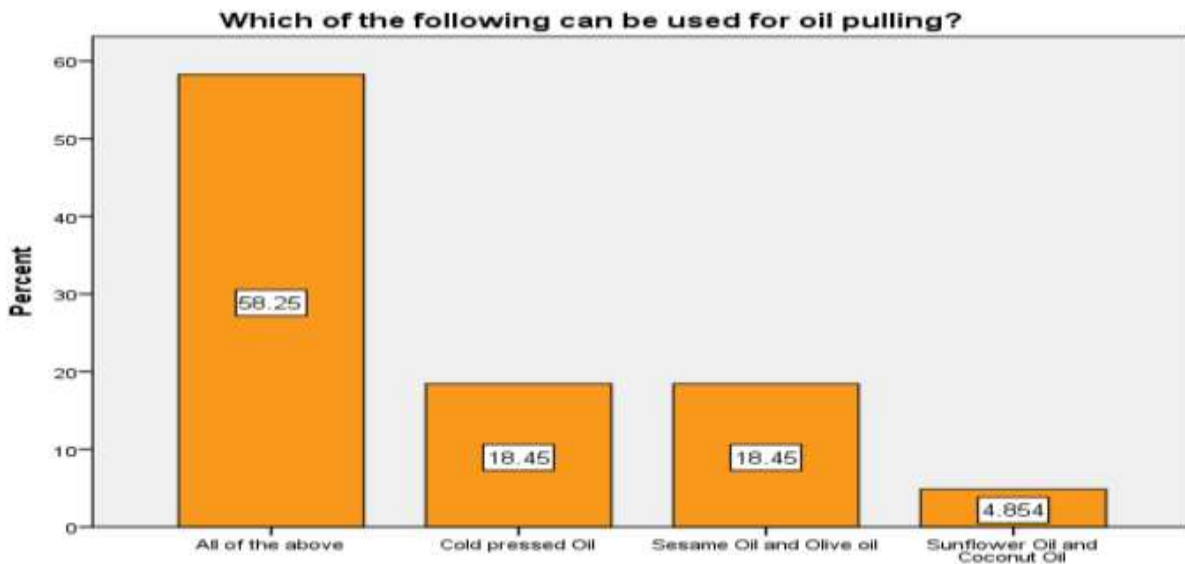


Fig 9: The bar graph represents the different oils preferred by the participants for oil pulling like cold pressed oil (18.45%), Sesame and olive oil (18.45%), Sunflower and coconut oil (4.85%) or all of the

above (58.25%). It was observed that more than half the participants believed that all of the above oils can be used for oil pulling.

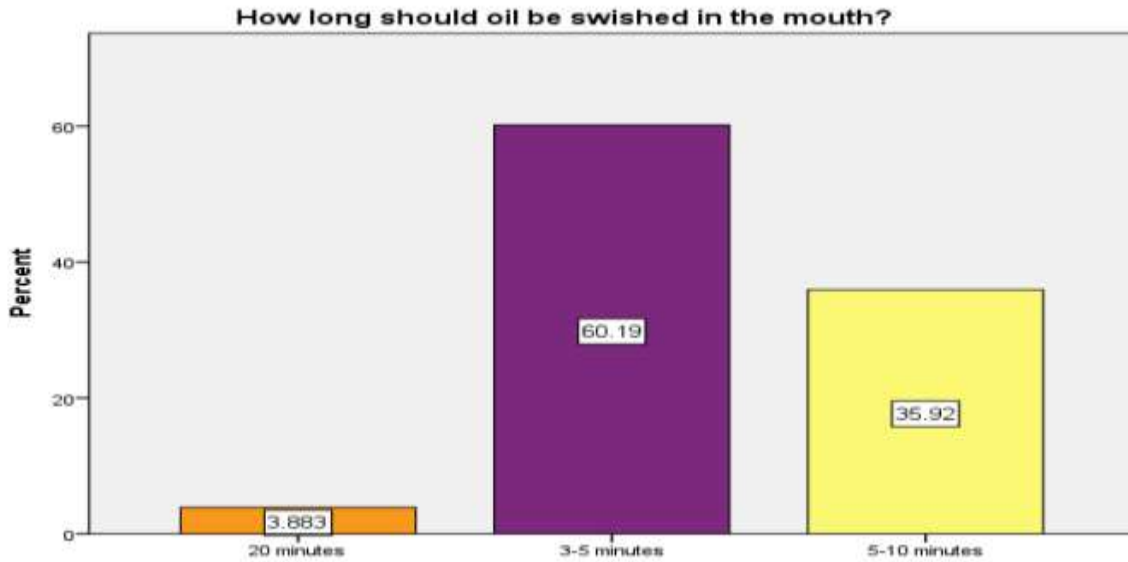


Fig 10: The bar graph represents the duration of time the participants believed the oil had to be swished in the mouth. Purple depicts 3-5 minutes, yellow depicts 5-10 minutes and orange depicts 20 minutes. It was observed that 60.19% believed that oil had to swished in the mouth for 3-5 minutes.

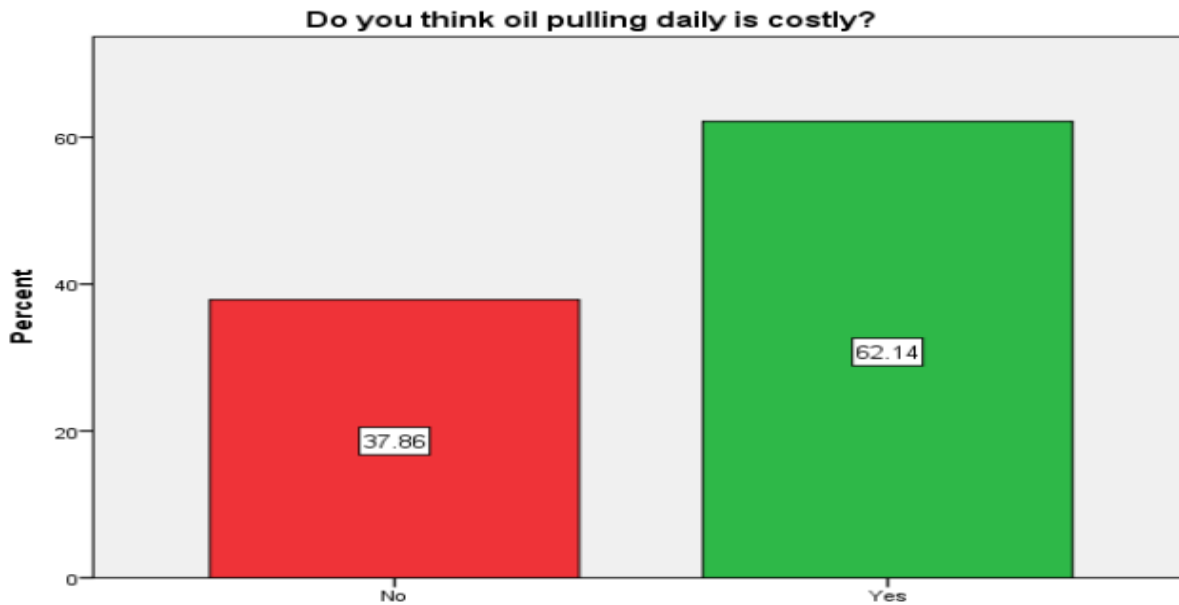


Fig 11: The bar graph represents the percentage of participants that thought oil pulling daily is expensive. Red depicts no and green depicts yes. It was observed that 62.14% felt it was expensive while 37.86% did not.

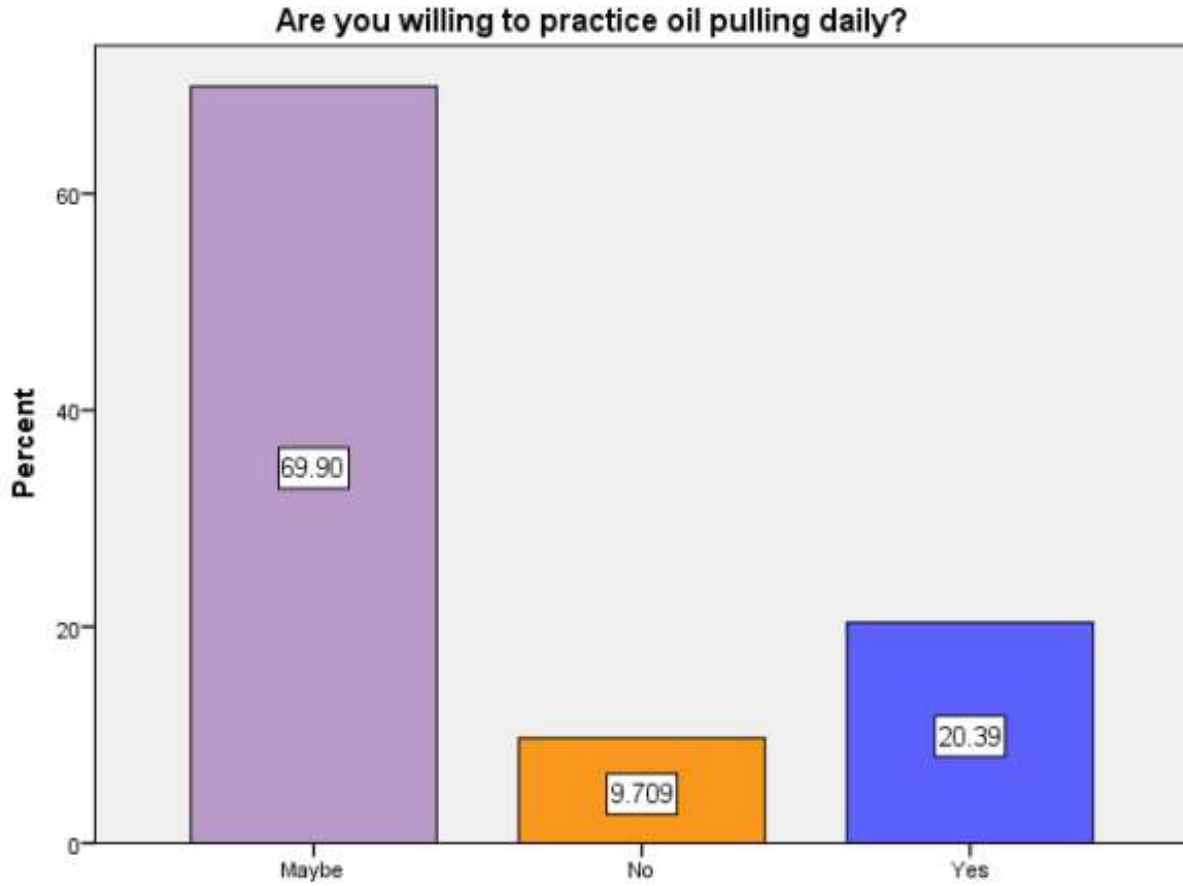


Fig 12: The bar graph represents the percentage of participants that were willing to perform oil pulling everyday. Blue depicts yes, yellow depicts no and purple depicts maybe. It was observed that among the participants that took the survey, 20.39% were willing, 9.7% were not and 69.9% said they would consider.

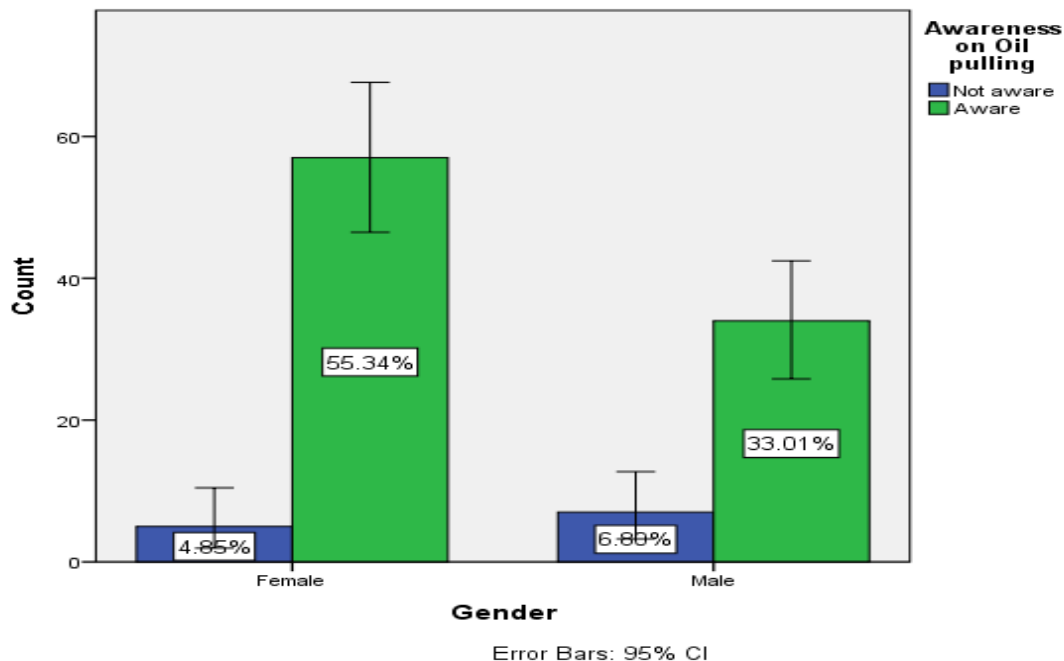


Fig 13: The bar graph represents the comparison between the gender distribution of the participants and their awareness on oil pulling. Blue depicts not aware and green depicts aware. It was observed that among the participants, no statistically significant difference in the awareness of oil pulling was observed between males and females with a P value of 0.163.

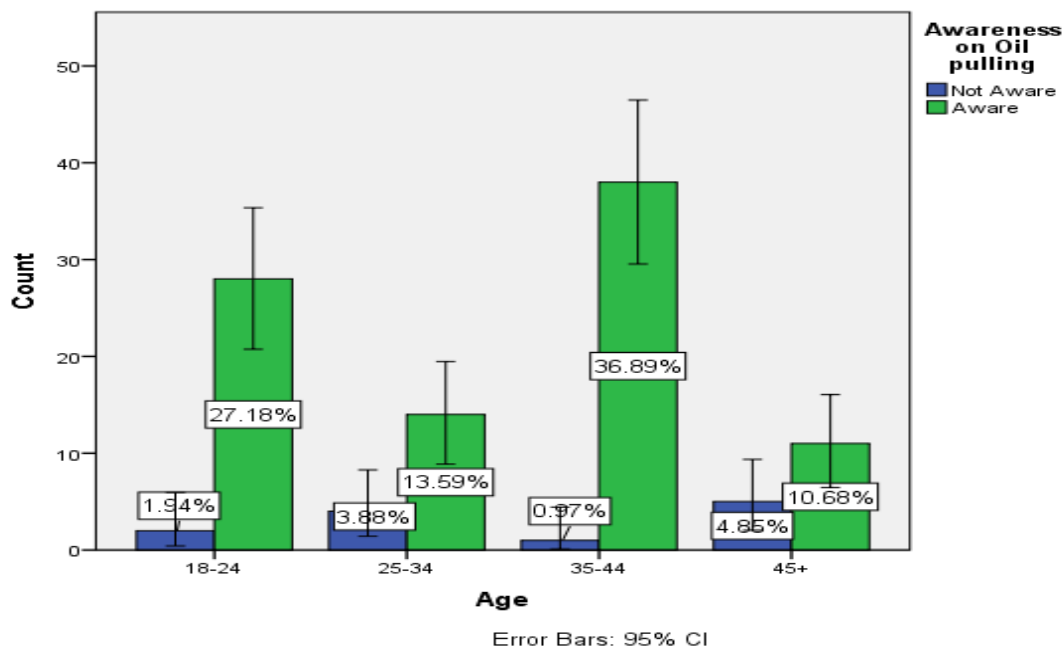


Fig 14: The bar graph represents the comparison between the age distribution of the participants and their awareness on oil pulling. Blue depicts not aware and green depicts aware. It was observed that

among the participants that took the survey, a statistically significant difference was noted among the different age groups with a p value of 0.008. The age groups 35-44 years were more aware of oil pulling.

CONCLUSION:

Within the limits of the study, we found that 88.35% of the participants were aware of oil pulling for maintaining oral hygiene, but not many were aware of the mechanism of action and other benefits. However, 78.65% believed that oil pulling helps improve gum health. Despite this only 20% of them were willing to follow oil pulling every day. More awareness needs to be created among the public regarding how oil pulling positively influences overall health and serves to be an affordable and less harmful alternative to chemical medication.

ACKNOWLEDGEMENTS:

We would like to thank Saveetha Dental college for providing us with this opportunity to conduct a survey and study the knowledge and attitude the general population has towards oil pulling as an oral hygiene maintenance aid. We would also like to thank the reviewers for their contributions.

CONFLICTS OF INTEREST: The authors declare that there are no conflicts of interest in the present study.

SOURCE OF FUNDING: The present study is supported by

- Saveetha Institute of Medical and Technical Sciences
- Saveetha Dental College and Hospitals
- Saveetha University
- Al Shams Energies Private Ltd.

REFERENCES:

1. Stanski R, Palmer C. Oral health and nutrition as gatekeepers to overall health: We are all in this together. *European Journal of General Dentistry*. 2015;4:99.
2. Li X, Kolltveit KM, Tronstad L, Olsen I. Systemic diseases caused by oral infection. *Clin Microbiol Rev*. 2000 Oct;13(4):547–58.
3. Karimi A, Majlesi M, Rafieian-Kopaei M. Herbal versus synthetic drugs; beliefs and facts. *J Nephropharmacol*. 2015 Jan 1;4(1):27–30.
4. Parolia A. Oil hygiene. *Br Dent J*. 2009 Nov 14;207(9):408.
5. Ballal V. Oil therapy. *Br Dent J*. 2009 Sep 12;207(5):193.
6. Singh A, Purohit B. Tooth brushing, oil pulling and tissue regeneration: A review of holistic approaches to oral health. *J Ayurveda Integr Med*. 2011 Apr;2(2):64–8.

7. Sood P, Devi M A, Narang R, V S, Makkar DK. Comparative efficacy of oil pulling and chlorhexidine on oral malodor: a randomized controlled trial. *J Clin Diagn Res.* 2014 Nov;8(11):ZC18–21.
8. Peedikayil FC, Sreenivasan P, Narayanan A. Effect of coconut oil in plaque related gingivitis - A preliminary report. *Niger Med J.* 2015 Mar;56(2):143–7.
9. Lakshmi T, Rajendran R, Krishnan V. Perspectives of oil pulling therapy in dental practice. *Dent Hypotheses.* 2013 Oct 1;4(4):131.
10. Asokan S, Rathan J, Muthu MS, Rathna PV, Emmadi P, Raghuraman, et al. Effect of oil pulling on *Streptococcus mutans* count in plaque and saliva using Dentocult SM Strip mutans test: a randomized, controlled, triple-blind study. *J Indian Soc Pedod Prev Dent.* 2008 Mar;26(1):12–7.
11. Kensche A, Reich M, Kümmerer K, Hannig M, Hannig C. Lipids in preventive dentistry. *Clin Oral Investig.* 2013 Apr;17(3):669–85.
12. Jauhari D, Srivastava N, Rana V, Chandna P. Comparative Evaluation of the Effects of Fluoride Mouthrinse, Herbal Mouthrinse and Oil Pulling on the Caries Activity and *Streptococcus mutans* Count using Oratest and Dentocult SM Strip Mutans Kit. *Int J Clin Pediatr Dent.* 2015 May;8(2):114–8.
13. An TD, Pothiraj C, Gopinath RM. Effect of oil-pulling on dental caries causing bacteria. *African Journal of [Internet].* 2008; Available from: <https://academicjournals.org/journal/AJMR/article-abstract/21CA7A911094>
14. Imperato PJ. The role of women in traditional healing among the Bambara of Mali. *Trans R Soc Trop Med Hyg.* 1981;75(6):766–70.
15. Hebbar A, Keluskar V, Shetti A. Oil pulling--Unraveling the path to mystic cure. *J Int Oral Health.* 2010;2(4):11–5.
16. Pathak S. Oil pulling therapy in dental practice: A short review. *SRM J Res Dent Sci.* 2016;7(1):33.
17. Tomar P, Hongal S, Jain M, Rana K, Saxena V. Oil pulling and oral health: A review. *IJSS Case Report & Reviews.* 2014;1(3):33–7.
18. Asokan S, Rathinasamy TK, Inbamani N, Menon T, Kumar SS, Emmadi P, et al. Mechanism of oil-pulling therapy - in vitro study. *Indian J Dent Res.* 2011 Jan;22(1):34–7.
19. Asokan S, Emmadi P, Chamundeswari R. Effect of oil pulling on plaque induced gingivitis: a randomized, controlled, triple-blind study. *Indian J Dent Res.* 2009 Jan;20(1):47–51.
20. Amith HV, Ankola AV, Nagesh L. Effect of oil pulling on plaque and gingivitis. *J Oral Health Community Dent [Internet].* 2007; Available from:

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.552.614&rep=rep1&type=pdf>

21. Ramesh A, Varghese S, Jayakumar ND, Malaiappan S. Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study. *J Periodontol.* 2018 Oct;89(10):1241–8.
22. Ramesh A, Varghese S, Jayakumar ND, Malaiappan S. Comparative estimation of sulfiredoxin levels between chronic periodontitis and healthy patients - A case-control study. *J Periodontol.* 2018 Oct;89(10):1241–8.
23. Paramasivam A, Priyadharsini JV, Raghunandhakumar S, Elumalai P. A novel COVID-19 and its effects on cardiovascular disease. *Hypertens Res.* 2020 Jul;43(7):729–30.
24. S G, T G, K V, Faleh A A, Sukumaran A, P N S. Development of 3D scaffolds using nanochitosan/silk-fibroin/hyaluronic acid biomaterials for tissue engineering applications. *Int J Biol Macromol.* 2018 Dec;120(Pt A):876–85.
25. Del Fabbro M, Karanxha L, Panda S, Bucchi C, Nadathur Doraiswamy J, Sankari M, et al. Autologous platelet concentrates for treating periodontal infrabony defects. *Cochrane Database Syst Rev.* 2018 Nov 26;11:CD011423.
26. Paramasivam A, Vijayashree Priyadharsini J. MitomiRs: new emerging microRNAs in mitochondrial dysfunction and cardiovascular disease. *Hypertens Res.* 2020 Aug;43(8):851–3.
27. Jayaseelan VP, Arumugam P. Dissecting the theranostic potential of exosomes in autoimmune disorders. *Cell Mol Immunol.* 2019 Dec;16(12):935–6.
28. Vellappally S, Al Kheraif AA, Divakar DD, Basavarajappa S, Anil S, Fouad H. Tooth implant prosthesis using ultra low power and low cost crystalline carbon bio-tooth sensor with hybridized data acquisition algorithm. *Comput Commun.* 2019 Dec 15;148:176–84.
29. Vellappally S, Al Kheraif AA, Anil S, Assery MK, Kumar KA, Divakar DD. Analyzing Relationship between Patient and Doctor in Public Dental Health using Particle Memetic Multivariable Logistic Regression Analysis Approach (MLRA2). *J Med Syst.* 2018 Aug 29;42(10):183.
30. Varghese SS, Ramesh A, Veeraiyan DN. Blended Module-Based Teaching in Biostatistics and Research Methodology: A Retrospective Study with Postgraduate Dental Students. *J Dent Educ.* 2019 Apr;83(4):445–50.
31. Venkatesan J, Singh SK, Anil S, Kim S-K, Shim MS. Preparation, Characterization and Biological Applications of Biosynthesized Silver Nanoparticles with Chitosan-Fucoidan Coating. *Molecules [Internet].* 2018 Jun 12;23(6). Available from: <http://dx.doi.org/10.3390/molecules23061429>
32. Alsubait SA, Al Ajlan R, Mitwalli H, Aburaisi N, Mahmood A, Muthurangan M, et al. Cytotoxicity of

- Different Concentrations of Three Root Canal Sealers on Human Mesenchymal Stem Cells. *Biomolecules* [Internet]. 2018 Aug 1;8(3). Available from: <http://dx.doi.org/10.3390/biom8030068>
33. Venkatesan J, Rekha PD, Anil S, Bhatnagar I, Sudha PN, Dechsakulwatana C, et al. Hydroxyapatite from Cuttlefish Bone: Isolation, Characterizations, and Applications. *Biotechnol Bioprocess Eng*. 2018 Aug 1;23(4):383–93.
 34. Vellappally S, Al Kheraif AA, Anil S, Wahba AA. IoT medical tooth mounted sensor for monitoring teeth and food level using bacterial optimization along with adaptive deep learning neural network. *Measurement*. 2019 Mar 1;135:672–7.
 35. PradeepKumar AR, Shemesh H, Nivedhitha MS, Hashir MMJ, Arockiam S, Uma Maheswari TN, et al. Diagnosis of Vertical Root Fractures by Cone-beam Computed Tomography in Root-filled Teeth with Confirmation by Direct Visualization: A Systematic Review and Meta-Analysis. *J Endod*. 2021 Aug;47(8):1198–214.
 36. R H, Ramani P, Tilakaratne WM, Sukumaran G, Ramasubramanian A, Krishnan RP. Critical appraisal of different triggering pathways for the pathobiology of pemphigus vulgaris-A review. *Oral Dis* [Internet]. 2021 Jun 21; Available from: <http://dx.doi.org/10.1111/odi.13937>
 37. Ezhilarasan D, Lakshmi T, Subha M, Deepak Nallasamy V, Raghunandhakumar S. The ambiguous role of sirtuins in head and neck squamous cell carcinoma. *Oral Dis* [Internet]. 2021 Feb 11; Available from: <http://dx.doi.org/10.1111/odi.13798>
 38. Sarode SC, Gondivkar S, Sarode GS, Gadbaile A, Yuwanati M. Hybrid oral potentially malignant disorder: A neglected fact in oral submucous fibrosis. *Oral Oncol*. 2021 Jun 16;105390.
 39. Kavarthapu A, Gurumoorthy K. Linking chronic periodontitis and oral cancer: A review. *Oral Oncol*. 2021 Jun 14;105375.
 40. Vellappally S, Abdullah Al-Kheraif A, Anil S, Basavarajappa S, Hassanein AS. Maintaining patient oral health by using a xeno-genetic spiking neural network. *J Ambient Intell Humaniz Comput* [Internet]. 2018 Dec 14; Available from: <https://doi.org/10.1007/s12652-018-1166-8>
 41. Aldhuwayhi S, Mallineni SK, Sakhamuri S, Thakare AA, Mallineni S, Sajja R, et al. Covid-19 Knowledge and Perceptions Among Dental Specialists: A Cross-Sectional Online Questionnaire Survey. *Risk Manag Healthc Policy*. 2021 Jul 7;14:2851–61.