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# Oral Health Knowledge and Self Care Practices of the Pregnant Women in Chennai City Padmalochini Sudharsan, Arthi Balasubramaniam

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## KEYWORDS

pregnant women, oral health, self care practice, knowledge, awareness, green energy

## ABSTRACT:

**Introduction:** Good oral hygiene during pregnancy improves the oral health of the pregnant woman and the foetus. The proper knowledge and good practice on oral health measures of the mother will help in inculcating the same to their children. This study aims to assess the knowledge of oral health and self care practices of pregnant women.

**Materials and Methods:** 108 pregnant women of 1st, 2nd and 3rd trimesters visiting private and public gynecology hospitals were involved in this cross-sectional study. A Self structured, pre-validated questionnaire was distributed among the subjects. Statistical analysis was performed in SPSS software version- 23. Descriptive and inferential statistics were performed.

**Results:** The results showed that about 53.7% and 17.6% of the educated and uneducated participants felt sugar diets will damage teeth. Also, 62.9% and 28.7% of educated and uneducated women perceived dental treatments are safe during pregnancy. Among the participants 8.3% and 10.2% of educated and uneducated felt scaling will not cause teeth loss. About 26.9% and only 10.2% of educated and uneducated participants brush their teeth twice daily. A significant association of education and oral health behaviors was elucidated ( $p < 0.05$ ).

**Conclusion:** Educated pregnant women have comparatively good oral health knowledge and practices than uneducated pregnant women. However, their oral health beliefs and behaviours need to be modified by creating awareness.

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## 1. Introduction

Good oral hygiene at the time of pregnancy improves the oral health of the pregnant woman and the fetus. The general health of the mother is very much essential for promoting the oral and general health of

their children. Literature has stated that pregnancy conjoined with physiological, emotional and physical changes increases women's susceptibility to oral conditions such as gingivitis, periodontitis, benign gingival lesions, tooth mobility, tooth erosion and dental caries [1].



Maternal oral health during pregnancy has implications on the development of the baby and in its health. Thus, the presence of nontreated active periodontal pathology is often associated with a better risk of preeclampsia, preterm infants, or low birth weight [2]. Inflammation of the placenta results in a lower secretion of key growth factors of the fetus such as fibroblast protein (FBF) and brain-derived neurotrophic factor (BDNF) [3]. The existence of a high systemic inflammatory response in pregnant women with periodontitis has also been demonstrated. Moderate to severe periodontitis has been associated with higher levels of C-reactive protein (CRP) and prostaglandin E2 (PGE2), which may risk pregnancy [4].

Inadequate knowledge and practices regarding the oral health of the pregnant women might lead to dental caries and tooth loss. Oral health of pregnant women is vital for their general health. If the pregnant woman is ignorant, it might lead to swelling of gums. Cohort and cross-sectional studies among pregnant women have found that their knowledge, attitude and practice of oral health measures needs attention [5][3].

Proper knowledge and good practice of oral health measures will not only improve their health but also improve the health of their children. Our team has extensive knowledge and research experience that has translated into high quality publications [6–24]. Thus, it is necessary to assess the knowledge and practice of oral health measures among pregnant women with different trimesters with different cultural beliefs and behaviours. [25–29]

Thus, the presented study aimed to access the oral health knowledge and self care practices of pregnant women in Chennai city.

## 2. Materials and Methods

A cross-sectional study was conducted among 108 pregnant women of 1st, 2nd and 3rd trimesters from Kalyani Hospitals and Institute of child health and hospital for children, Egmore, chennai with different

cultural backgrounds. A non-probability convenience sampling method was employed. A pre-validated and reliable questionnaire containing 17 questions both in English and vernacular language (Tamil) was distributed to the patients (Annexure 1). The internal consistency of the questionnaire using Cronbach's  $\alpha$  was found to be 0.83. The questionnaire contained the question items pertaining to their knowledge, attitude and practice of the oral health measures. The average time taken by the participants to fill the questionnaire was 8 minutes.

All pregnant women who visited the above mentioned hospitals and who were willing to participate in the study at the time of investigation had been included in the study. Oral consent from the participants had been obtained after explaining the need for the study. Pregnant women with a history of systemic disease and under medication for any disease which have a significant effect on oral health and who were not willing to participate were excluded from the study. Prior approval to carry out the study was obtained from the Institutional Research Committee (IRB) of the author University. Also, prior permission to carry out the study was obtained from the private and public gynecological hospitals. Statistical analysis was performed in the Statistical Package for the Social Sciences (SPSS) software version 23.0 (IBM, Chicago, USA). Descriptive statistics were performed to present the frequency distribution of the options of the question items. Also, Pearson's chi-square association was done to find the influence of education on the knowledge, attitude and practice of oral health measures among the participants. p value <0.05 was considered to be significant.

## 3. Results

The mean age of the study participants was found to be 24.42 +/- 3.142. The data collected from pregnant women shows that 69.44% was educated and 30.56% was uneducated; 39.81% of pregnant women have more than Rs.50000 monthly income. About 23.15% of pregnant women were working women and 76.85% of pregnant women were homemakers. About



41.67% of pregnant women reside in urban areas and 58.33% pregnant women reside in rural areas. Among the participants, 72.22% were in the 1st, 25% were in the 2nd trimester and 2.78% were in the 3rd trimester of pregnancy. About 48.16% of women have been pregnant once, 39.81% twice and 12.04% more than twice. About 2.78% of pregnant women think extraction of teeth can be done during pregnancy and 97.22% think extraction cannot be done during pregnancy. About 71.3% pregnant women think high sugar diets can damage teeth and 28.7% think high sugar diets cannot damage teeth. Also, 65.74% pregnant women think regularly visiting dentists is important. Among them, 91.67% think dental treatments are safe during pregnancy. About 81.48% of pregnant women think scaling is safe during pregnancy, 75% of pregnant women use brush and paste, 17.59% follow any home remedy and 7.41% use a combination of both. About 97.22% of pregnant women do not use mouthwash, 62.96% of pregnant women brush once and 37.04% brush twice in a day.

About 61.11% of educated and 14.81% uneducated participants use brush and paste, 5.56% educated and 12.04% uneducated participants use home remedy and 3.7% of educated and uneducated participants use a

combination of both [Figure 1]. Among educated pregnant women, 53.7% think high sugar diets can damage teeth and 15.74% do not think so. Among the uneducated pregnant women 17.59% think high sugar diets can damage teeth and 12.96% do not think so [Figure 2]. About 42.59% of the pregnant women brush once in a day and 27.3% of uneducated pregnant women brush once in a day [Figure 3]. About 6.48% educated and 1.85% uneducated participants think dental treatments are safe during pregnancy and 62.96% educated and 1.85% uneducated do not think so [Figure 4]. Among the educated pregnant women, 28.7% have been pregnant once, 32.41% twice and 8.33% more than once. Among 45.37% of educated and 20.37% uneducated people think regularly visiting a dentist is important and 24.07% educated and 10.19% uneducated think it is not important [Figure 5]. Among the educated pregnant women 67.59% think extraction of tooth cannot be done during pregnancy and 1.85% do not think so, among the uneducated once 29.63% think extraction cannot be done [Figure 6]. About 8.33% educated and 10.19% uneducated once think scaling can make teeth loose. About 1.85% educated and 0.93% uneducated use mouthwash 67.59% educated and 29.63% uneducated do not use mouthwash.

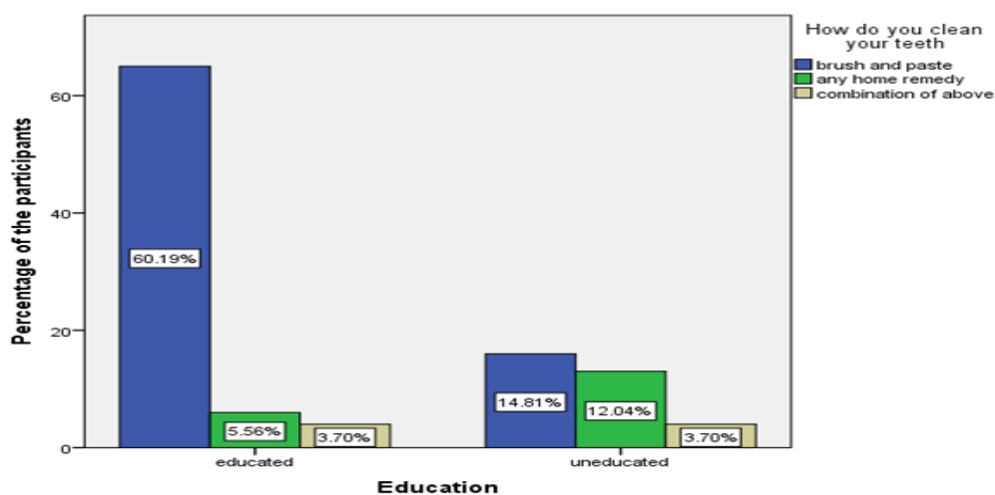


Figure 1: Bar graph represents the association of education among pregnant women and their modes of cleaning their teeth. The X axis represents the education of the participants and the Y axis represents the percentage of the



participants. Blue colour denotes the participants who used brush and paste, green colour denotes the participants who used any home remedy and the pale yellow colour denotes the participants who used combination of brush and paste and any home remedy to maintain their oral hygiene. Brush and paste was the most commonly used mode to clean their teeth in both the groups of the participants. The association between education and materials used for oral hygiene maintenance was statistically significant (Chi-square test;  $p=0.008$  - significant)

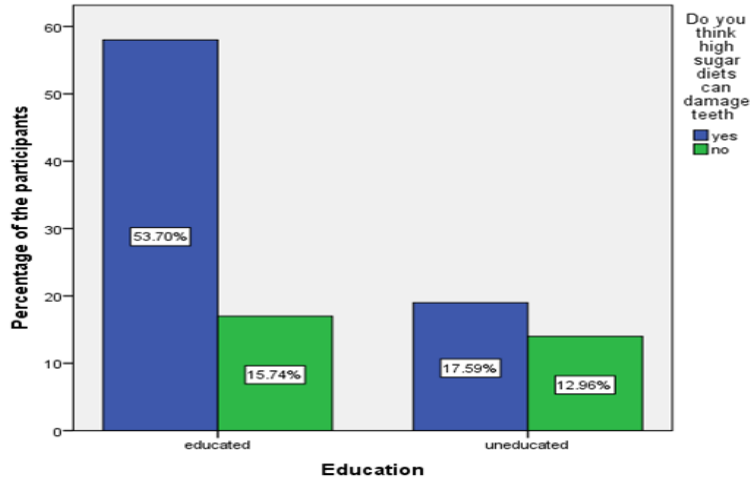


Figure 2: Bar Graph represents the association of education among pregnant women and their knowledge about high sugar diets and their damaging effects on teeth. The X axis represents the education of the participants and the Y axis represents the percentage of the participants. Blue colour denotes the participants think high sugar diets can damage their teeth and the green colour denotes the participants do not think high sugar diets can damage their teeth. Majority of the participants of both the groups think high sugar diets can damage their teeth. The association between education and knowledge of sugar on dental caries was statistically significant (Chi-square test;  $p=0.034$  - significant)

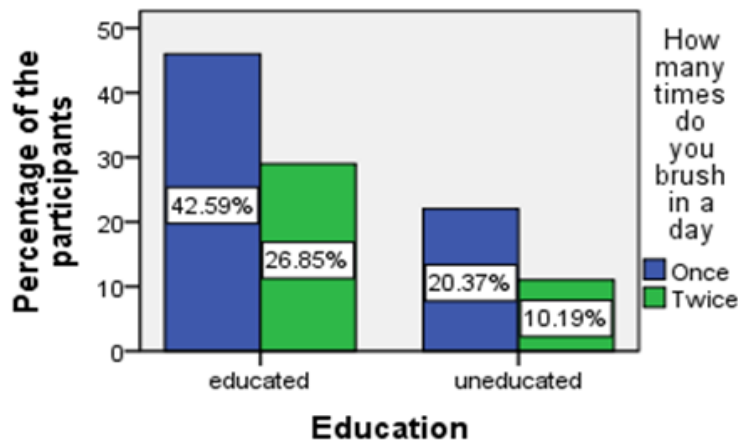


Figure 3: Bar Graph represents the association of education among pregnant women and their brushing habits. The X axis represents the education of the participants and the Y axis represents the percentage of the participants. Blue colour denotes the participants brush once in a day and the green colour denotes the participants brush twice a day.



Majority of the participants of both the groups brush once a day. The association of education and number of times brushing teeth was statistically significant (Chi-square test;  $p=0.029$  - significant)

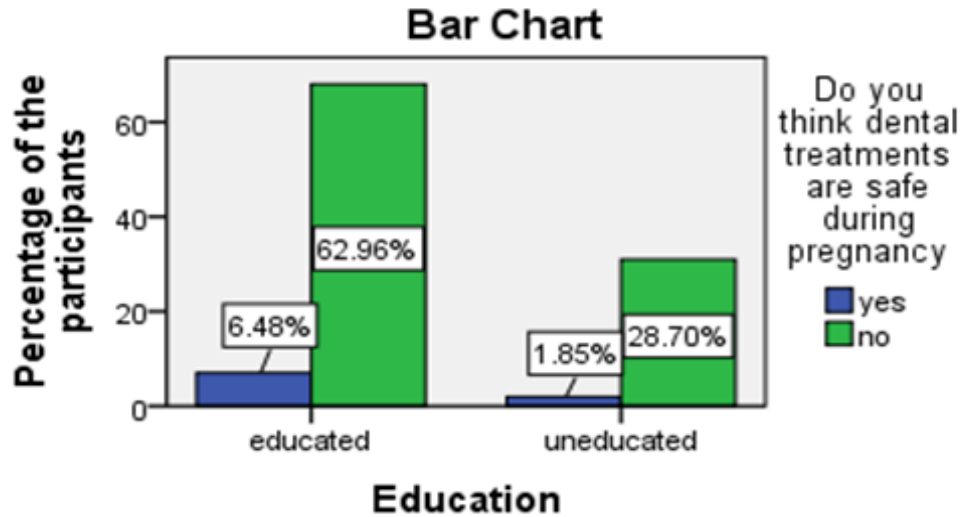


Figure 4: Bar Graph represents the association of education among pregnant women and their knowledge about the dental treatments during pregnancy. X axis represents the education of the participants and the Y axis represents the percentage of the participants. Blue colour denotes the participants think dental treatments are safe during pregnancy and the green colour denotes the participants who do not think dental treatments are safe during pregnancy. Majority of the participants of both the groups think dental treatments are unsafe during pregnancy. The association between education and knowledge on dental treatment during pregnancy was statistically significant (Chi-square test;  $p=0.046$  - significant)

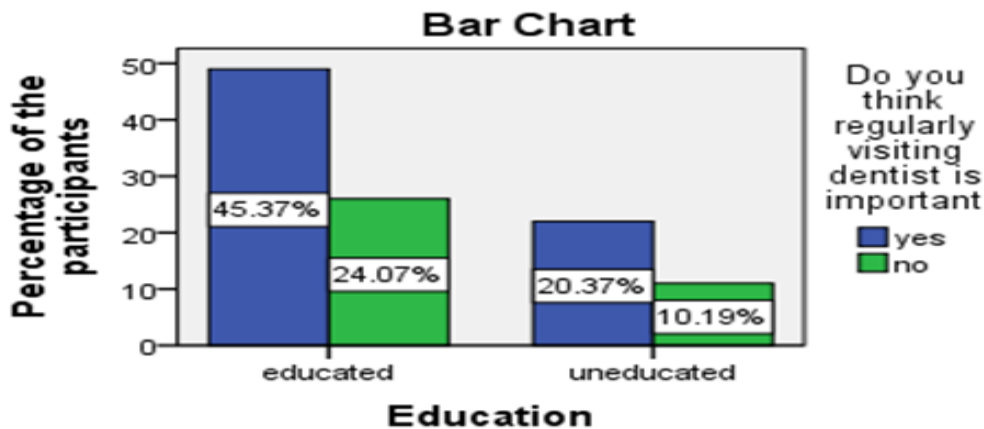


Figure 5: Bar Graph represents the association of education among pregnant women and their knowledge of regularly visiting the dentist. X axis represents the education of the participants and the Y axis represents the percentage of the participants. Blue colour denotes the participants who think regularly visiting the dentist is important and the green



colour denotes the participants who think regularly visiting the dentist is unimportant. Majority of the participants of both the groups think regularly visiting the dentist is important. The association between education and knowledge on importance of regular dental visits was statistically significant (Chi-square test;  $p=0.002$  - significant)

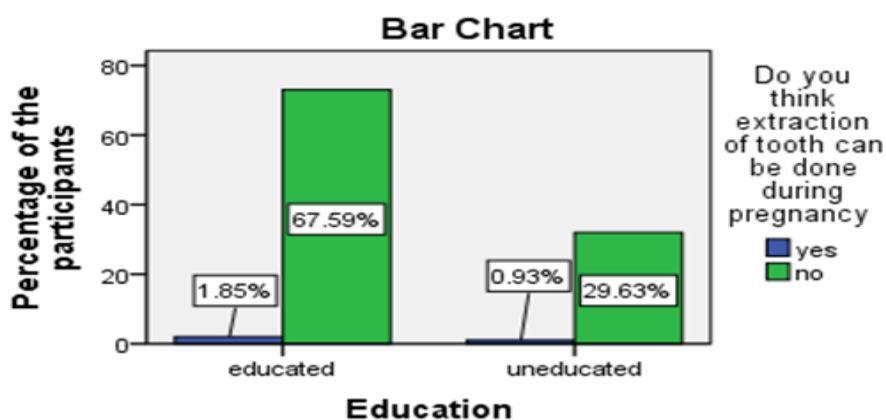


Figure 6: Bar Graph represents the association of education among pregnant women and their knowledge of extraction of teeth during pregnancy. The X axis represents the education of the participants and the Y axis represents the percentage of the participants. Blue colour denotes the participants who think extraction of tooth can be done during pregnancy and the green colour denotes the participants who think extraction of tooth cannot be done during pregnancy. Majority of the participants of both the groups think the extraction of teeth cannot be done during pregnancy. The association between education and knowledge on extraction of teeth during pregnancy was statistically significant (Chi-square test;  $p=0.046$  - significant)

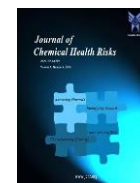
#### 4. Discussion

The present study aimed to assess the knowledge and practice of oral health measures among the pregnant women in Chennai city. The oral health knowledge of pregnant women was found to be moderate and their practices need modifications. Educated pregnant women had better knowledge and practice compared to uneducated pregnant women.

One study done among pregnant women in South Africa has found that oral health status and treatment needs were satisfactory [30]. Oral health status of pregnant women in public health systems makes it imperative in oral health. Another study reported that the oral health status among pregnant women was not satisfactory. The mean decayed teeth and mean missing teeth were found to be 12 and 7 among the pregnant women of different trimesters [31]. One study conducted to assess the oral health knowledge

and self care practices among pregnant women in Saudi has stated that 45% of pregnant women had poor knowledge and practices. This study in consistency with the present study found that education and occupation influences the oral health knowledge and practices among pregnant women [32].

Educated pregnant women took good care of their oral health in this study. They follow good measures to care for their oral health. People with low socioeconomic and uneducated backgrounds had less oral self care. These results were inconsistent with another study which stated that less knowledge of oral and dental health of women with poor education from lower socioeconomic backgrounds was elucidated. Also found that 62.7% of pregnant women never visited a dentist in their pregnancy and also found their knowledge towards oral health was poor [33]. Improved dental health education at pregnancy period



leads to good oral health and improves pregnancy outcomes.

This study assessed the oral health knowledge and practice among pregnant women of different cultural backgrounds with different socio-economic status. The only limitation is that this study used a convenience sampling technique. Further cohort studies need to be directed to extrapolate the results to the population with different races and cultures.

## 5. Conclusion

The oral health knowledge and practice among pregnant women of different trimesters is not satisfactory. However, Educated pregnant women have comparatively better oral health knowledge and practices than uneducated pregnant women. Education plays a major role in oral health practices and knowledge. Thus, their oral health beliefs and behaviours need to be modified by creating awareness.

## 6. AUTHOR CONTRIBUTIONS

Author 1: Padmalochini Sudharsan, carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis and in the preparation of the manuscript.

Author 2: Arthi Balasubramaniam, aided in conception of the topic, designing the study and supervision of the study, correction and final approval of the manuscript.

## 7. ACKNOWLEDGEMENT

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## 8. CONFLICTS OF INTEREST

None declared

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## References

1. Sultan S, Chaitra TR, Wagh S, Chaudhary S, Manuja N, Sinha A. Knowledge, Attitude and Practice of Oral Health and Adverse Pregnancy Outcomes among Rural and Urban Pregnant Women of Moradabad, Uttar Pradesh, India. *Journal of Interdisciplinary Dentistry*. 2018. p. 5. doi:10.4103/jid.jid\_56\_17
2. Wu M, Chen S-W, Jiang S-Y. Relationship between Gingival Inflammation and Pregnancy. *Mediators of Inflammation*. 2015. pp. 1–11. doi:10.1155/2015/623427
3. Llena C, Nakdali T, Sanz JL, Forner L. Oral Health Knowledge and Related Factors among Pregnant Women Attending to a Primary Care Center in Spain. *Int J Environ Res Public Health*. 2019;16. doi:10.3390/ijerph16245049
4. Sanz M, Kornman K, working group 3 of the joint EFP/AAP workshop\*. Periodontitis and adverse pregnancy outcomes: consensus report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases. *Journal of Clinical Periodontology*. 2013. pp. S164–S169. doi:10.1111/jcpe.12083
5. Lakshmi SV, Srilatha A, Satyanarayana D, Reddy LS, Chalapathi SB, Meenakshi S. Oral health knowledge among a cohort of pregnant women in south India: A questionnaire survey. *J Family Med Prim Care*. 2020;9: 3015–3019.
6. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of *Streptococcus mutans*, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: randomized controlled trial. *Clin Oral Investig*. 2020;24: 3275–3280.
7. Samuel SR. Can 5-year-olds sensibly self-report the impact of developmental enamel defects on their quality of life? *Int J Paediatr Dent*. 2021;31: 285–286.



8. Samuel SR, Kuduruthullah S, Khair AMB, Al Shayeb M, Elkaseh A, Varma SR, et al. Impact of pain, psychological-distress, SARS-CoV2 fear on adults' OHRQOL during COVID-19 pandemic. *Saudi J Biol Sci.* 2021;28: 492–494.
9. Samuel SR, Kuduruthullah S, Khair AMB, Shayeb MA, Elkaseh A, Varma SR. Dental pain, parental SARS-CoV-2 fear and distress on quality of life of 2 to 6 year-old children during COVID-19. *Int J Paediatr Dent.* 2021;31: 436–441.
10. Samuel SR, Acharya S, Rao JC. School Interventions-based Prevention of Early-Childhood Caries among 3-5-year-old children from very low socioeconomic status: Two-year randomized trial. *J Public Health Dent.* 2020;80: 51–60.
11. Vikneshan M, Saravanakumar R, Mangaiyarkarasi R, Rajeshkumar S, Samuel SR, Suganya M, et al. Algal biomass as a source for novel oral nano-antimicrobial agents. *Saudi Journal of Biological Sciences.* 2020. pp. 3753–3758. doi:10.1016/j.sjbs.2020.08.022
12. Chellapa LR, Shanmugam R, Indiran MA, Samuel SR. Biogenic nanoselenium synthesis, its antimicrobial, antioxidant activity and toxicity. *Bioinspired, Biomimetic and Nanobiomaterials.* 2020;9: 184–189.
13. Samuel SR, Mathew MG, Suresh SG, Varma SR, Elsubeihi ES, Arshad F, et al. Pediatric dental emergency management and parental treatment preferences during COVID-19 pandemic as compared to 2019. *Saudi J Biol Sci.* 2021;28: 2591–2597.
14. Barma MD, Muthupandiyan I, Samuel SR, Amaechi BT. Inhibition of Streptococcus mutans, antioxidant property and cytotoxicity of novel nano-zinc oxide varnish. *Arch Oral Biol.* 2021;126: 105132.
15. Muthukrishnan L. Nanotechnology for cleaner leather production: a review. *Environmental Chemistry Letters.* 2021. pp. 2527–2549. doi:10.1007/s10311-020-01172-w
16. Muthukrishnan L. Multidrug resistant tuberculosis - Diagnostic challenges and its conquering by nanotechnology approach - An overview. *Chem Biol Interact.* 2021;337: 109397.
17. Sekar D, K AP. Letter to the Editor: H19 Promotes HCC Bone Metastasis by Reducing Osteoprotegerin Expression in a PPP1CA/p38MAPK-Dependent Manner and Sponging miR-200b-3p. *Hepatology.* 2021. doi:10.1002/hep.31719
18. Gowhari Shabgah A, Amir A, Gardanova ZR, Olegovna Zekiy A, Thangavelu L, Ebrahimi Nik M, et al. Interleukin-25: New perspective and state-of-the-art in cancer prognosis and treatment approaches. *Cancer Med.* 2021;10: 5191–5202.
19. 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.* 2021. doi:10.1111/odi.13798
20. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma. *J Oral Pathol Med.* 2019;48: 299–306.
21. R H, Ramani P, Ramanathan A, R JM, S G, Ramasubramanian A, et al. CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2020;130: 306–312.
22. J PC, Marimuthu T, C K, Devadoss P, Kumar SM. Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study. *Clin Implant Dent Relat*



- Res. 2018;20: 531–534.
23. Wahab PUA, Madhulaxmi M, Senthilnathan P, Muthusekhar MR, Vohra Y, Abhinav RP. Scalpel Versus Diathermy in Wound Healing After Mucosal Incisions: A Split-Mouth Study. *J Oral Maxillofac Surg.* 2018;76: 1160–1164.
  24. Mudigonda SK, Murugan S, Velavan K, Thulasiraman S, Krishna Kumar Raja VB. Non-suturing microvascular anastomosis in maxillofacial reconstruction- a comparative study. *J Craniomaxillofac Surg.* 2020;48: 599–606.
  25. Sathish T, Karthick S. Wear behaviour analysis on aluminium alloy 7050 with reinforced SiC through taguchi approach. *Journal of Materials Research and Technology.* 2020;9: 3481–3487.
  26. Campeau PM, Kasperaviciute D, Lu JT, Burrage LC, Kim C, Hori M, et al. The genetic basis of DOORS syndrome: an exome-sequencing study. *Lancet Neurol.* 2014;13: 44–58.
  27. Dhinesh B, Niruban Bharathi R, Isaac JoshuaRamesh Lalvani J, Parthasarathy M, Annamalai K. An experimental analysis on the influence of fuel borne additives on the single cylinder diesel engine powered by Cymbopogon flexuosus biofuel. *J Energy Inst.* 2017;90: 634–645.
  28. Parthasarathy M, Isaac JoshuaRamesh Lalvani J, Dhinesh B, Annamalai K. Effect of hydrogen on ethanol-biodiesel blend on performance and emission characteristics of a direct injection diesel engine. *Ecotoxicol Environ Saf.* 2016;134: 433–439.
  29. Gopalakannan S, Senthilvelan T, Ranganathan S. Modeling and Optimization of EDM Process Parameters on Machining of Al 7075-B4C MMC Using RSM. *Procedia Engineering.* 2012;38: 685–690.
  30. Africa CWJ, Turton M. Oral Health Status and Treatment Needs of Pregnant Women Attending Antenatal Clinics in KwaZulu-Natal, South Africa. *Int J Dent.* 2019;2019: 5475973.
  31. Deghatipour M, Ghorbani Z, Ghanbari S, Arshi S, Ehdavivand F, Namdari M, et al. Oral health status in relation to socioeconomic and behavioral factors among pregnant women: a community-based cross-sectional study. *BMC Oral Health.* 2019;19: 117.
  32. Moawad S, Badawy AS, Alosimi S, Alrowily M. The Oral Health Knowledge and Self-care Practices of Pregnant Women in Saudi Arabia. *American Journal of Nursing Research.* 2019. pp. 643–651. doi:10.12691/ajnr-7-4-25
  33. Thomas NJ, Middleton PF, Crowther CA. Oral and dental health care practices in pregnant women in Australia: a postnatal survey. *BMC Pregnancy Childbirth.* 2008;8: 13.