

Type of manuscript: Survey

COMPARATIVE STUDY ON EFFECTIVENESS OF OIL PULLING AND MOUTHWASH

Running title: Oil pulling Vs Mouthwash

ABSTRACT

Aim: The aim of the study is to compare the effectiveness between oil pulling and mouthwash.

Objective: To create awareness and to compare the effectiveness between oil pulling and mouthwash.

Materials and methods: The questionnaire- based study was carried out online through a survey monkey app. Individuality was ensured when the subjects filled up the survey. 100 students took part in the survey. A total of 10 questions were asked based on the responses from the subjects, statistical analysis was performed and the results were tabulated systematically.

Result: The study shows that the effectiveness of cleaning the mouth is almost equal between oil pulling and mouthwash with a result 51% for mouth wash and 49% for oil pulling. And for the question which is safer among oil pulling and mouthwash the result shows that oil pulling(61%) is safer than that of mouthwash(39%). But nowadays the usage of oil pulling is comparatively less than mouthwash. But still some people are following traditional methods.

Conclusion: This survey was done to access the knowledge and awareness on the effect of oil pulling and mouthwash.

Key words: questionnaire, mouthwash, oil pulling, statistical analysis

INTRODUCTION:

The mouth is considered the mirror of the overall health of the human body. There are billions of microorganisms in the oral cavity, some of which contribute to the development or progression of systemic diseases such as cardiovascular disease, diabetes mellitus. Oral health and overall health are interrelated (Kandaswamy, Sharath and Priya, 2018). Therefore, it is very important to maintain oral health. Antibiotic resistance, side effects and toxicity to modern drugs have prompted scientists to study natural products (Kaushik *et al.*, 2016; Kandaswamy, Sharath and Priya, 2018).

Oil pulling is the process where oil is being gargled in the mouth similar to that of the mouth wash (Rajpurohit *et al.*, 2017). This type of oral therapy isn't new; it had its origin in Ayurvedic medicine dating 3000 years ago (Siripaiboonpong, no date; Ahmed, Mostafa and El-Malt, 2020). Mouthwash is the antiseptic solution intended to reduce the microbial load in the oral cavity (Ahmed, Mostafa and El-Malt, 2020). It's a liquid usually held in your mouth passively or swilled round the mouth by contraction of the peri oral muscles and by the movement of the tongue, could also be gargled (Monsen, no date). Mouthwash has properties like anti-fungal, anti-inflammatory, and anti-bacterial (Ramamurthy and Mg, 2018; Vadhana *et al.*, 2019). The antiseptic properties of mouthwash are used to maintain oral hygiene (A and Gupta, 2018). Some mouthwash is proven to kill bacteria causing cavities, gingivitis, and bad breath (Zulkepli, 2012). Those of the properties of oil pulling is not known, but it is still said to be antagonistic to the modern mouthwash thus it was necessary to compare the mouthwash with that of oil pulling (Bolor, 2018). The aim of the study is to compare between oil pulling and mouthwash.

MATERIALS AND METHODS:

A convenient sample size of 100 consecutive respondents participated in this study. A cross sectional observational online based study was conducted using Google forms with dichotomous response and multiple choice questions. The ethical approval was obtained from the Institutional Ethical Committee. The questionnaire contains 10 questions based on knowledge and awareness

of effectiveness of oil pulling and mouthwash and finally the data were collected and entered in excel and then it is converted into SPSS software for statistical analysis. Descriptive analysis was done and the correlation of data was carried out using Chi-square test.

RESULTS AND DISCUSSION:

Majority of Participants who answered this survey are 19-30 years of age 49% (green) and few who answered were below 18 years of age 22% (blue) and few participants who answered this survey was 31-40 years of age 21%(yellow) and the remaining were above 40 years of age 8% (violet)(Figure 1). Majority participants who took part in this survey were male 72%(blue) and the remaining were female 28%(green)(Figure 2). Majority participants answered that they were aware of it 85%(blue) while few answered that they were not aware of 15% (green)(Figure 3). Majority of respondents answered that they use oil pulling method to clean their mouth 61% (green) while few answered that they use mouthwash 30% (blue) and the remaining answered that they use other techniques 9% (yellow)(Figure 4). Majority of participants answered that they would cleanse their mouth twice a day 54% (green) while few answered that they would cleanse their mouth once a day 36% (blue) and the remaining answered they would cleanse more than twice a day 10% (yellow)(Figure 5). Majority participants answered that they do not have any such cavities 78% (blue) while the remaining answered that they have cavities 22% (green)(Figure 6). Majority of participants answered that mouthwash is an effective procedure in cleansing our mouth 60% (blue) while few answered that oil pulling is effective 40% (green)(Figure 7). Majority respondents answered that oil pulling is the safety procedure in cleansing our mouth 59%(blue) while few answered that mouth wash is more safe 41%(green)(Figure 8). Majority of respondents answered that Coconut oil is best suitable for oil pulling 61% (blue) while few answered that sesame oil also suits for oil pulling 26% (green) and the remaining answered that peppermint oil is suitable for oil pulling 13% (yellow)(Figure 9). Majority of participants have practiced oil pulling procedure for cleansing their mouth 74% (blue) while few have not practiced oil pulling yet 26% (green)(Figure 10).

Chi square test was done in comparison with the gender of the respondents. Bar graph showing the association between gender and the question “Which do you think is effective in cleaning the mouth?”. X-axis represents the gender and Y-axis represents the number of participants of which

blue colour indicates mouthwash and green colour indicates oil pulling. Majority of the males(39 participants) choose mouthwash as effective in cleaning their mouths. However the difference is not statistically significant (Chi-square value-3.646 , p value-0.056 (>0.05) hence not significant). Bar graph showing the association between gender and the question “7. Which do you think is safer?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates oil pulling and green colour indicates mouthwash . Majority of the males(39 participants) chose oil pulling as safer. However the difference is not statistically significant (Chi-square value-2.483 , p value-0.115 (>0.05) hence not significant). Bar graph showing the association between gender and the question “8. Which oil do you think is best for oil pulling?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates coconut oil and green colour indicates sesame oil and yellow colour represents peppermint oil. Majority of the males(45 participants) chose coconut oil as the best oil. However the difference is not statistically significant (Chi-square value-0.816 , p value-0.665 (>0.05) hence not significant). Bar graph showing the association between gender and the question “3. What do you use to clean your mouth?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates mouthwash and green colour indicates oil pulling and yellow colour indicates both. Majority of the males(47 participants) chose oil pulling. However the difference is not statistically significant (Chi-square value-5.543 , p value-0.063 (>0.05) hence not significant).

The clinical evaluation in this study was based on the plaque index provided by(Asokan, Emmadi and Chamundeswari, 2009) and the modified gum index provided by(Ankola, Nagesh and Amith, 2007). The modified gum index is the most widely used index in clinical trials of therapeutic agents and was therefore used in this study. Oil pulling with sunflower oil was found to significantly reduce plaque index and gum index after 45 days(Nagilla *et al.*, 2017). Sesame oil stretching therapy was found to be as effective as chlorhexidine in reducing plaque-induced gingivitis(Inc. and Kernel Networks Inc., 2019). In our study the data for the process showed a reduction in the bacterial growth but that of the mouthwash data showed more significant result at an instant thus mouth was is more preferable among the subject, but further studies showed that the regular use of oil pulling over mouth was significantly beneficial.

The present study has some limitations like the study population like small sample size as there were only 100 participants. We could create more awareness and let people understand the effectiveness between oil pulling and mouthwash.

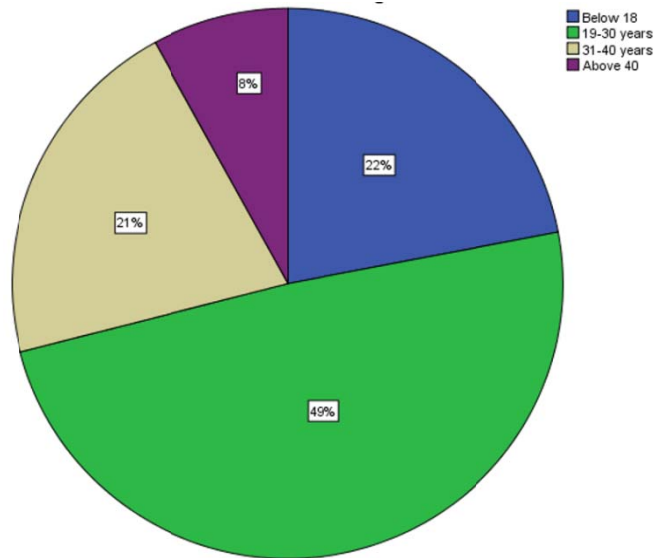


FIGURE 1 - Pie chart showing percentage distribution of Age group. Majority of Participants who answered this survey are 19-30 years of age 49% (green) and few who answered were below 18 years of age 22% (blue) and few participants who answered this survey was 31-40 years of age 21%(yellow) and the remaining were above 40 years of age 8% (violet)

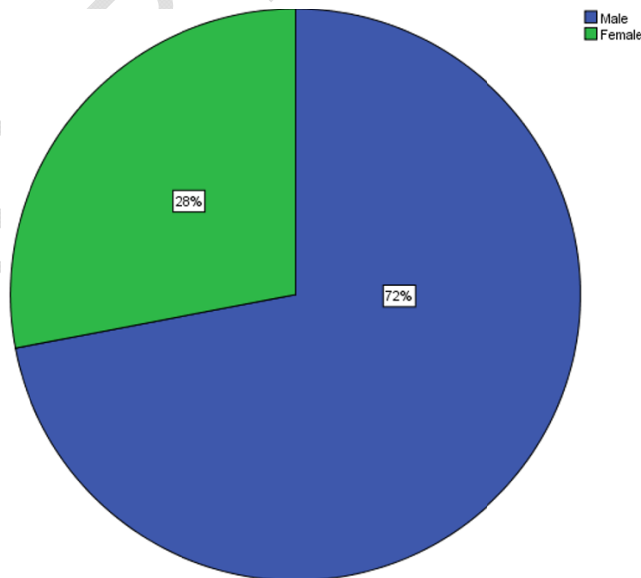


FIGURE 2 - Pie chart showing percentage distribution of gender. Majority participants who took part in this survey were male 72%(blue) and the remaining were female 28%(green).

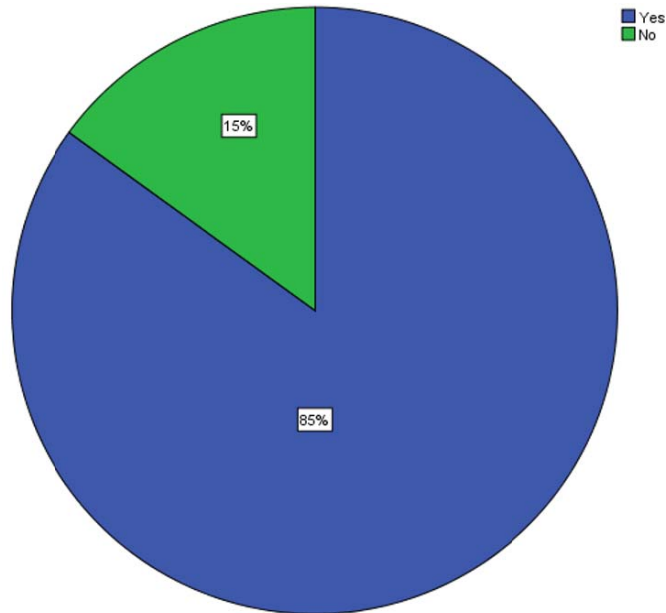


FIGURE 3- Pie chart showing percentage distribution of awareness of participants in cleaning their mouth. Majority participants answered that they were aware of it 85%(blue) while few answered that they were not aware 15% (green).

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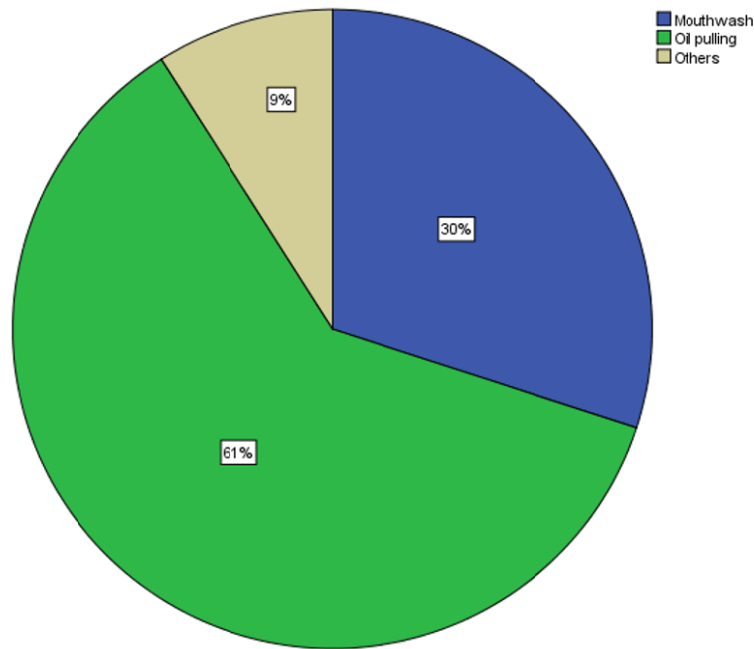


FIGURE 4 - Pie chart showing percentage distribution of awareness of participants on the techniques used to clean the mouth. Majority of respondents answered that they use oil pulling method to clean their mouth 61% (green) while few answered that they use mouthwash 30% (blue) and the remaining answered that they use other techniques 9% (yellow).

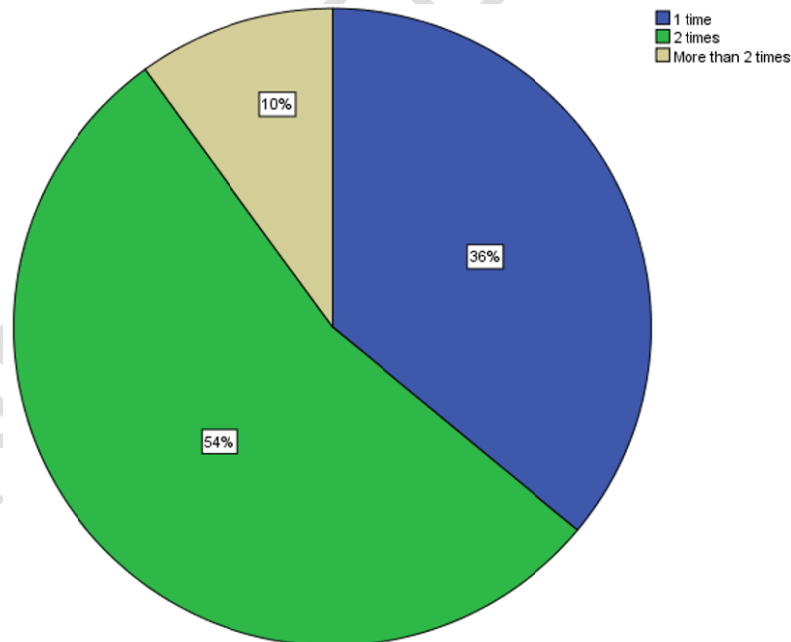


FIGURE 5 - Pie chart showing percentage distribution of knowledge of the participants in cleansing their mouth per day. Majority of participants answered that they would cleanse their mouth twice a day 54% (green) while few answered that they would cleanse their mouth once a

day 36% (blue) and the remaining answered they would cleanse more than twice a day 10% (yellow).

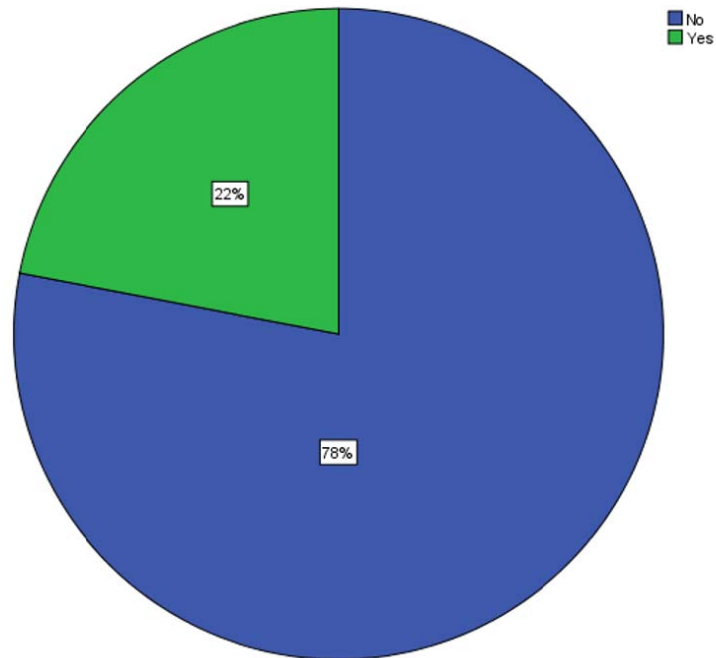


FIGURE 6- Pie chart showing percentage distribution of awareness of participants whether they have cavities or not. Majority participants answered that they do not have any such cavities 78% (blue) while the remaining answered that they have cavities 22% (green).

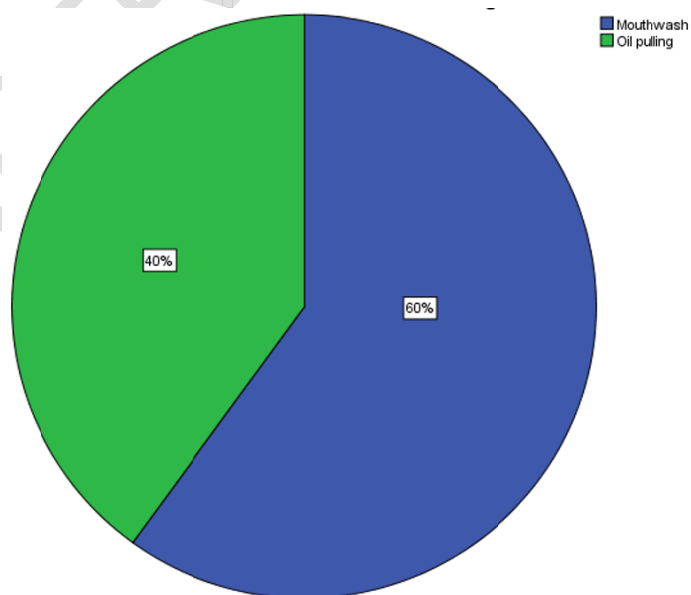


FIGURE 7 - Pie chart showing percentage distribution of awareness of participants in the type of technique which is effective in cleansing the mouth. Majority of participants answered that mouthwash is an effective procedure in cleansing our mouth 60% (blue) while few answered that oil pulling is effective 40% (green).

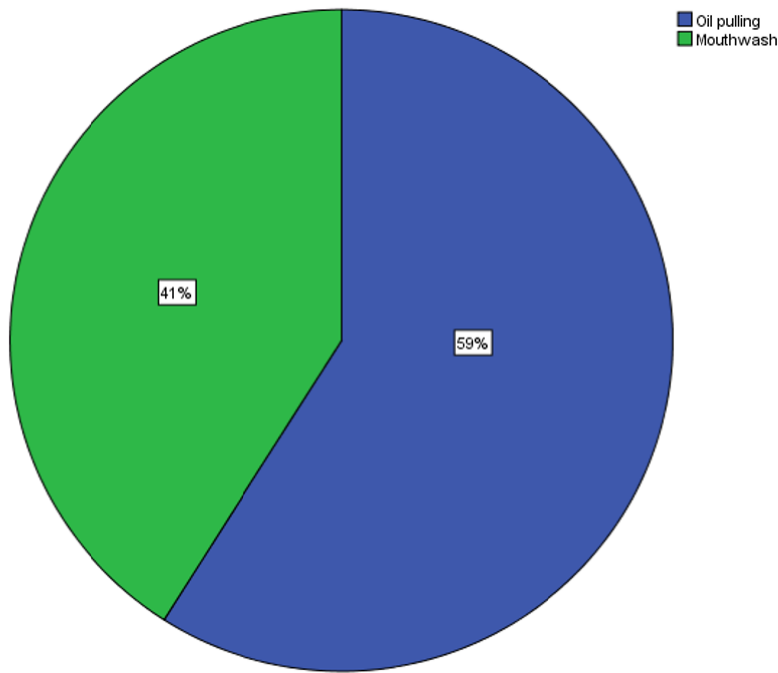


FIGURE 8 - Pie chart showing percentage distribution of knowledge of participants on the type of technique which is safe to use for mouth cleansing. Majority respondents answered that oil pulling is the safety procedure in cleansing our mouth 59%(blue) while few answered that mouth wash is more safe 41%(green).

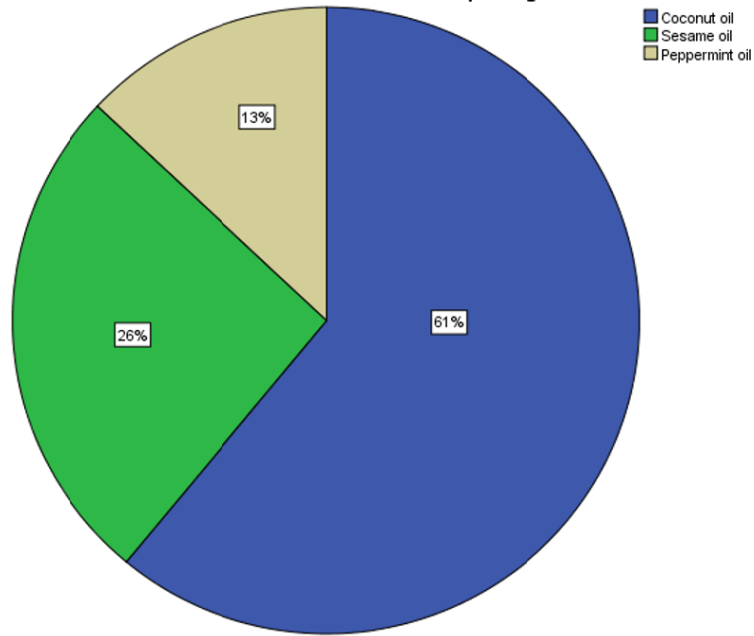


FIGURE 9 - Pie chart showing percentage distribution of awareness of participants on the best oil which is best suited for oil pulling. Majority of responders answered that Coconut oil is best suitable for oil pulling 61% (blue) while few answered that sesame oil also suits for oil pulling 26% (green) and the remaining answered that peppermint oil is suitable for oil pulling 13% (yellow).

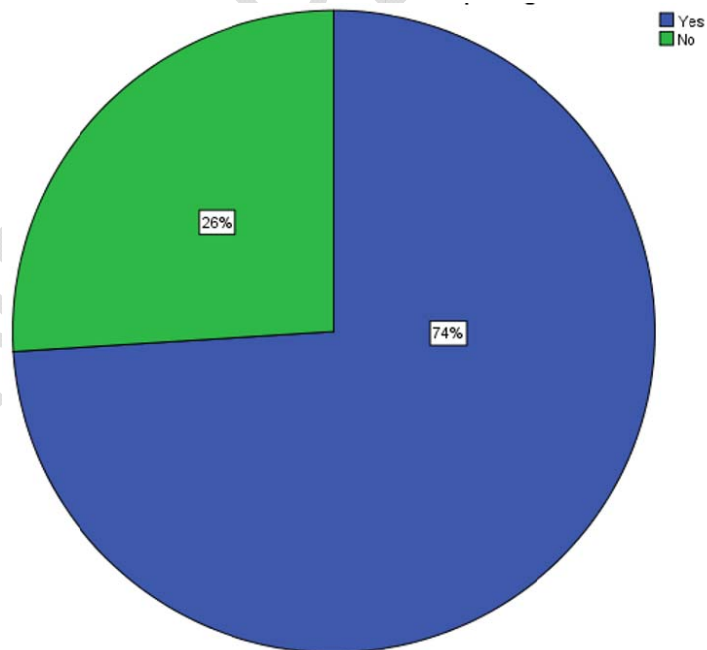


FIGURE 10 - Pie chart showing percentage distribution of practice of participants on oil pulling technique. Majority of participants have practiced oil pulling procedure for cleansing their mouth 74% (blue) while few have not practiced oil pulling yet 26% (green).

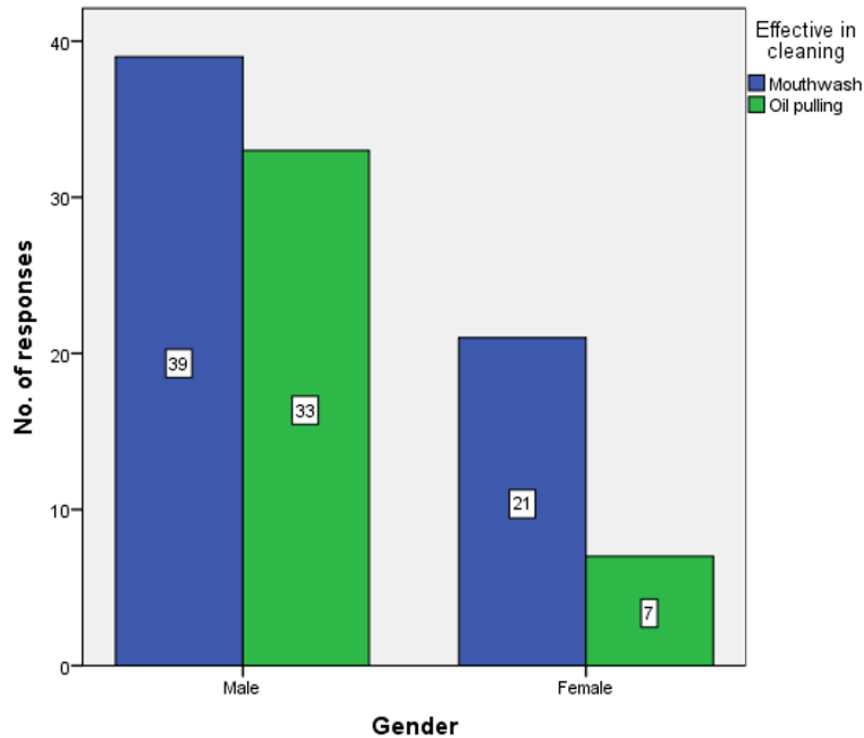


FIGURE 11- Bar graph showing the association between gender and the question “Which do you think is effective in cleaning the mouth?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates mouthwash and green colour indicates oil pulling. Majority of the males(39 participants) choose mouthwash as effective in cleaning their mouths. However the difference is not statistically significant (Chi-square value-3.646 , p value-0.056 (>0.05) hence not significant).

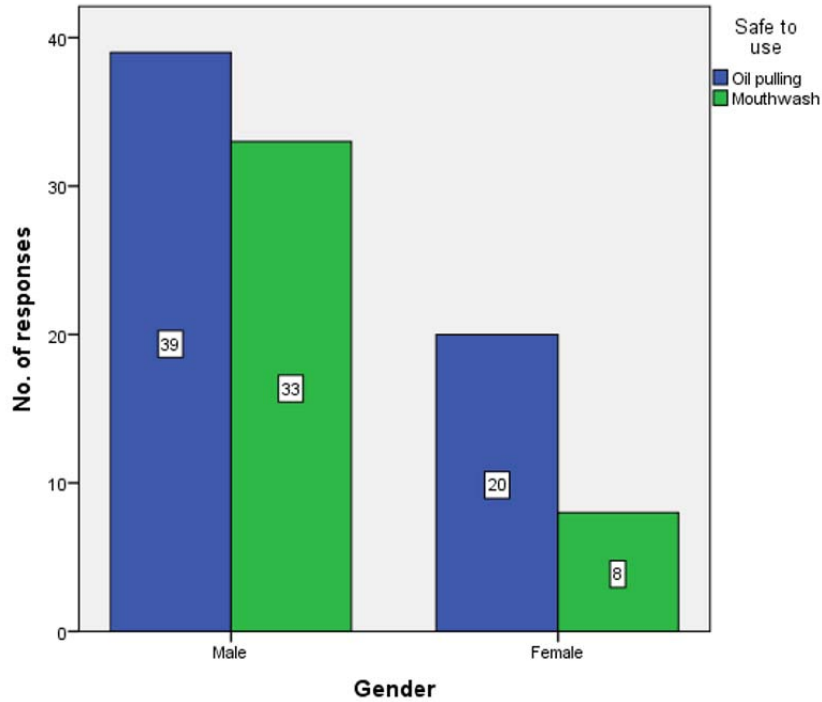


FIGURE 12- Bar graph showing the association between gender and the question “7. Which do you think is safer?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates oil pulling and green colour indicates mouthwash . Majority of the males(39 participants) chose oil pulling as safer. However the difference is not statistically significant (Chi-square value-2.483 , p value-0.115 (>0.05) hence not significant).

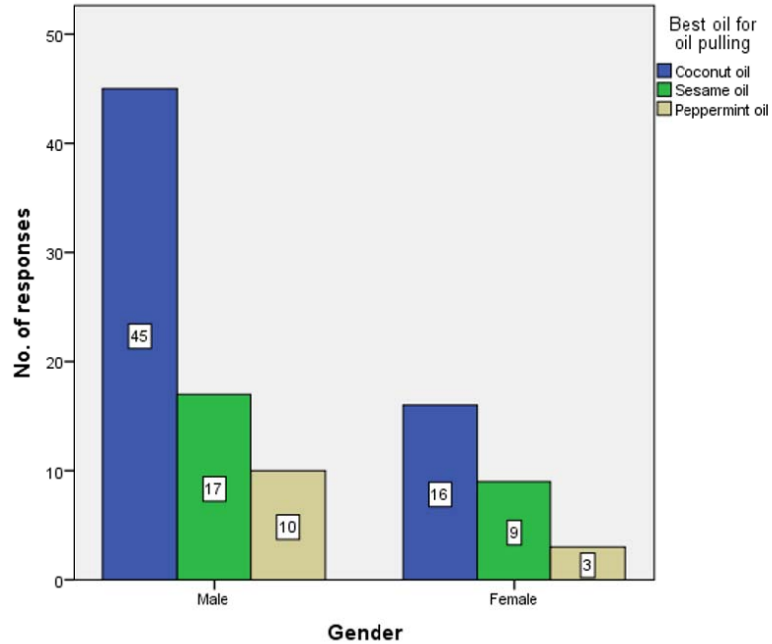


FIGURE 13- Bar graph showing the association between gender and the question “8. Which oil do you think is best for oil pulling?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates coconut oil and green colour indicates sesame oil and yellow colour represents peppermint oil. Majority of the males(45 participants) chose coconut oil as the best oil. However the difference is not statistically significant (Chi-square value-0.816 , p value-0.665 (>0.05) hence not significant).

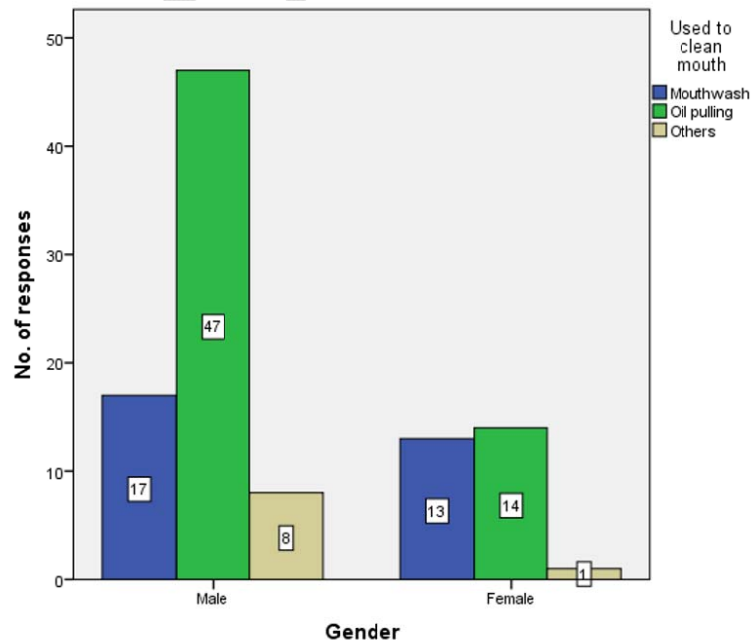


FIGURE 14- Bar graph showing the association between gender and the question “3. What do you use to clean your mouth?”. X-axis represents the gender and Y-axis represents the number of participants of which blue colour indicates mouthwash and green colour indicates oil pulling and yellow colour indicates both. Majority of the males(47 participants) chose oil pulling. However the difference is not statistically significant (Chi-square value-5.543 , p value-0.063 (>0.05) hence not significant).

CONCLUSION:

From the study it is evident that the participants had very little knowledge on oil pulling. Hence it is of utmost importance to enhance the awareness on effectiveness of oil pulling

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