



# **Knowledge and Awareness on the Effect of Lemon Grass Tea on Oral Health among College Students**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author JDMB carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis. Author JP aided in conception of the topic, has participated in the study design, statistical analysis and has supervised in preparation of the manuscript. Authors JP and author GD have participated in the study design and have coordinated in developing the manuscript. All the authors have discussed the results among themselves and contributed to the final manuscript.*

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## **ABSTRACT**

Lemongrass tea can be utilized to treat fever, cold and stomach upset. The tea has diuretic properties and water maintenance, making it accommodating individuals with hypertension. The tea can likewise assist with forestalling typhoid fever, malignant growth and obscuring of vision. It can assist with mitigating menstrual issues and sickness. The tea can assist with bringing down cholesterol levels. A total of 200 college students were involved in the study. Self administered questionnaire related to the impact on the impact of lemongrass tea on oral health along with sociodemographic details was prepared and it was distributed through an online survey link. Chi square analysis was used for inferential statistics. 66% of the participants have tasted lemongrass tea, only 34% of the participants have not tasted lemongrass tea. 28% of male and 38% of female participants have tasted lemongrass tea. More females have tasted lemongrass tea than males. There was a significant correlation between gender and participants who have tasted lemongrass tea with p value-0.003(<0.05) which was statistically significant. Majority of the participants (81.0%) were aware that drinking lemongrass tea prevents oral diseases. Lemon grass helps to prevent the

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growth of bacteria which causes plaque formation. By drinking lemon grass tea we can prevent most of the oral diseases. In the present study, the knowledge and awareness on the effect of lemon grass tea on oral health was satisfactory.

*Keywords: Lemongrass; impact; oral health; oral diseases.*

## 1. INTRODUCTION

Lemongrass is a tropical perennial plant which yields aromatic oil. Aromatic or essential oils are highly concentrated secondary metabolites of diverse functions in the plant system. They constitute hundreds of organic compounds including terpenoids, benzenoids, organic sulphur and nitrogenous compounds, which work at different levels. The name lemongrass is derived from the typical lemony odour of the essential oil present in the shoot [1]. Lemongrass has been used for decades to treat respiratory infections, sinusitis, bladder infections, high cholesterol, digestive problems, varicose veins and also for regeneration of connective tissue. It has anti spasmotic, antipyretic, anti-fungal, anti-bacterial, anti-inflammatory, antiseptic, insect repellent, sedative, vasodilator and flavoring properties. In china, it has been used traditionally as a remedy for stomach and liver diseases and also to treat rheumatism [2]. Lemongrass tea can be utilized to treat fever, cold and stomach upset. The tea has diuretic properties and water maintenance, making it accommodating individuals with hypertension. The tea can likewise assist with forestalling typhoid fever, malignant growth and obscuring of vision. It can assist with mitigating menstrual issues and sickness. The lemon grass tea can assist with bringing down cholesterol levels [3]. Lemongrass tea has a greater impact on oral health [4]. The impact of the lemongrass tea on oral health is increasing day to day [5]. The comparative nutritive estimations of lemongrass proved to prevent cancers [6]. Plants have been used as helpful specialists since days of yore in both sorted out (Ayurveda, Unani) and chaotic (people, ancestral, local) structure. Plants have been recognised as the intense restorative specialist, because of the nearness of wholesome (minerals and nutrients) and non-nourishing (filaments, dynamic phytochemical, including the flavonoids, terpenoids, lignans, sulphides, polyphenolics, carotenoids, coumarins, saponins, plant sterols, curcumins, and phthalates) part, subsequently advanced as "utilitarian food". [7]. Lemongrass tea can be utilized to treat fever, cold, hack and stomach

upset. The tea has diuretic properties and water maintenance, making it accommodating individuals with hypertension. The tea can likewise assist with forestalling typhoid fever, malignant growth and obscuring of vision. It can assist with mitigating menstrual issues and sickness. The tea can assist with bringing down cholesterol levels. Lemon grass can be utilized in natural medication to treat apprehensive conditions and irritation [8]. It can likewise be utilized to treat chest contaminations, injuries, muscle spasms and migraine [9]. Essential oils of fragrant plant species are utilized in businesses for the creation of cleansers, scents and toiletries [10]. Previously our department has published extensive research [11-18] this vast research experience has inspired us to research the impact of lemongrass tea on oral health among the college students. The aim of the present study is to analyse knowledge and awareness on the impact of lemongrass tea on oral health among the college students.

## 2. MATERIALS AND METHODS

A descriptive cross sectional study was conducted among dental college students aged 18-25 years to assess their knowledge and awareness on the impact of lemongrass tea on oral health among the college students.. Simple convenient random sampling was done. A total of 200 participants were involved in the study. Self administered questionnaire of close ended questions was prepared related to the effect of lemon grass tea on oral health along with sociodemographic details and distributed among dental college students through an online survey link. The responses were collected, tabulated in excel sheet and analysed. Statistical analysis was done in SPSS software version 22. Chi square analysis was used for inferential statistics. Finally, the result was presented by using pie charts, bar graphs and tables.

## 3. RESULTS AND DISCUSSION

In the present study, 50% were males and 50% were females. Surprisingly, 66% of the

participants have tasted lemongrass tea, only 34% of the participants have not tasted lemongrass tea (Fig. 1). 28% of male and 38% of female participants have tasted lemongrass tea. More females have tasted lemongrass tea than males. There was a significant correlation between gender and participants who have tasted lemongrass tea with p value - 0.003(<0.05) which was statistically significant (Fig. 2). Majority of the participants (81.0%) were aware that drinking lemongrass tea prevents oral diseases (Fig. 3). 41% of male and 40% of female participants were aware. Males were much more aware than females. There was no significant correlation between gender and awareness on lemongrass tea prevents oral diseases with p value - 0.718(>0.05) which was statistically not significant (Fig. 4). About 82.0% were aware that drinking lemongrass tea prevents plaque formation. Majority of the participants (71%) agreed that drinking lemongrass tea helps in the management of halitosis (bad breath) (Fig. 5). 32% of male and 39% of female participants had good knowledge. Females had better knowledge than males on lemongrass tea helps in the management of halitosis. There was no significant correlation between gender and knowledge on lemongrass

tea helps in the management of halitosis with p value - 0.029(<0.05) which was statistically significant (Fig. 6). About 69.5% of the participants were aware that lemongrass has anti-inflammatory properties. 72% of the participants agreed that lemongrass tea can help to prevent oral cancers (Fig. 7). Females had better knowledge than males on lemongrass tea helps to prevent oral cancer. There was a significant correlation between gender and knowledge on lemongrass tea helps to prevent oral cancer with p value - 0.005(<0.05) which was statistically significant (Fig. 8). About 79% of the participants were aware that drinking lemongrass tea helps to prevent gingivitis and periodontitis (Fig. 9). 36% of male and 43% of female participants were aware. Females were much more aware than males. There was a significant correlation between gender and awareness on lemongrass tea helps to prevent gingivitis and periodontitis with p value-0.015(<0.05) which was statistically significant (Fig. 10). Majority of the participants (74%) were aware that lemongrass tea helps to maintain overall health. Percentage distribution of knowledge and awareness on the effect of lemongrass tea among college students is given in (Table 1).

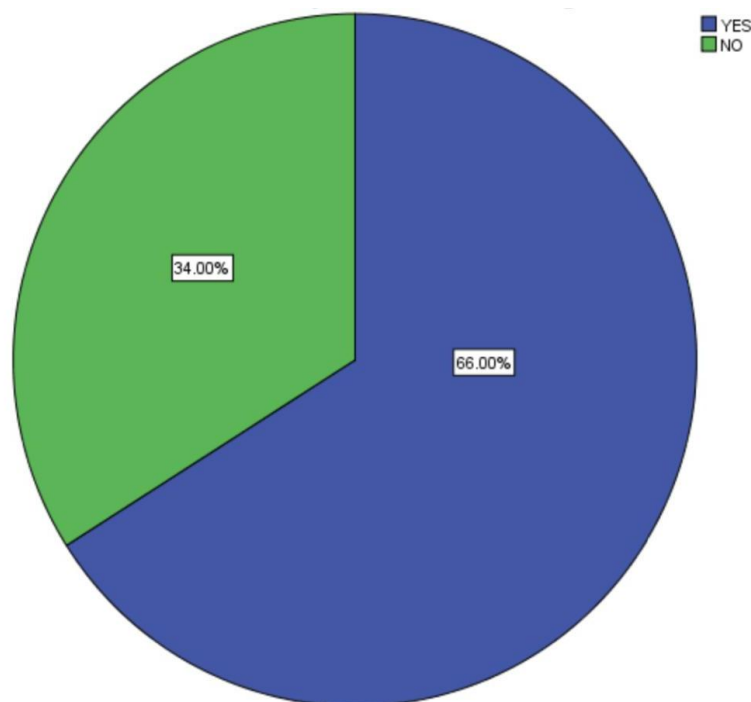
**Table 1. Percentage distribution of knowledge and awareness on the effect of lemongrass tea on oral health**

S. No	Questions	Responses	Percentage
1.	Mention your gender	<ul style="list-style-type: none"> <li>● Male</li> <li>● Female</li> </ul>	<ul style="list-style-type: none"> <li>● 50.0%</li> <li>● 50.0%</li> </ul>
2.	Have you ever tasted lemongrass tea?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 66.0%</li> <li>● 34.0%</li> </ul>
3.	Are you aware that drinking lemon grass tea prevents oral diseases?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 81.0%</li> <li>● 19.0%</li> </ul>
4.	Are you aware that drinking lemongrass tea prevents plaque formation?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 82.0%</li> <li>● 18.0%</li> </ul>
5.	Do you agree that lemongrass tea helps in the management of halitosis(bad breath)?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 87.5%</li> <li>● 12.5%</li> </ul>
6.	Are you aware that lemongrass tea has anti-inflammatory properties?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 69.5%</li> <li>● 30.5</li> </ul>
7.	Do you agree that lemongrass tea can help to prevent oral cancers?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 72.0%</li> <li>● 28.0%</li> </ul>
8.	Are you aware that drinking lemongrass tea helps to prevent gingivitis and periodontitis?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 79.0%</li> <li>● 21.0%</li> </ul>
9.	Are you aware that lemongrass tea helps to maintain overall health?	<ul style="list-style-type: none"> <li>● Yes</li> <li>● No</li> </ul>	<ul style="list-style-type: none"> <li>● 74.0%</li> <li>● 26.0%</li> </ul>

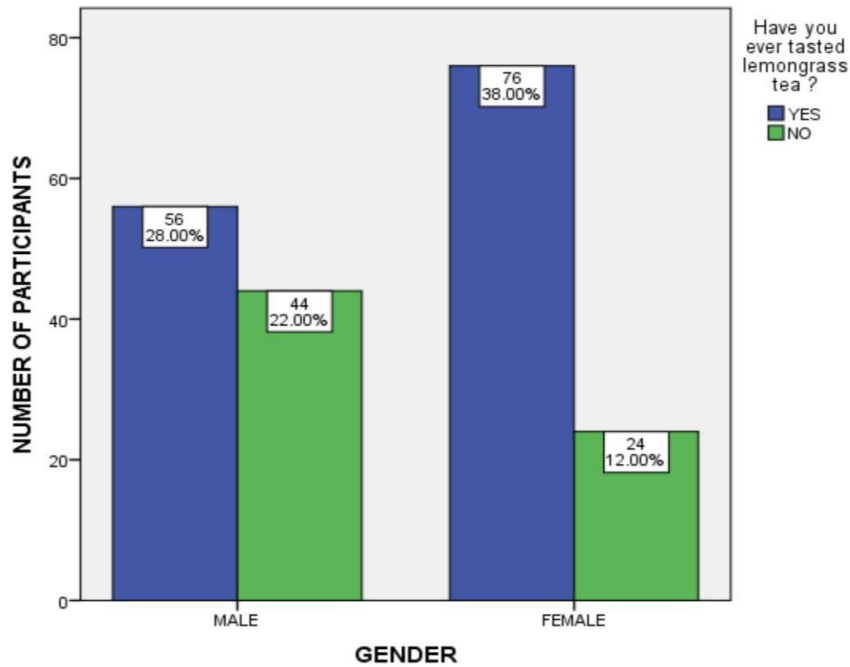
Lemon grass tea contains several bio compounds in its decoction, infusion and essential oil extracts. The various properties of lemongrass tea are Anti-oxidant, anti-inflammatory, antibacterial, anti obesity, antinociceptive, anxiolytic and antihypertensive. In the present study, about 69.5% of the participants were aware that lemongrass has anti inflammatory properties [4]. Lemongrass tea has been associated with health claims such as treatment in coughs, constipation, elephantiasis, flu, gingivitis, headache, leprosy, malaria, ophthalmia, pneumonia, vascular disorders, diarrhoea and stomach ache. In the present study, Majority of the participants (74%) were aware that lemongrass tea helps to maintain overall health [7]. Lemongrass contains high citral content, it has been used as a mouthwash to control the bad odour from the oral cavity. Lemongrass has also got antimicrobial action against Gram negative bacteria, the proteolytic degradation by the bacteria can be reduced which results in the control of bad breath. Majority of the participants (71%) agreed that drinking lemongrass tea helps in the

management of halitosis (bad breath). Lemongrass has both antibacterial and non toxic properties which makes it adjunct to mouthwash to prevent plaque formation and also to remove plaque. About 82% were aware that drinking lemon grass tea prevents plaque formation. Gingivitis is inflammation of the gums due to the accumulation of plaque. Gingivitis may develop into periodontitis in vulnerable patients. Therefore by preventing gingivitis, periodontitis can also be prevented. Lemongrass prevents periodontitis by increasing the level of thiol antioxidants and also by reducing the bacterial load. About 79% of the participants were aware that drinking lemongrass tea helps to prevent gingivitis and periodontitis [19].

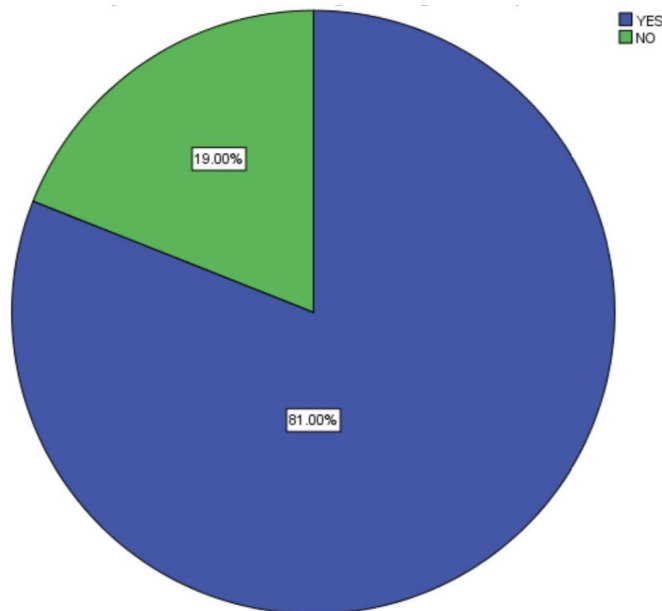
The present study is a novel study, hence there is no existing previous studies. Limitation of the study is less sample size. In future an extensive study with large sample size and varied population can be used to assess the knowledge and awareness on the effect of lemongrass tea on oral health.



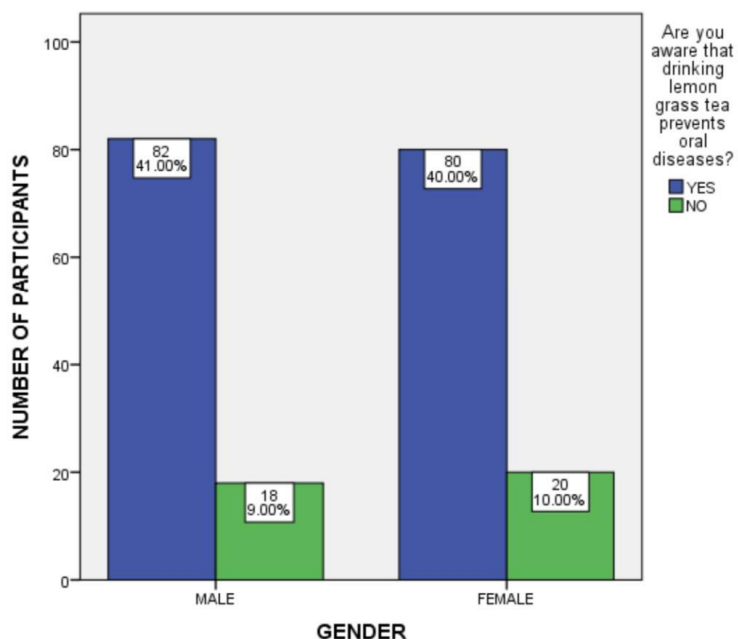
**Fig. 1. Pie chart representing percentage distribution of participants who have tasted lemongrass tea where blue colour denotes yes and green colour denotes no. Majority (66%) of the participants have tasted lemon grass tea (blue)**



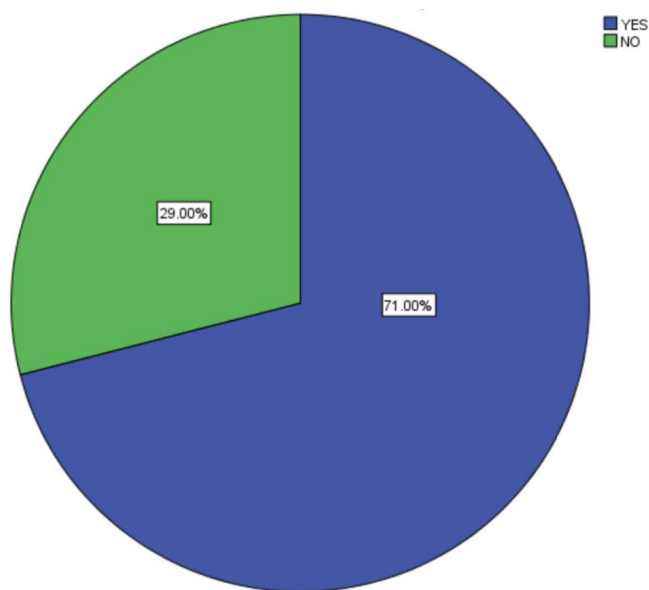
**Fig. 2. Bar graph representing percentage distribution of association of gender and participants who have tasted lemongrass tea. X axis represents the gender and Y axis represents the number of participants and blue colour denotes yes and green colour denotes no. 28% of male and 38% of female participants have tasted lemongrass tea. More females have tasted lemongrass tea than males. Pearson chi square test- 8.913 p value- 0.003(<0.05) - statistically significant**



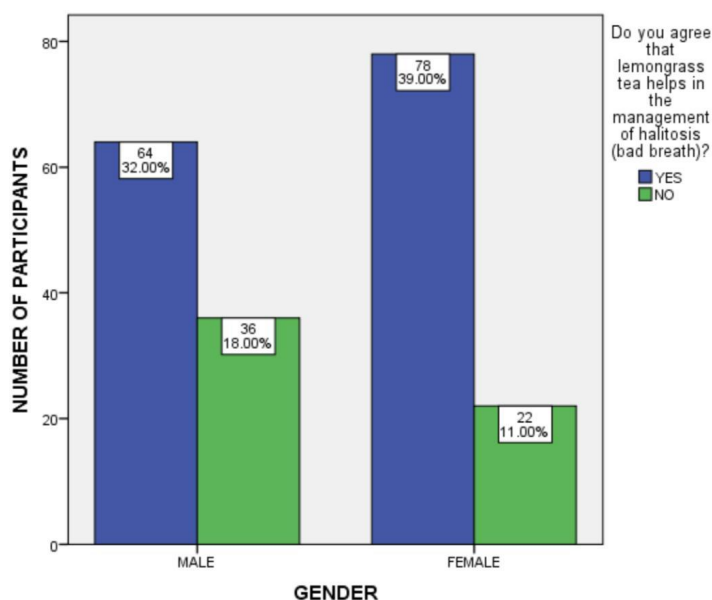
**Fig. 3. Pie chart representing percentage distribution of awareness on lemongrass tea prevents oral diseases where blue colour denotes yes and green colour denotes no. Majority (81%) of the participants were aware (blue)**



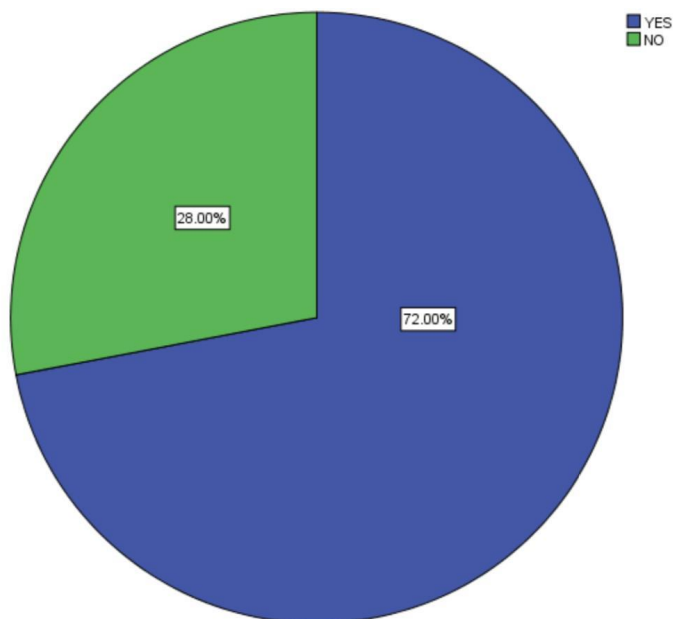
**Fig. 4. Bar graph representing percentage distribution of association of gender and awareness on lemongrass tea prevents oral diseases. X axis represents the gender and Y axis represents the number of participants and blue colour denotes yes and green colour denotes no. 41% of male and 40% of female participants were aware. Males were much more aware than females. Pearson chi square test- 0.130 p value- 0.718(>0.05) - statistically not significant**



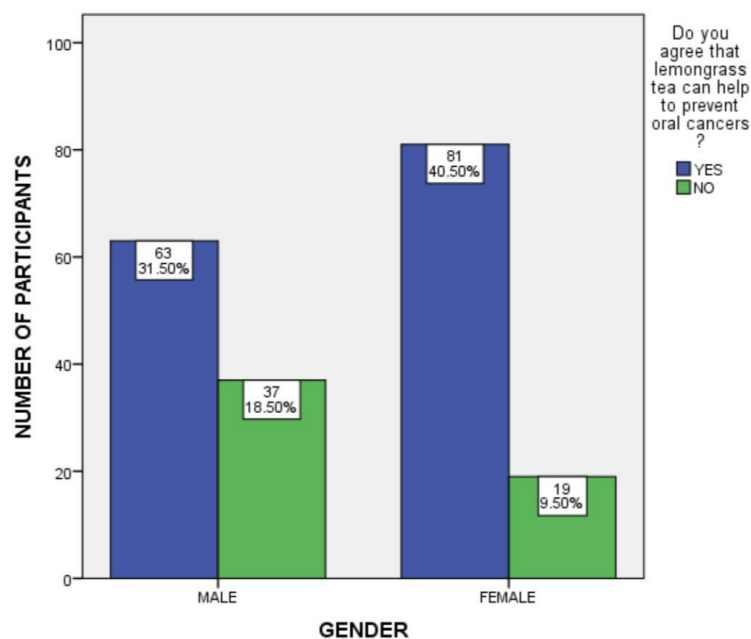
**Fig. 5. Pie chart representing percentage distribution of knowledge on lemongrass tea helps in the management of halitosis where blue colour denotes yes and green colour denotes no. About 71%(blue) of the participants had good knowledge on lemongrass tea helps in the management of halitosis**



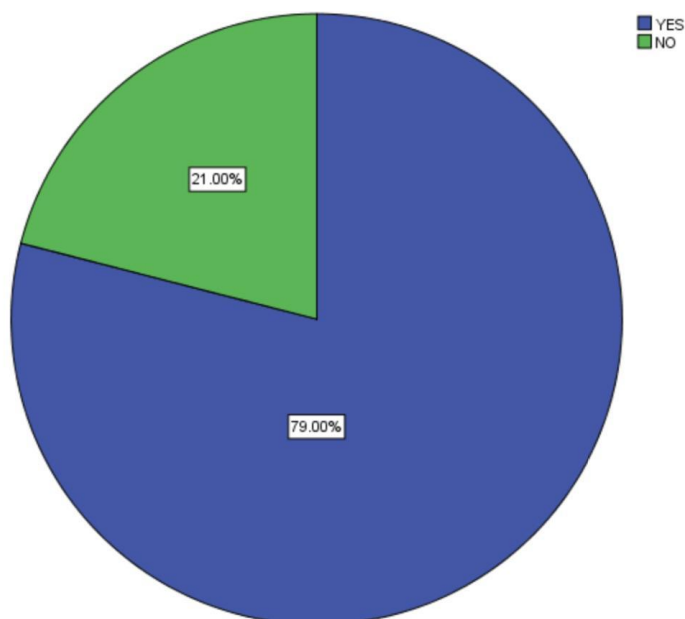
**Fig. 6.** Bar graph representing percentage distribution of association of gender and knowledge on lemongrass tea helps in the management of halitosis. X axis represents the gender and Y axis represents the number of participants and blue colour denotes yes and green colour denotes no. 32% of male and 39% of female participants had good knowledge. Females had better knowledge than males on lemongrass tea helps in the management of halitosis. Pearson chi square test- 4.760 p value- 0.029(<0.05) - statistically significant



**Fig. 7.** Pie chart representing percentage distribution of knowledge on lemongrass tea helps to prevent oral cancer where blue colour denotes yes and green colour denotes no. About 72%(blue) of the participants had good knowledge on lemongrass tea to help prevent oral cancer

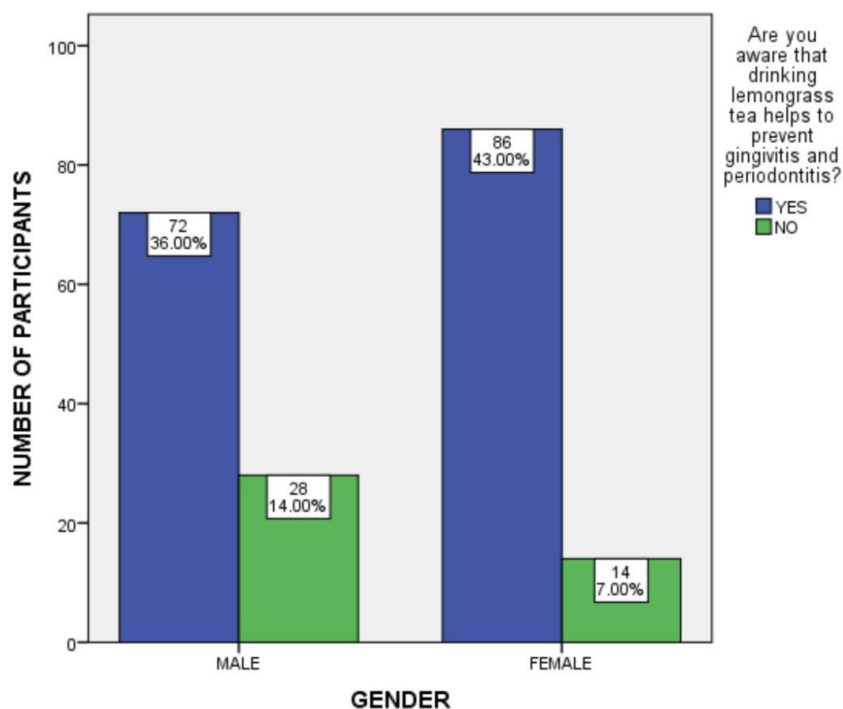


**Fig. 8. Bar graph representing percentage distribution of association of gender and knowledge on lemongrass tea helps to prevent oral cancer. X axis represents the gender and Y axis represents the number of participants and blue colour denotes yes and green colour denotes no. 31.5% of male and 40.5% of female participants had good knowledge. Females had better knowledge than males on lemongrass tea helps to prevent oral cancer. Pearson chi square test- 8036 p value- 0.005(<0.05) - statistically significant**



**Fig. 9. Pie chart representing percentage distribution of awareness on drinking lemongrass tea helps to prevent gingivitis and periodontitis where blue colour denotes yes and green colour denotes no. Majority (79%) of the participants were aware (blue)**





**Fig. 10.** Bar graph representing percentage distribution of association of gender and awareness on drinking lemongrass tea helps to prevent gingivitis and periodontitis. X axis represents the gender and Y axis represents the number of participants and blue colour denotes yes and green colour denotes no. 36% of male and 43% of female participants were aware. Females were much more aware than males. Pearson chi square test- 5.907 p value- 0.015(<0.05) - statistically significant

#### 4. CONCLUSION

Lemon grass has been used for decades to treat various diseases. It possesses various pharmacological actions. Lemon grass helps to prevent the growth of bacteria which causes plaque formation. By drinking lemon grass tea we can prevent most of the oral diseases. In the present study, the knowledge and awareness on the impact of lemon grass tea on oral health among college students was satisfactory. For further augmentation, awareness should be created through various means about the advantages of drinking lemongrass tea and presented to the college students.

#### CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent has been collected and preserved by the authors. Ethical Approval was obtained from the institutional review board.

#### ACKNOWLEDGEMENT

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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