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Knowledge, Awareness and Perception on Burning Mouth Syndrome among Dental Students-A Survey

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Authors' contributions

This work was carried out in collaboration among all authors. Author SJA carried out the literature search, data collection, data analysis and manuscript writing. Author RG conceived the study, participated in its design and coordinated and provided guidance to draft the manuscript. All the authors have equally contributed in developing the manuscript. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Introduction: Burning mouth syndrome is a condition distinguished by painful burning sensation of the tongue and mucosal tissue of the mouth, lips and palate that lasts from a few days to a few months. Common symptoms of burning mouth syndrome include burning sensation in the mouth, altered taste sensation and xerostomia or dry mouth despite normal salivation. Treatment of BMS is by either local or systemic medications that temporarily relieve symptoms and on improving quality of life. Menopausal or postmenopausal women with hormonal changes or psychological disorders have higher risk of developing burning mouth syndrome.
Aim: The aim of this study is to evaluate and assess the knowledge, awareness and perception on burning mouth syndrome among dental students.
Materials and Methods: A cross sectional survey was conducted among dental students to evaluate the awareness about burning mouth syndrome. The study population in the study are the

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dental students with a sample size of 100. The questionnaire consisted of 14 questions and was shared to dental students using online survey platform. Frequency table was prepared for each question and analysed using spss data analysis software.
Results and Discussion: 82% of the participants were aware about burning mouth syndrome and 18% of the participants were not aware. 69% of the participants were aware that psychological problems like anxiety, depression can cause bms whereas 31% of the participants were not aware
Conclusion: The dental students have a moderate level of awareness about burning mouth syndrome. Most of the dental students were aware about burning mouth syndrome but there was still a group of teenagers who were not aware. More awareness and better understanding will result in better management and better treatment plans.

Keywords: Awareness; perception; burning mouth syndrome; dental students; survey; innovative technology; novel method.

1. INTRODUCTION

Burning mouth syndrome is a condition distinguished by painful burning sensation of the tongue and mucosal tissue of the mouth, lips and palate that lasts from a few days to few months [1]. Common symptoms of burning mouth syndrome include burning sensation in the mouth, altered taste sensation and xerostomia or dry mouth despite normal salivation [2]. Treatment of BMS is by either local or systemic medications that temporarily relieve symptoms and on improving quality of life [3]. Primary BMS are generally idiopathic and can occur spontaneously without any identifiable precipitating factors [4]. Secondary BMS is associated with systemic factors but the exact etiology of BMS is still unknown and the condition appears to be multifactorial [5]. Secondary BMS has been associated with different conditions such as thyroid disease, psychiatric illnesses, oral infections, drug use and dental treatment [6,7].

Burning mouth syndrome occurs at a much higher rate in females than males and also has a strong association with advancing age. The syndrome is almost non-existent in children and rarely seen in those under age 30. Menopausal or postmenopausal women with hormonal changes or psychological disorders have higher risk of developing burning mouth syndrome [8]. Patients with burning mouth syndrome should avoid tobacco, spicy foods, acidic foods, carbonated beverages and excessive stress to alleviate the symptoms of burning mouth syndrome [9]. Based on symptoms, BMS is classified into three general categories, with Type 2 being the most prevalent and Type 3 being the least common. In type 1, symptoms are not present upon waking and then gradually increases during the day. Symptoms are present throughout the day in type 2 and there is no regular pattern of symptoms in type 3.

The presence of taste changes and sensory anomalies in burning mouth syndrome indicates that the BMS has some neuropathic basis [10]. Histopathologic modifications to nociceptive nerve fibres in the oral cavity, such as dysplasia, have been reported in some studies, though symptoms may appear without evidence of histologic improvement. There are no known histopathologic findings unique to burning mouth syndrome [11]. Benzodiazepines is used as the first- line medication in pharmacological management of burning mouth syndrome. The cause-and-effect association between depression, anxiety, or neuroticism and BMS is unclear, as psychic causes may be either causative or consequential to oral symptoms [12,13]. Therefore, in order to achieve the best clinical outcome, treatment should also include psychological intervention. Psychotherapy and complementary and alternative medicine (CAM) are the non pharmacological management of burning mouth syndromeOur team has extensive knowledge and research experience that has translate into high quality publications [14-33] . The aim of this study is to evaluate and assess the knowledge, awareness and perception on burning mouth syndrome among dental students.

2. MATERIALS AND METHODS

2.1 Study Design

A cross sectional survey was conducted among dental students to evaluate the awareness of burning mouth syndrome among dental students. The sampling method is simple random sampling method. The sample size of this study is 100. The participants did the survey voluntarily and no

incentives were given to them. The study was conducted in the month of Feb,2021.

2.2 Survey Instrument

The survey instrument which was a questionnaire was prepared after extensive review of the existing literature. The questionnaire was reviewed and amendments were made to improve clarity of the questions to eliminate ambiguous responses. The questionnaire consisted of 14 questions with both open and closed ended questions. The questionnaire was shared to dental students using online survey platform.

2.3 Data Analysis

Only completed surveys were taken for analysis and the incompleted surveys were eliminated. The statistical test used is descriptive statistics . All the responses obtained were tabulated and reliability of the data was checked. Frequency table was prepared for each question and analysed using spss data analysis software [34–36].

3. RESULTS

Out of the 100 participants,52% of them belong to the age group of 16 to 19 years, 31% of them belong to the age group of 20 to 23 years and the remaining 17% were above 23 years (Fig. 1). 58% of the participants were females and 42% were males (Fig. 2). 82% of the participants were aware about burning mouth syndrome and 18% of the participants were not aware (Fig. 3). 56% of the participants were aware that bms is primarily due to a hormone imbalance in women and 44% were not aware (Fig. 4). 29% of the participants said that oral mucosal pain as the common complaints in patients with bms, 15% of the participants said altered taste sensation, 9% said as dry mouth and 46% of the participants said all of the these are the common complaints in patients with bms (Fig. 5). 70% of the participants were aware that certain oral rinses can be used to treat bms and 30% were not aware (Fig. 6). 66% of the participants were aware that vitamin deficiency could cause bms and 34% were not aware (Fig. 7).

30% of the participants said that oral swab test is used for diagnosis of bms, 9% of the participants said that allergy test is used for diagnosis of bms, 17% of the participants said that tissue biopsy is used for diagnosis of bms and 44% of the participants said that all of these methods are used for diagnosis of bms (Fig. 8). 60% of the participants were aware that allergies to dental products and materials can cause bms and 40% of the participants were not aware (Fig. 9). 69% of the participants were aware that psychological problems like anxiety, depression can cause bms whereas 31% of the participants were not aware

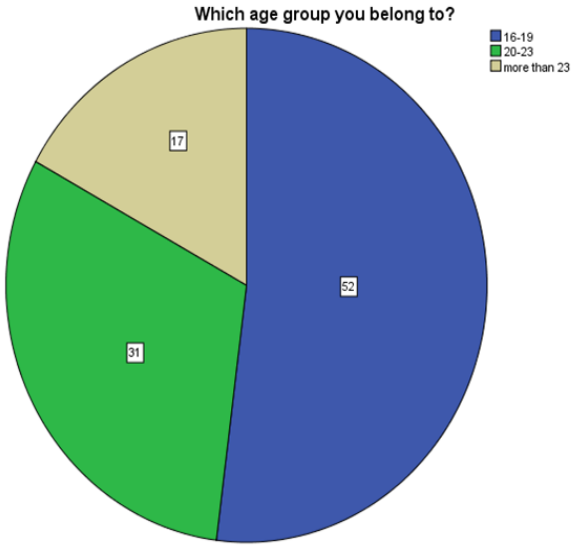

Fig. 1. Pie chart showing the age group of the participants. 52% of them belong to the age group of 16 to 19 years, 31% of them belong to the age group of 20 to 23 years and the remaining 17% were above 23 years

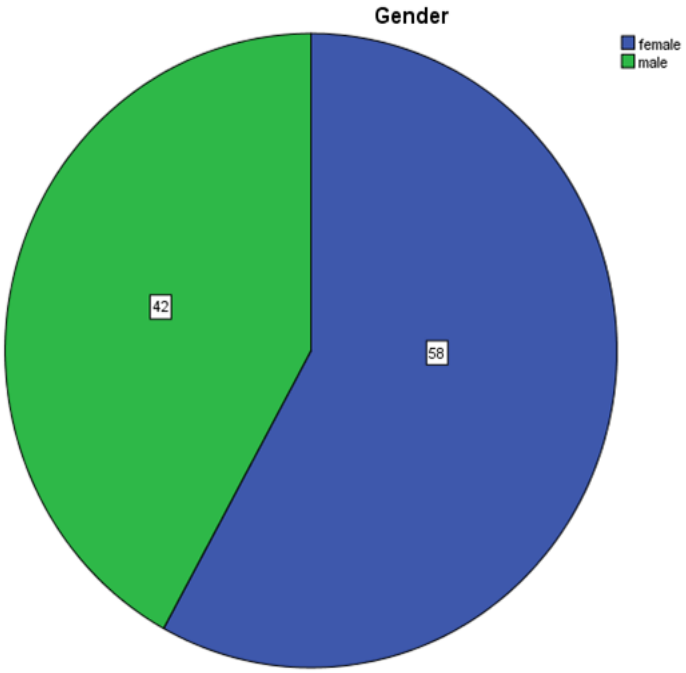

Fig. 2. Pie chart showing the gender of the participants. 58% of the participants were females and 42% were males

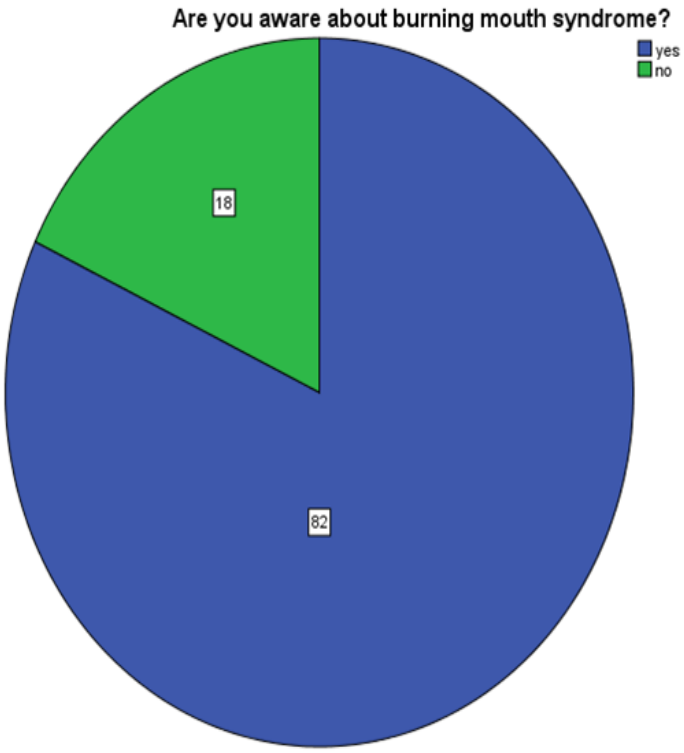

Fig. 3. Pie chart showing the awareness of burning mouth syndrome among dental students. 82% of the participants were aware about burning mouth syndrome and 18% of the participants were not aware

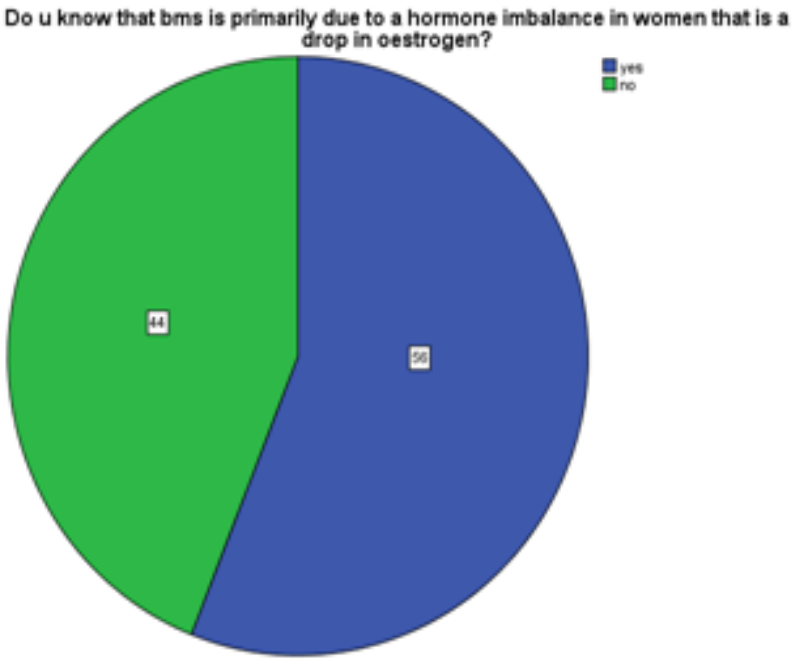

Fig. 4. Pie chart showing the awareness about bms caused primarily due to a hormone imbalance in women. 56% of the participants were aware that bms is primarily due to a hormone imbalance in women and 44% were not aware

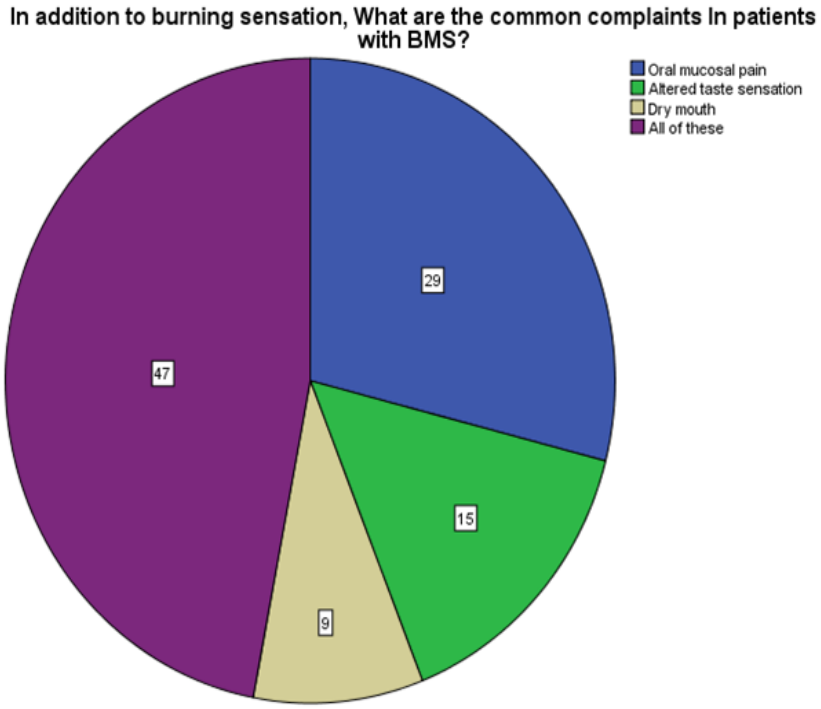

Fig. 5. Pie chart showing the awareness about the common complaints in patients with BMS. 29% of the participants said that oral mucosal pain as the common complaints in patients with bms, 15% of the participants said altered taste sensation, 9% said as dry mouth and 46% of the participants said all of the these are the common complaints in patients with bms

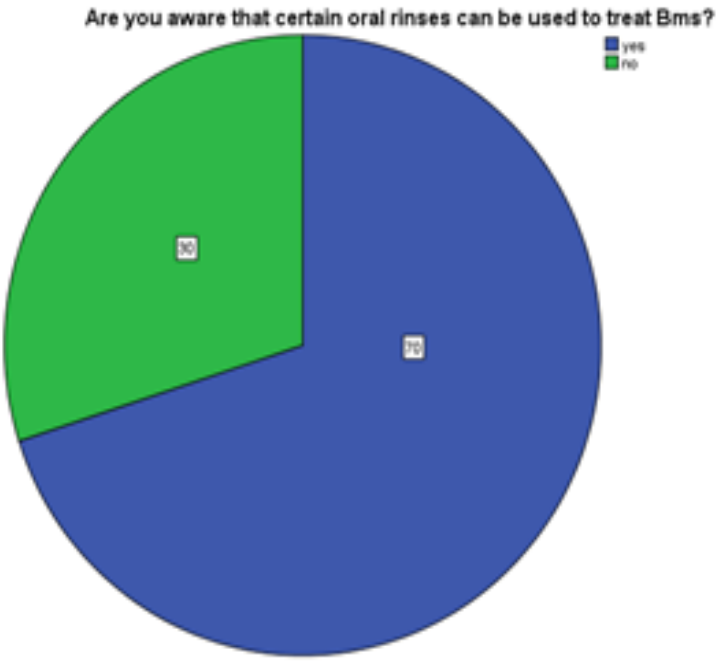

Fig. 6. Pie chart showing the awareness of oral rinses used to treat BMS. 70% of the participants were aware that certain oral rinses can be used to treat bms and 30% were not aware

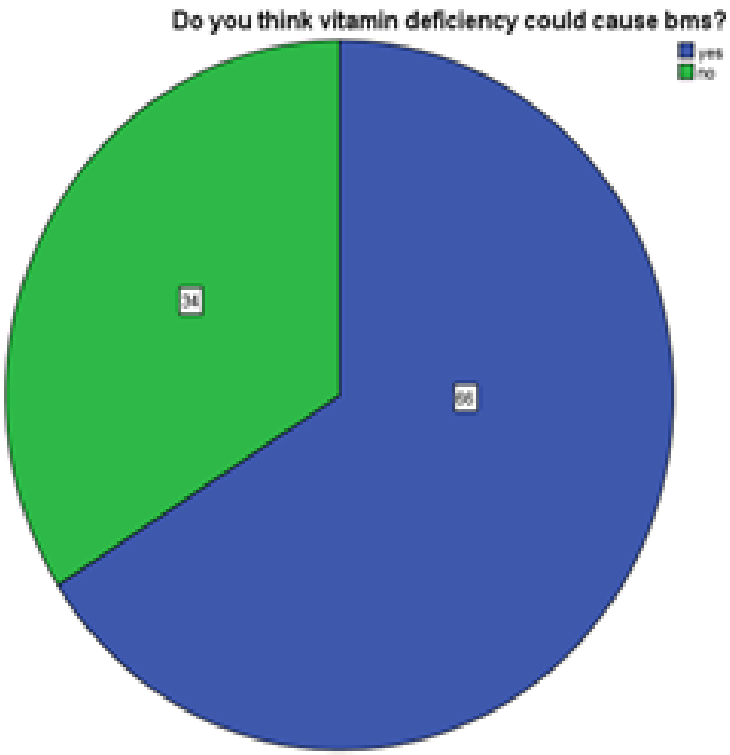

Fig. 7. Pie chart showing the responses of whether vitamin deficiency could cause BMS. 66% of the participants were aware that vitamin deficiency could cause bms and 34% were not aware

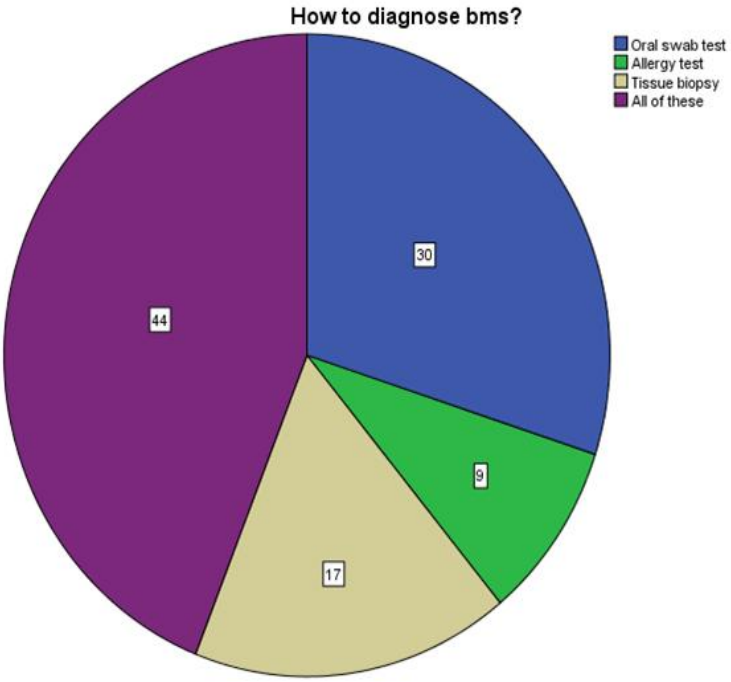

Fig. 8. Pie chart showing the awareness about diagnosis of BMS. 30% of the participants said that oral swab test is used for diagnosis of bms, 9% of the participants said that allergy test is used for diagnosis of bms, 17% of the participants said that tissue biopsy is used for diagnosis of bms and 44% of the participants said that all of these methods are used for diagnosis of bms

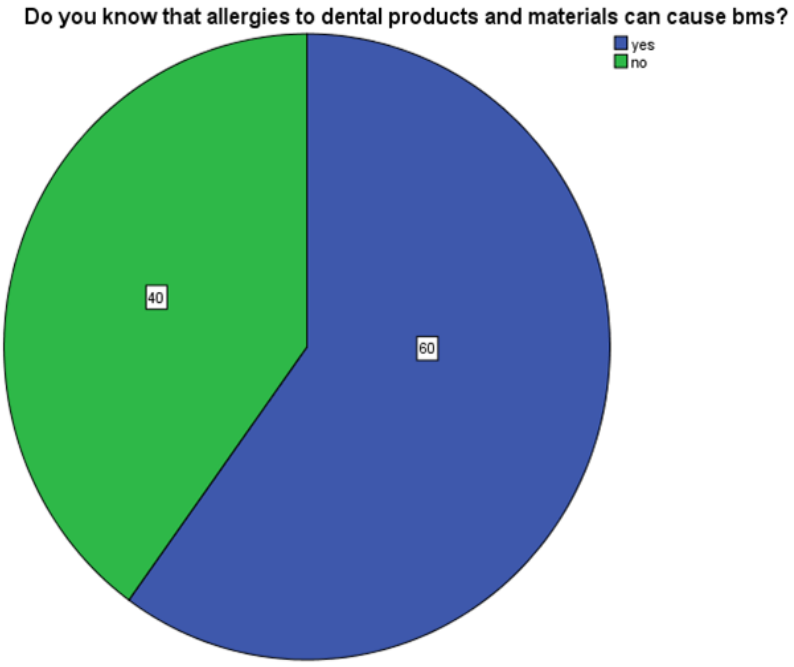

Fig. 9. Pie chart showing the awareness that allergies to dental products and materials can cause BMS. 60% of the participants were aware that allergies to dental products and materials can cause BMS and 40% of the participants were not aware

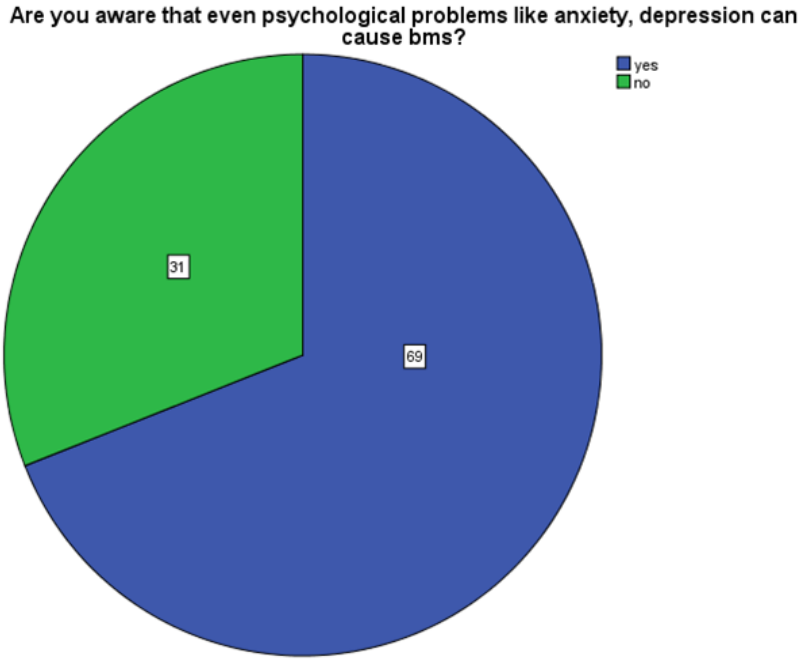

Fig. 10. Pie chart showing the awareness of psychological problems causing BMS. 69% of the participants were aware that psychological problems like anxiety, depression can cause bms whereas 31% of the participants were not aware

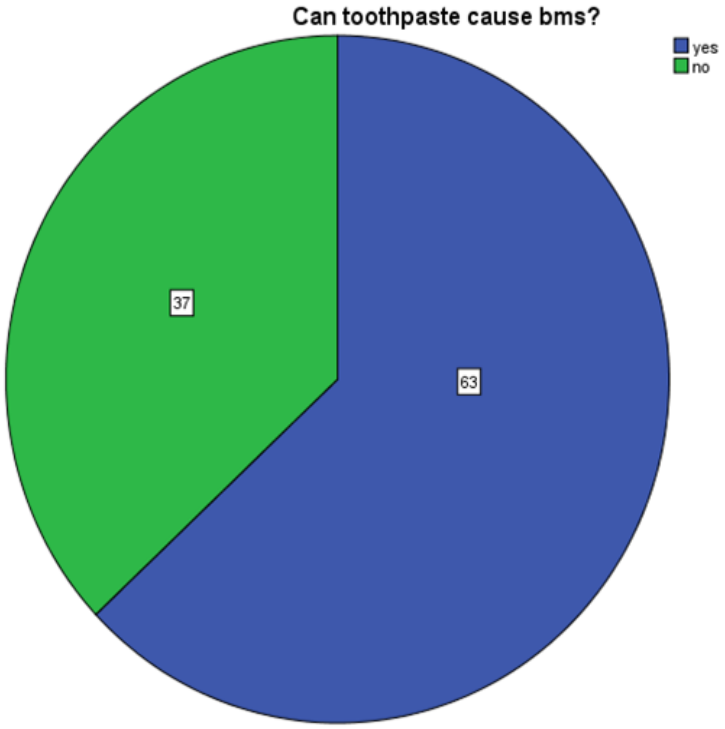

Fig. 11. Pie chart showing the responses whether toothpaste can cause BMS. 63% of the participants agreed that toothpaste can cause bms and 37% disagreed

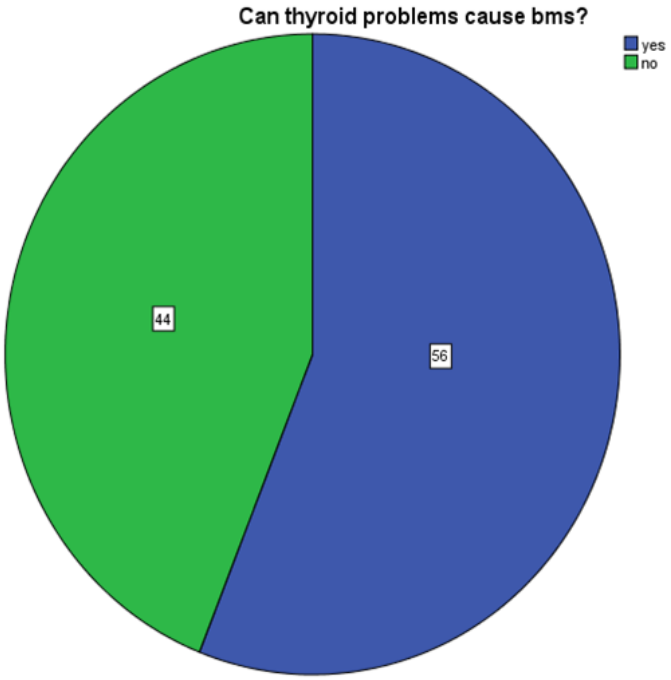

Fig. 12. Pie chart showing the responses whether thyroid problems can cause BMS. 56% of the participants said that thyroid problems can cause bms and 44% of the participants said that thyroid problems does not cause BMS

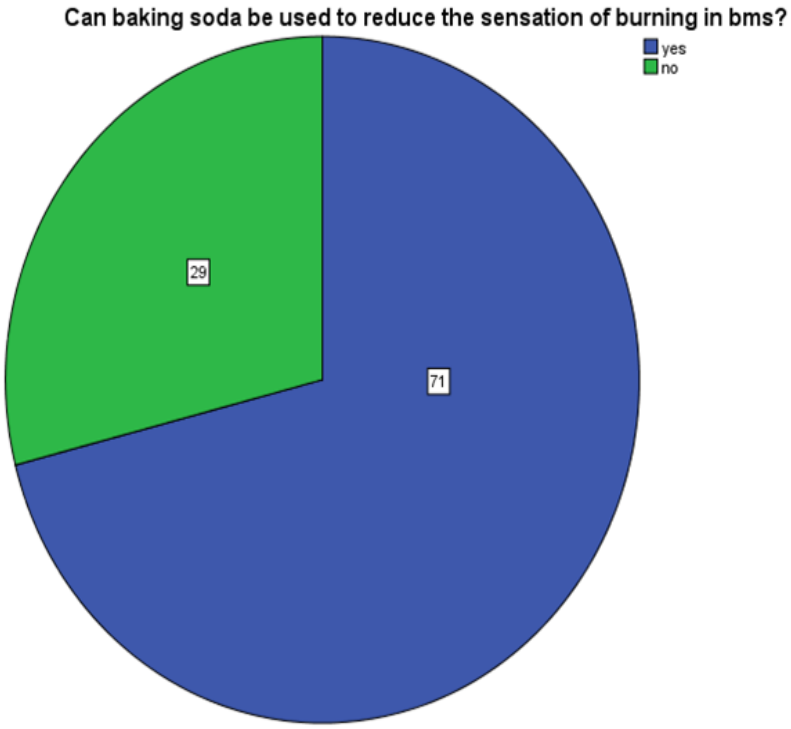

Fig. 13. Pie chart showing responses whether baking soda can be used to reduce the sensation of burning in BMS. 71% of the participants agreed that baking soda can be used to reduce the sensation of burning in BMS and 29% of the participants disagreed

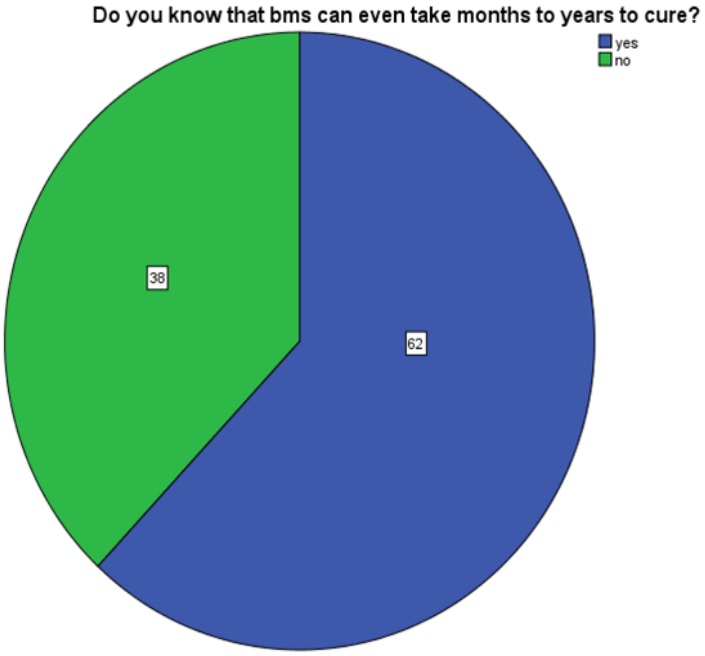

Fig. 14. Pie chart showing the awareness about BMS can take months to years to cure. 62% of the participants were aware that bms can even take months to years to cure and 38% of the participants were not aware

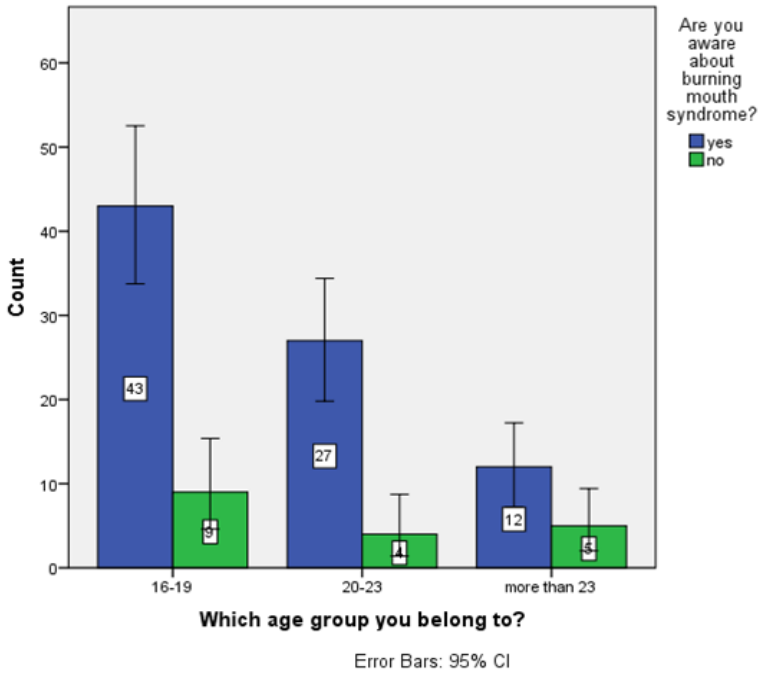

Fig. 15. Bar graph represents the association between age group and awareness of burning mouth syndrome. X axis represents the age group and Y axis represents awareness about burning mouth syndrome. Blue denotes the participants who were aware of the burning mouth syndrome. Green denotes the participants who were not aware. Chi square test was done and the association was found to be statistically not significant. Pearson's chi square value: 0.357(>0.05)

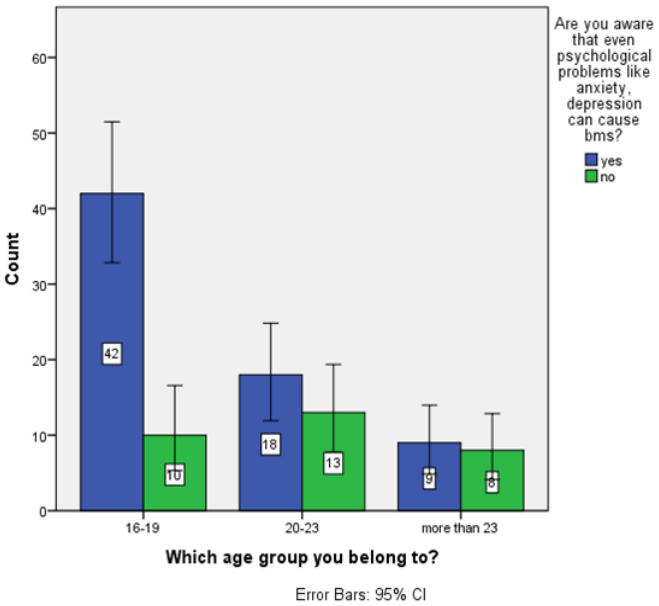

Fig. 16. Bar graph represents the association between age group and awareness about psychological problems causing BMS. X axis represents the age group and Y axis represents the awareness of psychological problems causing BMS. Blue denotes the participants who were aware that psychological problems can cause burning mouth syndrome. Green denotes the participants who were not aware. Chi square test was done and the association was found to be statistically significant. Pearson's chi square value: 0.028(<0.05)

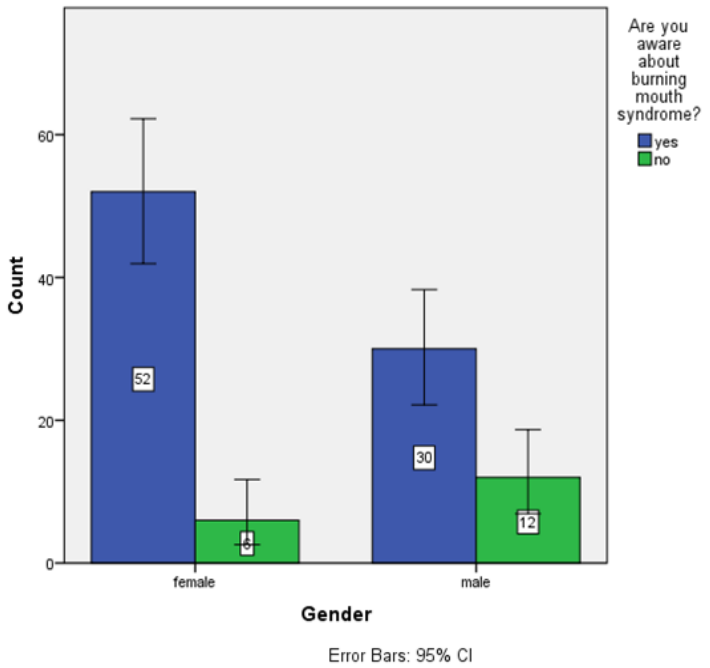

Fig. 17. Bar graph represents the association between gender and awareness of burning mouth syndrome. X axis represents the gender and Y axis represents awareness about burning mouth syndrome. Blue denotes the participants who were aware of the burning mouth syndrome. Green denotes the participants who were not aware. Chi square test was done and the association was found to be statistically significant. Pearson's chi square value: 0.019(<0.05)

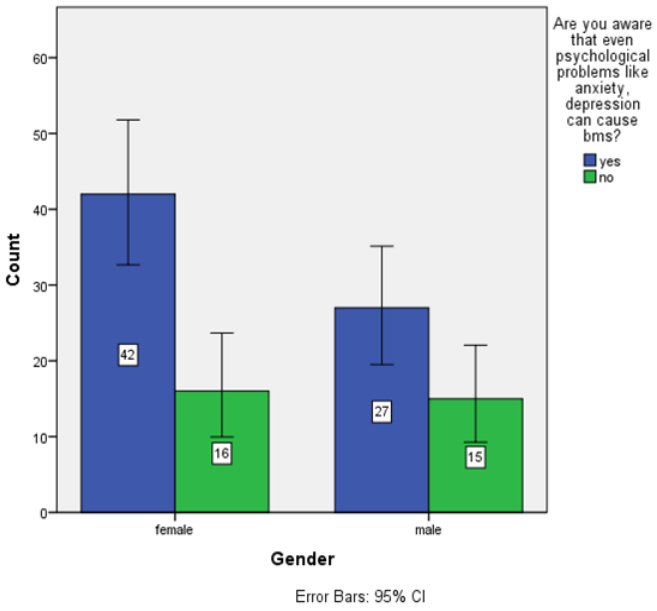

Fig. 18. Bar graph represents the association between gender and awareness about psychological problems causing BMS. X axis represents gender and Y axis represents the awareness of psychological problems causing BMS. Blue denotes the participants who were aware that psychological problems can cause burning mouth syndrome. Green denotes the participants who were not aware. Chi square test was done and the association was found to be statistically not significant. Pearson's chi square value: 0.386(>0.05)

(Fig. 10). 63% of the participants agreed that toothpaste can cause bms and 37% disagreed (Fig. 11). 56% of the participants said that thyroid problems can cause bms and 44% of the participants said that thyroid problems does not cause bms (Fig. 12). 71% of the participants agreed that baking soda can be used to reduce the sensation of burning in bms and 29% of the participants disagreed (Fig. 13). 62% of the participants were aware that bms can even take months to years to cure and 38% of the participants were not aware (Fig. 14).

In the chi square analysis between age group and awareness of burning mouth syndrome, the p value obtained was 0.357 and it was statistically not significant (Fig. 15). In the chi square analysis between age group and awareness about psychological problems causing BMS, the p value obtained was 0.028 and it was statistically significant (Fig. 16). In the chi square analysis between gender and awareness of burning mouth syndrome, the p value obtained was 0.019 and it was statistically significant (Fig. 17). In the chi square analysis between gender and awareness about psychological problems causing BMS, the p value obtained was 0.386 and it was statistically not significant (Fig. 18).

4. DISCUSSION

In a study, 195 patients diagnosed with BMS and 95 stable patients without BMS were recruited. Menopause, candidiasis, psychiatric problems, and dry mouth were all prevalent among BMS patients. In BMS, age and gender were the most important predictors. BMS was shown to be strongly correlated with psychological conditions and candidiasis [37]. There is only limited evidence in the literature to guide physicians in the treatment of patients with BMS. Before diagnosing primary BMS, secondary causes should be investigated [38].

Following the latest preliminary diagnosis procedure for BMS, a sample of 123 patients originally diagnosed with BMS was chosen in a study. A control group of 123 patients with dental complications but no oral burning was also chosen as a control group. All patients were subjected to further protocol following their thyroid function and echography. In comparison to eighty five patients in the research population, thirteen control patients had certain thyroid abnormalities. The study discovered that hypothyroidism is also responsible for oral burning and dysgeusia. Hence, thyroid function testing could be used in the diagnosis process

for BMS patients [39]. Hormones, whether it be in excess or deficiency, have a negative impact on the oral cavity. A patient with thyroid dysfunction, as well as a patient taking thyroid medications, requires proper risk management before considering dental treatment [40].

Some of the limitation in this study include, the smaller samples size of 100. Larger sample size will give more accurate data. Wide variety of population can be included, our study only dental students. In the future, studies can be done with larger sample sizes.

5. CONCLUSION

From the results obtained, we can conclude that dental students have a moderate level of awareness about burning mouth syndrome. Most of the dental students were aware about burning mouth syndrome but there was still a group of dental students who were not aware. More awareness and better understanding will result in better management and better treatment plans. The survey has created awareness about Burning mouth syndrome.

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- Ateeq Al Dhahery Trading Est.

CONSENT AND ETHICAL APPROVAL

Ethical approval was taken and informed consent from the participants were obtained.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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