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KNOWLEDGE AND AWARENESS OF ORAL MANIFESTATIONS OF SYSTEMIC LUPUS ERYTHEMATOSUS AND CROHN'S DISEASE AMONG DENTAL STUDENTS

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Keywords: Cheilitis; Crohn's; Oral manifestations; Systemic lupus erythematosus.

ABSTRACT

Crohn's disease is an inflammatory bowel disease and causes inflammation of the digestive tract and hence leads to abdominal pain, severe diarrhoea, fatigue, weight loss and malnutrition.Some people may be symptom-free most of their lives, while others can have severe chronic symptoms that never go away.Medications such as steroids and immunosuppressants are used to slow the progression of disease and they require regular screening to check the progression of the disease as well. Lupus erythematosus is a chronic autoimmune disease that can cause severe fatigue and joint pain. There is no treatment for Lupus but current treatments focus on improving quality of life through controlling symptoms and minimising flare-ups. This begins with lifestyle modifications, including sun protection and diet. Further disease management includes medication such as anti-inflammatories and steroids. Both these diseases seem to have a variety of oral manifestations that are characteristic to them as well as general manifestations.The survey showed moderate to below average level of awareness regarding the oral manifestations of both lupus and crohn's disease. Though the awareness is moderate, the awareness level of specific features

of oral manifestations were below average. The oral manifestations awareness level was moderate and are practised averagely for both lupus and crohn's disease but knowledge of identifying features specific for each disease is less and needs to be improved for early diagnosis as well as better prognosis. This survey was aimed to assess the awareness levels regarding the oral manifestations of Lupus erythematosus and Crohn's disease among dental students and correlate the data.

INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic autoimmune inflammatory disease involving the connective tissue (Lehman, 1995) involved such as lungs, kidneys, and heart. It shows a slight female preponderance and age of onset is 15-40 years.SLE may initially show up as increased fatigue or exhaustion, an ambiguous sentiment of distress or sickness, fever, loss of appetite and weight reduction. Most influenced people additionally have joint torment, ordinarily influencing similar joints on the two sides of the body, and muscle agony and limitations in movement. Skin issues are normal in SLE. The trademark is a level red rash over the cheeks and scaffold of the nose, called a "butterfly rash" in light of its shape. The rash, which by and large doesn't do any harm or cause irritation, regularly shows up and becomes more progressive when presented to daylight Some of the common symptoms include glomerulo-nephritis (Burge *et al.*, 1989) . Xerostomia and hypersalivation are predisposing factors.The oral manifestations may include oral ulceration, honeycomb plaque, keratotic plaque (raised), petechiae, cheilitis, and so on. (Chi *et al.*, 2010) 25% of SLE patients have oral manifestations which may present as any one or more of the above mentioned factors. As there is no current treatment for lupus since it is an autoimmune disease early diagnosis has become imperial for better prognosis (Hammoudeh *et al.*, 2018).

Crohn's disease is an inflammatory bowel disease. It is an immunologically mediated inflammatory disease of the gastrointestinal tract (Ranasinghe and Hsu, 2019). The inflammation extends through the entire thickness of the bowel wall from the mucosa to the serosa. (Lightner *et al.*, 2019)(García *et al.*, 2019). Indications regularly incorporate stomach pain, looseness of the bowels (which might be bloody if aggravation is extreme), fever, and weight reduction. Different inconveniences outside the gastrointestinal tract may incorporate anemias, skin rashes, joint pain, irritation of the eye, and tiredness.The skin rashes might be because of diseases just as pyoderma gangrenosum or erythema nodosum. Gut obstructions may happen as a result of interminable aggravation, and those with the illness are at more serious danger of malignancies pertaining to the bowel and small bowel cancer. There is no cure for this disease. Granuloma formation is also very common in case of Crohn's disease (Woo, 2015)

The oral manifestations may be present as persistent lip swelling.(Rowland, Fleming and Bourke, 2010) . Others may include oral ulcerations, cheilitis, and many others as well.(Scheper and Brand, 2002) Cobblestoning of the mucosa is the most common oral manifestation of Crohn' s disease (Scheper and Brand, 2002; Mays, Sarmadi and Moutsopoulos, 2012). This survey will

evaluate the knowledge and awareness of oral manifestations of these diseases among the dental students which may further contribute to early diagnosis.

MATERIALS AND METHODS

The study was conducted in an online setting. The advantages are that it has a wider reach and predisposes for an untainted opinion, the disadvantages are that it may lead to survey fatigue and a biased opinion due to it. Moreover, an online setting requires some amount of accessibility and resources. The sample size is 74. Previous studies and surveys similar to this with a sample size of 400 (Haikel, Bin Haikel and Al Tulaihi, 2018) and 168 (Kinsey and Burden, 2016) have been done. Random sampling method has been used. Validity is provided by homogenisation and cross verification of the questionnaire. The output is based on the knowledge necessary to complete the survey and the results are presented as graphs and pie charts. A questionnaire of about 12 questions were framed and deployed through an online survey setting. The responses were analysed using SPSS software and the data was correlated using chi square test. The age, gender were independent variables. The analysis was optional analysis because it was an objective, option based survey and not descriptive.

RESULTS AND DISCUSSION

The results show that the knowledge and awareness of dental students regarding the oral manifestationsof systemic Lupus erythematosus and Crohn' s disease are moderate to above average at best. The study was conducted in Chennai, Tamil Nadu which is a very low ratio when and if compared to different states and countries and their knowledge and awareness levels.

According to Figure 1, 58.1% people are aware that in 80% of Crohn's affected cases, the patients manifest oral clinical features. While 41.9% people are not aware that Crohn's disease may have predisposing oral manifestations (Hussey *et al.*, 2011) which are imperial to the early diagnosis as well as to diagnose asymptomatic cases

According to Figure 2, 52.7% of students are aware that the cobblestoning of mucosa and formation of polyps may be an indication of Crohn's disease. This feature is almost a classic of Crohn's disease (Harty *et al.*, 2005). The mucosa develops a cobblestone appearance, which results from deep, longitudinal ulcerations interlaced with intervening normal mucosa and this is seen predominantly in the colon, but also presents in the oral mucosa.

According to Figure 3, 39.2% are aware that the age of onset of Crohn's disease is between 15-30 years, while 58.1% are not aware of this. Knowing the age of onset will help in the early diagnosis of the disease as well as the monitoring and screening of patients with genetic predisposition and at a place of risk. (Johnston and Logan, 2008)

According to Figure 4, 48.6% are unaware that oral ulcerations may be indicative of Crohn's disease while 44.6% are aware of this. The rest of the responses are ambivalent. Some people develop mouth ulcers several years before they experience any intestinal symptoms due to Crohn's

disease.Crohn's disease commonly causes mouth ulcers known as canker sores. These develop around the base of the gums and these also increase during flare ups of the disease.
According to Figure 5, 44.6% of students are aware that cheilitis of the oral cavity may be prelude to Crohn's disease while 54.1% are unaware hence, cheilitis is also a very common feature to many other systemic diseases (Jajam, Bozzolo and Niklander, 2017). Oral cheilitis may follow, coincide with or precede the onset of Crohn's disease.(Triantafillidis *et al.*, 2008). This extraintestinal manifestation could significantly affect the quality of life of patients with Crohn's disease

According to Figure 6, 43.2% students are aware that oral petechiae is a very common feature in case of Systemic lupus erythematosus (SLE) while 54.1% are not aware of this fact. Non-specific lesions in the oral cavity can also be the result of malnutrition and drugs. Malnutrition, followed by anemia and mineral and vitamin deficiency, affects the oral cavity and teeth. (Muhvić-Urek, Tomac-Stojmenović and Mijandrušić-Sinčić, 2016)

According to Figure 7, 41.9% of the students are aware that the onset of the disease occurs in 15-40 years of age while 56.8% are unaware of the age of onset of SLE disease. It is subjective because it is an autoimmune disease (Al Arfaj and Khalil, 2009) the majority of disease onset is seen to greater affect the females more than the males.(Ohta *et al.*, 2013)

According to Figure 8, 66.2% are unaware that the presentation of honeycomb plaque in the oral cavity is a predisposing factor for SLE and 32.4% are aware of this factor. Honeycomb plaque is majorly seen in the Lining and masticatory mucosa and is a chronic, well-circumscribed erythematous plaque with white lacy hyperkeratosis. It is a characteristic lesion of lupus erythematosus, especially juvenile onset of the disease. (Rodsaward *et al.*, 2017)

According to Figure 9, 68.9% are unaware that raised keratotic plaque with the presence of erythema of the oral cavity is an indication of SLE. 17.6% are aware of this while 13.5% are ambivalent. The oral mucosa might be included either preceding or following the manifestation of skin lesions or even in the nonattendance of skin indications. Oral sores start as erythematous zones, without induration and with white spots. The edges of the injuries are not forcefully outlined yet oftentimes show the development of a tight zone of keratinization.(Pandey *et al.*, 2018)

According to Figure 10, 41.9% females and 16.2% males are not aware while 21.6% females and 17.6% males are aware of the age of onset which shows that the majority of females are not aware of the age of onset of Crohn's disease while the distribution is very close to each other in case of male participants, but this is not significant as p value>0.05. Awareness can be increased by conducting awareness programmes and so on.

According to Figure 11, 33.8% females and 9.5% males are aware while 31.1% females and 22.97% males are not aware which shows that the majority

of females are aware that oral petechiae is characteristic of SLE while the majority of males are unaware of the fact, but this is not significant as p value>0.05. The awareness levels can be increased by showing live cases to the students and conducting case programmes.
According to Figure 12, 37.8% females and 18.9% males are not aware while 27% females and 14.9% males are aware of the age of onset of SLE, which shows that the majority of females are not aware of the age of onset of Systemic Lupus Erythematosus disease, but this is not significant as p value>0.05. The awareness can be increased in the students by conducting awareness and case programmes and case studies.

Previous studies with similarity in outcomes are more than the counterpart. (Stoopler *et al.*, 2011) and have said up to 88% of awareness level is present. In case of awareness level, it is more in case of medical students than dental students (85.9%) but they have very low practise levels (Stoopler *et al.*, 2011; Sarumathi, 2013). Poor awareness levels may be indicative also of lack of clinical exposure (Sujatha *et al.*, 2015). Thus level of awareness is very much important for survey methods of data analysis. (Ashok and Suvitha, 2016)

Sometimes other conditions may also be mistaken to be an oral manifestation while they are actually not and may be an allergic reaction or effects of other medicaments (Selvan and Ganapathy, 2016)(Subasree, Murthykumar and Dhanraj, 2016)(Vijayalakshmi and Ganapathy, 2016)(Ashok et al., 2014)(Kannan and Venugopalan, 2018)(Basha, Ganapathy and Venugopalan, 2018) or procedures (Venugopalan *et al.*, 2014)(Ajay *et al.*, 2017)(Ganapathy, Kannan and Venugopalan, 2017)(Duraisamy *et al.*, 2019)(Jyothi *et al.*, 2017)(Ariga *et al.*, 2018)also, so understanding that phase is important. For example marginal discrepancy can be brought about by many other causes (Ganapathy *et al.*, 2016)(Jain, Ranganathan and Ganapathy, 2017) other than systemic diseases.

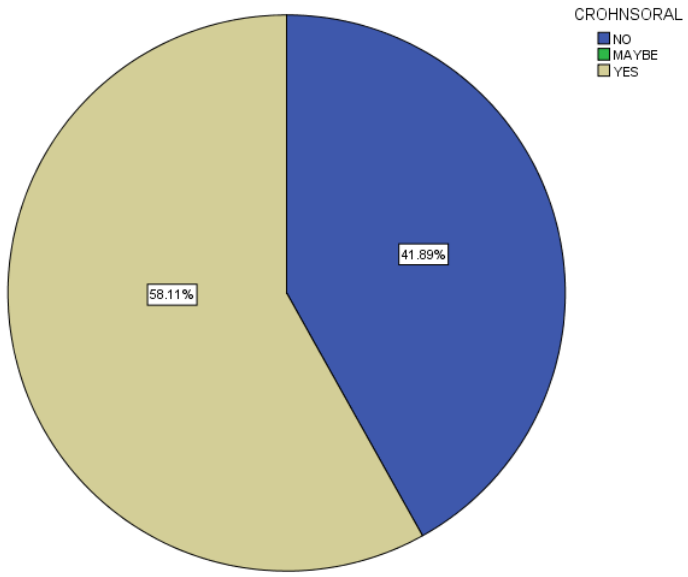

Figure 1: Pie chart representing the percentage distribution of the awareness on whether 80% Crohn's affected patients have oral manifestations. 41.9% responded yes (beige) and 58.1% responded no (blue).

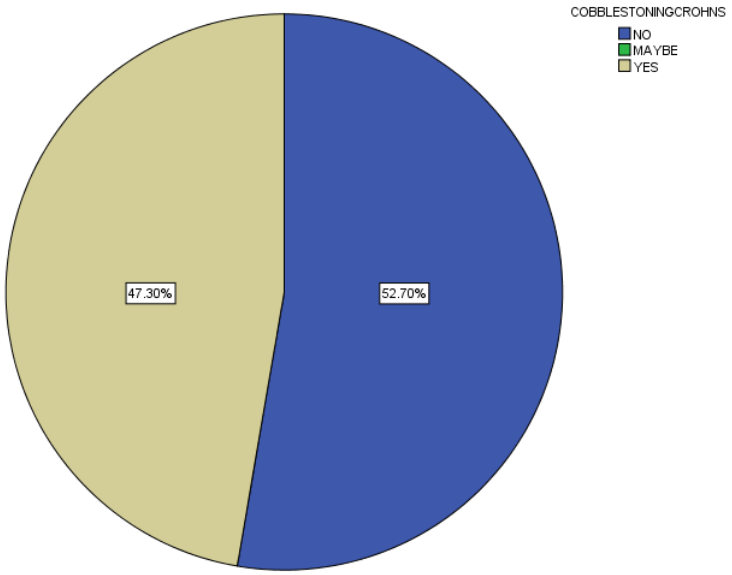

Figure 2: Pie chart representing the percentage distribution of awareness regarding cobble-stoning of mucosa and polyps may be an indication of Crohn's disease 47.3% responded yes (beige) and 52.7% responded no (blue).

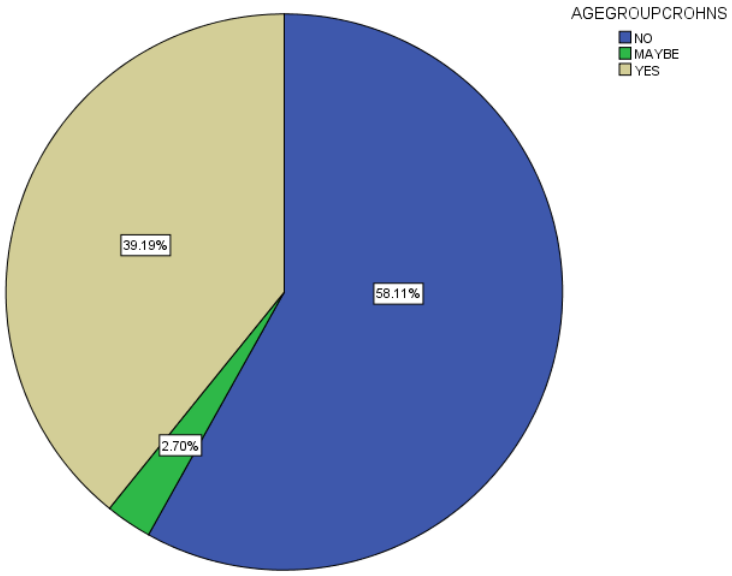

Figure 3: Pie chart representing the percentage distribution of awareness regarding onset of Crohn's disease occurs in the age group 15 - 30 years. 39.2% responded yes (beige), 58.1% responded no (blue) and 2.7% responded maybe (green).

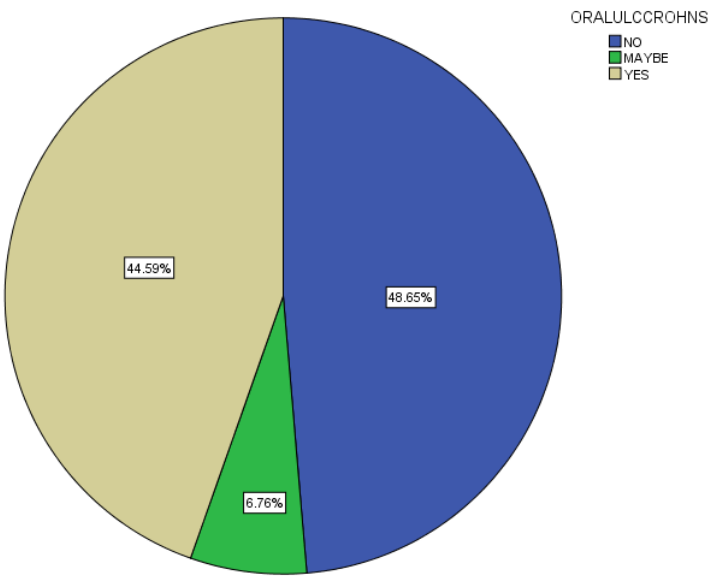

Figure 4: Pie chart representing the percentage distribution of response whether oral ulceration is a common feature of Crohn's disease. 44.6% responded yes (beige), 48.6% responded no (blue) and 6.8% responded no (green).

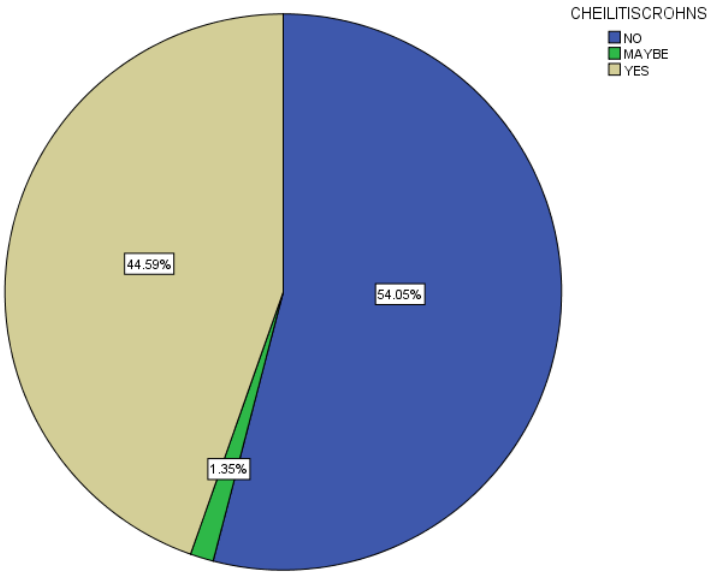

Figure 5: Pie chart representing the percentage distribution of awareness of cheilitis being a prelude to Crohn's disease. 44.6% responded yes (beige), 54.1% responded no (blue) and 1.3% responded maybe (green).

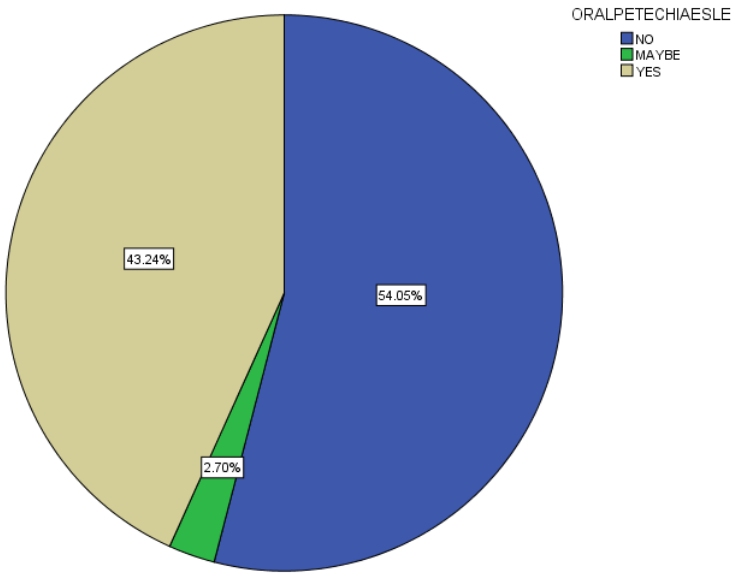

Figure 6: Pie chart representing the percentage distribution of awareness of oral petechiae as a common feature of lupus patients. 43.2% responded yes (beige), 54.1% responded no (blue) and 2.7% responded maybe (green).

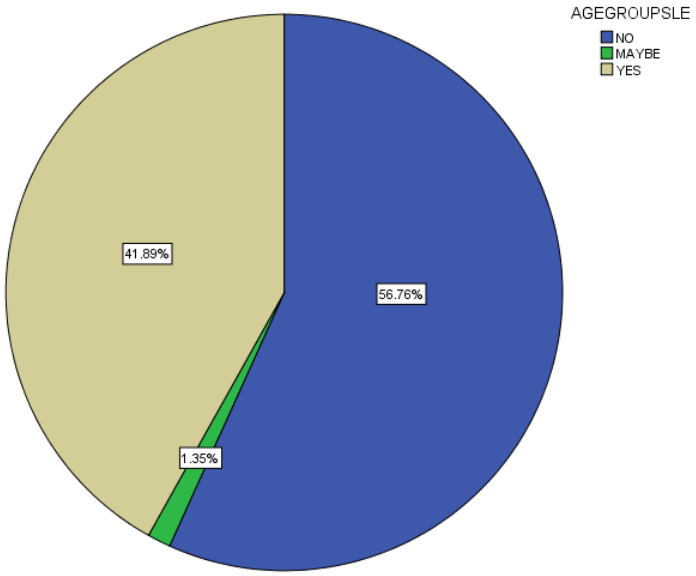

Figure 7: Pie chart representing the percentage distribution of awareness regarding age of onset of SLE disease occurs in the age group 15 - 40 years. 41.9% responded yes (beige), 56.8% responded no (blue) and 1.3% responded maybe (green).

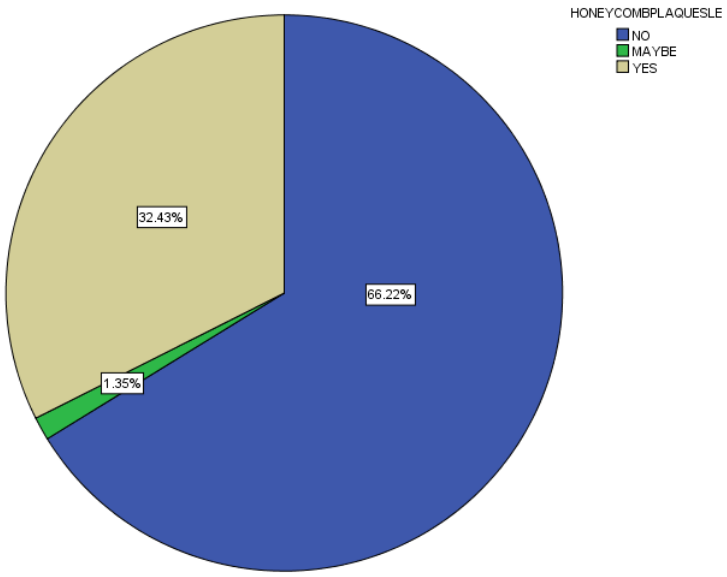

Figure 8: Pie chart representing the percentage distribution of awareness on honeycomb plaque as an indication of SLE. 32.4% responded yes (beige), 66.2% responded no (blue) and 1.4% responded maybe (green).

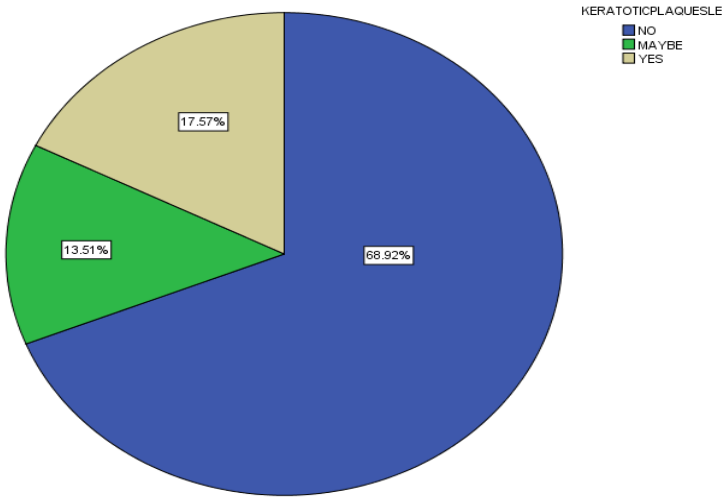

Figure 9: Pie chart representing the percentage distribution of awareness of raised keratotic plaque and erythema as an indication of SLE. 17.6% responded yes (beige), 68.9% responded no (blue) and 13.5% responded maybe (green).

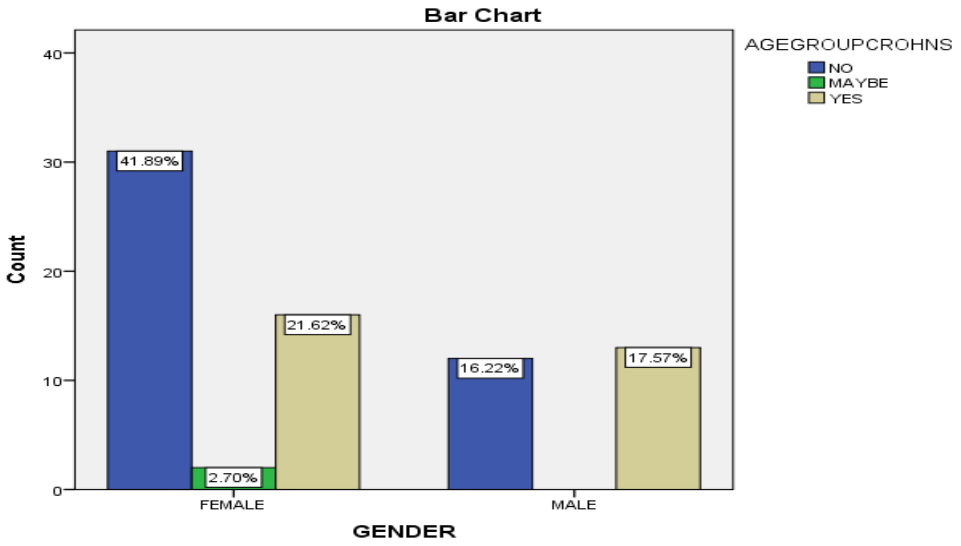

Figure 10: Bar graph representing the association between gender and the awareness regarding age of onset of Crohn's disease among the participants. Beige colour represents awareness, blue colour represents not aware and green colour represents ambivalence. X-axis represents gender. Y-axis represents the number of responses. 21.6% females and 17.6% males were aware, whereas 41.89 % female and 17.57% were not aware of the age of onset, hence there is no significant difference between the genders. Statistical analysis was done for association using Chi square test showing p=0.195 which was statistically not significant as p>0.05.

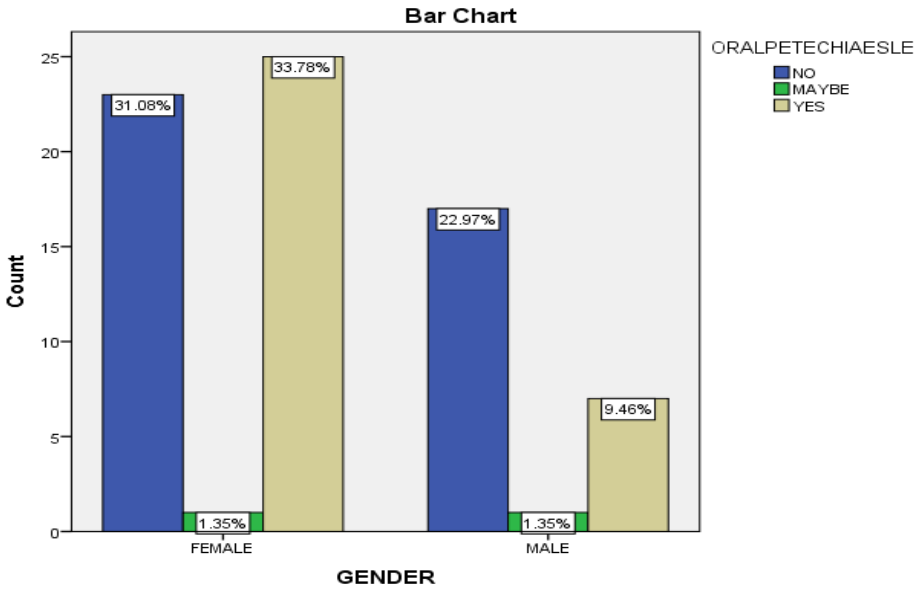

Figure 11: Bar graph representing the association between awareness regarding oral petechiae as a characteristic oral manifestation of Systemic Lupus Erythematosus (SLE) affected patients and gender of the participants where beige colour represents aware, blue colour represents not aware and

green colour represents ambivalence. X-axis represents gender. Y-axis represents the number of responses. 33.8% females and 9.5% males are aware while 31.08 % females and 22.97% of males were not aware, hence females exhibit more awareness of the manifestations of SLE. Statistical analysis for association was done using Chi Square test showing p=0.163 was not statistically significant as p>0.05.

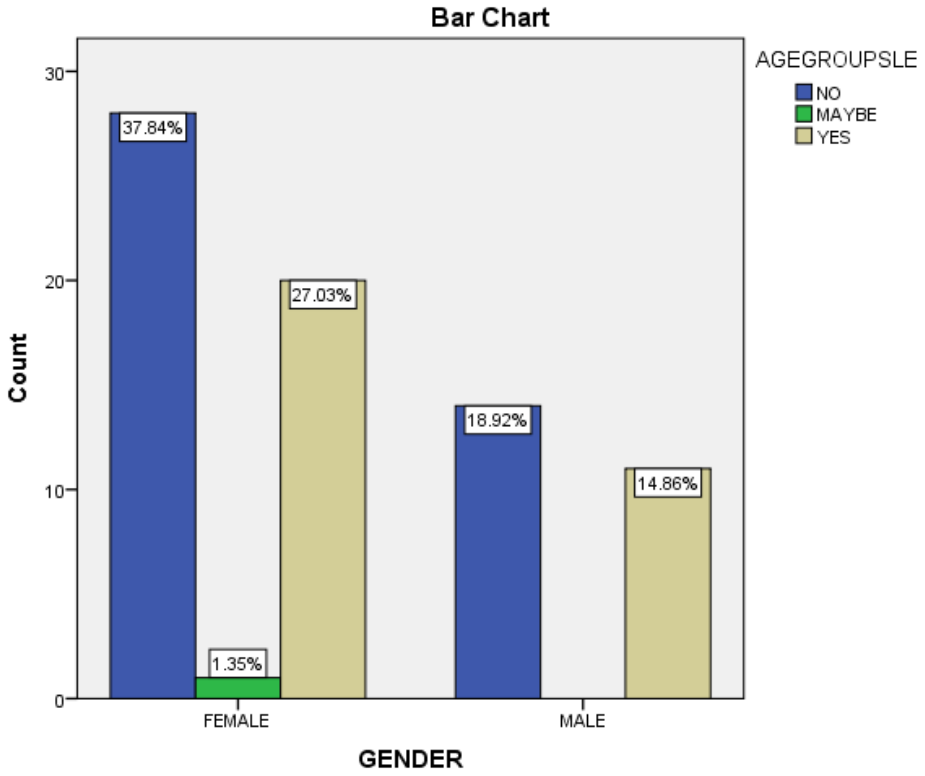

Figure 12: Bar graph representing the association between awareness regarding age of onset in Systemic Lupus Erythematosus (SLE) affected patients and gender of the participants, where beige colour represents aware, blue colour represents not aware and green colour represents ambivalence. X-axis represents gender. Y-axis represents the number of responses. 37.8% females and 18.9% males were not aware ; 27.3% females and 14.86 % male were aware but there was no significant difference between the genders; Statistical analysis for association was done using Chi square Test showing p=0.758 was not statistically significant as p>0.05.

CONCLUSION

Within the limits of the study, knowledge and awareness of oral manifestations of systemic lupus erythematosus and Crohn's disease were evaluated. Upon evaluation, it was found that the dental students had a moderate level of awareness and knowledge about the topic, which can be improved by delivering information and more exposure. Though the awareness levels were average in accordance to the fact that there are oral manifestations of systemic diseases, the awareness pertaining to the specific oral manifestations of both systemic lupus erythematosus and Crohn’s disease was below average and requires the spread of awareness and knowledge for

the betterment of diagnosis and prognosis and the betterment of clinical practice.

AUTHOR'S CONTRIBUTION

Author 1 (Nishanthana Murali), carried out the survey study by collecting data and drafted the manuscript after performing the necessary statistical analysis. Author 2 (Venkatesh Kommi), aided in the conception of the topic, has participated in the study design, statistical analysis and has supervised the preparation of the manuscript. Author 3 (Anitha Roy) has participated in the study design, and has coordinated in developing the manuscript. All the authors have discussed the results among themselves and contributed to the final manuscript.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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