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Prevalence of Angular Cheilitis and Assessment of Factors Associated with It - A Retrospective Study

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Abstract

Angular cheilitis is inflammation of the skin, occurring at the labial commissure – the angle of the mouth. It is an eroded and erythematous non-vesicular lesion that can occur at one or both corners of the mouth. The point of interface for squamous epithelium of the face and oral mucosa is at the angle of the mouth . It is also a mechanically dynamic hinge for the oral aperture that endures more motion and tensile forces than the rest of the lips. Thus, the commissures are especially susceptible to certain stresses. Other names for angular cheilitis include angular cheilosis, angular stomatitis, commissural stomatitis, rhagades, or perleche. The increased prevalence is associated with human immunodeficiency virus, usage of immunosuppressants and corticosteroids, increased usage of oral prosthesis in the elderly, xerostomia, expanded usage of oral antibiotics, obesity and diabetes to name a few. In young children, angular cheilitis is associated with habitual lip licking, thumb sucking, or biting of the corners of the mouth, whereas in older patients it occurs from sagging at the commissures of the mouth. The aim of this study was to assess the prevalence of angular cheilitis and assessment of factors associated with it. A retrospective study was conducted in the Saveetha Dental College, Chennai, India. Ethical clearance was obtained from SRB committee, Saveetha Dental College, Chennai, India. The clinical portion of this retrospective study was conducted over a 9 month period,i.e, between June, 2019 to March,2020. Some patients reported with pain while for others it was observed during routine examination. Data was collected from a total of 86000 patients who visited Saveetha dental college between Jun,2019 to March,2020. Out of this, the data of 57 patients who visited the institute and were diagnosed with angular cheilitis were retrieved. The data obtained was tabulated in SPSS for windows, version 20. Descriptive statistics were analysed. Chi square test was done to analyse association of habits of the patient with age, gender,dental status and systemic diseases of patients with angular cheilitis. The results of the study indicated angular cheilitis was more predominant in males and it was more predominant between 40-49 years of age. Angular cheilitis was more predominant in completely edentulous patients and diabetes was the most common systemic disease among the patients. There was statistically significant association between gender (P=0.002) and habits of the patient. However, there was no statistically significant association between age(P=0.278), dental status (P=0.137) and systemic diseases (P=0.817) with habits of the patient.

Keywords: *Angular cheilitis, angular cheilosis, angular stomatitis, commissural stomatitis, rhagades, perleche.*

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Introduction

Angular cheilitis is inflammation of the skin, occurring at the labial commissure – the angle of the mouth. It is an eroded and erythematous non-vesicular lesion that can occur at one or both corners of the mouth[1]. The point of interface for squamous epithelium of the face and oral mucosa is at the angle of the mouth . It is also a mechanically dynamic hinge for the oral aperture

that endures more motion and tensile forces than the rest of the lips. Thus, the commissures are especially susceptible to certain stresses[2]. Other names for angular cheilitis include angular cheilosis, angular stomatitis, commissural stomatitis, rhagades, or perleche[3].

The increased prevalence is associated with human immunodeficiency virus, usage of immunosuppressants and corticosteroids, increased usage of oral prosthesis in the elderly, xerostomia, expanded usage of oral antibiotics, obesity and diabetes to name a few [4,5]. Iron deficiency anemia and other vitamin deficiencies have been cited as other predisposing factors. It usually occurs in association with oral candidiasis[6]. Staphylococcus aureus and β-hemolytic streptococci have also been associated with it.[7–9] Angular cheilitis has also been associated with diseases that cause enlarged lips, such as orofacial granulomatosis [7,10].

In young children, angular cheilitis is associated with habitual lip licking, thumb sucking, or biting of the corners of the mouth, whereas in older patients it occurs from sagging at the commissures of the mouth [8,11–14].

Initially, the corners of the mouth develop a gray-white thickening and adjacent erythema. Later, the usual appearance is a roughly triangular area of erythema, edema and maceration at either corner of the mouth[15]. Typical symptoms are soreness, pain, itching, burning and a raw feeling in the later stage. Opportunistic bacterial or fungal infection along with factors like nutritional deficiencies, decreased vertical dimension, drooling, dry mouth, persistent licking of lips can cause persistence of the lesions. Although it poses a very low mortality risk, it can be physically uncomfortable, and the patient may complain of burning mouth, dysgeusia, dysphagia, anorexia, and weight loss, leading to nutritional deficiency and impaired quality of life [16–20].

Sometimes, it is an extension of denture stomatitis. Denture stomatitis is characterised by erythema and edema in the denture bearing areas. It can occur due to candidal and non-candidal infections, allergy to denture materials, etc. The growth can also occur due to marginal inadequacies of implants [8,11–13]. This affects integrity of implants [21–23].

Although it poses a very low mortality risk, it can be physically uncomfortable. The patient may complain of burning mouth, dysgeusia, dysphagia, anorexia, and weight loss, leading to nutritional deficiency and impaired quality of life [8,11–14,24].

Ohman et al stated that the clinical appearance of angular cheilitis fell into 4 categories. A ground rhagad at the corner of the mouth involving adjacent skin in dentate patients. Among denture wearers a deep lesion following the labiomarginal sulcus was observed[25].

The purpose of this study is to assess the prevalence of angular cheilitis.

Materials and Methods

A retrospective study was conducted in the Saveetha Dental College, Chennai, India. Ethical clearance was obtained from SRB committee, Saveetha Dental College, Chennai, India. The clinical portion of this retrospective study was conducted over a 9 month period,i.e, between June, 2019 to March,2020. Some patients reported with pain while for others it was observed during routine examination.

Inclusion criteria: Patients diagnosed with angular cheilitis, both candidal and non-candidal associated, both males and females, patients of all ages, all dental status.

Data was collected from a total of 86000 patients who visited Saveetha dental college between Jun,2019 to March,2020. Out of this, the data of 57 patients who visited the institute and were diagnosed with angular cheilitis were retrieved. The data obtained was tabulated in SPSS for windows, version 20. Descriptive statistics were analysed. Chi Square test was done to analyse correlation.

Results and Discussion

The results of the present study indicated that 50.9% were males and 49.1% were females(**Figure 1)**. 14% were between 20-29 years, 12.3% were between 30-39 years, 40.4% were between 40-49 years, 12.3% were between 50-59 years, 15.8% were between 60-69 years, 5.3% were >70 years(**Figure 2)**. 24.6% were smokers, 7% were gutkha chewers, 19.3% were paan chewers, 49.1% had no habits . 21.1% had caries, 22.8% had restorations, 21.1% had crowns, 5% were partially edentulous and 26.3% were completely edentulous **(Figure 3)**. 17.5% had diabetes, 8.8% had hypertension, 5.3% had other systemic diseases, 68.4% had no systemic diseases **(Figure 4)(Table 1)**.

Table 1 - Represents the frequencies of gender, age, habits, dental status and systemic diseases.

S.No	Variable	Options	Frequency (%)
1	Gender	Male Female	29 (50.9%) 28 (49.1%)
2	Age	20-29 years 30-39 years 40-49 years 50-59 years 60-69 years >70 years	8 (14%) 7 (12.3%) 23 (40.4%) 7 (12.3%) 9 (15.8%) 3 (5.3%)
3	Habits	Smoking Gutkha Paan chewing None	14 (24.6%) 4 (7%) 11 (19.3%) 28 (49.1%)
4	Dental status	Caries Restorations Crowns Partially edentulous Completely edentulous	12 (21.1%) 13 (22.8%) 12 (21.1%) 5 (8.8%) 15 (26.3%)
5	Systemic diseases	Diabetes Hypertension Other systemic diseases No systemic diseases	10 (17.5%) 5 (8.8%) 3 (5.3%) 39 (68.4%)

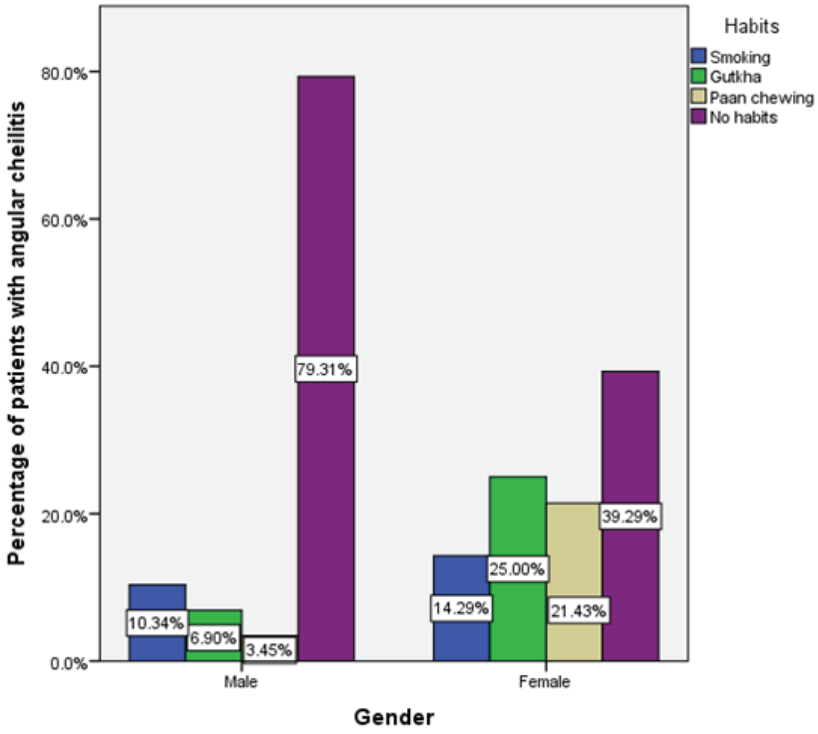

Figure 1 - Bar graph represents the correlation between gender and habits of the patient. X-axis represents the gender of the patient. and the Y-axis represents the percentage of angular cheilitis patients with habits. (Pearson Chi-square P value:0.002 (<0.05) hence statistically significant). In 79.31% of the patients with angular cheilitis, there were no associated habits and the results were found to be statistically significant in both the genders.

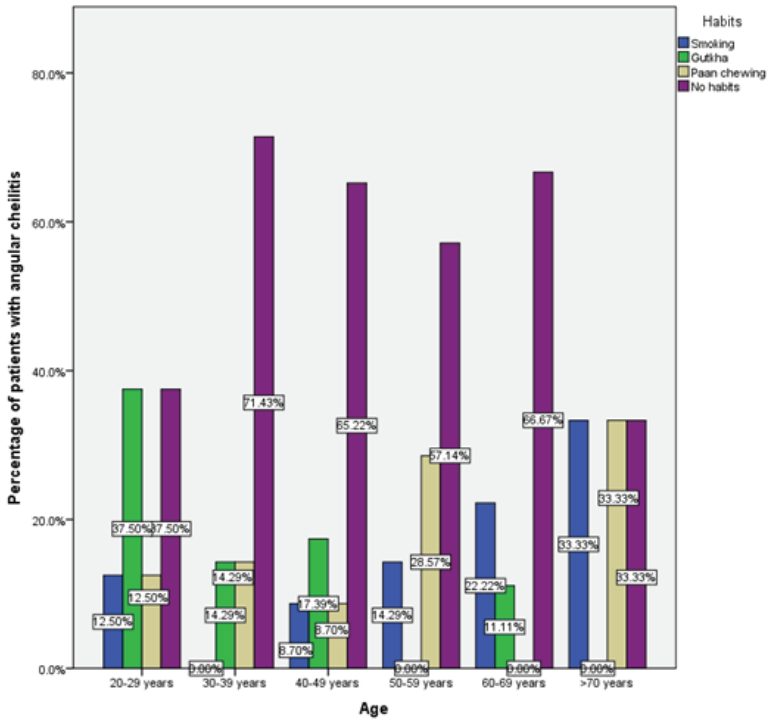

Figure 2 - Bar graph represents the correlation between age and habits of the patient. X-axis represents the age of the patient and Y-axis represents the percentage of angular cheilitis.with habits.(Pearson Chi-square test P value:0.278 (>0.05), hence not statistically significant). Even though the majority of the patients in all age groups

were found to have no habits, the results were not found to be statistically significant.

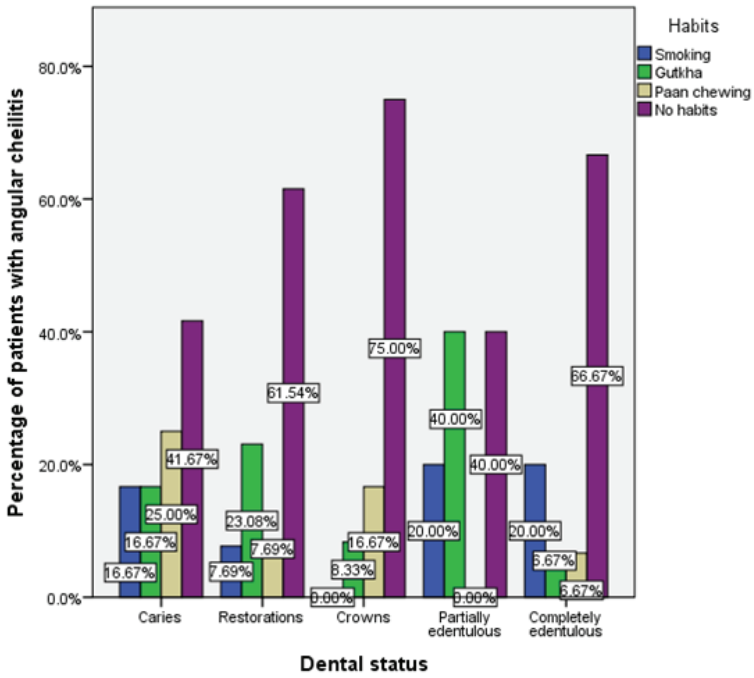

Figure 3 - Bar graph represents the correlation between habits of the patient and dental status of the patient. X-axis represents the dental status of the patient and Y-axis represents the percentage of angular cheilitis patients with habits. (Pearson Chi-square P value:0.137 (>0.05), hence not statistically significant). Even though the majority of the patients of all dental status groups were found to have no habits, the results were not found to be statistically significant.

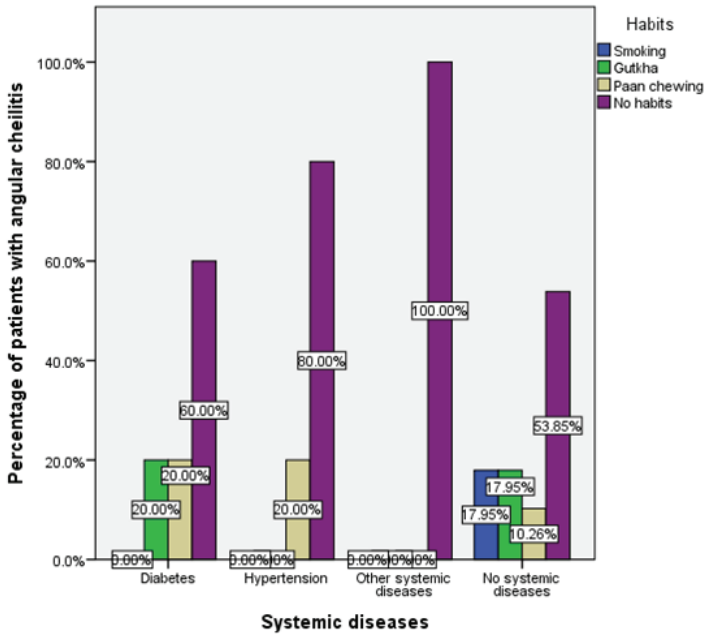

Figure 4 - Bar graph represents the correlation between habits of the patient and systemic diseases of the patient. X-axis represents the dental status of the patient and Y-axis represents the percentage of patients with angular cheilitis. (Pearson Chi-square P value:0.817 (>0.05), hence not statistically significant) Even though the majority of the patients in all systemic disease groups were found to have no habits, the results were not found to be statistically significant.

The present study had no gender predominance with angular cheilitis. This is in accordance with Shahzad et

al who state that it occurs in both males and females[26]. However, Federico et al state that angular cheilitis is twice as frequent in men than in women[27]. There was significant correlation between the presence of habits and gender (P=.013) in this study.

Angular cheilitis was more predominant between 40-49 years in the present study. According to Shahzad et al, Federico et al, and Cross et al angular cheilitis predominantly occurs in adults in the third to sixth decades of life [26–28]. A study by Parlak et al in Turkey with 993 children revealed that 9% of 13–16 year olds had angular cheilitis and this was the most common oral mucosal lesion[29]. However, a larger epidemiological study by Shulman in 10,030 children aged between 2 and 17 years failed to record a single case[30]. This could be due to underlying nutritional deficiencies between these two groups, as the presence of angular cheilitis in the Turkish population was associated with anaemia[29]. There was no significant correlation between the presence of habits and age (P=.648) in this study.

In the present study, 28.1% were smokers. Some studies have stated that smoking does not affect Candida carriage significantly [31,32], while others have reported that smoking significantly increased carriage by 30 to 70%[33]. Some authors have also stated that cigarette smoking might lead to localized epithelial alterations that allow colonization by Candida. This relationship between cigarette smoke and Candida is particularly important, as the enzyme system can increase the carcinogenic activity of the hydrocarbon and candidal leukoplakia might have a higher potential for malignant changes than normal leukoplakia[34].

26.3% of the participants in the present status were completely edentulous. Federico et al stated that there is a 3-fold incidence in denture-wearers[27]. According to Scully et al, people with angular cheilitis who wear dentures may have erythematous mucosa underneath the denture. This appearance is consistent with denture stomatitis[35]. Sharon et al stated that wrinkles or at the oral commissures lead to an increased risk for angular cheilitis by creating a chronic, moist, intertriginous environment which fosters microorganisms. The long-term use of ill-fitting dentures accentuates this wrinkling. Ill-fitting dentures cause resorption of the bone on which the dentures lay thereby reducing the vertical height of the lower face. These conditions lead to saliva trapping or excessive saliva at the angles of the mouth[36]. Cross et al state that angular cheilitis was observed in patients wearing appliances with full palatal coverage slightly less frequently than expected when compared with adult complete denture wearers[28]. Ohman et al, Cawson et al and Turrell et al stated that neither loss of the vertical dimension nor the condition of the dentures seem to be a significant factor in the etiology of angular cheilitis [25,37,38]. There was no significant correlation between the presence of habits and dental status (P=.534) in this study.

In the present study 17.5% of the participants were diabetic. Sharon et al state that diabetes is a risk factor for angular cheilitis[36]. Khalid et al state that angular cheilitis occurs significantly more frequently in diabetic than in non-diabetic patients[39]. Scully et al stated that immunocompromised patients have more predilection for angular cheilitis[35]. There was no significant correlation between the presence of habits and systemic diseases (P=.602) in this study.

The limitations of this study includes the small sample size and the geographic location of the patients were not assessed. Since this was a retrospective, prevalence study the prognosis of the patients could ot be analysed. Future analytical studies need to be done with these limitations in mind.

Conclusion

Within the limitations of this study, it can be concluded that angular cheilitis was more predominant in males, between 40-49 years of age. Clinical association was seen in completely edentulous patients and in patients with systemic disease like diabetes. There was statistically significant association between gender and habits of the patient.

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The co-author verified the results and manuscript before submission.

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Ethical Clearance

It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/

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