

Evaluation of severity level, stress and bad habit among dental students with exfoliative cheilitis

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ABSTRACT

Introduction: Exfoliative cheilitis (EC) is one of the most common cheilitis found among the community. This lesion can cause difficulty in mouth opening, speech difficulties and reduce aesthetical value of the lips. EC is a chronic inflammation characterized by desquamation, erythema, and crusting that occurs on upper or lower lip. The aim of this study was to evaluation of severity level, stress and bad habit among dental student with exfoliative cheilitis. **Methods:** The method used in this research was a descriptive method. The method used to carry out this research is total sampling were clinical dental students batch of 2016 to 2018 Faculty of Dentistry Universitas Padjadjaran on 83 clinical dental students with EC. The lips were then examined and data was recorded. EC is classified into 3 stages in clinical manifestation. They are mild, moderate and severe exfoliative cheilitis. The data was presented with simple frequency distribution table. **Result:** The result showed that 30.1% of the research subjects had mild EC, 53% had moderate EC and 16.9% have severe EC. The predisposing factors of EC in this research were stress and bad habits where the percentage contribution was 53% and 16.9% respectively. There were also students found with both stress and bad habits and the percentage contribution was 30.1%. **Conclusions:** Moderate exfoliative cheilitis is most commonly found among the where the clinical features are desquamation and erythema. The predisposing factors of exfoliative cheilitis is stress which has the highest percentage among the clinical dental students.

Keywords: exfoliative cheilitis; clinical features; predisposing factors.

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INTRODUCTION

The lips, also known as labial¹, are one of the parts that form the oral cavity and are located between the nose and the chin that are made up externally by the upper vermilion border, lower

vermilion border and angle of the mouth.² It is a musclocutaneous fold that is highly sensitive, and the line of contact between the upper lip and lower lip is called the oral commissures.³ Lips have many functions. One of them is high aesthetic value, especially for girls. They also

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act as a sealer to open and close the oral cavity during chewing, swallowing, and speech. They play an essential role in detecting the texture and temperature of food before entering into the mouth.⁴ Exfoliative cheilitis (EC) is one of the lesions that can interfere with the functions of the lips. It is a chronic inflammatory condition⁵ that affects both the upper and lower lip. It is commonly found in females and young aged people.⁶ The prevalence of exfoliative cheilitis in Singapore is 5.4%,⁷ in Thailand contributes a percentage of about 18.3%⁸ and 0.6% in China.⁹ The predisposing factor of exfoliative cheilitis is unknown. However, according to the Clinical Medicine and Pathology book, there is an association between bad habits and the occurrence of exfoliative cheilitis. Bad habits, including persistent lip licking, lip biting, lip picking, or lip sucking, are also known as self-induced trauma¹⁰ can contribute to the occurrence of EC. Psychiatric conditions like stress or depression also cause this inflammatory condition.¹¹ A recent research by Yasmin Burakian¹² stated that 48 patients (87%) suffer from exfoliative cheilitis due to psychiatric conditions.

Theoretically, there are a few characteristics that describe exfoliative cheilitis. It is essential to determine the clinical appearance of exfoliative cheilitis to ease the diagnosis process of exfoliative cheilitis. Exfoliative cheilitis is often overlooked or misdiagnosed as dry lips due to the clinical features that look similar. However, by identifying the clinical features of exfoliative cheilitis, clinicians can prevent the risk of misdiagnosing exfoliative cheilitis. This lesion must be treated and prevented from worsening. The clinical features of exfoliative cheilitis would be dryness and crusting of the lips. Besides, it is characterized by the formation of hyperkeratotic crusts that are yellowish-brown.¹²

There will be the formation of hemorrhagic crusts, fissuring and desquamation of the lips. Exfoliative cheilitis usually begins from the midline of the lip and starts from a single fissure. As it progresses, it develops yellow-white crusts that can be peeled off or ulcerations and hemorrhagic crusts on the lips.¹³ Recent case reports reported a patient was diagnosed with exfoliative cheilitis with clinical features such as desquamation followed by the immediate formation of new

thick scales within days.¹⁴ Chronic lip biting can cause thickened and scarred mucosa that appears paler than the surrounding. It also appears white frayed to macerated surfaces that may be soft and sometimes become edematous and erosions.¹⁵ Recent case report has reported a patient diagnosed with exfoliative cheilitis with clinical features such as desquamation followed by the immediate formation of new thick scales within days.¹⁴

Our previous research on the prevalence of exfoliative cheilitis among dental students showed that exfoliative cheilitis was the highest prevalence in the same group of subjects.¹⁶ However, the predisposing factor has not been known in previous studies; for this reason, this research aims to evaluate the severity level, stress, and bad habit among dental students with exfoliative cheilitis.

METHODS

Descriptive research was conducted with a total sampling method on the population of dental students batch of 2016 to 2018 of the Faculty of Dentistry Universitas Padjadjaran with exfoliative cheilitis. Ethical clearance was obtained from the Institutional Ethics Committee of Faculty of Medicine Universitas Padjadjaran, with the approval number of 475/UN6.KEP/EC/2019, and this approval was used to gain access to the dental chairs for sample taking.

The participants have explained the aim and the research procedure priorly. The participants signed the informed consent as they were approved to participate in the research. The female participants were asked to remove their lipstick before being examined. The subjects are asked to sit comfortably in a dental chair and not move during the procedure. The lip lesion was examined thoroughly by the researcher.

The research subjects' data were obtained through direct observation based on clinical features. The researcher classified exfoliative cheilitis into three stages: mild, moderate, and severe. Exfoliative cheilitis was mild when the subject has hyperkeratosis on the upper or lower lip. The lesion was moderate when the subject has desquamation and erythema on the upper or lower lip. The lesion is severe when the subject

has desquamation, erythema, and haemorrhagic crusts on the upper or lower lip. The research subjects completed an online questionnaire (Google Form) to determine the predisposing factors. In addition, a picture of the subject's lips is taken for documentation. The Google Form is also analysed and tabulated in data to obtain the predisposing factors of exfoliative cheilitis: stress and bad habits.

RESULTS

The research was conducted among 83 dental students of the Faculty of Dentistry Universitas Padjadjaran with exfoliative cheilitis, comprising ten male (12%) and 73 female (88%) subjects. The age range of the subjects was 21-26 years old. About 17 subjects (20.5%) aged 21-22 years old, 45 subjects (54.2%) aged 23-24 years old, and 21 subjects (25.3%) aged 25-26 years old. The exfoliative cheilitis was classified into three stages in clinical manifestation: mild, moderate, and severe exfoliative cheilitis. Mild exfoliative cheilitis was observed on 25 of the subjects (30.1%), moderate exfoliative cheilitis was found on 44 subjects (53%) and severe exfoliative cheilitis was found on 14 subjects (16.9%). These data were presented in Table 1 and Table 2.

Table 1. Distribution of exfoliative cheilitis according to gender and age

Exfoliative cheilitis	Number of samples	Percentage (%)
Gender		
Male	10	12
Female	73	88
Total	83	100
Age		
21-22	17	20.5
23-24	45	54.2
25-26	21	25.3
Total	83	100

Table 2. Clinical appearance of exfoliative cheilitis

Clinical appearances	Number of samples	(%)	Gender			
			Male	%	Female	%
Mild	25	30.1	1	1.7	24	34.3
Moderate	44	53	9	69.2	35	50
Severe	14	16.9	3	23.1	11	15.7
Total	83	100	13	100	70	100



Figure 1. Mild EC that shows hyperkeratosis on the upper and lower lip



Figure 2. Moderate EC that shows desquamation and erythematous area on the lower lip



Figure 3. Severe EC that shows haemorrhagic crusts on the upper and lower lip

Table 3. Predisposing factors

Predisposing factors	Samples	(%)	Gender			
			Male	%	Female	%
Stress	43	53	8	61.5	35	50
Bad habits	15	16.9	1	7.7	14	20
Stress and Bad habits	25	30.1	4	30.8	21	30
Total	83	100	13	100	70	100

DISCUSSION

The current research found that exfoliative cheilitis was more commonly found in female participants subjects compared to males. The number of female participants in this research

was higher than that of males. The result of this research is consistent with the theoretical facts that proclaim the occurrence of exfoliative cheilitis is dominant in females. This research also reported that most participants aged 21 to 26 years old had exfoliative cheilitis. This result is also consistent with other studies that concluded that exfoliative cheilitis is common in individuals below 30 years old.¹⁷

In this research, most of the participants were found with moderate exfoliative cheilitis (53%). Moderate EC is identified when the subject has desquamation and erythema on the upper or lower lip. Desquamation means the shedding of cornified layers of the lips, whereas erythema is the redness of the mucosa membrane.¹⁷ A case study done at Hamadan University reported that a patient suffering from exfoliative cheilitis had desquamation of the epidermal layer of lips and erythematous area on the lips, which is similar to the clinical features of moderate exfoliative cheilitis in this research.¹⁸ On the other hand, severe exfoliative cheilitis are least found among the subjects. Severe is known when the subjects have desquamation, erythema, and hemorrhagic crusts on the upper lip or lower lip. A case study by Altaf et al. reported a 28 year old female suffering from exfoliative cheilitis. The subject had crusts and scaly lips¹⁹, which is almost similar to the clinical features of severe EC in this research. Individuals with exfoliative cheilitis are often associated with a burning sensation of the lips due to chronic inflammation. Inflammation has five symptoms: rubor, calor, dolor, tumour and loss of function.

These individuals with moderate exfoliative cheilitis mostly had two signs that are rubor and dolor due to desquamation and erythema. There are no classifications for exfoliative cheilitis. However, a case study has further elaborated on the development of exfoliative cheilitis. Exfoliative cheilitis is characterised by a thick white coating on the lower lip; meanwhile, the upper lip has loose adherent bilateral keratin fragments. The mid-portion of the upper lip has a thin coating of keratin on and appears almost normal. The lower lip is erythematous after the loosely adherent keratin coat is removed on the first day. The upper lip remains untouched. The erythema seems to decrease gradually as the

keratin layer thickens for nine days. A comparison of lower and upper lips shows that the upper lip's keratin layer had already begun to form on day one. Towards day 10, the keratin layer of the upper lip will be thicker than the lower lip.

This observation proclaims that the cycle continues differently for the upper and lower lip where certain lip areas may peel while others may form a keratin layer that gives an impression of continuously peeling lips. Brooke et al.²⁰ also reported a similar cyclical pattern of disease activity. Brooke et al.²⁰ suggested five days for completing the whole cycle.

The predisposing factors of exfoliative cheilitis in this research are stress and bad habits. Stress has the highest percentage among the participants. As the participants were clinical students, they were often exposed to a stressful environment due to the workload during clinical sessions, making students susceptible to stress. Recent research conducted at Christ University concluded that most students are undergoing stress due to workload or assignments.²¹

Stress has a mechanism that contributes to the occurrence of exfoliative cheilitis. Stress is accepted in the central nervous system as stress perception, which will cause neurochemical changes in brain waves that will be transferred to the hypothalamus. This condition will produce corticotropin hormone (CRH) and stimulate the anterior pituitary gland to release adrenocorticotropin hormone (ACTH). As a result, the adrenal cortex will produce cortisol, which functions as an immunosuppressant and anti-inflammatory effect mediator.²²

Stress response activates the sympathetic-adrenomedullary axis (SAM), which will release norepinephrine and cortisol. This condition will cause immune imbalance. Norepinephrine increases the production of cytokines, the IL-2, which will induce beta-adrenergic receptors. Then IFN-gamma, which is another inflammatory cytokine, will be produced. Hence, this will increase the epidermal growth factor (EGF) of the oral mucosa²², leading to hyperproliferation of the epidermis of the lips. Keratinocytes are the most abundant of the cell types in the epidermis. The maintenance of homeostatic balance in epidermal keratinocytes is dependent on the coordinate regulation of differentiation and activation. In

a healthy epidermis, the basal keratinocytes are mitotically active cells that differentiate sequentially from the basal to the cornified layer of skin.

For bad habits, there is a difference between the result of this research and the research in Croatia, where the subjects are children. Children have lip licking, lip biting as well as lip sucking habits. These habits will cause chronic irritation, stimulating the epithelium and resulting in increased keratin production.²³ However, response to epidermal injuries, such as chronic lip biting and lip sucking, causes hyperproliferation where the basal keratinocytes become activated.

They are triggered to terminal differentiation and initiate their migration and hyperproliferation through the suprabasal layers. The activated epidermal keratinocytes become able to produce and respond to growth factors and cytokines, such as EGF and transforming growth factor- α . Once the keratinocytes are activated, it leads to hyperkeratosis of the lips' epidermis, which causes exfoliative cheilitis.

CONCLUSIONS

Moderate exfoliative cheilitis was the highest number of participants in this research. Therefore, stress is the main predisposing factor that causes exfoliative cheilitis in this research.

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