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Knowledge And Awareness on Periorbital Hyperpigmentation Among Dental Students

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ABSTRACT
Aim: To analyse the knowledge and awareness of Periorbital hyperpigmentation among dental students.
Introduction: In the day to day life, higher education students deal with a lot of stress in their academics. The signs of stress and strain reflect in our body. One of the most encountered signs is periorbital hyperpigmentation(POH), the so-called dark circle. It is evident among the population and it tends to affect the quality of life of patients and their social interactions. The aim of the study is to assess the knowledge and awareness of periorbital hyperpigmentation among higher education students.
Materials And Methods: The observational pilot study was carried out in 25 dental students (15 female, 10 male). A well-framed 20 self-structured questionnaire was formed and circulated among the dental students through offline means. Collected responses were tabulated in google sheets and the data was transferred to SPSS software. Statistical analysis was done using the chi square test. P value <0.05 was considered significant.
Results: Females were more aware about POH than the males participants. 96% of the students reported sleep deprivation as a triggering factor of Periorbital hyperpigmentation. 76% of the students were well aware that rubbing their eyes often predisposes to POH. The results showed that the dental students possess high knowledge and awareness regarding periorbital hyperpigmentation.
Conclusion: Students had a fair idea about periorbital hyperpigmentation and its causes. Further studies can be carried out for better understanding in a different set of larger populations.

Keywords: Questionnaire; Survey; Periorbital; Hyperpigmentation; Higher education students, Innovative method.

INTRODUCTION

Periorbital hyperpigmentation (POH) is a complex multifactorial entity and a commonly encountered dermatologic condition. In scientific terms, it is known as periocular hyperpigmentation, periorbital melanosis, infraorbital discoloration(1).Pressing down on the affected area and pulling the skin to the side will improve the appearance of dark circles caused by subcutaneous capillaries (2). Various overlapping exogenous and endogenous factors contributing to Periorbital hyperpigmentation in higher education students(3). Endogenous factors involve Genetics/heredity, excessive vascularity, vitamin K deficiency, chronic sinusitis, infraorbital swelling,(4). Exogenous factors include Sun exposure, Allergies (contact & airborne), fatigue/eye strain, post-inflammatory conditions, hormonal therapy(Oral contraceptives, hormone replacement therapy (5). Periorbital hyperpigmentation was generally categorised into four types based on the above mentioned etiology namely pigmented (brown color), vascular (blue/pink/purple color), structural (skin color), and mixed type (6).
Periorbital hyperpigmentation in students, can occur mostly related to lifestyle, nutrition, excessive screen time, stress,temporary allergies(7). Numerous treatment choices like physical as well as chemical methods are available for treating Periorbital hyperpigmentation such as Lasers, sunscreens, chemical peels, topical vitamin C, topical retinoic acids, hydroquinone, tretinoin, botox, and soft tissue fillers, surgery (8). Yet, there are frequently observed acute side effects of hydroquinone include mild skin irritation, itching, postinflammatory hyperpigmentation, and transient hyperchromasia (9). Long-term use can lead to exogenous ochronosis, leukomelanoderma en confetti, discoloration of nails, and colloid milium (10). Alternative simple treatments to cure dark circles involve tea bags, sliced potatoes or cucumbers, yogurt, and honey masks, Frozen gel-filled eye

masks, and massage(11). Several natural sources such as Kojic acid, Arbutin, and Topical vitamin C can be used to resolve dark circles in students rather than chemical medications. Clinical observation is usually sufficient to determine the root cause of periorbital hyperpigmentation; confirmation by histopathological examination is seldom necessary (12). Although most cases are of benign origin, it is wise to take a complete history to rule out the underlying disease(13). Besides, some medical problems also contribute to dark circles such as heart disorders, thyroid, kidney, liver; hereditary blood disorders; vitamin K deficiency; Addison's disease; or circulatory conditions that cause fluid retention (14).

Only a very few studies have been done about the prevalence, type, epidemiology, histopathology and treatment of periorbital hyperpigmentation. Hormones play an important role as females were much more associated with periorbital hyperpigmentation than males and present study associates gender with the extent of POH (15). Our team has extensive knowledge and research experience that has translated into high quality publications (16)(17–30) ,(31–35). This study aims at analyzing the knowledge and awareness of Periorbital hyperpigmentation among dental students.

MATERIALS AND METHODS

Study design/ setting

The Present study design is a questionnaire based survey, which constitutes the dental population of higher education students.This survey was conducted among the students of Saveetha dental college and hospital, Chennai.

Participants selection and recruitment

The data of this cross-sectional observational survey consisted of 25 dental students who are having Periorbital hyperpigmentation (Dark circles). A paper survey was carried out to investigate Periorbital hyperpigmentation.

Development of questionnaires

Considering the factors leading to dark circles among higher education students, the questionnaire was framed. The lifestyle, food habits, study duration, materials used for studying were taken into consideration. The created questions were verified and validated by the guides.

Survey (data Collection

20 Self-administered questionnaires (including demographic details like age, gender) were framed and distributed to the participants manually. The dependent variables include knowledge, awareness, lifestyle and the independent variables are age, sex, and gender. A simple random sampling was done to eliminate bias. The participants were advised to read the questions thoroughly and then begin to answer accordingly. The collected data was entered in google sheets and then transferred to SPSS software. Descriptive statistics were carried out.

Outcome/Variables (if applicable)

Using chi-square test, the association between gender and knowledge of dental students regarding periorbital hyperpigmentation was analysed

Statistical analysis

The data collected was analysed in SPSS software. Chi - Square test was used to analyse the collected data statistically. The p value was noted to verify whether the results were significant.

RESULTS

Descriptive characteristics

S.No	Question	Response (in %)
1.	Age category 18 - 25 years 16 - 18 years	 80 20
2	Gender distribution Male Female	 40 60

3	Is Periorbital hyperpigmentation (POH) an aesthetic concern? Yes No	 96 4
4	What are the triggering factors of POH? Heredity Sunlight exposure Ageing Stress Nutritional deficiencies All the above	 8 4 12 28 12 36
5	Can sleep deprivation cause POH? Yes No	 96 4
6	Is the age category 16-25 years more prone to POH? Yes No	 84 16
7	Preferred study time Early morning Late night	 56 44
8	Study duration per day Less than 5 hours 5-8 hours More than 8 hours	 44 52 4
9	Preferred choice of study material Books iPad	 12 88
10	What is the distance from the study material? Less than 1 feet 1 - 2 feet	 32 68
11	Does frequent rubbing of eyes cause POH? Yes No	 76 24
12	Have you undergone any medication for POH? Yes No	 52 48
13	Can POH be brought back to normalcy? Yes No May be	 52 28 20
14	Does lack of vision correction lead to POH? Yes No	 92 8
15	Does poor illumination cause POH? Yes No	 72 28

16	Does cosmetic usage cause POH? Yes No	 60 40
17	Does smoking and alcohol consump lead to POH? Yes No	 84 16
18	Are laser therapies effective for POH? Yes No	 98 2

In figure 1, 96% of the students have responded that sleep deprivation is an essential triggering factor of Periorbital hyperpigmentation. In figure 2, 44% of the students have responded that they study for less than 5 hours per day. 92% of the students agreed that lack of vision correction leads to POH (Figure 3). 72% of the students have responded that poor illumination causes POH (Figure 4). In figure 5, 98% of the participants reported that laser therapies are effective for treating POH. Figure 6 and 7 shows the association between gender and the knowledge of POH based on Chi- square test and analysed the p value.

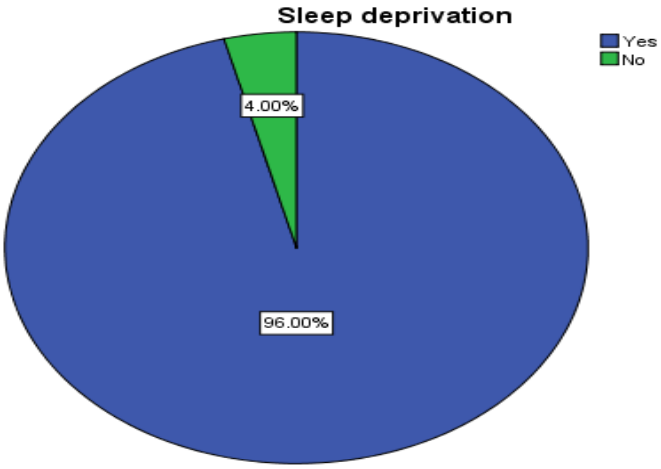

Figure 1: Percentage of students who were aware about sleep deprivation being a key factor for POH. 96% of the participants reported yes (Blue). 4% of the participants reported no (Green)

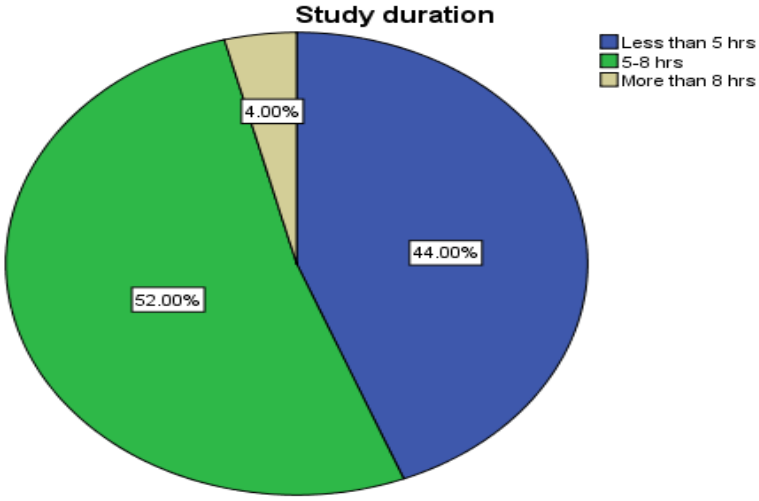

Figure 2: The pie chart represents the percentage distribution regarding the study duration. 44% of the participants reported less than 5 hours (Blue); 52% of the participants reported 5-8 hours (Green); 4% of the participants reported more than 8 hours (Yellow).

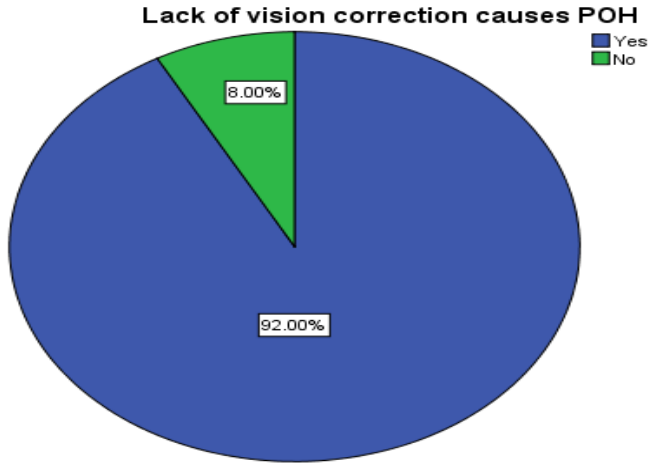

Figure 3: The pie chart represents the percentage distribution regarding lack of vision correction leading to POH. 92% of the participants reported yes (Blue); 8% of the participants reported no (Green).

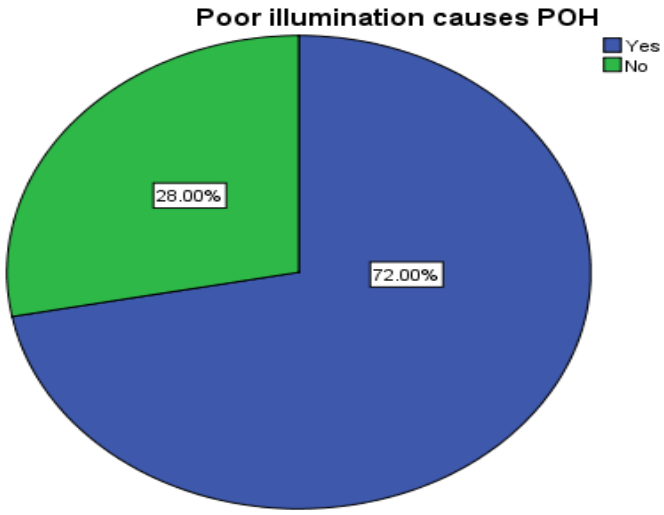

Figure 4: The pie chart represents the percentage distribution of poor illumination leading to POH. 72% of the participants reported yes (Blue); 28% of the participants reported no (Green).

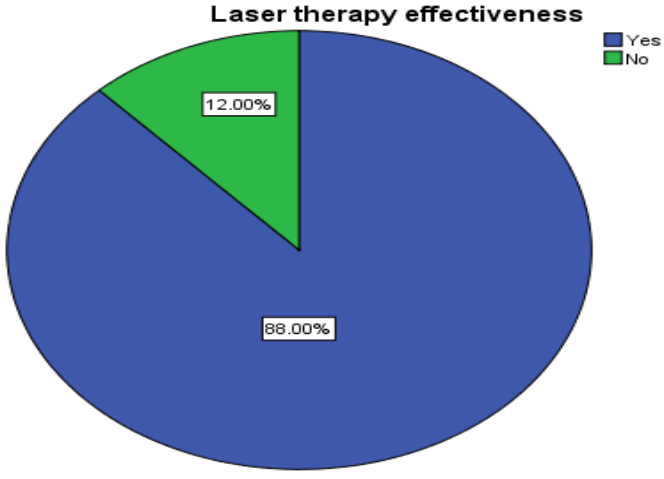

Figure 5: The pie chart represents the percentage distribution regarding laser therapy effectiveness. 98% of the participants reported yes(Blue); 2% of the participants reported no (Green).

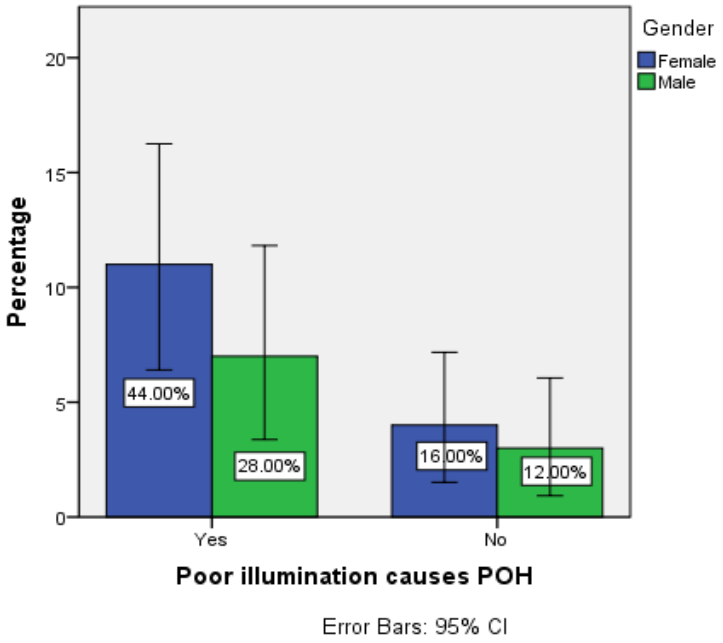

Figure 6: The bar graph represents the association between gender and the knowledge of participants about poor illumination causing POH. X axis represents the gender; Y-axis represents the number of responses. 44% of male (Blue) and 28% of females (Green) responded yes whereas, 16% of male (Blue) and 12% of females (Green) responded no. Pearson's chi-square test shows p-value is 0.049(<0.05). Hence, it is statistically significant.

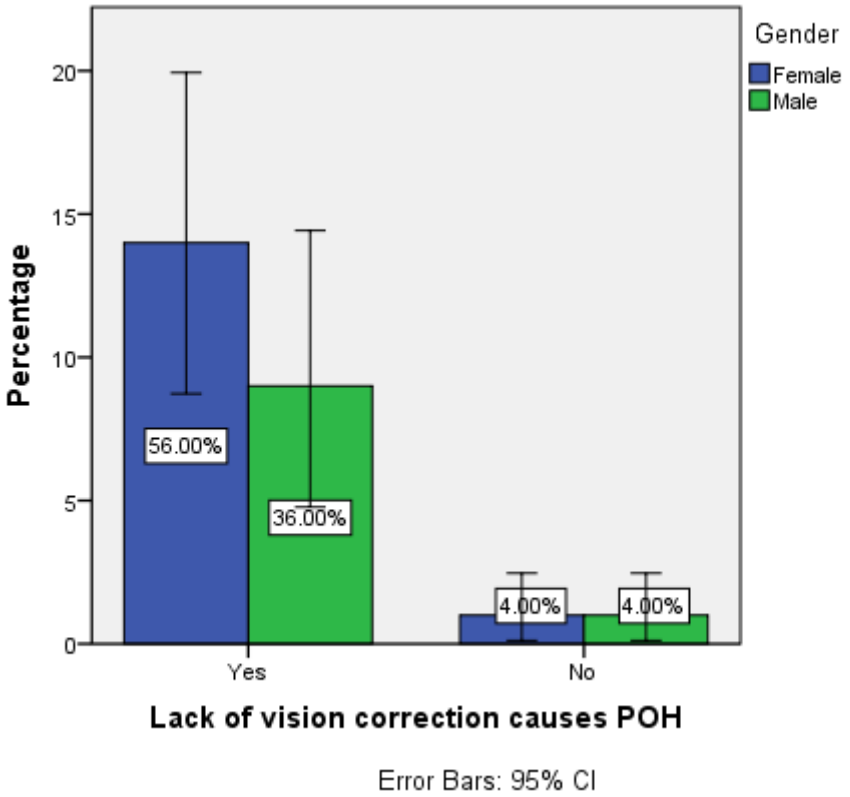

Figure 7: The bar graph represents the association between gender and the knowledge of participants about lack of vision correction causing POH. The X-axis represents the gender; Y-axis represents the number of responses. 56% of male (blue) and 36% of females (Green) responded yes whereas, 4% of male (Blue) and 4% of females (Green) responded no. Pearson's chi-square test shows p-value is 0.149(<0.05). Hence, it is not statistically significant.

DISCUSSION

Previous studies have reported that the addition of kojic acid to a gel containing 10% glycolic acid and 2% hydroquinone further improves pigmentation in melasma. For periorbital hyperpigmentation due to post inflammatory hyperpigmentation, Azelaic acid serves as a promising agent. Oral hydroquinone in the case of Rodents is toxic and causes cancer in those organisms. POH can also occur due to post-inflammatory hyperpigmentation following atopic dermatitis, lichen planus pigmentosus, erythema dyschromicum perstans. (36) Earlier study stated that tear trough depression in eyes and periorbital edema contribute to Periorbital hyperpigmentation. (37) It can also result from the extension of pigmentary demarcation lines from the face towards the infraorbital region (38). The dilation of dermal blood vessels also contribute to periorbital hyperpigmentation (39). In our study, POH mostly occurred as a result of personal habits and lifestyle of students unlike any serious medical issues. The sample size of the present study is very less and in future, it can be extended by increasing the population number and carrying it out in a different set of persons.

CONCLUSION

Females were more aware about POH than the males participants. Fair amount of knowledge and awareness about periorbital hyperpigmentation was evident among the dental students.

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CONFLICT OF INTEREST

The authors would like to declare no conflict of interest in the present study.

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