Original Article

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A Study on the Impact of Hyperhidrosis on the Quality of Life among College Students

Physiology Section

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Introduction: Hyperhidrosis (HH) is a condition characterized by excessive sweating or perspiration. General population, especially in developing countries like India are seldom aware of this condition and sparsely seek medical attention. The tropical climate and the environment also influence this condition to a greater extent. This can be a hindrance in their professional and social life. Though, it is a widely explored topic, studies on hyperhidrosis from India are rare.

Aim: The current study was aimed at estimating the prevalence of hyperhidrosis among college students subjectively and to assess the quality of life using Dermatology Life Quality Index (DLQI).

Materials and Methods: Five hundred students with age ranging from 17 to 21 years of both genders were included in this study using convenient sampling method. After explaining the study and getting written consent, the students were requested to respond to two questionnaires, one for the subjective diagnosis of hyperhidrosis using a standardized questionnaire developed by North Jersey Thoracic Surgical Associates and the other to assess the quality of life using DLQI. Based on the subjective prevalence scores, the students were divided into 3 groups as "Not bothersome" group, "Somewhat bothersome group" and "Extremely bothersome" group. The DLQI scores of these three groups were compared by ANOVA using SPSS 21.0.

Results: The study revealed that overall, 38% of the students were suffering from somewhat bothersome to extremely bothersome hyperhidrosis. Gender analysis showed that male students were affected more (58%), especially with palmar hyperhidrosis and were significantly requiring treatment when compared to female students. Analysis of DLQI scores using ANOVA revealed the fact that overall quality of life was significantly affected in almost 35% of students to the extent that they require appropriate treatment and care.

Conclusion: This study brings into light the higher prevalence of hyperhidrosis and also its impact on the quality of life among college students in this tropical region.

Keywords: Dermatology life quality index, Excessive sweating, Perspiration

INTRODUCTION

Hyperhidrosis (HH) is a condition characterized by excessive sweating or perspiration. It is estimated that roughly 3% of world's population i.e. around 200 million people have this medical condition [1-3]. In tropical countries, the prevalence rates ranges from 1.5 % to 9% [4-6]. Normal sweating is essential for thermal regulation but in case of HH, sweating exceeds the body's need for physiological thermal regulation. HH occurring in specific areas such as palm, foot, axilla and groin is called primary HH which is due to over activity of sympathetic nervous system [7]. HH may also be the result of existing illness which is called secondary HH. Excessive sweating is often uncontrollable and embarrassing. It may lead to several physiological concerns such as cold and clammy hands, dehydration and skin infections all of which affect the quality of life. Diagnosis of HH can be done by subjective measurements like questionnaires or by clinical and laboratory evaluation like Minor's iodine starch test and Gravimetric quantification of sweat production [8]. The most important criteria for deciding the type of therapy is the details regarding the impact of HH on the quality of life of the affected individual. Therapeutic options for HH vary according to whether the condition is focal or generalized and also range from topical therapy to surgery [9].

The general population, especially in developing countries like India is seldom aware of this condition and sparsely seeks medical attention. The tropical climate and the environment also influence and aggravate this condition to a greater extent. Most patients try to modify their lifestyle and get adapted to this problem. This can be a hindrance to their normal professional and social life. Many relevant studies had been conducted, yet only a very few published data are available from India.

AIM

This study was proposed to find out the prevalence of hyperhidrosis and its impact on the quality of life among college students.

MATERIALS AND METHODS

This was a cross-sectional study carried out as a questionnaire survey among college students. We recruited 500 apparently healthy students from Medical and Engineering Colleges, of both gender between age group 17-21 years, by convenient sampling method i.e., involving the students who were voluntarily giving consent to participate in the study. This study was approved by Institution Ethics Committee of Chennai Medical College Hospital and Research Centre, Trichy, Tamil Nadu, India and was conducted in the same institution in the year 2014 for 3 months from June to August. Informed and written consent was obtained from all the study participants. Students who were not willing to participate in the study, those who were on treatment for psychiatric problems like chronic depression, those with chronic diseases like diabetes and hypertension were excluded from the study.

The students were approached in small batches (maximum of 10 students per batch) and the details regarding the research problem of the study (i.e., HH) and the need for this questionnaire survey were well explained. Then they were requested to respond to two questionnaires, one for the subjective diagnosis of HH (standardized questionnaire developed by North Jersey Thoracic Surgical Associates) [10] and the other to assess the quality of life using Dermatology Life Quality Index (DLQI) [11]. The doubts in filling the questionnaire were duly cleared by the team of investigators. The responses were collected and assessed using appropriate guidelines given in the questionnaires.

STATISTICAL ANALYSIS

The results were then statistically analysed using SPSS software version 21.0. Prevalence of HH based on the scoring pattern was done by percentage analysis. Analysis of Quality of Life parameters was done by descriptive analysis. The p-value of less than 0.05 was considered to be statistically significant.

RESULTS

Out of 500 students in our study the responses from 492 students were used in the analysis of data because of lack of clarity in the remaining 8 students' responses. Among these 492 students, 281 were boys and 211 were girls. The baseline characteristics and associated factors of the study participants are given in the [Table/Fig-1].

Characteristics	Number (%)
Age in years	17 - 21
Gender	
Male	281 (57.1)
Female	211 (42.9)
Family history present	42 (8)
Age of onset in years	
Childhood	80 (21.4)
Adolescent onset	295 (78.6)
Smokers	12 (2.84)
History of other illnesses	0

[Table/Fig-1]: Baseline characteristics and associated factors of the study participants.

After analysing the responses for the questionnaire that provides subjective diagnosis of HH, we found that overall percentage of students affected by HH is around 38%. Of the 492 students, 117 students (24%) had sweating that was 'not bothersome', 296 students (60%) reported sweating as 'somewhat bothersome' and 79 students (16%) reported as 'extremely bothersome' based on the standardized questionnaire developed by North Jersey Thoracic Surgical Associates that was used for the subjective diagnosis of HH in this study. The frequency distribution of different types of HH is given in the [Table/Fig-2].

HH in specific regions	Not bothersome (n= 117)	Somewhat bothersome (n=296)	Extremely bothersome (n=79)
Palmar HH (%)	51.2	43.6	5.2
Axillary HH (%)	31.1	62.2	6.7
Plantar HH (%)	54.3	42.3	3.4

[Table/Fig-2]: Frequency distribution of HH in specific regions.

Analysis of gender differences using Student's independent t-test, among those who had somewhat bothersome and extremely bothersome sweating [Table/Fig-3] showed that males with palmar HH were more significantly affected (p = 0.05) than females. The quality of life regarding the treatment taken for this condition also shows higher scores for males (p=0.03).

Comparison of DLQI scores of the students who were divided into three groups based on their subjective grading of sweating as 'not bothersome', 'somewhat bothersome' and 'extremely bothersome' using one-way ANOVA revealed that the total DLQI score and the subtype scores were significantly higher in 'extremely bothersome' group and 'somewhat bothersome' group than 'not bothersome' group (p = 0.0001) [Table/Fig-4].

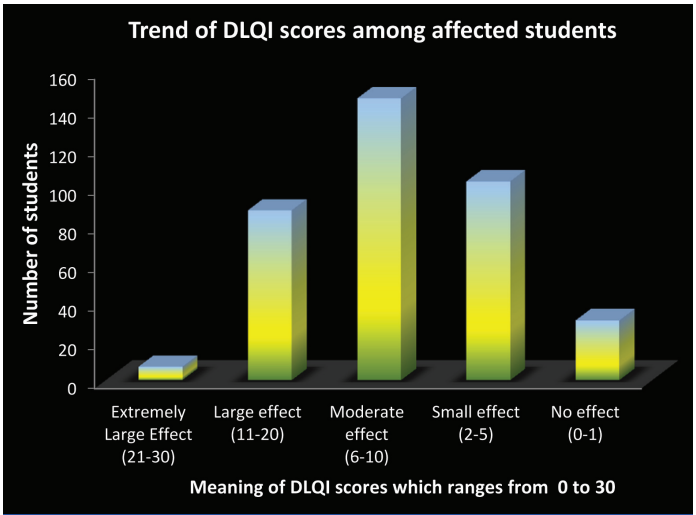
On estimating the effect of HH on the quality of life among affected students, it was found out that HH had no effect on 1% of the affected students, had small effect on 23.5% of students, moderate effect on 38.9% of students, large effect on 27.5% of students and extremely large effect on 8.2% of students [Table/Fig-5].

	Male (n = 217)	Female (n = 158)	t-score	p-value
Severity scores of regional hyperhidrosis‡				
Palmar HH	4.54 ± 2.6	3.99 ± 2.7	1.96	0.05*
Axillary HH	5.61 ± 1.9	5.24 ± 1.8	1.83	0.06
Plantar HH	3.88 ± 2.6	3.42 ± 2.7	1.63	0.1
Dermatology Quality of Life Index [11]				
Total score	7.96 ± 5.0	7.15 ± 4.5	1.59	0.11
Symptoms and feelings	1.46 ± 1.4	1.37 ± 1.35	0.67	0.5
Daily activities	1.88 ± 1.31	1.78 ± 1.3	0.67	0.5
Leisure	1.69 ± 1.4	1.65 ± 1.4	0.22	0.82
Work	0.76 ± 0.86	0.72 ± 0.84	0.92	0.67
Personal	1.30 ± 1.35	1.08 ± 1.28	1.64	0.22
Treatment	0.73 ± 0.84	0.54 ± 0.75	2.16	0.03*

[Table/Fig-3]: Gender-wise analysis of questionnaire responses for students having somewhat bothersome HH and extremely bothersome HH.
*Statistically significant p-value.
‡ Severity scores were assessed using the standardized questionnaire developed by North Jersey Thoracic Surgical Associates [10].
All the values were given as mean ± standard deviation.

Parameter	Not bothersome	Somewhat bothersome	Extremely bothersome.
Total score*	5.3 ± 4.58	7.17 ± 4.3	9.37 ±5.9
Symptoms and feelings*	1.10 ± 1.16	1.29 ± 1.24	1.89 ± 1.6
Daily activities*	1.61 ± 1.33	1.74 ± 1.2	2.18 ± 1.6
Leisure*	1.40 ± 1.3	1.66 ± 1.36	1.7 ± 1.5
Work*	0.53 ± 0.72	0.71 ± 0.8	0.87 ± 0.99
Personal*	0.72 ± 1.06	1.14 ± 1.2	1.44 ± 1.5
Treatment*	0.36 ± 0.62	0.65 ± 0.79	0.66 ± 0.86

[Table/Fig-4]: Comparison of DLQI scores between groups.
*Significant p-value (<0.05) by One-way ANOVA.



[Table/Fig-5]: Trend of DLQI scores among affected students.
The graph explains the adverse effect of the disease (Hyperhidrosis) on the quality of life of students with hyperhidrosis as assessed by the DLQI.

DISCUSSION

In our study, we found out that the overall subjective prevalence of HH was very high i.e., 38% when compared to other studies done in other parts of the world [1-3]. The prevalence was even higher than the rates found in other tropical countries like Brazil and China [4,5]. This high prevalence may be due to the many

facts. First, this study was done in the peak of summer and in a tropical region where the temperature is commonly above 39°C whereas; the studies referred above were done in much cooler regions. Also, this is only a subjective evaluation of HH, hence individual variations in predicting the degree of sweating is definitely a factor to be taken into consideration. It would have been better if this was supported by appropriate objective clinical and laboratory measurements of sweating. Second, our study was done with students as subjects. In a study by Lear et al., they have found that students were highly affected by HH (43.4%) than people of other occupation [3]. Third, many studies have revealed that the onset of HH is during adolescence in majority of cases [4,5]. Our study group participants belong to the age group of 17 to 21. Hence, there may be an apparent increase in the prevalence rate.

We observed that males had been affected more by palmar HH (58%) and a significant number of males were taking treatment when compared to females. Similar male preponderance was observed in other studies [4,12]. This was contradicted by Lear et al., who showed higher prevalence of HH among females [3]. Another study by Tu et al., has shown no gender differences in the prevalence rates. This variation might reflect the concern of the individual over the existing problem among individuals [5].

On exploring the family history of HH, our study revealed that 8% of students had positive family history. This is similar to the positive family history observed by Felini et al., (44%) Tu et al., (3%) and Alric et al., (12%–33%) [4,5,13].

We discovered axillary HH to be more common (68.9%) and bothersome followed by palmar and then plantar HH. A few reported extreme sweating in face, neck and chest regions but the percentage was very little. Similar, results were observed in other studies [3,12].

We grouped the students into three as 'not bothersome', 'somewhat bothersome' and 'extremely bothersome' based on their responses for the degree of sweating and analysed the DLQI scores. We noticed that both 'extremely bothersome' group and 'somewhat bothersome' group had significantly higher scores [Table/Fig-4] than 'not bothersome' group. This shows that the impact of HH on quality of life was much greater. Naumann et al., in their study have also found similar higher DLQI scores in those suffering from palmar HH, axillary HH and focal HH (8.8 – 18, 10 – 17 and 9.2 – 15.5, respectively) [14]. This was further explored and was found out that almost 35 % of students were significantly affected by this condition to the extent that they required appropriate treatment and care. This is supported by many previous studies [15-18]. This could seriously affect their studies and their attitude towards managing this condition would be poor if proper attention is not provided at an appropriate time.

LIMITATION

The actual prevalence of the disease cannot be estimated because this is only a subjective assessment. It is mandatory that the diagnosis be confirmed by clinical and laboratory methods for the exact prevalence to be determined. The same study should be done in other seasons like winter and autumn to negate the effects of climate to arrive at a concrete conclusion.

CONCLUSION

This study brings two findings into light:

1. The subjective prevalence of hyperhidrosis among college students was higher (38%) in this tropical region and
2. Impact of hyperhidrosis on the quality of life was also greater to the extent that 35% of students were in need of adequate and appropriate management.

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