# Prevalence of Stress and its Relation to Hair fall in Female Medical Students

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## ABSTRACT

**BACKGROUND:** Prevalence of hair fall and its relationship with stress has not been studied in Pakistan. Our study attempts at determining the prevalence of hair fall among female medical students of Dow Medical College, Karachi and to examine the relationship between stress and hair fall.

**METHODS:** A cross-sectional study was conducted. All female medical students of Dow Medical College were offered to participate in the study. Those who gave consent were assessed for level of stress using Perceived Stress Scale and were asked not to shampoo their hair for the next 24 hours for Hair Pull Test. Subjects with PSS scores ranging from 0-13 were considered low stress, scores ranging from 14-26 were considered moderate stress and scores ranging from 27-40 were considered high perceived stress.

**RESULTS:** A total of 375 female students participated in the study. Mean age was 20.5 ± 1.4 years. As per study criteria, only seven (1.9%) students fulfilled the criteria of excessive hair loss. The results of stress test showed that 15 (4.0%) students had mild stress, 303 (80.8%) had moderate stress while 57 (15.2%) had high stress.

**CONCLUSION:** Hair fall is less prevalent among medical students of Dow Medical College and no significant association was found between stress and hair fall.

Keywords: Hair Fall; Perceived Stress Scale; Hair Pull Test

## INTRODUCTION

Hair is the second fastest growing tissue of human body [1]. Normal hair fall is 50-100 hair per day; if hair fall exceeds this limit, it is termed as 'balding' or alopecia [2]. There are many reasons why men and women lose their hair, but according to a case-control study, stress may be the primary reason for unexplained hair loss [3]. When a person is under stress, hair can go into the telogen (fall-out) phase. Most common forms of hair loss in females include female pattern hair loss (FPHL), telogen effluvium (diffuse temporary hair loss typically manifested 2-3 months after severe stressful event such as child birth, severe disease, major surgery, crash diets, severe emotional stress and certain drugs), trichotillomania (impulse control disorder having compulsive urge to pull one's hair, more common in adolescent girls), iron deficiency hair loss, frequent styling techniques causes hair breakage, traction alopecia and central centrifugal alopecia [4-7].

Among the skin appendages, hair has an undeniable importance in the feminine personality, making hair loss one of their biggest problems with many psychosocial implications. As high level of stress is bound to affect female medical students, we studied the association between stress and hair fall [8].

Our aim was to study the prevalence of hair fall among female medical students of Dow Medical College, Karachi and to examine a relationship between stress and hair fall in these medical students.

## METHODS AND MATERIALS

A cross-sectional study was conducted in Dow Medical College, Karachi, Pakistan. All female medical students in the college were offered to participate in the study, those who gave consent were given the study proforma to assess the level of stress using the Perceived Stress Scale (PSS) and were asked not to shampoo for the next 24 hours for hair pull test (HPT). Those who did not shampoo their hair for the last 24 hours were subjected to HPT at the time of PSS

administration. Subjects on anti-depressants or anxiolytics and those with dermatological problems of the scalp and autoimmune disorders were excluded. PSS scores ranging from 0-13 were considered low stress, scores ranging from 14-26 were considered moderate stress and scores ranging from 27-40 were considered high stress. The PSS is a classic stress assessment instrument [13]. This tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about feelings and thoughts during the last month. There are several methods to determine hair loss. These include wash test, HPT, trichogram, phototrichogram and TrichoScan® [9-11]. HPT is a simple in-office test to estimate the activity of hair loss. In a subject who did not wash hair for over 24 hours before examination, about 40–60 hairs are grasped between the index finger, middle finger, and the thumb. The hairs are then pulled gently but with firm pressure as fingers slide along the hair shaft. The test is positive when 6 or more hairs remain in the hands of the examiner [12].

*Data analysis:* SPSS version 20 was used for analysis. Subjects with ≥ 5 hairs on HPT were considered to have excessive hair loss. Statistical significance between the two was studied using Chi-square test. Significance level was set at p<0.05.

### RESULTS

A total of 375 female students participated in the study. The mean ± SD age was 20.5 ± 1.4 years. Only seven (1.9%) students fulfilled the criteria of excessive hair loss. The results of stress test showed that 15 (4.0%) had mild stress, 303 (80.8%) had moderate stress while 57 (15.2%) had high stress. Cross-tabulating the stress grades with hair loss showed that all of the hair fall victims had moderate stress (Table 1). Using $\chi^2$ test, no significant difference was seen in frequencies of hair fall on the level of stress (p=0.221). Stress grades were also compared according to the professional class year of the subjects. Results are detailed in Table 2. There was no significant difference in the prevalence of stress grade in different years of medicine classes as assessed by $\chi^2$ test (p=0.09).

### DISCUSSION

In this study, we found that the prevalence of hair

**Table 1:** Stress Grade * Hair Fall Cross-tabulation

|  |  | Hair Fall |  |  |
|---|---|---|---|---|
|  |  | Normal | Hair Fall | Total |
| Stress Grade | Low Stress | 15 | 0 | 15 |
|  | Moderate Stress | 296 | 7 | 303 |
|  | High Stress | 57 | 0 | 57 |
|  | Total | 368 | 7 | 375 |

**Table 2:** Year of Study * Stress Grade Cross-tabulation

|  |  | Stress Grade |  |  |  |
|---|---|---|---|---|---|
|  |  | Low Stress | Moderate Stress | High Stress | Total |
| Year of Study | 1 | 4 | 69 | 15 | 88 |
|  | 2 | 1 | 72 | 21 | 94 |
|  | 3 | 5 | 62 | 9 | 76 |
|  | 4 | 5 | 80 | 8 | 93 |
|  | 5 | 0 | 20 | 4 | 24 |
| Total |  | 15 | 303 | 57 | 375 |

loss in female medical students was quite low; only seven (1.9%) students had significant hair loss as determined by HPT. We also found a high prevalence of moderate to high stress; almost 360 (96%) students were found to have moderate to high stress. However, we did not find an association between the level of stress and hair loss in these young medical students.

Hair loss is a troublesome issue for females and losing hair poses a great perceived threat to their femininity. This leads females to seek medical and non-medical hair care to prevent hair from falling. According to a cross-sectional study conducted in Brazil on females older than 20 years of age, 54% of them reported hair loss [14]. No such study has been conducted in Pakistan, hence our study attempted at finding out the prevalence of hair fall in female medical students.

Our findings are consistent with what has been reported in other studies. For example, a study conducted in Thailand found that 61.4% of the medical students were under stress; 59% experi-

enced mild stress whereas 2.4% underwent high level of stress [15].

Many studies have been conducted to state the relationship between stress and hair fall. Some have focused on stress causing hair fall, while others have looked for hair fall causing stress. One such study that focuses on hair fall causing stress was conducted in a public dermatological clinic, showing that out of 157 women interviewed, 54% reported hair loss and 29% reported at least two major symptoms of depression [14]. They concluded that complaints of hair loss were common and were associated with depression among adult female outpatients [14].

Our inability to establish a relationship between stress and hair fall can be due to the small number of females who had documented excessive hair loss, despite the fact that our overall sample size was quite large. Out of 375, only 7 participants had hair fall and 358 had no hair fall. A total of 15 students fell into the mild stress category, 303 had moderate stress and 57 underwent high level of stress. However, to state a relationship between stress and hair fall, we need to have a greater number of participants having significant hair fall. Moreover, as this study is conducted in a single medical college, it cannot be generalized to general population.

We suggest that further studies should be conducted with larger sample size and specific designs to demonstrate the relationship between stress and hair fall.

## CONCLUSION

Hair fall is not common among female medical students of Dow Medical College and no significant association was found between stress and hair fall.

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