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Original Article

Frequency of hair fall, its awareness and hair care practices among adult population

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Abstract

Background Hair loss or Alopecia is one of the most common presenting complain in dermatology clinic. Various myths regarding hair fall and poor hair care practices are prevalent among general population.

Objective To determine the frequency of hair shed among adult population, to assess knowledge and misconception regarding hair fall and to identify the hair care practices observed by participants.

Methods A descriptive cross- sectional study was conducted with 384 participants more than 18 years of age. Sample size was calculated by using Open EPI software and data was analyzed by using SPSS version 22.0.

Results A total of 385, 18+ individuals participated in this study. About 72 (18.7%) males and 313 (81.2%) females answered about their demographic profile, hair care practices and awareness regarding possible hair fall causing risk factors. Approximately half of the participants (53.2%) complained of daily hair fall. Statistically significant values were established for certain risk factors; dandruff, unbalanced diet, insomnia, hereditary factors, PCOS, and high testosterone levels only.

Conclusion Approximately half of the participants (53.2%) complained of daily hair fall. Hair loss was less in physically active male participants. However, no such correlation was found among female participants. Our study observed lack of knowledge and understanding among participants about hair fall causing risk factors. Hair care practices were satisfactory among both males and females according to the results of the current study.

Key words
Hair loss, awareness, alopecia, adult, population .

Introduction

After bone marrow, hair is the fastest growing tissue of human body.[1] Because of a high turnover of hair follicles, they require a good supply of nutrients and energy for their active metabolism.[2] The hair on our bodies has a particular structure and holds great cosmetic value. It helps in the maintenance of self-image of a person during social interaction.[3]

The rate of hair growth is about 1.25 cm or 0.5 inches per month, but it can vary from person to person. However, the fastest hair growing age group is estimated to be 15-30 years.[4] Hair loss,

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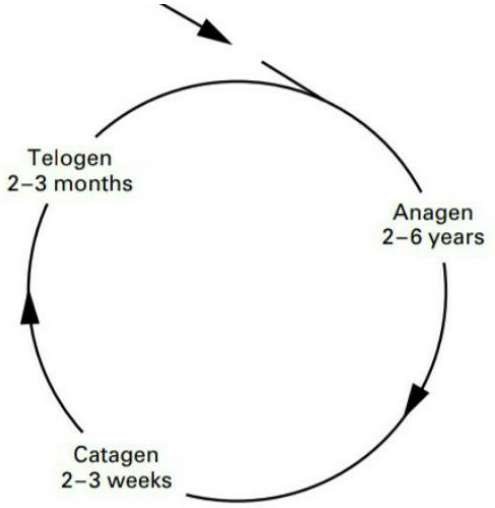

Figure 1 Cycle o scalp hair growth.

reportedly is a common patient complaint being presented to dermatologists and is a cause of great psychological and physical disturbance.[5] Shedding of 50-100 strands of hair per day is considered normal.[6] Following is the figure showing cycle of scalp-hair growth.[7]

Hair cycle: Similar to a leaf on a tree, hair on scalp also has its growing and shedding phases. There are multiple components of scalp i.e. papilla of hair, hair shafts, mouth of follicles, stratum granulosum, oil duct and sebaceous gland.[8] Hair follicles comprise of 3 stages:

1. *Anagen phase* is the period of active hair growth that lasts for about 2-8 years.
2. *Catagen phase* is the phase of follicular regression which lasts for about 2-3 weeks.
3. *Telogen phase* is the resting phase of hair follicle lasting for about 3 months.

Since hair loss or Alopecia is one of the most common presenting complaint for which patients visit dermatologists, there is a need to identify the causes related to hair shedding in the local population. Several myths are also traditionally prevalent in our culture regarding hair fall. A widespread myth is that regular shaving and trimming of hair might encourage hair growth, however, there is no scientific study which supports this. There is another prevalent myth that baldness comes from mother's side, but scientific study proves that male pattern baldness is a polygenic condition, which means that multiple variants are involved.[9,10]

Our study was designed to determine the frequency of hair fall, knowledge and misconception of participants regarding causes of hair fall and to assess their hair care practices. To our knowledge, no research has yet been conducted in Pakistan about awareness regarding multiple hair fall causing factors. Our study addressed variety of factors in a single article.

Methods

A descriptive cross-sectional study was conducted with a total of 384 participants by using non-probability convenient sampling technique. Ethical approval was obtained from institutional review board of Jinnah Sindh Medical University JSMU/IRB/2020/-302 and informed consent was acquired before data collection. All the consenting males and females of age 18 years or more were included in our study. All non-consenting participants and subjects of age less than 18 years of age were excluded. The questionnaire was prepared after extensive literature review from Google Scholar under the guidance of practicing Dermatologist in Karachi, Pakistan. The Questionnaire consisted of three parts. The first section included socio-demographic data of the participants. The second segment enquired about the symptoms of hair fall, myths and perceptions regarding their own hair fall. The third part investigated about routine hair care practices of the participants. Participants were invited to participate in a survey via posting an online questionnaire on different social media platforms including Facebook, email, Whatsapp. The questionnaire was also translated in national

Table 1 Distribution of participants based on Demographic profile (N=385).

Parameter	*Female (n=313)*	*Male (n=72)*	*p-value*
Age			
18-22	278 (88.8%)	67 (93.1%)	
22-26	27 (8.6%)	5 (6.9%)	0.541
26-30	3 (1.0%)	0 (0.00/o)	
30+	5 (1.6%)	0 (0.00/o)	
Marital Status			
Unmarried	305 (97.4%)	72 (100.00/o)	0.188
Married	8 (2.6%)	0 (0.0%)	
Educational Status			
Undergraduate	253 (80.8%)	61 (84.7%)	
Secondary	36 (11.5%)	5 (6.9%)	0.605
Graduated	22 (7.0%)	6 (8.3%)	
Primary	2 (0.6%)	0 (0.00/o)	
Resident of Karachi			
No	4 (1.3%)	5 (1.4%)	0.647
Yes	309 (98.7%)	71 (98.6%)	
Ethnicity			
Pathan	23 (7.3%)	4 (5.6%)	
Urdu speaking	176 (56.2%)	31 (43.1%)	0.000
Punjabi	62 (19.8%)	8 (1 1.1%)	
Sindhi	37 (1 1.8%)	27 (37.5%)	
Others	15 (4.8%)	17 (4.4%)	

language (Urdu) for participants' convenience. Sample size was calculated by using Open EPI software. Keeping confidence interval of 95% (Z score=1.96), 50% as prevalence because hair fall prevalence in Pakistan is not known and 5% allowable error of known prevalence, sample size obtained was n=384.

Data was analyzed by using SPSS version 22.0. Descriptive statistics were used to determine mean and standard deviation for numerical variables. Categorical variables were expressed in frequency and percentages. Chi square/ Fisher Exact test were applied to determine the association between gender distribution of study participants and their demographical profile, hair care practices and symptoms. A P value of <0.05 was considered significant.

Results

A total of 385 individuals of different educational background and ethnicity participated in this study. 72 (18.7%) males and 313 (81.2%) females answered about their demographic profile, hair care practices and awareness regarding 25 possible hair fall causing risk factors.

We asked the participants about their exercise routine and found that 33 (26.4%) males who exercised regularly did not experience hair fall unlike 39 (73.6%) male participants who practiced sedentary lifestyle and face hair fall on regular basis. From this finding a conclusion can be made that sedentary lifestyle and hair fall are correlated. However, no such correlation was found among female respondents of the study. Participants were asked if they practice hijab/hat as it is generally linked with hair fall however no such relation between head covering and hair fall could be made illuminating the need of conduction of further researches in this domain.

PCOs, a disorder of women of reproductive age, causes thinning of hair alongside other range of symptoms. Ironically, knowledge of male participants about this was significantly more

Table 2 Distribution of study participants by hair care practices and symptoms (n=385).

Parameter			*Female (n=313)*	*Male (n=72)*	*p-value*
Do you exercise?	No		228 (71.6%)	39 (73.6%)	0.002
	Yes		85 (28.4%)	33 (26.4%)	
Smoking Status	No Smoking		248 (79.2%)	58 (80.6%)	0.803
	Passive/Active smoker		65 (20.8%)	14 (19.4%)	
Tea Consumption	None		94 (30.0%)	20 (27.8%)	
	Once daily		98 (31.3%)	16 (22.2%)	0.072
	More than 1		91 (29.1%)	22 (30.6%)	
	More than 2		30 (9.6%)	14 (19.4%)	
Know addiction	No		301 (66.5%)	64 (33.5%)	0.012
	Yes		12 (66.7%)	8 (33.3%)	
Do you take Hijab/Hat	No		149 (47.6%)	62 (43.1%)	0.487
	Yes		164 (52.4%)	10 (56.9%)	
Hair fall daily basis	No		118 (37.7%)	62 (86.1%)	
	Yes		195 (62.3%)	10 (13.9%)	0.000
How much shredding you consider normal	0		252 (80.8%)	62 (86.1%)	
	0-50		22 (7.0%)	5 (6.9%)	0.208
	50-100		36 (11.5%)	5 (6.9%)	
	100-150		2 (0.6%)	0 (0%)	
Is your hair fall seasonal or throught the year	Seasonal		43 (13.7%)	18 (25.0%)	0.018
	Throught the year		270 (86.3%)	54 (75.0%)	
Visited Dermatologist	No		248 (79.2%)	59 (81.9%)	0.607
	Yes		65 (20.8%)	13 (18.1%)	
Hair Associated Scalp Problems	1) Dandruff	No	109 (34.8%)	31 (43.1%)	0.191
		Yes	204 (65.2%)	41 (56.9%)	
	2) Head lice	No	281 (89.8%)	70 (97.2%)	0.045
		Yes	32 (10.2%)	2 (2.8%)	
	3) Psoriasis	No	309 (98.7%)	72 (100%)	0.336
		Yes	4 (1.3%)	0 (0%)	
	4) Dermatitis	No	305 (97.4%)	70 (97.2%)	0.702
		Yes	8 (2.2%)	2 (2.8%)	
Hair fall lower your confidence	No		188 (60.1%)	47 (65.3%)	0.415
	Yes		125 (39.9%)	25 (34.7%)	
Hair fall make you self conscious	No		142 (45.4%)	51 (70.8%)	0.000
	Yes		102 (32.6%)	14 (19.4%)	
	No hair fall problem		69 (22.0%)	7 (9.7%)	
How often you wash your hair	Daily		18 (5.8%)	37 (57.4%)	0.000
	Once A week		20 (6.4%)	3 (4.2%)	
	Twice a week		89 (28.4%)	8 (11.1%)	
	Thrice a week		127 (40.6%)	14 (19.4%)	
	4 times a week		56 (17.9%)	7 (9.7%)	
	Twice daily		3 (1%)	3 (4.2%)	
Do you take medication or oil	No		293 (93.6%)	52 (72.2%)	0.000
	Yes		20 (6.4%)	20 (27.8%)	
How much hair on comb	0-25		94 (30.0%)	19 (26.4%)	0.092
	25-50		189 (60.4%)	39 (54.2%)	
	50-100		30 (9.6%)	14 (19.4%)	

than the female respondents (p=0.031). Upon comparing the responses of the genders, majority of the males claimed that dandruff (p=0.013), unbalanced diet (p=0.020), insomnia/ disturbed sleep (p=0.026), hereditary factors (p=0.049) and high testosterone levels (p=0.031) have contribution in excess hair fall, which is scientifically proven as well. This highlights that the male participants in our study have more insight about factors which might lead to hair

Table 3 Distribution of study participants by awareness regarding hair fall possible risk factors (n=385).

Parameter		*Female (n=313)*	*Male (n=72)*	*p-value*
Dandruff	No	123(39.3%)	17(23.6%)	
	Yes	190(60.7%)	55(76.4%)	0.013
Smoking	No	267(85.3%)	58(80.6%)	0.318
	Yes	46 (14.7%)	14 (19.4%)	
Pollution	No	194(62.0%)	46(63.9%)	0.764
	Yes	119(38.0%)	26(36.1%)	
Aging	No	175(55.9%)	33(45.8%)	0.122
	Yes	138(44.1%)	39(54.2%)	
Pregnancy	No	292(93.3%)	64(88.9%)	0.203
	Yes	21(6.7%)	8(11.1%)	
Chemotherapy	No	174(55.6%)	33(45.8%)	0.135
	Yes	139(44.4%)	39(54.2%)	
Stress	No	57(18.2%)	8(11.1%)	0.148
	Yes	256(81.8%)	64(88.9%)	
Unbalanced diet	No	105 (33.5%)	14 (19.4%)	0.020
	Yes	208 (66.5%)	58 (80.6%)	
Seasonal changes	No	157 (50.2%)	30 (41.7%)	0.195
	Yes	156 (49.8%)	42 (58.3%)	
Blow dryers / Straighteners	No	162 (51.8%)	33 (45.8%)	0.336
	Yes	151 (48.2%)	39 (54.2%)	
Overstretching(Tightly Pulled Hairstyles)	No	190 (60.7%)	36 (50.0%)	0.097
	Yes	123 (39.3%)	36 (50.0%)	
Certain Scalp infections	No	199 (63.6%)	37 (51.4%)	0.056
	Yes	114 (36.4%)	35 (48.6%)	
Hereditary factors	No	200 (63.9%)	37 (51.4%)	0.049
	Yes	113 (36.1%)	35 (48.6%)	
Insomnia/Disturbed sleep	No	209 (66.8%)	38 (52.8%)	0.026
	Yes	104 (33.2%)	34 (47.2%)	
Chronic illness	No	236 (75.4%)	50 (69.4%)	0.298
	Yes	77 (24.6%)	22 (30.6%)	
Hypo/Hyperthyroidism	No	250 (79.9%)	56 (73.6%)	0.243
	Yes	63 (20.1%)	19 (26.4%)	
Crash Dieting	No	257 (82.1%)	43 (73.6%)	0.101
	Yes	56 (17.9%)	29 (26.4%)	
High testosterone levels	No	253 (82.1%)	51 (70.8%)	0.031
	Yes	60 (17.9%)	21 (29.2%)	
Low levels of Vitamin D	No	255 (82.1%)	52 (72.2%)	0.058
	Yes	57 (17.9%)	20 (27.8%)	
Certain Birth Pills	No	263 (84.0%)	54 (75.0%)	0.070
	Yes	50 (16.0%)	18 (25.0%)	
PCOs	No	264 (84.3%)	53 (73.6%)	0.031
	Yes	49 (15.7%)	19 (26.4%)	
Low blood Hb levels	No	276 (88.2%)	62 (86.1%)	0.630
	Yes	37 (11.8%)	10 (13.9%)	
Excess use of electronics	No	282 (90.1%)	63 (87.5%)	0.516
	Yes	31 (9.9%)	9 (12.5%)	
Recent surgery	No	282 (90.1%)	62 (86.1%)	0.324
	Yes	31 (9.9%)	10 (13.9%)	
Trauma/Accidents	No	298 (95.2%)	15 (91.7%)	0.234
	Yes	15 (4.8%)	6 (8.3%)	
Excess use of Multivitamins	No	299 (95.5%)	66 (91.7%)	0.184
	Yes	14 (4.5%)	6 (8.3%)	

fall. 125 (39.9%) of females and 25 (34.7%) of the male participants admit that hair fall lowers their self-confidence. Majority of the participants blame stress for their hair fall making it the most voted factor as 256 (81.8%) females and 64 (88.9%) voted for it. It is followed by unbalanced diet and seasonal changes.

Discussion

Hair is the prime aspect of individual's personality loss of which may result in emotional sufferings and psychological damage. Regarding hair fall, various myths are prevalent among general population however, there are various scientifically proven factors which can contribute to hair fall. The purpose of our study was to determine the frequency of hair fall among respondents, knowledge of participants regarding different risk factors responsible for hair fall and to assess their daily hair care practices.

Our study reported that those male participants who exercise regularly do not experience hair fall as compared to the participants who prefer sedentary lifestyle. However, no such correlation was found among female respondents. In a 24 hour period, loss of 50-100 hair strands is considered normal,[11] but only a handful of participants from our study believed so. No significant association was found between hijab/ hat and hair fall in our study (p=.0.487)

Majority of the respondents in our study believed that stress contributes to hair fall making it the most voted risk factor followed by unbalanced diet and seasonal changes. Statistically significant association was found upon comparison of different risk factors like dandruff (p=0.013), unbalanced diet (p=0.020), insomnia/disturbed sleep (p=0.026), hereditary factors (p=0.049), PCOS (p=0.031) and high testosterone levels (p=0.031), among two genders.

Most of the females and some of the males in the conducted survey did not support dandruff to be a risk factor for hair loss however different studies have proved that seborrheic dermatitis paves the way for telogen effluvium. Normal scalp sheds around 50-100 hair strands per day in comparison to the scalp of dandruff sufferers, in whom 100-300 hair shed per day was observed.[12-15]

Participants in our study declined association between hair fall and deficiency of essential vitamins and minerals. Similar findings were observed in study conducted by Rajendra Singh Rajput and Emily L Guo.[16,17] Conversely, study conducted by Sonja Y. Hess, reported that visible improvement in hair quality, density and caliber was noted among participants after giving combined nutritional therapy for 4 months.[18]

Factors like unbalanced diet and poor quality of sleep were not supported by our study participants as cause of hair fall. However different studies have reported disturbed sleep as the root cause of stress ultimately causing thinning of hair and hair fall.[19]

Increased 5 alpha reductase activity was reported in the hair follicles of men with male pattern hair loss.[20] Similarly, PCOs, one of the leading endocrine disorder in women of reproductive age also causes of thinning of hair along with other range of symptoms. In our study, knowledge of male participants about this was significantly more than the female respondents. Studies have reported that majority of the women who present to the clinic with the main complaints of hair thinning were later on diagnosed with PCOs, confirming a positive correlation between androgenic alopecia in

females and PCOs.[21]

Limitation of our study is that we did not personally assess hair fall and hair condition of each participant which might have resulted in reporting bias as our data is exclusively based on the participant's perspective. Taking it into account, further research on this topic needs to be done in clinical setup under the guidance of trichologists and/or dermatologists before generalized conclusions can be drawn. Nevertheless, our study will make an important contribution in literature related to common problem of hair fall.

Conclusion

Approximately half of the participants (53.2%) complained of daily hair fall. Hair loss was less in physically active male participants. However, no such correlation was found among female participants. Our study observed lack of knowledge and understanding among participants about hair fall causing risk factors. Hair care practices were satisfactory among both males and females according to the results of the current study.

References

1. Zhang X, Caulloo S, Zhao Y, Zhang B, Cai Z, Yang J. Female pattern hair loss: clinico-laboratory findings and trichoscopy depending on diseases severity. *Int J Trichology*. 2012;**4**:23-8.
2. Finner AM. Nutrition and hair: deficiencies and supplements. *Dermatol Clin*. 2013;**31(1)**:167-72. https://doi.org/10.1016/j.det.2012.08.015
3. Hunt N, McHale S. The psychological impact of alopecia. *BMJ*. 2005;**331**:951-53.
4. Tortora GJ, Grabowski SR. *Principles of Anatomy and Physiology. 8th ed*. Menlopark, California: Harper Collins Publishers; 1996.p.129.
5. Wilson C, Walkden V, Powell S. *Br J Acad Dermatol*. 1991;**24**:661.
6. Nnoruka EN. Hair loss: is there a relationship with hair care practices in Nigeria? *Int J Dermatol*. 2005;**44**:13-7.
7. Price VH. Treatment of hair loss. *N Engl J Med*. 1999;**341(13)**:964-73.
8. Bhalerao SS, Solanki NH. Therapeutic approaches to management of common baldness. *Indian Drugs*. 2002;**39(11)**:567.
9. Peery, S. Fun facts and myths about hair, hair growth, hair color, and hair styles. 2016.
10. Hagenaars SP, Hill WD, Harris SE, Ritchie SJ, Davies G, Liewald DC, Gale CR, Porteous DJ, Deary IJ, Marioni RE. Genetic prediction of male pattern baldness. *PLoS Genetics*. 2017;**13(2)**:e1006594.
11. Sinclair R. Hair shedding in women: how much is too much. *Br J Dermatol*. 2015;**173(3)**:846.
12. Ranganathan S, Mukhopadhyay T. Dandruff: the most commercially exploited skin disease. *Indian J Dermatol*. 2010;**55(2)**:130-4.
13. Piérard-Franchimont, C. & Piérard, G. E. Teloptosis, a Turning Point in Hair Shedding Biorhythms. *Dermatology*. 2001;**203(2)**:115-7
14. Pierard-Franchimont, C., Petit, L., Loussouarn, G., Saint-Leger, D., & Pierard, G. E. The hair eclipse phenomenon: sharpening the focus on the hair cycle chronobiology. *Int J Cosmet Sci*. 2003;**25(6)**:295-2.
15. Piérard, G. E., Piérard-Franchimont, C., Marks, R., & Elsner, P. EEMCO Guidance for the Assessment of Hair Shedding and Alopecia. *Skin Pharmacol Physiol*. 2004;**17(2)**:98-110.
16. Rajendrasingh Rajput A Scientific Hypothesis on the Role of Nutritional Supplements for Effective Management of Hair Loss and Promoting Hair Regrowth. *J Nutrition Health Food Sci*. 2011;**6(3)**:1-11.
17. Guo EL, Katta R. Diet and hair loss: effects of nutrient deficiency and supplement use. *Dermatol Pract Concept*. 2017;**7(1)**:1.
18. Hess, S. Y. The impact of common micronutrient deficiencies on iodine and thyroid metabolism: the evidence from human studies. *Best Pract Res Clin Endocrinol Metab*. 2010;**24(1)**:117-32.
19. Walli H, Ghazal H, German S, Ali M, Zuberi BF. Prevalence of stress and its relation to hair fall in female medical

students. *J Pioneer Med Sci*. 2013;**3(4)**:205-7.

20. Richards, J. B., Yuan, X., Geller, F., Waterworth, D., Bataille, V., Glass, D. Mooser, V. Male-pattern baldness susceptibility locus at 20p11. *Nature Genetics*. 2008;**40(11)**;1282-4.
21. Cela, E., Robertson, C., Rush, K., Kousta, E., White, D., Wilson, H.Franks, S. Prevalence of polycystic ovaries in women with androgenic alopecia. *Eur J Endocrinol*. 2003;**149(5)**:439-42.