

## Prevalence of hair fall behaviour among school and college students in chengalpattu

Janani, B<sup>1.</sup>, Rajeshwari, B<sup>2.</sup> and Nivetha, S<sup>3.</sup>

1. Assistant Professor Department Of Statistics (M.Sc Biostatistics) S.D.N.B Vaishnav College For Women, Chromepet Chennai-44, Tamil Nadu, India;

2. &3. Post Graduate Students Of Department Of Statistics (M.Sc Biostatistics) S.D.N.B Vaishnav College For Women, Chromepet Chennai-44, Tamil Nadu, India;

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### ABSTRACT:

Identifying the factors, their level of concern and importance of food intake which are the criteria for affecting hair loss. An observational study was conducted among 400 respondents around chengalpattu area using their concern and issues related to hair fall. Quantitative and qualitative information was gathered and analysed using SPSS (23.0). Logistic regression analysis is used to identify the risk factor of getting hair fall among students. Respondents from (School and Colleges) students were equally experience severity of hair fall like scalp, stress and vitamins. Most of the respondents have not following diet and home remedies regularly; if they follow them regularly hair growth will be good and healthy.

**KEYWORDS:** Primary Data, Chi-square test, Logistic regression.

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### 1. INTRODUCTION:

Hair fall is one of the issues which occur common now a day's in younger age groups. Now a day's hair fall has become one of the most common problem for both School and college students. The various causes of hair fall are coming under hormonal changes, using cosmetic products, autoimmune disease, and environmental condition and the high risk factors for hair fall are age, stress, Dandruff, iron deficiency, diet etc. An Observational study was conducted by using questionnaire method and there are 33 attributes. The aim of the study focussed mainly on, severity of hair fall, home remedies for hair growth, diet and stress are considered as independent variable. The risk of the respondents (school and college students) are considered as dependent variable.

We reviewed some references for our study and focused on logistic regression model. Agarwal. S (2006) topic was based to determine the prevalence of female pattern hair loss to relate the clinical finding with hair density and hair diameter. In this he concluded that the low hair density was associated with fewer hairs of all diameters. Br.j.Dermatolin (2014) studied the deficiency of vitamin D in alopecia areata and to evaluate vitamin D levels between disease severities (AA) and they found that there are deficient serum 25(OH) D levels that are present in this disease (AA) this deficiency has possibility of getting alopecia. In 2007 EurgDermatol studied on topic of iron deficiency, he fined the risk factor for excessive hair loss in non-menopausal women. The study has concluded that iron play, the main constituent for haemoglobin and depletion of haemoglobin leads to anaemia which causes the hair loss. In 2005 Gan Dc determines age is related to prevalence of balding among women, in this dandruff and presence of gray hair was also studied and result says 57% of aged women also one of causes of balding of hair loss. HurmatWalli in (2013) studied the prevalence of stress in relation to the hair loss among 375female medical students they were conducted the cross-sectional study. In these criteria only seven (1.9%) students fulfilled excessive hair loss and they concluded that there is no relation between stress and hair fall.

The rest of the paper is organized as follows. In section 2 logistic regression, ROC curve is discussed. Section 3 represents the methods and findings based on our data and results are given conclusion in section 4.

## 2. FITTING THE LOGISTIC REGRESSION MODEL

Logistic regression is used in various fields, including machine learning, most medical fields, and social sciences etc. It measures the relationship between the categorical dependent variable and one or more independent variables by estimating probabilities using a logistic function. Suppose we have a sample of  $n$  independent observations of the pair  $(X_i, Y_i)$ ,  $i=1,2,3,\dots,n$  where  $Y_i$  denotes the value of dichotomous outcome variable and  $X_i$  is the value of the independent variable of the  $i^{\text{th}}$  subject. Let us assume that the outcome variable has been coded as 0 or 1, representing absence or presence of the characteristic, respectively. This coding for a dichotomous outcome will be used throughout the study. To fit the logistic regression model we need to estimate  $b_i$ 's from the given set of data. The logistic regression is used to estimate odd ratio for each of the independent variables in the model.

The specific form of the multiple logistic models with  $k$  predictors as follows

Where,  $p$  is the probability of presence of the characteristic interest.

## ROC CURVE

ROC curves can be constructed from clinical prediction rules. The sensitivity and specificity of a diagnostic test depends on more than the quality of the test. They also depend on the definition of an abnormal test. The position of the cut point will determine the number of true positive, true negatives, false positives and false negatives. An Roc curve demonstrates the following: It shows the trade-off between sensitivity and specificity. The closer the curve follows the left hand border and then the top border of the ROC space, the more accurate the test. The closer the curve comes to the 45-degree diagonal of the ROC space, the less accurate the test. The slope of the tangent line at a cut point gives the likelihood ratio for that value of the test. This corresponds to the far right, horizontal portion of the curve. The area under the curve is the measure of test accuracy.

The accuracy of the test depends on how well the test separates the group being tested into those with and without the disease in question. Accuracy is measured by the area under the ROC curve. An area of 1 represents a perfect test; an area 0.8 to 0.9 represents good test; an area of 0.5 represents a worthless test.

## 3. METHODS AND FINDINGS:

**DATA:** Primary data was collected based on the hair fall among school and college students in Chengalpattu. 400 samples were collected with 33 variables. Dependent variable in this study is taken as risk of hair fall (yes, no) among the school and college students and the independent variable is taken as reason, diet, stress and home remedies.

From the Chi-square test we have found that there is a significance difference between the variables such as home remedies, lice, scalp, stress, vitamin with severity of hair fall ( $p<0.05$ ). Also we found that there is no significant difference between scalp versus dandruff and product and severity of hair fall.

**LOGISTIC REGRESSION:**

A univariate binary logistic regression with significant risk factor is to predict the odds of getting hair fall among the Respondents (school and college students). Using various response variable such as Home remedies, Reasons for hair loss, Diet and Stress variables, we compared with the dependent variable indicating whether the Respondents having Risk of Hair Fall or not (Yes, No). We take the response predicted variable as a score value using Likert scale. The LOGISTIC REGRESSION analysis is carried out for the Respondents (school and colleges) data. The classification details of the model are shown in Table 3.1 We observed that 68.3% of the respondents (school and college students) having risk of hair fall is predicted and 47.9% of the respondents are not having risk of hair fall cases are predicted correctly. The overall accuracy of the model to predict the respondent period is 60%.

**TABLE 3.1 CLASSIFICATION TABLE**

Observed	Predicted		
	Hair fall Risk		Percentage Correct
	Yes	No	
Step 1 Hair fall Risk Yes	142	66	68.3
No	100	92	47.9
Overall Percentage			58.5

**TABLE 3.2: RISK FACTORS ASSOCIATED WITH THE HAIR FALL**

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
<b>Home remedies</b>	.054	.022	6.255	1	<b>.012</b>	<b>1.056</b>	1.012	1.101
<b>Reason</b>	.038	.020	3.739	1	<b>.043</b>	<b>1.039</b>	.999	1.080
<b>Diet</b>	.042	.014	8.977	1	<b>.003</b>	<b>1.043</b>	1.015	1.072
<b>Stress</b>	-.008	.023	.126	1	.723	.992	.947	1.038
<b>Constant</b>	-2.384	.640	13.883	1	.000	.092		

Variable(s) entered on step 1: Reason, Home remedies, Diet, Stress.

The fitted logistic regression model is

$$\text{Logit}(p) = -2.384 + 0.054(\text{Home remedies}) + 0.038(\text{Reason}) + 0.042(\text{Diet}) - 0.008(\text{Stress}).$$

The variables whose corresponding p-value less than 0.05 are Home remedies (Coconut milk, Aloe Vera, oil massage, Egg mask, Natural juices, Hibiscus leaf, Vendhayam), Reason (Travelling, Air pollution, Helmet using, Irregular periods, Changing shampoo, Split ends, Low iron deficiency, Dandruff, Dry skin, Oily skin, Shampoo often enough, Rough and Dead skin, Sensitivity), Diet (Curry leaves, Egg whites, Vegetables, Vitamins, Spinach) which contribute to the response variable namely risk of hair fall. The three factors Home remedies, Reason and Diet having the high risk for affecting hair loss among those respondents. The

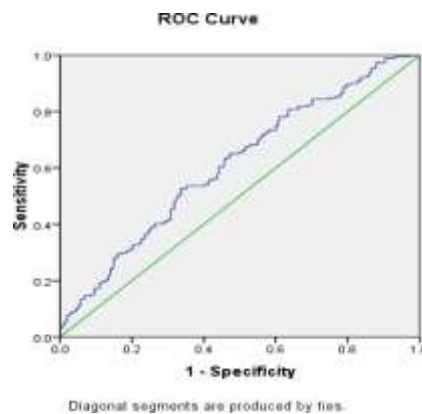
factor stress is not much having more risk for hair fall among the respondents. Home remedies and Diet are the important factor which the respondent has to follow regularly.

**ROC CURVE:**

**TABLE 3.3 CASE PROCESSING SUMMARY**

Hair fall Risk	Valid N (listwise)
Positive(a)	192
Negative	208

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state. The positive actual state is No.



**FIGURE: 3.1 ROC CURVE**

Area under the curve

Test result variable(s): predicted probability

Area
.611

The test result variable(s): predicted probability has at least one tie between the positive actual state group and the negative actual state group. The ROC area is 0.611 which means that in almost 61% of all possible subjects predicted with the response variable risk of hair fall is fairly good.

**4. CONCLUSION:**

Hair loss (alopecia) is a tendency of follicles to stop producing hair growth, leading to a decrease in the amount of hair. A women body goes through a lot of changes through her entire course of life. In the present study important food intake among respondents were poor which is highly significant. The respondents are not taking proper food intake like curry leaves, vegetables, spinach, vitamins, and egg. From the study it shows that the respondents are having awareness for hair loss and they are not adhered to maintain their hair and scalp from travelling, air pollution, iron deficiency. The respondents have to maintain their hair by avoiding these things. Taking care of hair using home remedies gives the solution for hair loss. Most commonly psychological factors play a vital role for hair loss among females. In this study the psychological factors does not gives significant result for hair loss among school and college going respondent. But it is considered as a risk factor for hair loss.

## 5. RECOMMENDATION:

- Prevent hair loss through proper nutrition intake and maintenances of the scalp
  - To avoid stress as much as possible this will give the stronger hair to begin with and make sure it is not falling out at the roots. Meditation can help in reducing that and restore hormonal balance.
  - Properly maintain the hair by using the right shampoos, natural home remedies avoiding pollution and changing of shampoo...etc.
  - Massaging your scalp for a few minutes daily will help stimulate circulation. Good circulation in the scalp keeps hair follicles active.
  - The medical attention needs by the evaluation of hair loss and dermatologist and possible treatment which helps to reduce the hair loss.
- If we do these things you will have the fullest healthiest head of hair possible given in our future.

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