# “ANEKANT EDUCATION SOCIETY’S”

TULJARAM CHATURCHAND COLLEGE ,BARAMATI



A Project Report on

“STUDY OF MENSTRUAL IRREGULARITIES IN ADOLESCENT GIRLS”

SUBMITTED TO

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**CERTIFICATE**

This is to certify that the project report entitled “**Study of menstrual irregularities in adolescent girls”.**

This is being submitted by Arya Kothadiya, Sunayana Thorat, Snehal Ranmode, Saee Kulkarni as partial fulfilment for the award of degree of Bachelor of Science (B.Sc.) record of bonafide work carried out under supervision and guidance.

Place: Baramati

Date:

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(Project Guide) Head of Department

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**ABSTRACT**

Menstrual disorders may affect the life of adolescent’s girls and may sometimes cause problems. The patterns of menstrual cycles were analysed for association with age of menarche, prevalence of menstrual irregularity, menstrual bleeding, and effect of menstrual disorders.

The main aim of this project is to evaluate the knowledge of irregularities and significant factor affecting on the menstrual cycle of adolescents girls of age 11-22years and also access the knowledge of irregularities with some selected variables of interest. The survey conducted among 306 girls of schools and colleges of Baramati. Girls were interviewed using structured questionnaire regarding their menstrual cycle.

The data was analysed by using chi-square test and logistic regression. In chi-square test it was found that factors like cycle length, dry fruit, outside food, blood loss, pain relief medicines, etc. are dependent on irregular periods also blood loss is dependent on factors like diet, cramps, clots, etc. regression analysis was conducted to test the significance of this factors on irregular periods it was found that cycle length, pain relief medicines and dry fruits have significant impact on irregular periods.

Observed data were analysed by using MS-excel, R-software.

* Keywords: Menarche, Menstrual disorders, Adolescents

**INTRODUCTION**

Adolescence is the period of transition between puberty and adulthood. Menarche is one of the markers of puberty and therefore, can be considered as an important event in the life of adolescent girls. Studies suggested that menarche tends to appear earlier in life as the sanitary, nutritional, and economic conditions of a society improve. For most girls, it occurs between the age of 10 and 16 years; however, it shows a remarkable range of variation. The normal range for ovulatory cycles is between 21 and 35 days. While most periods last from 3 to 5 days, duration of menstrual flow normally ranges from 2 to 7 days. For the first few years after menarche, irregular and longer cycles are common.

Menstrual disorders are a common presentation by late adolescence; 75% of girls experience some problems associated with menstruation including irregular periods, painful period cramps and heavy menstrual bleeding which are the leading reasons for the physician office visits by adolescents. Menstrual patterns are also influenced by a number of host and environmental factors. However, few studies in India have described the lifestyle factors associated with various menstrual cycle patterns. Therefore, we surveyed the current changes in the age of menarche in India adolescents. We also evaluated general menstruation patterns, the incidence of common menstrual disorders. Historically, the age at menarche has gradually decreased by about 4 months in every 10‐year interval. Some of these menstrual characteristics, such as irregularity in the menstrual cycle, premenstrual pain and discomfort at the time of a heavy menstrual discharge may affect the general reproductive health of a woman.

**Objectives**

* This study seeks to assess irregular patterns of menstrual cycle in adolescent girls aged 12 to 21 years.
* To study the important and significant factors affecting the regular

patterns of menstruation cycle among adolescents of selected schools

and colleges of Baramati.

**METHODOLOGY**

By keeping this information in mind, we have visited gynecologist in Baramati who have given us lot of information about menstruation cycle. We have also selected all schools and colleges in Baramati city and took the permission of school and colleges for collection of data regarding menstruation cycle in adolescent girls.

So, we collect information of 306 girls.

1. Data Collection:

Permission was obtained from principal of each school and colleges and we collected the data through Google forms. The data collection consists of information about education, age of menarche, HB, regular/irregular cycle of menstrual, cycle length, blood loss, diet, exercise etc.

1. Data Analysis:

We analyze the data by classifying the blood loss, cycle length, dry fruits, outside food, clots, periods, cramp, frequency of changing pads, pain relief medicine, etc. In appropriate counting of observation. The data were analyzed using MS excel and R-software. statistical significance of differences between variables was tested using chi-sq. test and logistic regression was used for analysis.

**Exploratory Data Analysis**

1. **Distribution of Meal taken by girls in a day.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Meals in day | | | | |
|  |  | 2 times | 3 times | 4 times |
| period | Regular | 125 | 112 | 19 |
|  | Irregular | 21 | 25 | 4 |
|  |

**Conclusion:** From the above graph we can say that 48%girls having regular periods take 2 times meal.

1. **Effect of Outside Food on Periods.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Periods | Outside food | | | |
|  | Never | less freq. | Frequently | More freq. |
| Regular | 10 | 147 | 85 | 14 |
| Irregular | 3 | 23 | 24 | 0 |

**Conclusion:** From the above graph we can say that 57% girls having regular periods eat outside food less frequently.

1. **Distribution of Dry fruit:**

|  |  |  |
| --- | --- | --- |
| Periods | Dry fruit | |
|  | No | Yes |
| Regular | 63 | 193 |
| Irregular | 19 | 31 |

**Conclusion**: From the above graph we can say that in 38% girls not including dry fruits in their diet have irregular periods.

1. **Distribution of Regular and Irregular periods:**

|  |  |
| --- | --- |
| Periods | |
| Regular | 256 |
| Irregular | 50 |

**Conclusion:** From the above graph we can see that 84% girls have regular menstruation cycle and 16% girls have irregular menstruation cycle.

1. **Sources of Travelling of Girls:**

|  |  |  |
| --- | --- | --- |
| Source of travelling | | |
|  | Regular | Irregular |
| Two-wheeler | 101 | 16 |
| Walking | 49 | 12 |
| Bus | 26 | 5 |
| Cycle | 80 | 17 |

**Conclusion:** From above graph we can say that 34% girls having irregular periods use cycle as source of travelling. Similarly, 10% girls having irregular periods use bus as source of travelling.

1. **Distribution of Frequency of Changing the pads:**

|  |  |  |
| --- | --- | --- |
| Frequency of changing pads | | |
|  | regular | Irregular |
| After 3 hours | 49 | 4 |
| After 6 hours | 109 | 30 |
| After 8 hours | 64 | 14 |
| After 12 hours | 34 | 2 |

**Conclusion:** From the above graph we can say that 60% girls having irregular periods change pads after 6 hours.

1. **Distribution of Blood loss and HB of Girls:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Blood loss | | | | |
|  |  | less | moderate | abundant |
| HB | Less than 10 | 4 | 21 | 0 |
| 10 to 14 | 12 | 116 | 11 |
| More than 14 | 1 | 1 | 0 |
| No test | 14 | 121 | 5 |

**Conclusion:** From the above graph we can say that there are 11 girls having abundant blood loss and HB 10-14 to be advice about future health effect of less HB.

1. **Distribution of Periods and Cramps:**

|  |  |  |
| --- | --- | --- |
| **Cramps** | **Periods** | **count** |
| Painful | Regular | 14% |
| Irregular | 3% |
| Not painful | Regular | 28% |
| Irregular | 8% |



**Conclusion:**  From the above diagram we can say that –

* 14 % & 3% of adolescent girls have regular periods with painful cramps and irregular periods with painful cramp resp.
* 28% & 8% of adolescent girls have regular periods with not painful cramps and irregular periods with not painful cramp resp.

**Descriptive Statistic**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statistics** | **Menarche age** | **BMI** | **Mother age** |
| **N** | 306 | 306 | 306 |
| **Mean** | 13.05 | 19.34 | 39.42 |
| **Median** | 13 | 18.7 | 39 |
| **Mode** | 13 | 16.36 | 40 |
| **Min** | 5 | 10.56 | 30 |
| **Max** | 18 | 59.79 | 70 |
| **Q1** | 12 | 16.36 | 36 |
| **Q3** | 14 | 21.36 | 42 |

**Conclusion:**

* Average menarche age is 13 years.
* Average BMI for girls is 19.34 which is good.

**WHO – Standards**

|  |  |
| --- | --- |
| **BMI** | **Nutritional status** |
| **< 18.5** | Underweight |
| 18.5 –24.5 | Normal weight |
| > 24.5 | Overweight |

|  |  |  |  |
| --- | --- | --- | --- |
| **HB** | **Responses** | **proportion** | **prop. excluding no test** |
| <10 | 25 | 8.169 | 15.06 |
| 10 to 12 | 81 | 26.47 | 48.79 |
| 12 to 14 | 58 | 18.95 | 34.93 |
| >14 | 2 | 0.653 | 1.2 |
| No test | 140 | 45.75 | - |
| **TOTAL** | **306** | **100** | **100** |

**Conclusion:**

* 46% of girls among the collected data have not done HB test.
* 48.79 % of girls those who have their HB between 10-12 which is not good because according to WHO HB level in female must be 13g/dl to 15g/dl.

**Chi-square Test of Independence (using R-software):**

1. **To test Type of period depends on cycle length or not?**

**H0: Type of period independent on cycle length.**

**Vs**

**H1: Type of period dependent on cycle length.**

|  |  |  |  |
| --- | --- | --- | --- |
| **periods**  **cycle**  **length** | **0** | **1** | **Grand Total** |
| 0 | 28 | 5 | 33 |
| 1 | 112 | 9 | 121 |
| 2 | 106 | 15 | 121 |
| 3 | 10 | 21 | 31 |
| **Grand Total** | **256** | **50** | **306** |

Chi-squared = 68.342, df = 3, p-value = 9.664e-15

Therefore, we may reject H0.

**Result: Irregular periods may be dependent on cycle length.**

1. **To test Type of period depends on dry fruits or not?**

**H0: Type of period independent on dry fruits.**

**Vs**

**H1: Type of period dependent on dry fruits.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Periods**  **Dry fruit** | **0** | **1** | **Grand Total** |
| 0 | 63 | 19 | 82 |
| 1 | 193 | 31 | 224 |
| **Grand Total** | **256** | **50** | **306** |

Chi-squared = 3.8236, df = 1, p-value = 0.05054

Therefore, we may reject H0.

**Result: Irregular periods may be dependent on dry fruits.**

1. **To test blood loss depends on outside food or not?**

**H0: Blood loss independent on outside food.**

**Vs**

**H1: Blood loss dependent on outside food.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Blood loss**  **Outside food** | **0** | **1** | **2** | **Grand Total** |
| 0 | 5 | 6 | 2 | 13 |
| 1 | 8 | 155 | 7 | 170 |
| 2 | 16 | 86 | 7 | 109 |
| 3 | 2 | 12 | 0 | 14 |
| **Grand Total** | **31** | **259** | **16** | **306** |

Chi-squared = 97.347, df = 6, p-value < 2.2e-16

Therefore, we may reject H0.

**Result: Blood loss may be dependent on outside food.**

1. **To test blood loss depends on meal or not?**

**H0: blood loss independent on meal.**

**Vs**

**H1: blood loss dependent on meal.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Blood**  **loss**  **Meal** | **0** | **1** | **2** | **Grand Total** |
| 0 | 18 | 122 | 6 | 146 |
| 1 | 11 | 115 | 9 | 135 |
| 2 | 2 | 22 | 1 | 25 |
| **Grand Total** | **31** | **259** | **16** | **306** |

Chi-squared = 2.4107, df = 4, p-value = 0.6607

Therefore, we may accept H0.

**Result: Blood loss may be independent on meal.**

**Results of Chi-squared test for independence. (Using R-software)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable 1** | **Variable 2** | **P-value** | **Results** |
| Type of period | Fruit | 0.732 | Independent |
| Type of period | Cycle length | 9.664e-15 | **Dependent** |
| Type of period | Diet | 0.7743 | Independent |
| Type of period | Meal | 0.6642 | Independent |
| Type of period | Dry-fruit | 0.05 | **Dependent** |
| Type of period | Area | 0.8703 | Independent |
| Type of period | Socio-economic status | 0.9306 | Independent |
| Type of period | Exercise | 0.6054 | Independent |
| Type of period | Outside food | 0.0814  (Here α=9%) | **Dependent** |
| Type of period | Source of travailing | 0.752 | Independent |
| Type of period | Duration of flow | 0.4129 | Independent |
| Type of period | Clots | 0.218 | Independent |
| Type of period | Haemoglobin | 0.2451 | Independent |
| Type of period | Frequency of changing pads | 0.02925 | **Dependent** |
| Type of period | Medicine | 0.02508 | **Dependent** |
| Type of period | Family | 0.1976 | Independent |
| Type of period | Blood loss | 3.386e-06 | **Dependent** |
| Blood Loss | Outside Food | 2.2e-16 | **Dependent** |
| Blood Loss | Meals | 0.6607 | Independent |
| Blood Loss | Dry-fruit | 0.2656 | Independent |
| Blood Loss | Fruit | 0.1923 | Independent |
| Blood Loss | Diet | 1.734e-09 | **Dependent** |
| Blood Loss | Medicine | 8.43e-05 | **Dependent** |
| Blood Loss | Haemoglobin | 0.9004 | Independent |
| Blood Loss | Cramps | 0.002442 | **Dependent** |
| Blood Loss | Clots | 0.00194 | **Dependent** |
| Dry-fruit | Economic status | 0.0426 | **Dependent** |

**Logistic Regression:**

Logistic regression with an indicator explanatory variable is a very special case. It is important because many multiple logistic regression analysis focus on one or more such variables as the primary variable for interest.

ln(*Π*(x)/1- *Π*(x)) =0+1x

Here, ln denotes natural logarithm. 0 is the intercept and1 is the regression coefficient. *Π*(x) ranges 0 to 1.

Suppose we consider the case for the explanatory variable is dry fruit in diet, which we have coded using an indicator variable x3 with value x3=1 for girls those who include dry fruit in diet and x3=0 for girls those who do not include dry fruit in diet. The response variable(y) is also an indicator function. Thus, (y=1) the girls either having irregular periods or (y=0) for girls not having irregular periods. The model says that the probability that the girls having irregular periods depends upon the dry fruits in diet (x3=1 or x3=0). The slope in this logistic regression model is the difference between the log (ODDS) for girls taking dry fruits and the log (ODDS) for girls not taking dry fruits. Interpretation of the results in terms of the regression slope is difficult. Usually, we apply a transformation to help us. It can be transformed eslope undoes the logarithm and transforms the logistic regression into odds ratio. Also, cdr, explanatory variable Blood loss (x1) is coded with value x1=0 for less blood loss, x1=1 for moderate blood loss, x1=2 for abundant blood loss. Explanatory variable cycle length (x2) which we have coded with value x2=0 for cycle length less than 21 days, x2=1 for cycle length of 21 to 27 days, x2=2 for cycle length of 28 to 35 days, x2=3 for cycle length greater than 35 days. Explanatory variable outside food (x4) is coded with value g {\displaystyle g}g ( F ( x ) ) = ln ⁡ ( F ( x ) 1 − F ( x ) ) = β 0 + β 1 x , {\displaystyle g(F(x))=\ln \left({\frac {F(x)}{1-F(x)}}\right)=\beta \_{0}+\beta \_{1}x,} x4=0 for girls eating outside food never, x4=1 for girls eating outside food less frequently, x4=2 for girls eating outside food frequently, x4=3 for girls eating outside food most frequently. Explanatory variable frequency of changing pads (x5) is coded with value x5=0 for changing pads after 3 hours, x5=1 for changing pads after 6 hours, x5=2 for changing pads after 8 hours, x5=3 for changing pads after 12 hours. Explanatory variable Pain relief medicine (x6) is coded with value x6=0 for girls never taking pain relief medicines, x6=1 for girls taking pain relief medicines sometimes, x6=2 for girls taking pain relief medicines every time. Response variable (y) irregular periods is coded with value y=1 for girls having irregular periods and y=0 for girls having regular periods.

**Fitting of Logistic regression model**

1. **Fitting of Logistic Regression for irregular periods on cycle length, blood loss, dry fruit, outside food, frequency of changing pads, usage of pain relief medicine.**

H0: Independent variables for Irregular periods are not adequate.

V/s

H1: Independent variables for Irregular periods are adequate.

Y: Dependent variable= periods are irregular

Xi: Independent variable.; i =1,2,3,4,5,6

X1= blood loss

X2= cycle length

X3= dry fruit

X4= outside food

X5= frequency of changing pads

X6= usage of pain relief Medicine.

data=read.csv("D:/User Profile/user39/Documents/diets.csv”, header=T)

>model=glm(formula=Periods~(BL+CL+DF+OF+CP+PM), family="binomial”, data=data)

> summary(model)

Call:

glm(formula = Periods ~ (BL + CL + DF + OF + CP + PM), family = "binomial", data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -1.6226 -0.5744 -0.4438 -0.3148 2.7539 |

Coefficients:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estimate | Std. Error | | Z value | | | Pr(>|z|) |
| (Intercepts) | -2.873847 | | 0.774477 | | 3.711 | 0.000207 \*\*\* | |
| BL | -0.115199 | | 0.400373 | | 0.288 | 0.773554 | |
| CL | 1.024802 | | 0.222994 | | 4.596 | 4.31e-06 \*\*\* | |
| DF | -0.669329 | | 0.355838 | | 1.881 | 0.059973. | |
| OF | 0.007801 | | 0.257334 | | 0.030 | 0.975815 | |
| CP | -0.118492 | | 0.190634 | | 0.622 | 0.534226 | |
| PM | 0.510944 | | 0.266311 | | 1.919 | 0.055035. | |

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.50 on 305 degrees of freedom

Residual deviance: 236.83 on 299 degrees of freedom

AIC: 250.83

Number of Fisher Scoring iterations: 5

G=Null Deviance-Residual deviance

= 272.50-236.83

G = 35.67

Chi.sq tab=12.5916

Here, G exceed chi-sq.

Therefore, we may reject Ho at 5% L.O.S

**Conclusion:** At least one regressor may be significant.

**Individual Tests**

1. **Fitting Of Logistic Regression for Irregular periods on Cycle length.**

H0: cycle length may not be significant for Irregular periods.

V/s

H1: cycle length may be significant for Irregular periods.

Y=Dependent variable= periods are irregular

X1= Independent variable= cycle length

model10=glm(formula=y~cycle.length,family="binomial",data=data)

> summary(model10)

Call:

glm(formula = y ~ cycle.length, family = "binomial", data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -1.0832 -0.6869 -0.4123 -0.2415 2.6644 |

Coefficients:

Estimate Std.Error z value Pr(>|z|)

(Intercept) -3.5203 0.4567 -7.708 1.28e-14 \*\*\*

cycle.length 1.0982 0.2230 4.926 8.41e-07 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.50 on 305 degrees of freedom

Residual deviance: 243.97 on 304 of freedom

AIC: 247.97

Number of Fisher Scoring iterations: 5

G= Null Deviance - Residual deviance

= 272.50-243.97

G = 28.53

Chi-sq. tab = 3.841

Here, G exceed Chi-square

Therefore, we may reject Ho at 5% L.O.S

**Conclusion:** Cycle length may be significant.

**Interpretation:** for 1 unit increase in cycle length will **increase** odds of irregular periods by 1.99 times.

1. **Fitting of Logistic Regression for irregular periods on Frequency of Changing pads.**

H0: Frequency of changing pads may not be significant for Irregular periods.

V/s

H1: Frequency of changing pads may be significant for Irregular periods.

Y = Dependent variable = periods are irregular

X1=Independent variable = frequency of changing pads

> data=read.csv("D:/User Profile/user39/Documents/INDIVIDUAL TEST.csv",header=T)

> model=glm(formula=Periods~CP,family="binomial",data=data)

> summary(model)

Call:

glm(formula = Periods ~ CP, family = "binomial", data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -0.6175 -0.6020 -0.6020 -0.5719 1.9449 |

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.56060 0.27227 -5.732 9.94e-09 \*\*\*

CP -0.05572 0.17410 -0.320 0.749

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.5 on 305 degrees of freedom

Residual deviance: 272.4 on 304 degrees of freedom

AIC: 276.4

Number of Fisher Scoring iterations: 3

G= Null Deviance - Residual deviance

= 272.5 -272.4

G = 0.1

Chi-sq. tab = 3.841

Here, G not exceed chi-sq.

Therefore, we may not reject Ho at 5% L.O.S

**Conclusion:** Frequency of Changing pads **may not be significant.**

1. **Fitting of Logistic Regression for Irregular periods son Pain relief medicine.**

H0: Pain relief medicinemay not be significant for Irregular periods

V/s

H1: Pain relief medicinemay be significant for Irregular periods

Y=Dependent variable= periods are irregular

X1=Independent variable=pain relief medicine

data=read.csv("D:/User Profile/user39/Documents/INDIVIDUAL TEST.csv",header=T)

> model=glm(formula=Periods~PM,family="binomial",data=data)

> summary(model)

Call:

glm(formula = Periods ~ PM, family = "binomial", data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -0.9266 -0.5284 -0.5284 -0.5284 2.0188 |

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.8982 0.1965 -9.658 < 2e-16 \*\*\*

PM 0.6375 0.2457 2.595 0.00947 \*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.5 on 305 degrees of freedom

Residual deviance: 266.1 on 304 degrees of freedom

AIC: 270.1

Number of Fisher Scoring iterations: 4

G= 272.5-266.1

G=6.4

Chi-sq. tab = 3.841

Here, G exceed chi-sq.

Therefore, we may reject Ho at 5% L.O.S

**Conclusion:** Pain relief medicine **may be significant.**

**Interpretation:** For 1 unit increase in consumption of pain relief medicine will **increase** odds of irregular periodsby 0.89 times.

1. **Fitting of Logistic Regression for Irregular periods on Outside food.**

H0: Outside food may not be significant for Irregular periods

V/s

H1: Outside food may be significant for Irregular periods

Y=Dependent variable= periods are irregular

X1=Independent variable=outside food

Call:

glm(formula = Periods ~ How.often.do.you.eat.outside.food., family = &quot;binomial&quot;data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -0.6159 -0.6042 -0.5926 -0.5926 1.9295 |

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.69263 0.37163 -4.555 5.25e-06 \*\*\*

outfood 0.04214 0.23847 0.177 0.86

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.50 on 305 degrees of freedom

Residual deviance: 272.47 on 304 degrees of freedom

AIC: 276.47

Number of Fisher Scoring iterations: 3

G=272.5-272.47

G=0.03

Chi-sq. tab = 3.841

Here, G not exceed chi-sq.

Therefore, we may not reject Ho at 5% L.O.S

**Conclusion:** Outside food for Irregular periods **may not be significant.**

1. **Fitting of Logistic Regression for Irregular periods on dry fruit.**

H0: Dry fruit may not be significant for Irregular periods.

V/s

H1: Dry fruit may be significant for Irregular periods.

Y=Dependent variable= periods are irregular

X1= Independent variable=dry fruit

data=read.csv(&quot;C:/Users/admin/Documents/logistic.csv&quot;header=T)

model=glm(formula=Periods~x,family=&quot;binomial&quot;,data=data)

summary(model)

Call:

glm(formula = Periods ~ x, family = &quot;binomial&quot;, data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -0.7261 -0.5458 -0.5458 -0.5458 1.9888 |

Coefficients:

|  |
| --- |
| Estimate Std.Error z value Pr(>|z|) |
| (Intercept) -1.1987 0.2617 -4.580 4.65e-06 \*\*\* |
| x -0.6300 0.3255 -1.936 0.0529. |

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.50 on 305 degrees of freedom

Residual deviance: 268.89 on 304 degrees of freedom

AIC: 272.89

G=272.50-268.89

G=3.61

Chi-sq. tab = 3.841

Here, G not exceed chi-sq.

Therefore, we may reject Ho at 7% L.O.S

**Conclusion:** Dry fruits for Irregular periods **may be significant.**

**Interpretation:** For 1unit increase in consumption of dry fruits will **decrease** odds of irregular periods by 0.46 times.

1. **Fitting of Logistic Regression for Irregular period on Blood Loss.**

H0: Blood loss may not be significant for Irregular periods.

V/s

H1: Blood loss may be significant for Irregular periods.

Y=Dependent variable= periods are irregular

X1=Independent variable=blood loss

> model12=glm(formula=Periods~Blood.loss.,family="binomial",data=data)

> summary(model12)

Call:

glm(formula = Periods ~ Blood.loss., family = "binomial", data = data)

Deviance Residuals:

|  |
| --- |
| Min 1Q Median 3Q Max |
| -0.6200 -0.5961 -0.5961 -0.5961 1.9433 |

|  |
| --- |
| Coefficients: |
| Estimate Std. Error z value Pr(>|z|) |
| (Intercept) -1.55140 0.40355 -3.844 0.000121 \*\*\* |
| Blood.loss. -0.08637 0.39563 -0.218 0.827187 |

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 272.50 on 305 degrees of freedom

Residual deviance: 272.45 on 304 degrees of freedom

AIC: 276.45

Number of Fisher Scoring iterations: 3

G=272.50-272.45

G= 0.05

Chi-sq. tab = 3.841

Here, G not exceed chi-sq.

Therefore, we may not reject Ho at 5% L.O.S

**Conclusion:** Blood loss for irregular period **may not be significant**.

**Logistic Regression for Irregular Periods**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent | Independent | Estimate for variable | Estimates for intercept | p-value | logistic model | Significant in model | ψ hat | 1-ψ hat |
| Periods (regular- 0 & irregular - 1) | Cycle length | 1.0982 | -3.5203 | 8.41E-07 | Y= -3.5203+ 1.0982X | Significant | 2.9988 | 1.9987 |
| changing pad | -0.0557 | -1.5606 | 0.749 | Y=-1.5606-0.0557x | Not significant | ---- | ---- |
| pain relief medicine | 0.6375 | -1.8982 | 0.00947 | Y=-1.8982+ 0.6375X | Significant | 1.8917 | 0.8917 |
| Outside food | 0.04214 | -1.69263 | 0.86 | Y=-1.69263+ 0.004214X | Not significant | ---- | ---- |
| Dry fruit | -0.63 | -1.1987 | 0.0529 | Y=-1.1987- 0.63X | Significant at 7% | 0.5326 | 0.4674 |
| Blood loss | -0.0864 | -1.5514 | 0.827187 | Y=-1.5514-0.08637X | Not significant | ---- | ---- |

**Interpretation:**

1. for 1 unit increase in cycle length will **increase** odds of irregular periods by 1.99 times.
2. For 1 unit increase in consumption of pain relief medicine will **increase** odds of irregular periodsby 0.89 times.
3. For 1unit increase in consumption of dry fruits will **decrease** odds of irregular periods by 0.46 times.

**Cause and Effect Diagram**

Above analysis can be summarised by cause-and-effect diagram as follows. Here, cycle length, blood loss, pain relief medicines, outside food, dry fruits and frequency of changing pads are the main causes for irregular periods. There are some sub causes of blood loss and dry fruits as shown below:

C

Cycle length

Blood loss

Pain relief medicine

diet

BMI

Cramps

Clots

**Irregular Periods**

Economic status

Dry fruits

Frequency of changing pads

Outside food

**Conclusion**

* Type of period may dependent on cycle length ,dry fruit consumption, outside food, frequency of changing pads, intake of pain relief medicine and blood loss.
* Blood loss during periods may depend on outside food, diet, intake of pain relief medicine, period cramps, and clots.
* Dry fruit in diet may depend on economic status of family.
* Cycle length, intake pain relief medicine, consumption of dry fruit may be significant factors for irregular periods.
* Average menarche age is 13 years.
* 46% of girls among the collected data have not done HB test.
* 48.79 % of girls those who have their HB between 10-12 which is not good because according to WHO HB level in female must be 13g/dl to 15g/dl.

**Scope and Limitations**

* **Scope:**

There are many scopes related to these topics for example PCOD. Comprehensive school education program on menarche and menstrual problems may help girls to cope better and seek proper medical assistance.

* **Limitations:**

In spite of the large sample size, there were some limitations to this study. First, because the study was cross-sectional in nature, causality cannot be determined from the results.

The study is conducted in the selected region; therefore, generalizing must be done with care. The findings may not be representative the menstrual characteristics in whole Baramati. Moreover, the study and the results are related to an urban area, so it might not be a good representative for rural areas. Missing data and incomplete questionnaires were another problem. As it was a questionnaire-based study, recall bias was an expected problem.

Finally, the study was conducted only in schools and colleges from city area of Baramati. If we collected the data from rural area of Baramati then the results may be different and we may get different significant factor. Hence the results may not be generalizable to the entire population.

**Source Of Data**

* Tuljaram Chaturchand College, Baramati.
* Anekant English Medium School, Baramati
* Vinodkumar Gujar Bal Vikas Mandir, Baramati.

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**THANK YOU…**