PROJECT REPORT
ON

Analysis of Usage Pattern of Mobile Phone and Its Impact on Human Health in Vadodara City

A REPORT SUBMITTED TO

DEPARTMENT OF STATISTICS
FACULTY OF SCIENCE
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF THE MASTER OF SCIENCE

GUIDE:

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Year 2019-2020

AKNOWLEDGEMENT

We are pleased to present this report "Analysis of Usage Pattern of Mobile Phone and Its Impact on Human Health in Vadodara City".

First and foremost, we would like to thank our guide, Prof. R. Srivastava who always helped us, welcomed our questions, keep us motivated and gave us a lot of recommendations and suggestions. We would not have reached this phase, if it were not for him permanent support, advice, and guidance.

We also would like to express our gratitude to our Head Prof. Vipul A. Kalamkar for their support, guidance and helpful feedback.

We would like to thank medical Officers of M.S.U. Health Center and Narhari Hospital to gave us lot of information regarding our Project.

Thanks to the university to provide us with such great faculties, library, environment-to grow ourselves, and for the platform to explore ourselves and showcase our skills.

Our sincere thanks to our parents for guiding us decently and supporting at every stage in our life also their wishes for successful completion of this project.

Last but not least, we would like to express our eternal gratitude to friends and seniors (Shrey Pandya & Bhagyashree Patil) for their support, appreciation and patience. We would like to dedicate this report to them all.

CERTIFICATE

This is to certify that ***KINJAL PANARA, RESHMA SHAH, BANSARI BAMBHANIYA , VISHAL HARIJAN*** have satisfactorily completed the project entitled ***"Analysis of Usage Pattern of Mobile Phone and Its Impact on Human Health in Vadodara City"*** as a team in the academic year 2019-20, this work is submitted to the Department as a fulfilment for degree of Master of Science in Statistics. Throughout the semester they carried out work with sincerity & has presented on the time and with enthusiasm. I wish them grand success in future.

PROF. RAKESH SRIVASTAVA

GUIDE

PROF. VIPUL A. KALAMKAR

HEAD

DEPARTMENT OF STATISTICS
FACULTY OF SCIENCE
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

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Introduction

Technology has become a fundamental aspect in our lives and we cannot neglect its contribution in the welfare of human beings.

The rapid technological advancement has in invention of many gadgets and mobile phone is one of them.

Mobile are considered as an essential and an integral tool(item) necessary for communicating and connecting to family, friends and work even used for emergencies.

Mobile phone has come into existence which not only help you in making calls but also help you stay entertained allowing you to play Games, listen to Music and do lots of other stuff. And the things we never thought would be present in mobile phone.

Mobile phone not only provide a social outlet are a means to oneself in interesting Activity such as surfing the internet, conducting research and taking and sharing a photograph, they provide us more flexibility compared to home telephone.

It is true that mobile phone can help students in studies but only if they use them wisely.

Most of the students become addictive to mobile phones and found plying games, chatting with their friends, watching movies and other stuff.

Scientists have reported health effects of using mobile phone including changes in brain activity, sleeping pattern etc.

Mobile phones are being used by each and every one today. Their use without any knowledge of their harmful effects is unsafe and have several downsides, especially on human health.

The highlight of this project includes recent scientific facts and Analysis of Mobile phone on Human Health and Life.

And we are discussing about how its impacting on human body, Sleeping pattern and Physical stress.

Aim of this survey is to investigate the possible symptoms and sensations expressed by usage pattern of mobile phone.

In this survey section where asked to investigate the following sensation,

1)Usual sleep habits (of section 1)

2) Physical health problem (Upper limb, Neck and Back) (of section 2)

3) Physical health problem (Eye Problem) (of section 3)

4) Physical health problem (Physical Stress) (of section 4)

In sleep section of the survey, recall their sleep habits to answer 9 individual questions related to seven main components: sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleep medication and daytime dysfunction.

In the second section of the survey questions relate to upper limb, neck and back.

In third section of the survey questions relate to eye problems.

In the fourth section of the survey questions relate to restlessness, tiredness and irritation.

There were the advantages and disadvantages of mobile phones. In the end it all depends on our uses. Mobile phone is the most personal device to us and we should make an optional use of them.

Methodology and Fieldwork:

Data Collection

Understand data & Analysis Generating Insights

Presentation of Results Obtained

Sample

- Vadodara city

Sample size

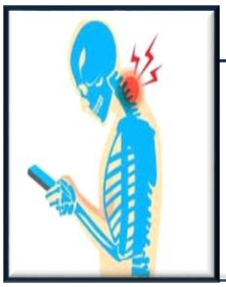
- Total Population(of 4 wards)
- =5,88,922
- Sample size(of 4 wards)
- = 337

Sampling type

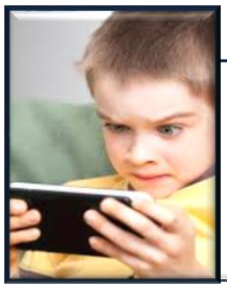
- Proportional Stratified sampling

Objective:

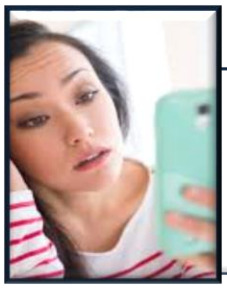
Impact on sleeping hours



Effect on humans Upper Limb , Back and Neck



Impact on Eyes



Physical Stress due to mobile phone

- To estimate proportion of users of mobile phone after 10 p.m. ward wise of Vadodara City.
- To estimate Proportion of users of mobile phone ward wise of Vadodara City.
- To check whether there is significant difference among the four wards based on Global score of Usual sleep habits.
- To check whether there is difference between the rank of Gender based on Sleep Latency.
- To check whether there is association between Usual sleep habits of section-1, Physical health problem (upper limb, neck and back) of section-2, Physical health problem (Eye Problem) of section-3, and Physical health problem (Physical stress) of section-4 based on Gender and Usage of mobile phone.
- To gain insight into whether out of 6 purpose which one is major for given Physical health problem (upper limb, neck and back) of section-2, Physical health problem (Eye Problem) of section-3, and Physical health problem (Physical stress) of section-4 to aware of the associated potential risk.
- To study the placing pattern of their mobile phone based on Age, Gender and occupation.

Sample Size Determination & Sample Collection Methodology

Population:

A population is the total number of individuals or objects that are the main focus of the study. The population of this study is the number of individuals in Vadodara City that use mobile phone, aged 18-year-old and above and able to understand English or Gujarati language. Collecting information from the entire population is not feasible for this study so a sample or subset of the population will be considered instead. Findings will be extrapolated based on the data received from this sample population.

Sample size Determination:

It was projected that each individual will be interviewed and asked to fill up the questionnaire. The age group was considered to be 18 and above 18. There were a number of ways that the sample population could have been selected. For example, occupation and technical competence were considered but it was decided to group participants according to age group and wards in the city. It was expected that this would give the most random level of results and there would be enough mixed data, independent of participants' technical background or occupation.

We have used Sample size determination based on Pilot survey results, by proportion method using proportions of mobile phone users and its impacting on human health? In response "yes" and "no", to determine the sample size.

For the collection of samples, we have used three stage sampling.
In first stage we have used cluster sampling, we have divided the Baroda city into different clusters based on the Zone.
In second stage we have used cluster sampling, we have divided the Zone into different clusters based on the ward.
In third stage we have chosen 4 wards randomly form each Zone by simple random sampling.
Then we have used Probability Proportional to size sampling to calculate the sample size of each cluster (ward).

Sr. no	Zone	Ward number	Ward name	Total Population
1.	North Zone	7	Fatehgunj	1,82,567 (= N1)
2.	West Zone	11	Vasna	1,22,645 (= N2)
3.	South Zone	4	Pratapnagar	1,60,969 (= N3)
4.	East Zone	2	Harni	1,22,741 (= N4)

From pilot survey of our study

Sr. no	Ward number	Ward name	Pilot survey sample	Proportion
1.	7	Fatehgunj	20 $(= n_1^*)$	0.8 $(= p_1^*)$
2.	11	Vasna	20 $(= n_2^*)$	0.55 $(= p_2^*)$
3.	4	Pratapnagar	20 $(= n_3^*)$	0.65 $(= p_3^*)$
4.	2	Harni	20 $(= n_4^*)$	0.7 $(= p_4^*)$

$$p = \frac{n_1^* p_1^* + n_2^* p_2^* + n_3^* p_3^* + n_4^* p_4^*}{n_1^* + n_2^* + n_3^* + n_4^*}$$

$$p = \frac{(20 \times 0.8) + (20 \times 0.55) + (20 \times 0.65) + (20 \times 0.7)}{20 + 20 + 20 + 20}$$

p=0.675

q =1-p=0.325

where, p is probability of getting success & (1-p) is probability of getting failure.
Sample size is determined in two steps:
1.Calculate the sample size for infinite population.
2.Adjust the sample size to required population.

$$S = \frac{Z^2 \times p \times (1-p)}{M^2}$$

Where,

S = sample size for infinite population.

z = z score

p = population proportion (assumed to be 67.5%)

M = Margin of error

z score is determined based on confidence level.

Confidence level: The probability that the value of a parameter false within specified range of values.

confidence level	z- value
90%	1.645
95%	1.96
99%	2.576

If we consider 95% confidence level then z-score is 1.96.

Margin of error is small amount that is allowed for in case of miscalculation or change of circumstances. Generally, we take margin of error as 5%.

M =0.05

Z-score =1.96

p= 0.675

$$S = \frac{(Z-score)^2 \times p \times (1-p)}{(Margin\ of\ error)^2} = 337.1028$$

So, sample size for infinite population is 337 Now, we must adjust the sample size to the required population.

If we want to adjust the sample size to 5,88,922 population. Then use the following formula for adjusted sample size,

$$\frac{S}{1+\left[\frac{(S-1)}{N}\right]}$$

Adjusted S = 336.9105

Finally, we have determined the sample size for **5,88,922** population as **337**.

So fixed n is 337.

Sample size for given population is $\boldsymbol{n_i = \frac{n}{N} \times N_i}$; where i= 1,2,3,4.

$$n_1(for\ Fatehgunj) = \frac{n}{N} \times N_1 = \frac{337}{588922} \times 182567 = 104.47$$

$$n_1 = 105$$

$$n_2(for\ Vasna) = \frac{n}{N} \times N_2 = \frac{337}{588922} \times 122645 = 70.18139$$

$$n_2 = 70$$

$$n_3(for\ Pratapnagar) = \frac{n}{N} \times N_3 = \frac{337}{588922} \times 160969 = 92.1116$$

$$n_3 = 92$$

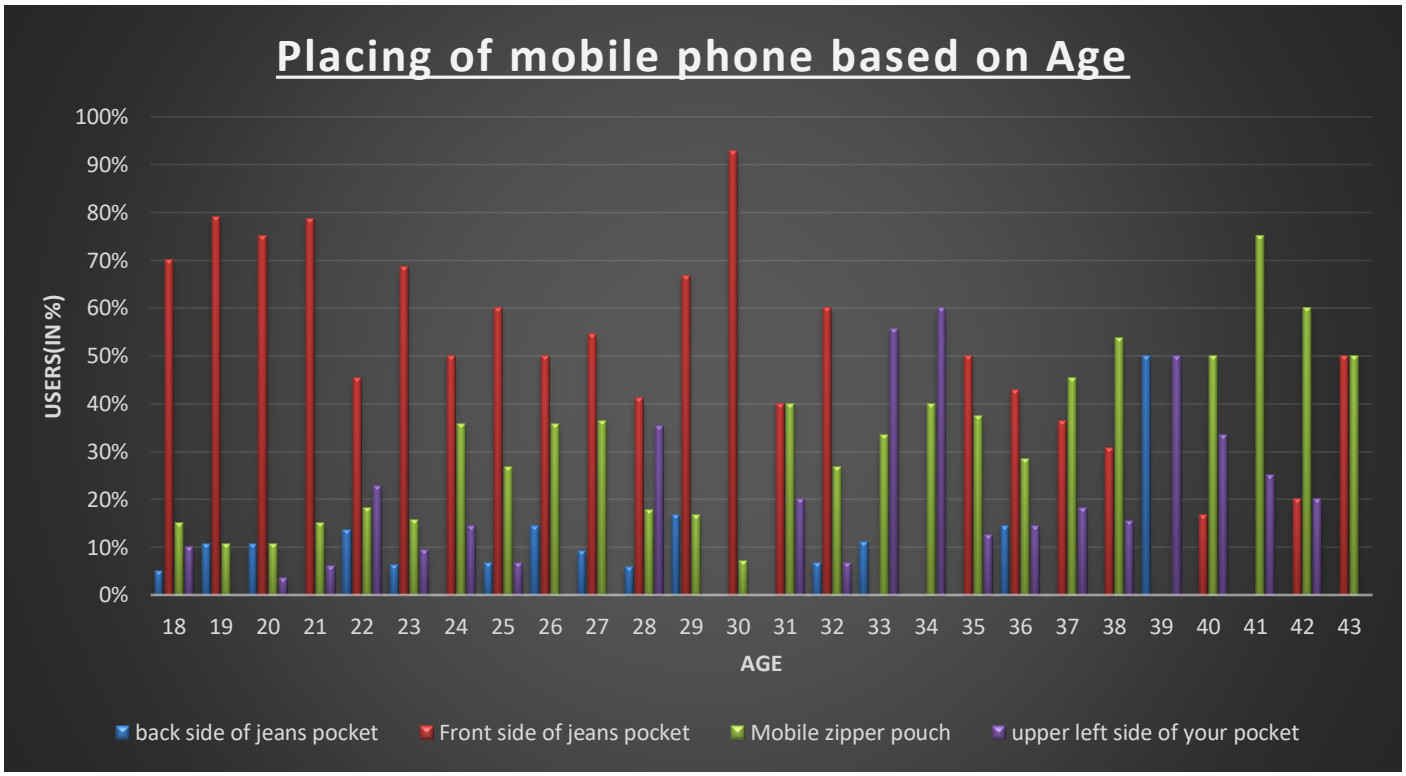
$$n_4(for\ \ Harni) = \frac{n}{N} \times N_4 = \frac{337}{588922} \times 122741 = 70.2363$$

$$n_4 = 70$$

Sr. no	Zone	Ward number	Ward name	Total Population	Sample size
1.	North Zone	7	Fatehgunj	1,82,567 (= N1)	105 $(= n_1)$
2.	West Zone	11	Vasna	1,22,645 (= N2)	70 $(= n_2)$
3.	South Zone	4	Pratapnagar	1,60,969 (= N3)	92 $(= n_3)$
4.	East Zone	2	Harni	1,22,741 (= N4)	70 $(= n_4)$

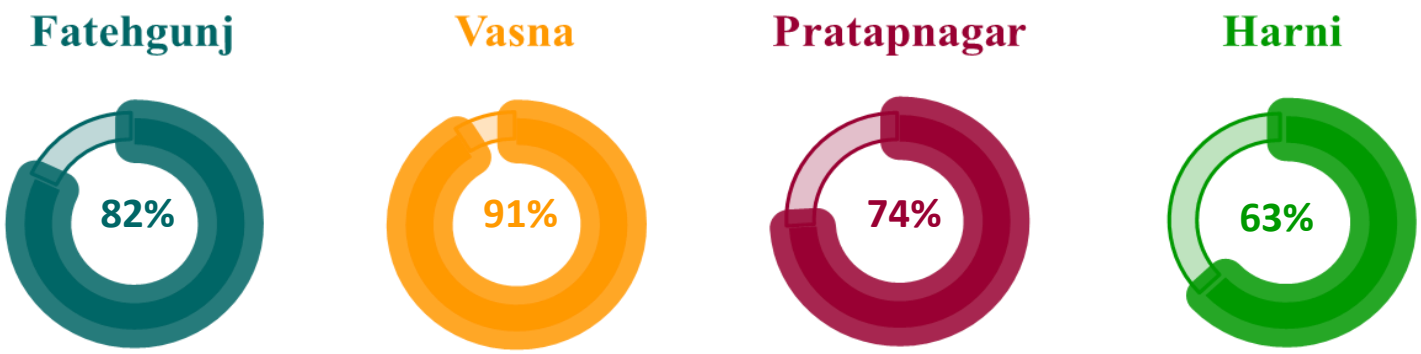
Graphical Visualization:

1) Placing of mobile phone based on Age



In our study we observe that majority of mobile phone users across all ages are keeping their phone in Front side of jeans pocket.

2) Users of mobile phone after 10 p.m. ward wise



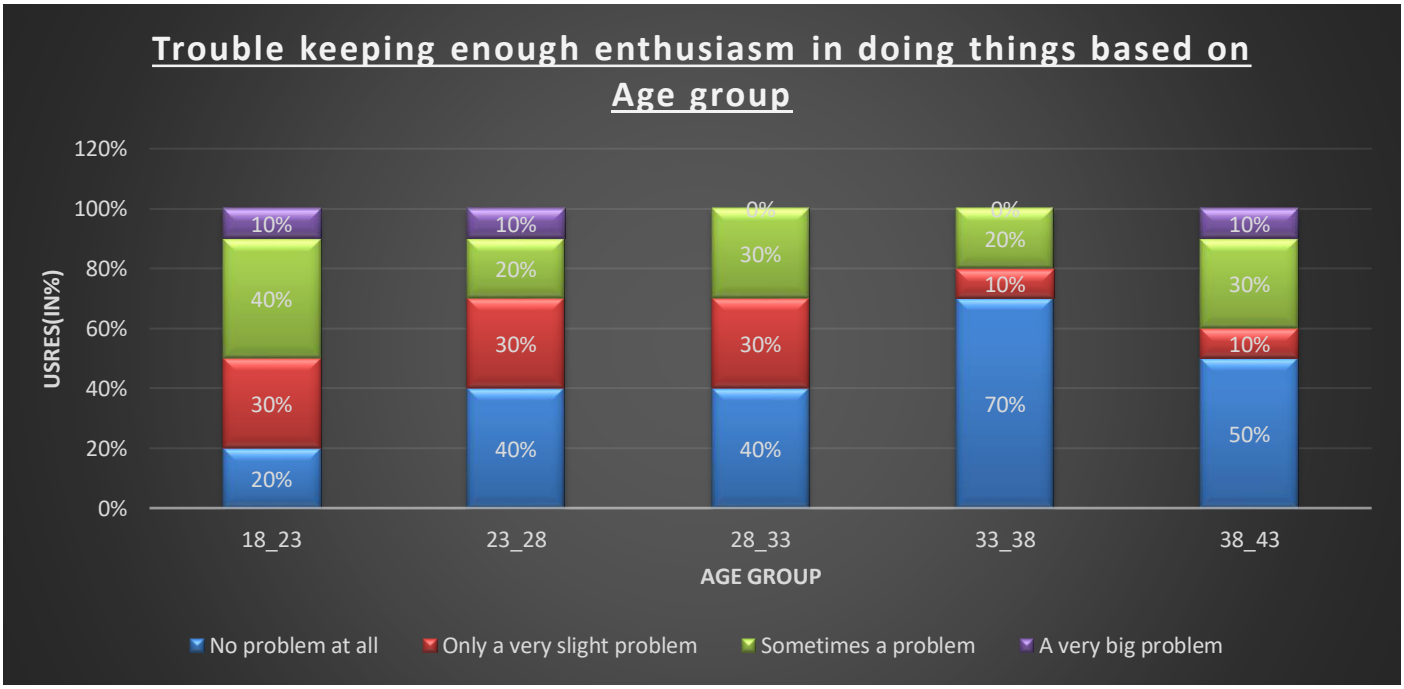
In our study we observe that maximum proportion of users of mobile phone after 10 p.m. lie in Vasna.

3) Usual sleep habits based on Gender (section 1)

In our study we observe that 28% Female having good sleep quality and 72% Females having poor sleep quality.

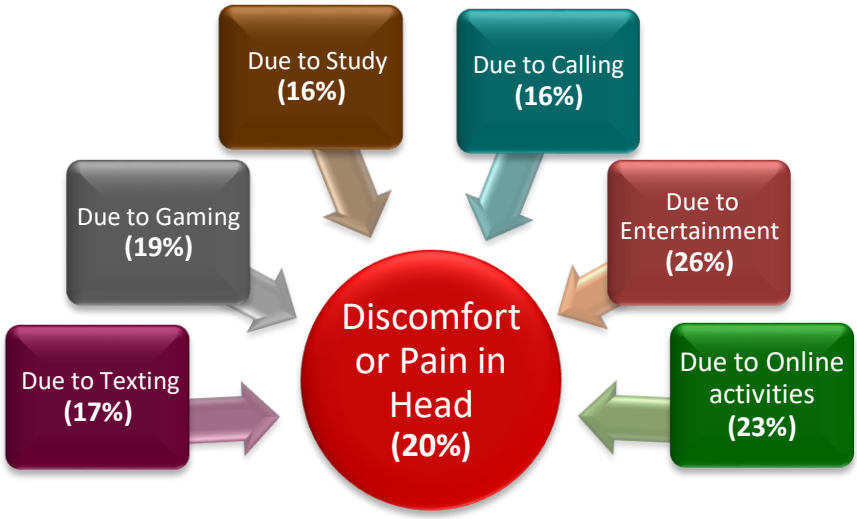
In our study we observe that 42% Male having good sleep quality and 58% Males having poor sleep quality.

4) Trouble keeping enough enthusiasm in doing things based on Age group

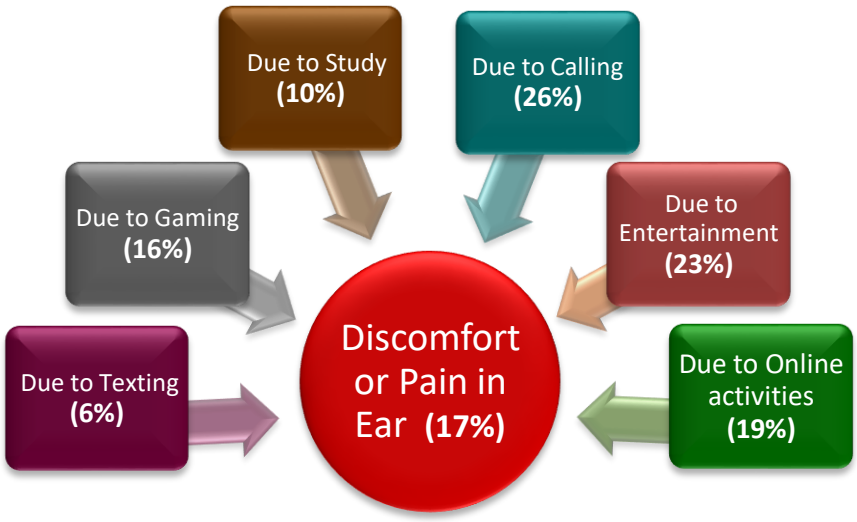


In our study we observe that majority response from age group of 18_23 is 'Sometimes a problem' and majority response from age group of 23_28,28_33,33_38 &38_43 is 'No problem at all'.

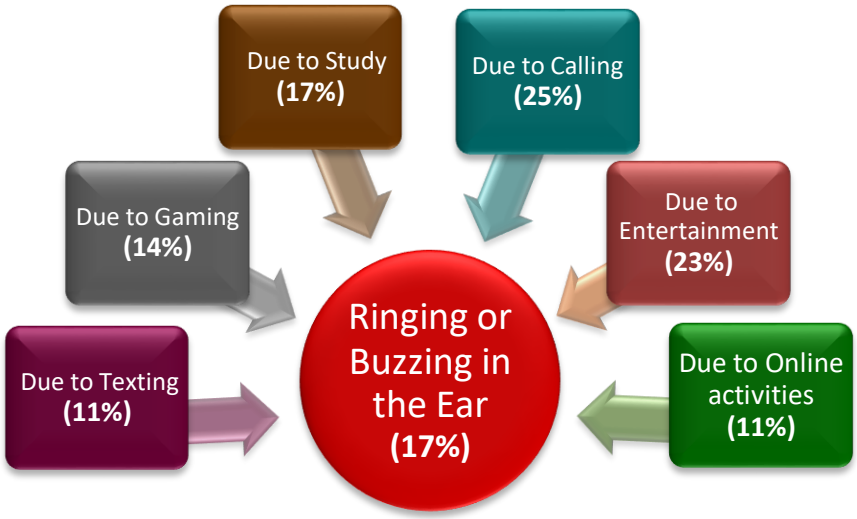
5) Physical Health Problems (upper limb, neck and back) based on 6 Purpose and Age (section 2)



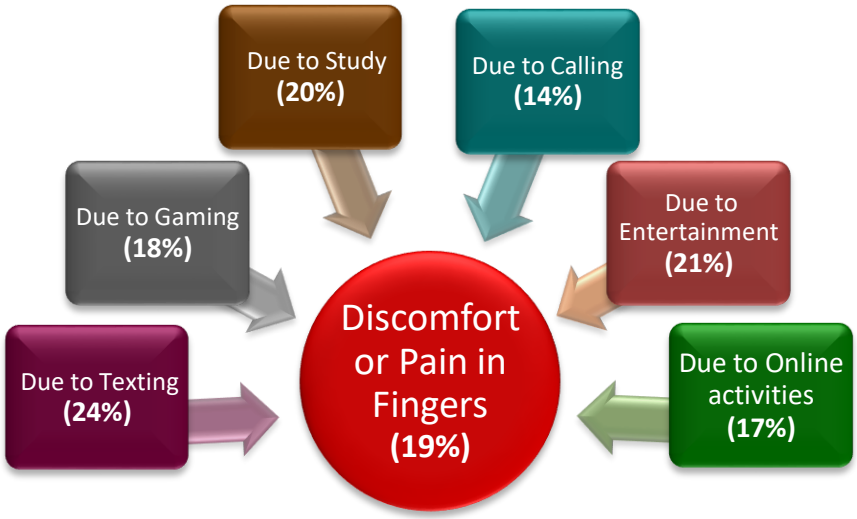
- In our study we observe that 26% Discomfort or pain in Head Due to Entertainment.



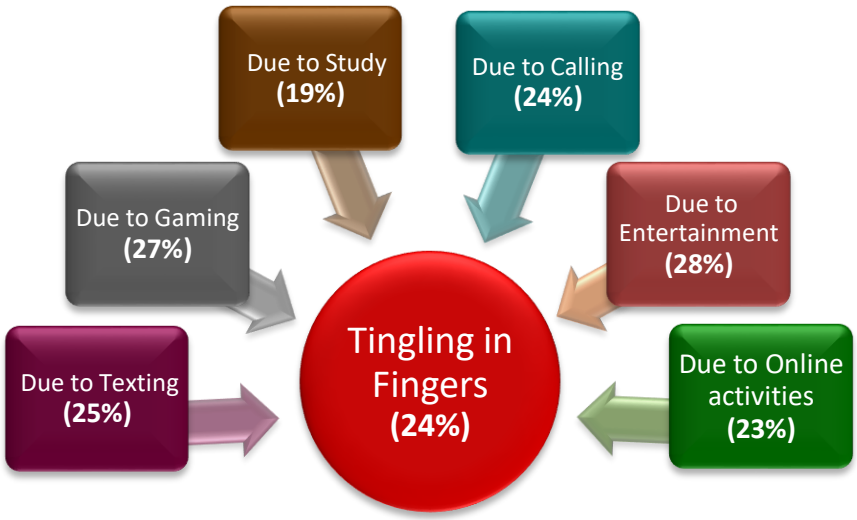
- In our study we observe that 26% Discomfort or pain in Ear Due to Calling.



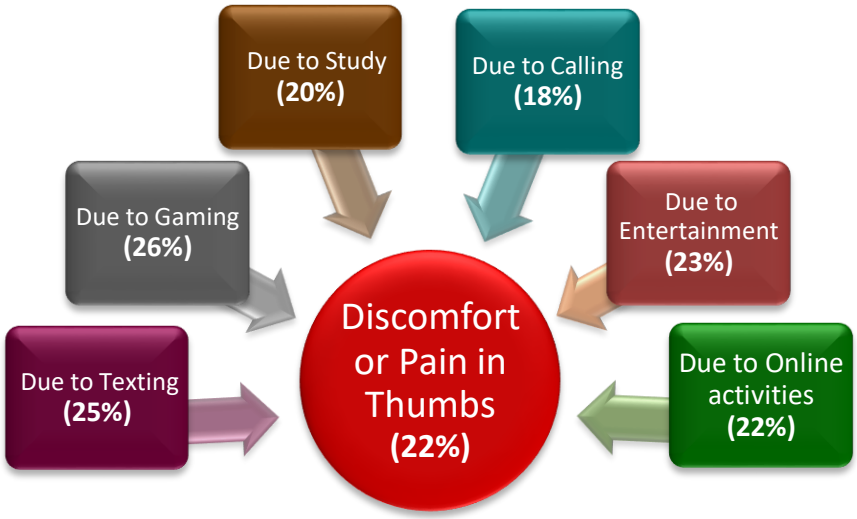
- In our study we observe that 25% Ringing or Buzzing in the Ear Due to Calling.



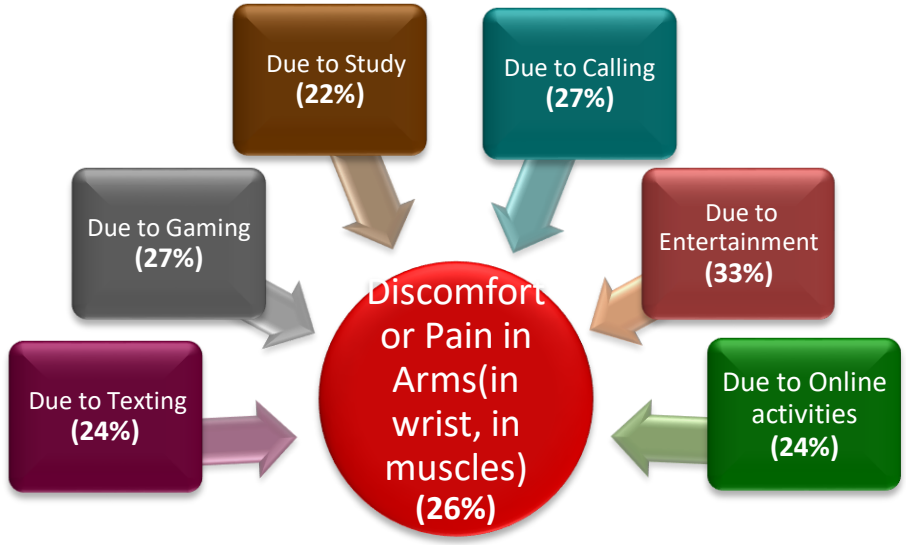
- In our study we observe that 24% Discomfort or pain in Fingers Due to Textimg.



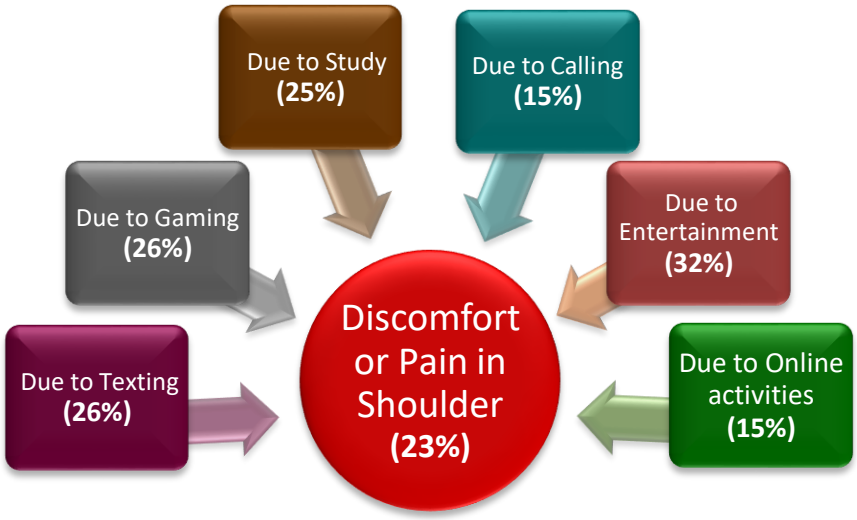
- In our study we observe that 28% Tingling in Fingers Due to Entertainment.



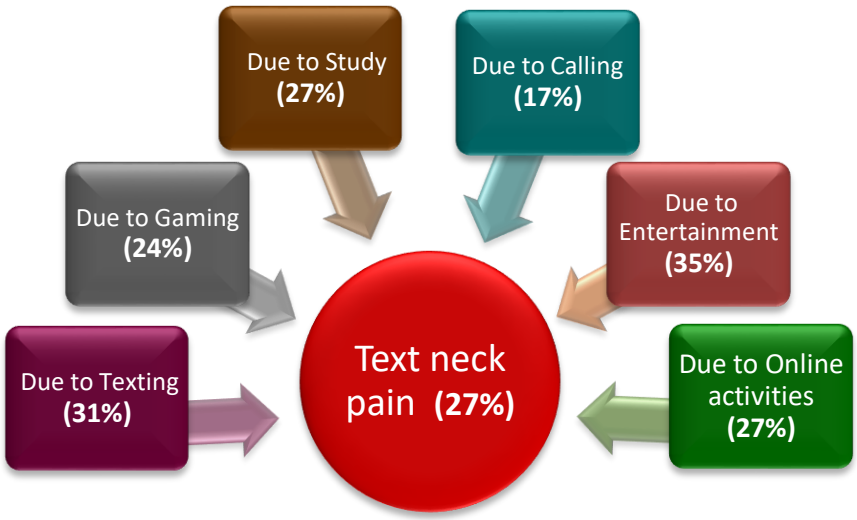
- In our study we observe that 26% Discomfort or pain in Thumbs Due to Gaming.



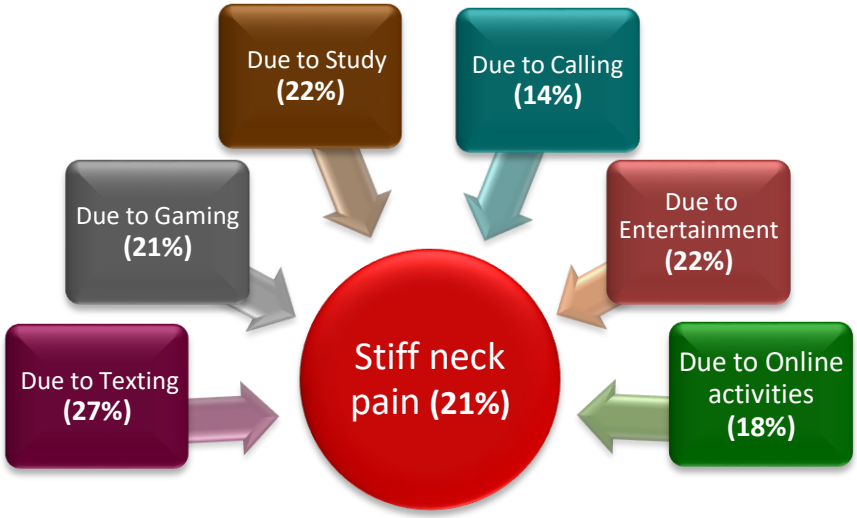
- In our study we observe that 33% Discomfort or pain in Arms(in wrist, in muscles) Due to Entertainment.



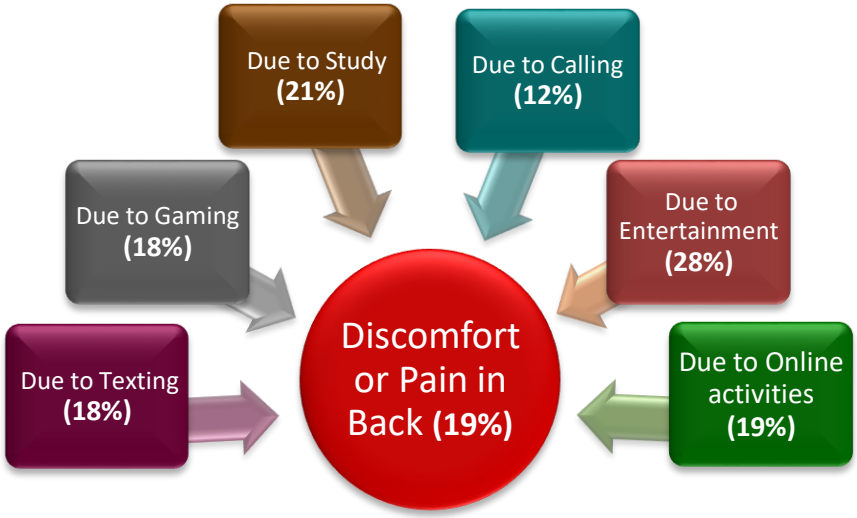
- In our study we observe that 32% Discomfort or pain in Shoulder Due to Entertainment.



- In our study we observe that 35% Text neck pain Due to Entertainment.

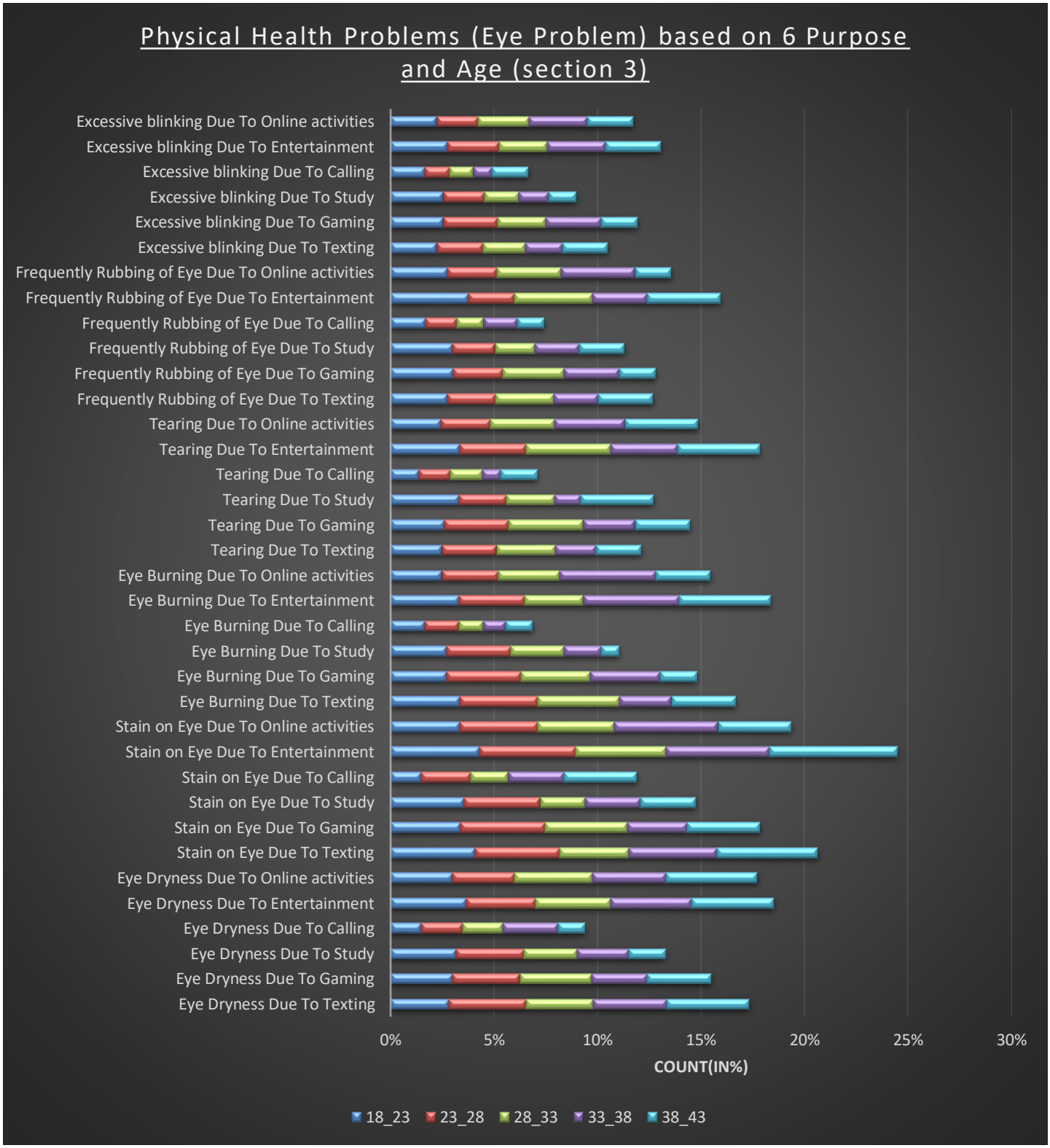


- In our study we observe that 27% Stiffneck pain Due to Texting.



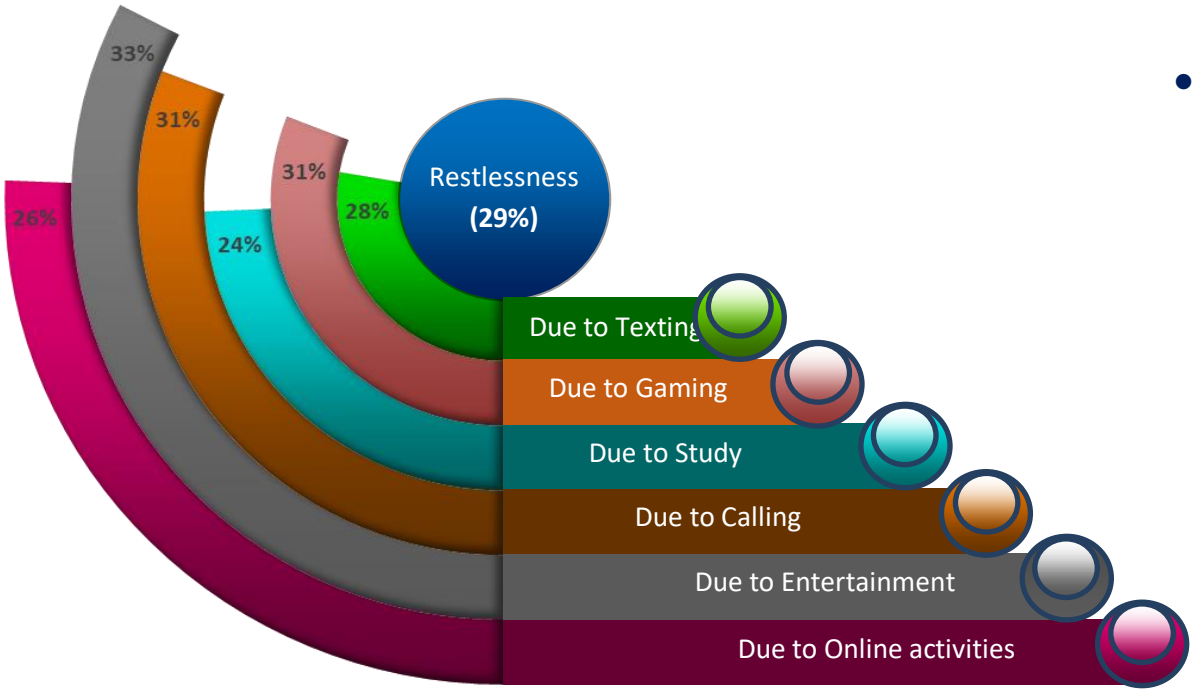
- In our study we observe that 28% Discomfort or pain in Back Due to Entertainment.

6) Physical Health Problems (Eye Problem) based on 6 Purpose and Age (section 3)

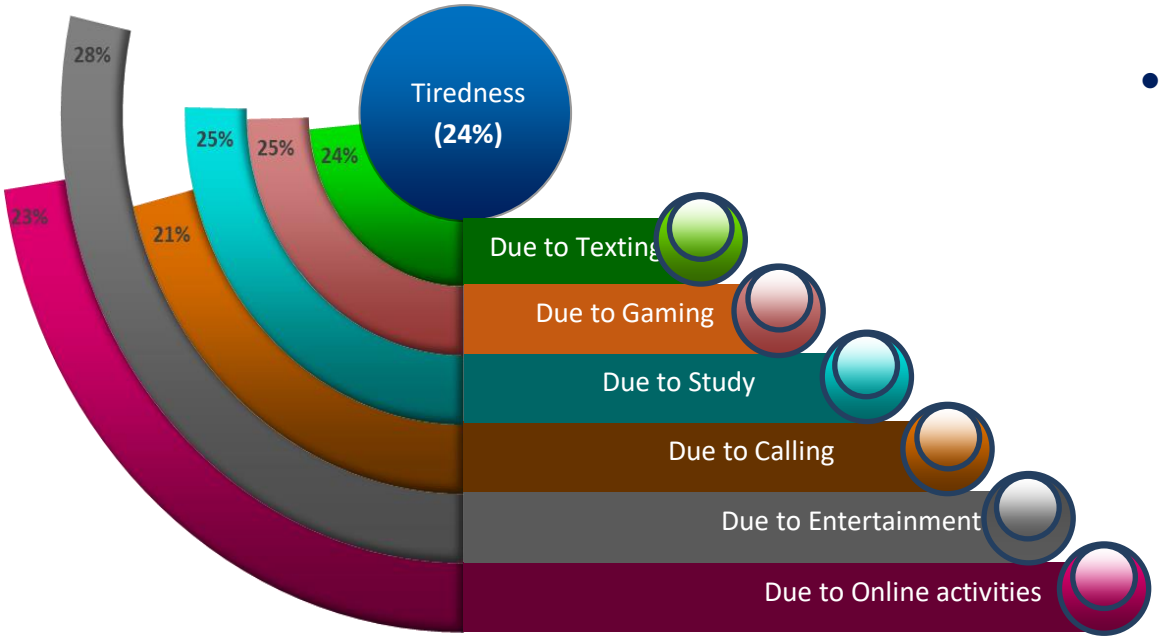


In our study we observe that for Physical Health Problems (Eye Problem) based on 6 Purpose responded are facing a more problem of Stain on Eye and is Due to Entertainment.

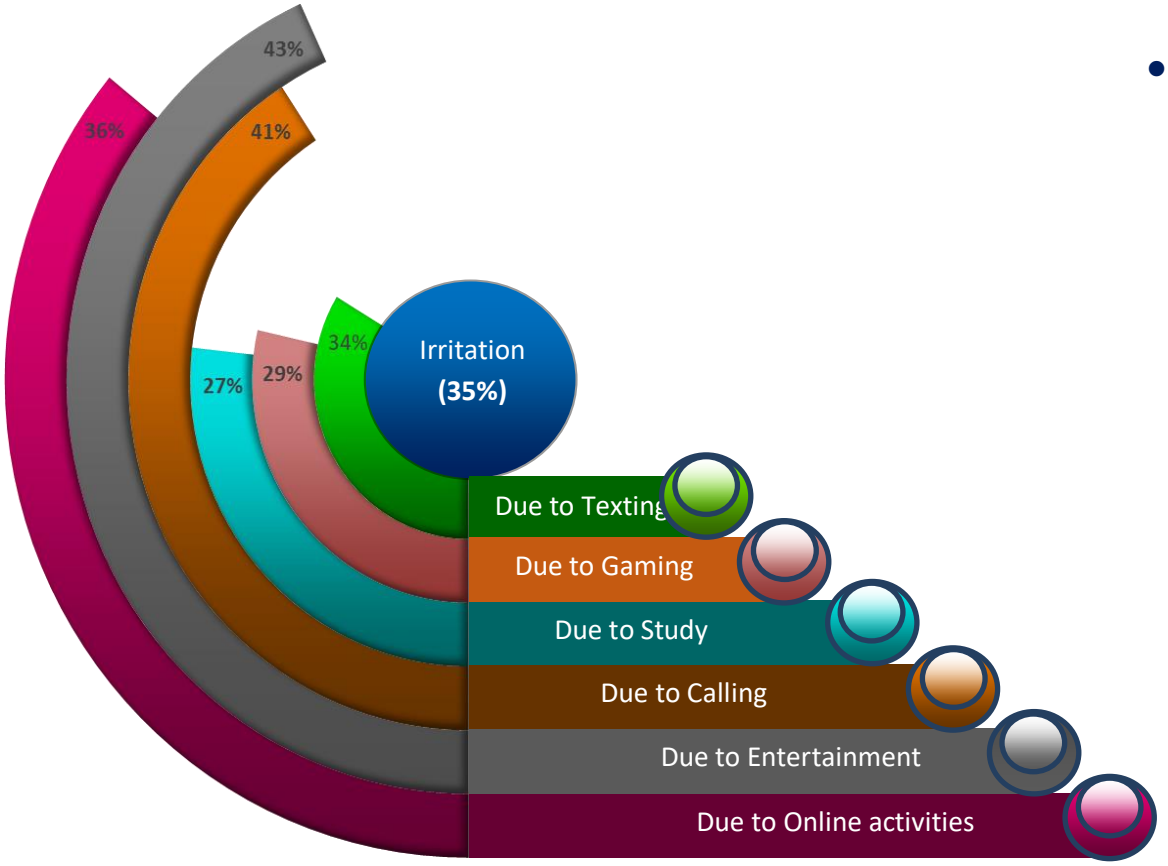
7) Physical Health Problems (Physical Stress) based on 6 Purpose and Age (section 4)



- In our study we observe that 33% Restlessness Due to Entertainment.



- In our study we observe that 28% Tiredness Due to Entertainment.



- In our study we observe that 43% Irritation Due to Entertainment.

Statistical Analysis

1) Proportion Test for checking users of mobile phone after 10 p.m. ward wise:

Hypothesis to be tested:

Ho: p1=p2=p3=p4
ag.
H1: Inequality at least one place.

```
> users<-c (86,64,68,44)
> total<-c (105,70,92,70)
> prop.test (users, total)

        4-sample test for equality of proportions without continuity
        correction

data:  users out of total
X-squared = 18.373, df = 3, p-value = 0.0003684
alternative hypothesis: two.sided
sample estimates:
   prop 1    prop 2    prop 3    prop 4
0.8190476 0.9142857 0.7391304 0.6285714
```

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.0003684

Conclusion:

Here the p value < alpha, so the data provides the enough evidence to reject H_0 at 5% Level of significance and 3 degrees of freedom.
Hence, we conclude that proportion of users of mobile phone after 10 p.m. is not same in all the wards.
We observe that maximum proportion of users of mobile phone after 10 p.m. lie in ward 2 i.e. Vasna.

2) Proportion Test for checking users of mobile phone (in hours) per day ward wise:

Hypothesis to be tested:

Ho: p1=p2=p3=p4
ag.
H1: Inequality at least one place.

```
> users<-c (156,118,190,133)
> total<-c (315,210,276,210)
> prop.test(users,total)

        4-sample test for equality of proportions without continuity
        correction
```

```
data:  users out of total
X-squared = 25.066, df = 3, p-value = 1.496e-05
alternative hypothesis: two.sided
sample estimates:
   prop 1    prop 2    prop 3    prop 4
0.4952381 0.5619048 0.6884058 0.6333333
```

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 1.496e-05

Conclusion:

Here the p value < alpha, so the data provides the enough evidence to reject H_0 at 5% Level of significance and 3 degrees of freedom.
Hence, we conclude that proportion of users of mobile phone (in hours) per day is not same in all the wards. We observe that maximum proportion of users of mobile phone (in hours) per day lie in ward 3 i.e. Pratapnagar.

CHI-SQUARE TEST:

Theory:

Chi-square is a statistical test commonly used to compare observed data with expected data based on specific hypothesis.

The chi-square test is always use for testing the null hypothesis, which states that there is no significant difference between the expected and observed result.

The Chi-square test can also be used to test for independence between rows and columns of a contingency table.

Hypotheses:

Ho: Attributes are independent ag. H1: Attributes are not independent

$$\chi^2_{cal} = \Sigma \frac{(O-E)^2}{E}$$

$$\chi^2_{tab} = \chi^2_{(\alpha,(r-1)(c-1))}$$

Where:
O = observed frequency
E = expected frequency
α= level of significance
r = no. of rows
c = no. of columns

Cross Tabulation:

The Crosstabs procedure forms two-way and multiway tables and provides a variety of tests and measures the association for two ways tables. The structure of the table and categories determine what test or measure to use.

Cross tabs statistics and measures of association are computed for two-way tables only. If you specify a row, a column and layer factor (control variable), the cross tabs procedure forms one panel of associated statistics and measures for each value of the layer factor (or a of values combination for two or more control variables).

In our analysis we observed the following results of chi-square test.

NO Association	NO
Association	YES

	Gender	Age	Usual sleep habits (section-1, Global score)
Usage of Mobile phone (in hour) per day	NO	YES	NO

	Gender	Usage of mobile phone after 10 p.m.
Actual sleep	YES	NO
How they rate their sleep quality overall	YES	YES
Usual sleep habits (section-1, Global score)	YES	YES

	Gender	Usage of Mobile phone (in hour) per day
Discomfort or Pain in Head	YES	YES
Discomfort or Pain in Ear	YES	YES
Ringing or Buzzing in the Ear	YES	YES
Discomfort or Pain in Fingers	YES	YES
Tingling in Fingers	YES	YES
Discomfort or Pain in Thumbs	YES	YES
Discomfort or Pain in Arms (in wrist, in muscles)	YES	YES
Discomfort or Pain in Shoulder	YES	YES
Text neck pain	YES	YES
Stiff neck pain	NO	YES
Discomfort or Pain in Back	YES	YES
Eye Dryness	NO	YES
Stain on Eye	NO	YES
Eye Burning	YES	YES
Tearing	NO	YES
Frequently Rubbing of Eye	YES	YES
Excessive blinking	NO	YES
Restlessness	NO	YES
Tiredness	YES	YES
Irritation	NO	YES

And Chi-Square test are shown below.

1) Objective: To check the dependency of Usage of mobile phone (in hour) per day on Gender.

To Test:

Ho: Usage of mobile phone is independent of gender**.**

Vs

H1: Usage of mobile phone is not independent of gender.

Observed Frequency table: Annexure:1(Objective:1)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.081[a]	3	.108
Likelihood Ratio	6.122	3	.106
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 21.52.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.108

Conclusion:

As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 3 degree of freedom.
Hence, we conclude that usage of mobile phone is independent of gender.

2) Objective: To check association between Usage of mobile phone (in hour) per day and Age.

To Test:

Ho: There is no association between Usage of mobile phone and Age.

Vs

H1: There is association between Usage of mobile phone and Age.

Observed Frequency table: Annexure:1(Objective:2)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.884[a]	12	.000
Likelihood Ratio	37.194	12	.000
N of Valid Cases	337		

a. 1 cells (5.0%) have expected count less than 5. The minimum expected count is 4.65.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 12 degree of freedom.
Hence, we conclude that usage of mobile phone is not independent of Age.
As there is association between two attributes, i.e. Usage of mobile phone and Age.
Then how much?

Hence for we use Cramer's V test.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.335	.000
	Cramer's V	.194	.000
N of Valid Cases		337	

Thus, there is 19.4% association between Usage of mobile phone and Age.

3) Objective: To check association between Total number of actual sleeps they get at night and Gender.

To Test:

Ho: There is no association between Total number of actual sleeps they get at night and Gender.

Vs

H1: There is association between Total number of actual sleeps they get at night and Gender.

Observed Frequency table: Annexure:1(Objective:3)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	27.068[a]	8	.001	.000[b]	.000	.009
Likelihood Ratio	29.704	8	.000	.000[b]	.000	.009
Fisher's Exact Test	26.304			.000[b]	.000	.009
N of Valid Cases	337					

a. 8 cells (44.4%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 334431365.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 8 degree of freedom.
Hence, we conclude that Total number of actual sleeps they get at night is not independent of Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	Monte Carlo Sig. 95% Confidence Interval Lower Bound	Monte Carlo Sig. 95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.283	.001	.000[a]	.000	.009
	Cramer's V	.283	.001	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 334431365.

Also, there is 28.3% association between Total number of actual sleeps they get at night and Gender.

4) Objective: To check association between Total number of actual sleeps they get at night and Usage of mobile phone after 10 p.m.

To Test:

Ho: There is no association between Total number of actual sleeps they get at night and Usage of mobile phone after 10 p.m.

Vs

H1: There is association between Total number of actual sleeps they get at night and Usage of mobile phone after 10 p.m.

Observed Frequency table: Annexure:1(Objective:4)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Monte Carlo Sig. (2-sided) Significance	Monte Carlo Sig. (2-sided) 95% Confidence Interval Lower Bound	Monte Carlo Sig. (2-sided) 95% Confidence Interval Upper Bound
Pearson Chi-Square	12.367[a]	8	.136	.113[b]	.079	.147
Likelihood Ratio	13.254	8	.103	.101[b]	.069	.133
Fisher's Exact Test	10.544			.169[b]	.129	.209
N of Valid Cases	337					

a. 9 cells (50.0%) have expected count less than 5. The minimum expected count is .22.

b. Based on 337 sampled tables with starting seed 624387341.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.101

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 8 degree of freedom.
Hence, we conclude that Total number of actual sleeps they get at night is independent of Usage of mobile phone after 10 p.m.

5) Objective: To check association between How they rate their sleep quality overall and Gender.

To Test:

Ho: There is no association between How they rate their sleep quality overall and Gender.

Vs

H1: There is association between How they rate their sleep quality overall and Gender.

Observed Frequency table: Annexure:1(Objective:5)
Chi-Square test:

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.383[a]	2	.009
Likelihood Ratio	9.412	2	.009
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.78.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.009

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 2 degree of freedom.
Hence, we conclude that How they rate their sleep quality overall not independent of Gender.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.167	.009
	Cramer's V	.167	.009
N of Valid Cases		337	

Also, there is 16.7% association between How they rate their sleep quality overall and Gender.

6) Objective: To check association between How they rate their sleep quality overall and Usage of mobile phone after 10 p.m.

To Test:

Ho: There is no association between How they rate their sleep quality overall and Usage of mobile phone after 10 p.m.

Vs

H1: There is association between How they rate their sleep quality overall and Usage of mobile phone after 10 p.m.

Observed Frequency table: **Annexure:1(Objective:6)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.811[a]	2	.000
Likelihood Ratio	31.891	2	.000
N of Valid Cases	337		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.45.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 2 degree of freedom.

Hence, we conclude that How they rate their sleep quality overall not independent of Usage of mobile phone after 10 p.m.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.302	.000
	Cramer's V	.302	.000
N of Valid Cases		337	

Also, there is 30.2% association between How they rate their sleep quality overall and Usage of mobile phone after 10 p.m.

7) Objective: To check association between Usual sleep habits (section 1, Global score) and Gender.

To Test:

Ho: There is no association between Usual sleep habits (section 1) and Gender.

Vs

H1: There is association between Usual sleep habits (section 1) and Gender.

Observed Frequency table: Annexure:1(Objective:7)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	26.080[a]	13	.017	.003[b]	.000	.009
Likelihood Ratio	26.609	13	.014	.015[b]	.002	.028
Fisher's Exact Test	25.777			.006[b]	.000	.014
N of Valid Cases	337					

a. 9 cells (32.1%) have expected count less than 5. The minimum expected count is 1.32.

b. Based on 337 sampled tables with starting seed 1573343031.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.015

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 13 degree of freedom.

Hence, we conclude that there is association between Usual sleep habits (section 1) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.278	.017	.003[a]	.000	.009
	Cramer's V	.278	.017	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1573343031.

Also, there is 27.8% association between Usual sleep habits (section 1) and Gender.

8) Objective: To check association between Usual sleep habits (section 1, Global score) and Usage of mobile phone after 10 p.m.

To Test:

Ho: There is no association between Usual sleep habits (section 1) and Usage of mobile phone after 10 p.m.

Vs

H1: There is association between Usual sleep habits (section 1) and Usage of mobile phone after 10 p.m.

Observed Frequency table: Annexure:1(Objective:8)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Monte Carlo Sig. (2-sided) Significance	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	38.611[a]	13	.000	.003[b]	.000	.009
Likelihood Ratio	37.044	13	.000	.006[b]	.000	.014
Fisher's Exact Test	33.434			.006[b]	.000	.014
N of Valid Cases	337					

a. 11 cells (39.3%) have expected count less than 5. The minimum expected count is .67.

b. Based on 337 sampled tables with starting seed 92208573.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.006

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 13 degree of freedom.

Hence, we conclude that there is association between Usual sleep habits (section 1) and Usage of mobile phone after 10 p.m.

Symmetric Measures

		Value	Approximate Significance	Monte Carlo Significance Significance	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.338	.000	.003[c]	.000	.009
	Cramer's V	.338	.000	.003[c]	.000	.009
N of Valid Cases		337				

c. Based on 337 sampled tables with starting seed 92208573.

Also, there is 33.8% association between Usual sleep habits (section 1) and Usage of mobile phone after 10 p.m.

9) Objective: To check association between Usual sleep habits (section 1, Global score) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Usual sleep habits (section 1) and Usage of mobile phone.

Vs

H1: There is association between Usual sleep habits (section 1) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:9)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	41.469[a]	39	.364	.365[b]	.314	.416
Likelihood Ratio	43.322	39	.292	.478[b]	.424	.531
Fisher's Exact Test	35.458			.570[b]	.517	.623
N of Valid Cases	337					

a. 24 cells (42.9%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 2048628469.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.478

Conclusion:

As p-value > alpha, therefore the data provide enough evident to do reject Ho at 5% Level of significance and 39 degree of freedom.

Hence, we conclude that there is no association between Usual sleep habits (section 1) and Usage of mobile phone.

10) Objective: To check association between Discomfort or Pain in Head (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Head (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Head (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:10)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	33.184[a]	13	.002	.003[b]	.000	.009
Likelihood Ratio	35.642	13	.001	.003[b]	.000	.009
Fisher's Exact Test	32.870			.003[b]	.000	.009
N of Valid Cases	337					

a. 12 cells (42.9%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.003

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 13 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Head (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.314	.002	.003[a]	.000	.009
	Cramer's V	.314	.002	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 31.4% association between Discomfort or Pain in Head (of section 2) and Gender.

11) Objective: To check association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone (in hour) per day.

To Test:
Ho: There is no association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone.
Vs
H1: There is association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:11)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	100.222[a]	39	.000	.000[b]	.000	.009
Likelihood Ratio	105.066	39	.000	.000[b]	.000	.009
Fisher's Exact Test	89.024			.000[b]	.000	.009
N of Valid Cases	337					

a. 29 cells (51.8%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 1585587178.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 39 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.545	.000	.000[a]	.000	.009
	Cramer's V	.315	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1585587178.

Also, there is 31.5% association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone.

12) Objective: To check association between Discomfort or Pain in Ear (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Ear (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Ear (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:12)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	24.965[a]	12	.015	.012[b]	.000	.023
Likelihood Ratio	29.552	12	.003	.000[b]	.000	.009
Fisher's Exact Test	26.000			.000[b]	.000	.009
N of Valid Cases	337					

a. 7 cells (26.9%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 12 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Ear (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.272	.015	.012[a]	.000	.023
	Cramer's V	.272	.015	.012[a]	.000	.023
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 27.2 association between Discomfort or Pain in Ear (of section 2) and Gender.

13) Objective: To check association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:13)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	90.615[a]	36	.000	.000[b]	.000	.009
Likelihood Ratio	94.186	36	.000	.000[b]	.000	.009
Fisher's Exact Test	82.895			.000[b]	.000	.009
N of Valid Cases	337					

a. 25 cells (48.1%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 213798720.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 36 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.519	.000	.000[a]	.000	.009
	Cramer's V	.299	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 213798720.

Also, there is 29.9% association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone.

14) Objective: To check association between Ringing or Buzzing in the Ear (of section 2) and Gender.

To Test:

Ho: There is no association between Ringing or Buzzing in the Ear (of section 2) and Gender.

Vs

H1: There is association between Ringing or Buzzing in the Ear (of section 2) and Gender.

Observed Frequency table: **Annexure:1(Objective:14)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	32.470[a]	13	.002	.003[b]	.000	.009
Likelihood Ratio	36.064	13	.001	.003[b]	.000	.009
Fisher's Exact Test	30.398			.003[b]	.000	.009
N of Valid Cases	337					

a. 11 cells (39.3%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.003

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 13 degree of freedom.
Hence, we conclude that there is association between Ringing or Buzzing in the Ear (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.310	.002	.003[a]	.000	.009
	Cramer's V	.310	.002	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 31% association between Ringing or Buzzing in the Ear (of section 2) and Gender.

15) Objective: To check association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:15)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	93.303[a]	39	.000	.000[b]	.000	.009
Likelihood Ratio	93.470	39	.000	.000[b]	.000	.009
Fisher's Exact Test	80.575			.000[b]	.000	.009
N of Valid Cases	337					

a. 29 cells (51.8%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 754262874.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 39 degree of freedom.
Hence,
we conclude that there is association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.526	.000	.000[a]	.000	.009
	Cramer's V	.304	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 754262874.

Also, there is 30.4% association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone.

16) Objective: To check association between Discomfort or Pain in Fingers (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Fingers (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Fingers (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:16)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	25.670[a]	13	.019	.030[b]	.012	.048
Likelihood Ratio	27.809	13	.010	.030[b]	.012	.048
Fisher's Exact Test	24.756			.036[b]	.016	.055
N of Valid Cases	337					

a. 11 cells (39.3%) have expected count less than 5. The minimum expected count is .88.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.03

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 13 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Fingers (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.276	.019	.030[a]	.012	.048
	Cramer's V	.276	.019	.030[a]	.012	.048
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 27.6% association between Discomfort or Pain in Fingers (of section 2) and Gender.

17) Objective: To check association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:17)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	93.566[a]	39	.000	.000[b]	.000	.009
Likelihood Ratio	96.019	39	.000	.000[b]	.000	.009
Fisher's Exact Test	81.072			.000[b]	.000	.009
N of Valid Cases	337					

a. 28 cells (50.0%) have expected count less than 5. The minimum expected count is .29.

b. Based on 337 sampled tables with starting seed 1660843777.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 39 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.527	.000	.000[a]	.000	.009
	Cramer's V	.304	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1660843777.

Also, there is 30.4% association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone.

18) Objective: To check association between Tingling in Fingers (of section 2) and Gender.

To Test:

Ho: There is no association between Tingling in Fingers (of section 2) and Gender.

Vs

H1: There is association between Tingling in Fingers (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:18)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	38.556[a]	16	.001	.000[b]	.000	.009
Likelihood Ratio	44.284	16	.000	.000[b]	.000	.009
Fisher's Exact Test	38.124			.000[b]	.000	.009
N of Valid Cases	337					

a. 15 cells (44.1%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 16 degree of freedom.
Hence, we conclude that there is association between Tingling in Fingers (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.338	.001	.000[a]	.000	.009
	Cramer's V	.338	.001	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 33.8% association between Tingling in Fingers (of section 2) and Gender.

19) Objective: To check association between Tingling in Fingers (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Tingling in Fingers (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Tingling in Fingers (of section 2) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:19)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	116.410[a]	48	.000	.000[b]	.000	.009
Likelihood Ratio	124.197	48	.000	.000[b]	.000	.009
Fisher's Exact Test	98.860			.000[b]	.000	.009
N of Valid Cases	337					

a. 44 cells (64.7%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 2009616798.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 48 degree of freedom.
Hence,
we conclude that there is association between Tingling in Fingers (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.588	.000	.000[a]	.000	.009
	Cramer's V	.339	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 2009616798.

Also, there is 33.9% association between Tingling in Fingers (of section 2) and Usage of mobile phone.

20) Objective: To check association between Discomfort or Pain in Thumbs (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Thumbs (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Thumbs (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:20)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	28.380[a]	12	.005	.000[b]	.000	.009
Likelihood Ratio	29.582	12	.003	.003[b]	.000	.009
Fisher's Exact Test	27.878			.000[b]	.000	.009
N of Valid Cases	337					

a. 8 cells (30.8%) have expected count less than 5. The minimum expected count is .88.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.003

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 12 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Thumbs (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.290	.005	.000[a]	.000	.009
	Cramer's V	.290	.005	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 29% association between Discomfort or Pain in Thumbs (of section 2) and Gender.

21) Objective: To check association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:21)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	116.265[a]	36	.000	.000[b]	.000	.009
Likelihood Ratio	128.794	36	.000	.000[b]	.000	.009
Fisher's Exact Test	109.813			.000[b]	.000	.009
N of Valid Cases	337					

a. 24 cells (46.2%) have expected count less than 5. The minimum expected count is .29.

b. Based on 337 sampled tables with starting seed 272886377.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 36 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.587	.000	.000[a]	.000	.009
	Cramer's V	.339	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 272886377.

Also, there is 33.9% association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone.

22) Objective: To check association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:22)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	31.113[a]	16	.013	.003[b]	.000	.009
Likelihood Ratio	34.049	16	.005	.006[b]	.000	.014
Fisher's Exact Test	30.497			.003[b]	.000	.009
N of Valid Cases	337					

a. 14 cells (41.2%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.006

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 16 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.304	.013	.003[a]	.000	.009
	Cramer's V	.304	.013	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 30.4% association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

23) Objective: To check association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:23)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	85.824[a]	48	.001	.000[b]	.000	.009
Likelihood Ratio	99.962	48	.000	.000[b]	.000	.009
Fisher's Exact Test	80.845			.000[b]	.000	.009
N of Valid Cases	337					

a. 42 cells (61.8%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 1149983241.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 48 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.505	.001	.000[a]	.000	.009
	Cramer's V	.291	.001	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1149983241.

Also, there is 29.1% association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone.

24) Objective: To check association between Discomfort or Pain in Shoulder (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Shoulder (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Shoulder (of section 2) and Gender.

Observed Frequency table: **Annexure:1(Objective:24)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	38.525[a]	15	.001	.000[b]	.000	.009
Likelihood Ratio	40.861	15	.000	.000[b]	.000	.009
Fisher's Exact Test	38.412			.000[b]	.000	.009
N of Valid Cases	337					

a. 15 cells (46.9%) have expected count less than 5. The minimum expected count is .88.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 15 degree of freedom.
Hence, we conclude that there is association between Discomfort or Pain in Shoulder (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.338	.001	.000[a]	.000	.009
	Cramer's V	.338	.001	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 33.8% association between Discomfort or Pain in Shoulder (of section 2) and Gender.

25) Objective: To check association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:25)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	122.889[a]	45	.000	.000[b]	.000	.009
Likelihood Ratio	134.729	45	.000	.000[b]	.000	.009
Fisher's Exact Test	108.674			.000[b]	.000	.009
N of Valid Cases	337					

a. 39 cells (60.9%) have expected count less than 5. The minimum expected count is .29.

b. Based on 337 sampled tables with starting seed 1978014291.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 45 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.604	.000	.000[a]	.000	.009
	Cramer's V	.349	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1978014291.

Also, there is 34.9% association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone.

26) Objective: To check association between Text neck pain (of section 2) and Gender.

To Test:

Ho: There is no association between Text neck pain (of section 2) and Gender.

Vs

H1: There is association between Text neck pain (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:26)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	34.283[a]	14	.002	.000[b]	.000	.009
Likelihood Ratio	36.532	14	.001	.000[b]	.000	.009
Fisher's Exact Test	34.684			.000[b]	.000	.009
N of Valid Cases	337					

a. 8 cells (26.7%) have expected count less than 5. The minimum expected count is .88.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 14 degree of freedom.
Hence, we conclude that there is association between Text neck pain (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.319	.002	.000[a]	.000	.009
	Cramer's V	.319	.002	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 31.9% association between Text neck pain (of section 2) and Gender.

27) Objective: To check association between Text neck pain (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Text neck pain (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Text neck pain (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:27)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	115.844[a]	42	.000	.000[b]	.000	.009
Likelihood Ratio	115.830	42	.000	.000[b]	.000	.009
Fisher's Exact Test	102.028			.000[b]	.000	.009
N of Valid Cases	337					

a. 27 cells (45.0%) have expected count less than 5. The minimum expected count is .29.

b. Based on 337 sampled tables with starting seed 1333095690.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 42 degree of freedom.
Hence,
we conclude that there is association between Text neck pain (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.586	.000	.000[a]	.000	.009
	Cramer's V	.339	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1333095690.

Also, there is 33.9% association between Text neck pain (of section 2) and Usage of mobile phone.

28) Objective: To check association between Stiff neck pain (of section 2) and Gender.

To Test:

Ho: There is no association between Stiff neck pain (of section 2) and Gender.

Vs

H1: There is association between Stiff neck pain (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:28)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	24.620[a]	15	.055	.053[b]	.029	.077
Likelihood Ratio	26.486	15	.033	.062[b]	.037	.088
Fisher's Exact Test	24.154			.056[b]	.032	.081
N of Valid Cases	337					

a. 13 cells (40.6%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.062

Conclusion:

As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 15 degree of freedom.
Hence, we conclude that there is no association between Stiff neck pain (of section 2) and Gender.

29) Objective: To check association between Stiff neck pain (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Stiff neck pain (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in E Stiff neck pain are (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:29)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	76.225[a]	45	.002	.000[b]	.000	.009
Likelihood Ratio	83.156	45	.000	.000[b]	.000	.009
Fisher's Exact Test	69.334			.000[b]	.000	.009
N of Valid Cases	337					

a. 37 cells (57.8%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 307647058.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 45 degree of freedom.
Hence, we conclude that there is association between Stiff neck pain (of section 2) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	Monte Carlo Sig. 95% Confidence Interval Lower Bound	Monte Carlo Sig. 95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.476	.002	.000[a]	.000	.009
	Cramer's V	.275	.002	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 307647058.

Also, there is 27.5% association between Stiff neck pain (of section 2) and Usage of mobile phone.

30) Objective: To check association between Discomfort or Pain in Back (of section 2) and Gender.

To Test:

Ho: There is no association between Discomfort or Pain in Back (of section 2) and Gender.

Vs

H1: There is association between Discomfort or Pain in Back (of section 2) and Gender.

Observed Frequency table: Annexure:1(Objective:30)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	32.995[a]	14	.003	.003[b]	.000	.009
Likelihood Ratio	38.106	14	.001	.003[b]	.000	.009
Fisher's Exact Test	34.441			.000[b]	.000	.009
N of Valid Cases	337					

a. 13 cells (43.3%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 79996689.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05

P-value = 0.003

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 14 degree of freedom.

Hence, we conclude that there is association between Discomfort or Pain in Back (of section 2) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	Monte Carlo Sig. 95% Confidence Interval Lower Bound	Monte Carlo Sig. 95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.313	.003	.003[a]	.000	.009
	Cramer's V	.313	.003	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 79996689.

Also, there is 31.3% association between Discomfort or Pain in Back (of section 2) and Gender.

31) Objective: To check association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:31)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	Monte Carlo Sig. (2-sided) 95% Confidence Interval Lower Bound	Monte Carlo Sig. (2-sided) 95% Confidence Interval Upper Bound
Pearson Chi-Square	84.076[a]	42	.000	.000[b]	.000	.009
Likelihood Ratio	92.280	42	.000	.000[b]	.000	.009
Fisher's Exact Test	78.299			.000[b]	.000	.009
N of Valid Cases	337					

a. 38 cells (63.3%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 213175432.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 42 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone.

Symmetric Measures

				Monte Carlo Sig.		
					95% Confidence Interval	
		Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Phi	.499	.000	.000[a]	.000	.009
	Cramer's V	.288	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 213175432.

Also, there is 28.8% association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone.

32) Objective: To check association between Discomfort or Eye Dryness (of section 3) and Gender.

To Test:

Ho: There is no association between Discomfort or Eye Dryness (of section 3) and Gender.

Vs

H1: There is association between Discomfort or Eye Dryness (of section 3) and Gender.

Observed Frequency table: Annexure:1(Objective:32)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.925[a]	6	.128
Likelihood Ratio	9.946	6	.127
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.05

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.128

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is no association between Discomfort or Eye Dryness (of section 3) and Gender.

33) Objective: To check association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone.

Vs

H1: There is association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:33)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.870[a]	18	.000
Likelihood Ratio	46.937	18	.000
N of Valid Cases	337		

a. 1 cells (3.6%) have expected count less than 5. The minimum expected count is 4.65

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
we conclude that there is association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.373	.000
	Cramer's V	.215	.000
N of Valid Cases		337	

Also, there is 21.5% association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone.

34) Objective: To check association between Discomfort or Stain on Eye (of section 3) and Gender.

To Test:

Ho: There is no association between Discomfort or Stain on Eye (of section 3) and Gender.

Vs

H1: There is association between Discomfort or Stain on Eye (of section 3) and Gender.

Observed Frequency table: Annexure:1(Objective:34)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.739[a]	6	.068
Likelihood Ratio	11.819	6	.066
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.42

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.068

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is no association between Discomfort or Stain on Eye (of section 3) and Gender.

35) Objective: To check association between Stain on Eye (of section 3) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Stain on Eye (of section 3) and Usage of mobile phone.

Vs

H1: There is association between Stain on Eye (of section 3) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:35)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.297[a]	18	.045
Likelihood Ratio	28.543	18	.054
N of Valid Cases	337		

a. 2 cells (7.1%) have expected count less than 5. The minimum expected count is 3.78.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.045

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,

we conclude that there is association between Stain on Eye (of section 3) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.295	.045
	Cramer's V	.170	.045
N of Valid Cases		337	

Also, there is 17% association between Stain on Eye (of section 3) and Usage of mobile phone.

36) Objective: To check association between Eye Burning (of section 3) and Gender.

To Test:

Ho: There is no association between Eye Burning (of section 3) and Gender.

Vs

H1: There is association between Eye Burning (of section 3) and Gender.

Observed Frequency table: Annexure:1(Objective:36)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.344[a]	6	.002
Likelihood Ratio	21.695	6	.001
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.15.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.002

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is association between Eye Burning (of section 3) and Gender.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.252	.002
	Cramer's V	.252	.002
N of Valid Cases		337	

Also, there is 25.5% association between Eye Burning (of section 3) and Gender.

37) Objective: To check association between Eye Burning (of section 3) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Eye Burning (of section 3) and Usage of mobile phone.

Vs

H1: There is association between Eye Burning (of section 3) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:37)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.741[a]	18	.000
Likelihood Ratio	54.120	18	.000
N of Valid Cases	337		

a. 5 cells (17.9%) have expected count less than 5. The minimum expected count is 2.04

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
we conclude that there is association between Eye Burning (of section 3) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.392	.000
	Cramer's V	.226	.000
N of Valid Cases		337	

Also, there is 22.6% association between Eye Burning (of section 3) and Usage of mobile phone.

38) Objective: To check association between Tearing (of section 3) and Gender.

To Test:

Ho: There is no association between Tearing (of section 3) and Gender.

Vs

H1: There is association between Tearing (of section 3) and Gender.

Observed Frequency table: Annexure:1(Objective:38)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.427[a]	6	.208
Likelihood Ratio	8.611	6	.197
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.15.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.208

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is no association between Tearing (of section 3) and Gender.

39) Objective: To check association between Tearing (of section 3) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Tearing (of section 3) and Usage of mobile phone.

Vs

H1: There is association between Tearing (of section 3) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:39)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.310[a]	18	.000
Likelihood Ratio	50.084	18	.000
N of Valid Cases	337		

a. 5 cells (17.9%) have expected count less than 5. The minimum expected count is 2.04

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
we conclude that there is association between Tearing (of section 3) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.375	.000
	Cramer's V	.216	.000
N of Valid Cases		337	

Also, there is 21.6% association between Tearing (of section 3) and Usage of mobile phone.

40) Objective: To check association between Frequently Rubbing of Eye (of section 3) and Gender.

To Test:
Ho: There is no association between Frequently Rubbing of Eye (of section 3) and Gender.
Vs
H1: There is association between Frequently Rubbing of Eye (of section 3) and Gender.

Observed Frequency table: Annexure:1(Objective:40)
Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.801[a]	6	.015
Likelihood Ratio	16.454	6	.012
N of Valid Cases	337		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.22.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.015
Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is association between Frequently Rubbing of Eye (of section 3) and Gender.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.217	.015
	Cramer's V	.217	.015
N of Valid Cases		337	

Also, there is 21.7% association between Frequently Rubbing of Eye (of section 3) and Gender.

41) Objective: To check association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone.

Vs

H1: There is association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:41)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.482[a]	18	.008
Likelihood Ratio	42.946	18	.001
N of Valid Cases	337		

a. 3 cells (10.7%) have expected count less than 5. The minimum expected count is 3.05.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.008

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
we conclude that there is association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.324	.008
	Cramer's V	.187	.008
N of Valid Cases		337	

Also, there is 18.7% association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone.

42) Objective: To check association between Excessive blinking (of section 3) and Gender.

To Test:

Ho: There is no association between Excessive blinking (of section 3) and Gender.

Vs

H1: There is association between Excessive blinking (of section 3) and Gender.

Observed Frequency table: **Annexure:1(Objective:42)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.597[a]	6	.470
Likelihood Ratio	5.739	6	.453
N of Valid Cases	324		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.54.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.470

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, we conclude that there is no association between Excessive blinking (of section 3) and Gender.

43) Objective: To check association between Excessive blinking (of section 3) and Usage of mobile phone (in hour) per day.

To Test:
Ho: There is no association between Excessive blinking (of section 3) and Usage of mobile phone.
Vs
H1: There is association between Excessive blinking (of section 3) and Usage of mobile phone.

Observed Frequency table: **Annexure:1(Objective:43)**

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	36.650[a]	18	.006	.006[b]	.000	.014
Likelihood Ratio	43.356	18	.001	.003[b]	.000	.009
Fisher's Exact Test	36.300			.006[b]	.000	.014
N of Valid Cases	324					

a. 7 cells (25.0%) have expected count less than 5. The minimum expected count is 1.77.
b. Based on 337 sampled tables with starting seed 2000000.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.003

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
we conclude that there is association between Excessive blinking (of section 3) and Usage of mobile phone.

Symmetric Measures

				Monte Carlo Sig.		
					95% Confidence Interval	
		Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Phi	.336	.006	.006[a]	.000	.014
	Cramer's V	.194	.006	.006[a]	.000	.014
N of Valid Cases		324				

a. Based on 337 sampled tables with starting seed 2000000.

Also, there is 19.4% association between Excessive blinking (of section 3) and Usage of mobile phone.

44) Objective: To check association between Restlessness (of section 4) and Gender.

To Test:

Ho: There is no association between Restlessness (of section 4) and Gender.

Vs

H1: There is association between Restlessness (of section 4) and Gender.

Observed Frequency table: Annexure:1(Objective:44)

Chi-Square test:

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					95% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	18.504[a]	16	.295	.312[b]	.262	.361
Likelihood Ratio	19.076	16	.265	.371[b]	.319	.422
Fisher's Exact Test	18.440			.306[b]	.256	.355
N of Valid Cases	337					

a. 13 cells (38.2%) have expected count less than 5. The minimum expected count is .44.
b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.371

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 16 degree of freedom.
Hence, we conclude that there is no association between Restlessness (of section 4) and Gender.

45) Objective: To check association between Restlessness (of section 4) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Restlessness (of section 4) and Usage of mobile phone.

Vs

H1: There is association between Restlessness (of section 4) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:45)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	91.397[a]	48	.000	.003[b]	.000	.009
Likelihood Ratio	99.511	48	.000	.000[b]	.000	.009
Fisher's Exact Test	83.865			.000[b]	.000	.009
N of Valid Cases	337					

a. 40 cells (58.8%) have expected count less than 5. The minimum expected count is .15.
b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 48 degree of freedom.
Hence,
we conclude that there is association between Restlessness (of section 4) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Phi	.521	.000	.003[a]	.000	.009
	Cramer's V	.301	.000	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1122541128.

Also, there is 30.1% association between Restlessness (of section 4) and Usage of mobile phone.

46) Objective: To check association between Tiredness (of section 4) and Gender.

To Test:

Ho: There is no association between Tiredness (of section 4) and Gender.

Vs

H1: There is association between Tiredness (of section 4) and Gender.

Observed Frequency table: Annexure:1(Objective:46)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	32.655[a]	15	.005	.000[b]	.000	.009
Likelihood Ratio	34.395	15	.003	.006[b]	.000	.014
Fisher's Exact Test	32.862			.000[b]	.000	.009
N of Valid Cases	337					

a. 12 cells (37.5%) have expected count less than 5. The minimum expected count is .44.

b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.006

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 15 degree of freedom.
Hence, we conclude that there is association between Tiredness (of section 4) and Gender.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.311	.005	.000[a]	.000	.009
	Cramer's V	.311	.005	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1122541128.

Also, there is 31.1% association between Tiredness (of section 4) and Gender.

47) Objective: To check association between Tiredness (of section 4) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Tiredness (of section 4) and Usage of mobile phone.

Vs

H1: There is association between Tiredness (of section 4) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:47)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	101.720[a]	45	.000	.000[b]	.000	.009
Likelihood Ratio	109.557	45	.000	.000[b]	.000	.009
Fisher's Exact Test	86.786			.000[b]	.000	.009
N of Valid Cases	337					

a. 38 cells (59.4%) have expected count less than 5. The minimum expected count is .15.

b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 45 degree of freedom.
Hence,
we conclude that there is association between Tiredness (of section 4) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.549	.000	.000[a]	.000	.009
	Cramer's V	.317	.000	.000[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1122541128.

Also, there is 31.7% association between Tiredness (of section 4) and Usage of mobile phone.

48) Objective: To check association between Irritation (of section 4) and Gender.

To Test:

Ho: There is no association between Irritation (of section 4) and Gender.

Vs

H1: There is association between Irritation (of section 4) and Gender.

Observed Frequency table: Annexure:1(Objective:48)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	25.429[a]	18	.114	.113[b]	.079	.147
Likelihood Ratio	26.267	18	.094	.175[b]	.134	.216
Fisher's Exact Test	24.890			.131[b]	.095	.167
N of Valid Cases	337					

a. 16 cells (42.1%) have expected count less than 5. The minimum expected count is 1.76.

b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.175

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 18 degree of freedom.
Hence, we conclude that there is no association between Irritation (of section 4) and Gender.

49) Objective: To check association between Irritation (of section 4) and Usage of mobile phone (in hour) per day.

To Test:

Ho: There is no association between Irritation (of section 4) and Usage of mobile phone.

Vs

H1: There is association between Irritation (of section 4) and Usage of mobile phone.

Observed Frequency table: Annexure:1(Objective:49)

Chi-Square test:

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pearson Chi-Square	88.505[a]	54	.002	.003[b]	.000	.009
Likelihood Ratio	102.300	54	.000	.000[b]	.000	.009
Fisher's Exact Test	76.386			.003[b]	.000	.009
N of Valid Cases	337					

a. 50 cells (65.8%) have expected count less than 5. The minimum expected count is .58.

b. Based on 337 sampled tables with starting seed 1122541128.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 54 degree of freedom.
Hence,
we conclude that there is association between Irritation (of section 4) and Usage of mobile phone.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig. Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Nominal by Nominal	Phi	.512	.002	.003[a]	.000	.009
	Cramer's V	.296	.002	.003[a]	.000	.009
N of Valid Cases		337				

a. Based on 337 sampled tables with starting seed 1122541128.

Also, there is 29.6% association between Irritation (of section 4) and Usage of mobile phone.

Multiple Response Analysis:

Custom Tables and the Chart Builder in SPSS support a special kind of "variable" called a multiple response set. Multiple response sets aren't really "variables" in the normal sense. You can't see them in the Data Editor, and other procedures don't recognize them.
Multiple response sets use multiple variables to record responses to questions where the respondent can give more than one answer.
Multiple response sets are treated like categorical variables, and the things you can do with categorical variables, you can also do with multiple response sets.

1) Discomfort or Pain in Head (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Head Due to Texting	114	17.6%	42.4%
Discomfort or Pain in Head Due to Gaming	117	18.1%	43.5%
Discomfort or Pain in Head Due to Study	90	13.9%	33.5%
Discomfort or Pain in Head Due to Calling	115	17.7%	42.8%
Discomfort or Pain in Head Due to Entertainment	120	18.5%	44.6%
Discomfort or Pain in Head Due to Online activities	92	14.2%	34.2%
Total	648	100.0%	240.9%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (18.5%) of Discomfort or Pain in Head is Due to Entertainment.

2) Discomfort or Pain in Ear (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Ear Due to Texting	46	9.3%	20.0%
Discomfort or Pain in Ear Due to Gaming	94	18.9%	40.9%
Discomfort or Pain in Ear Due to Study	42	8.5%	18.3%
Discomfort or Pain in Ear Due to Calling	114	22.9%	49.6%
Discomfort or Pain in Ear Due to Entertainment	92	18.5%	40.0%
Discomfort or Pain in Ear Due to Online activities	109	21.9%	47.4%
Total	497	100.0%	216.1%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (22.9%) of Discomfort or Pain in Ear is Due to Calling.

3) Ringing or Buzzing in the Ear (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Ringing or Buzzing in the Ear Due to Texting	69	13.0%	26.5%
Ringing or Buzzing in the Ear Due to Gaming	106	19.9%	40.8%
Ringing or Buzzing in the Ear Due to Study	66	12.4%	25.4%
Ringing or Buzzing in the Ear Due to Calling	138	25.9%	53.1%
Ringing or Buzzing in the Ear Due to Entertainment	88	16.5%	33.8%
Ringing or Buzzing in the Ear Due to Online activities	65	12.2%	25.0%
Total	532	100.0%	204.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (25.9%) of Ringing or Buzzing in Ear is Due to Calling.

4) Discomfort or Pain in Fingers (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Fingers Due to Texting	138	25.5%	55.9%
Discomfort or Pain in Fingers Due to Gaming	72	13.3%	29.1%
Discomfort or Pain in Fingers Due to Study	82	15.1%	33.2%
Discomfort or Pain in Fingers Due to Calling	58	10.7%	23.5%
Discomfort or Pain in Fingers Due to Entertainment	94	17.3%	38.1%
Discomfort or Pain in Fingers Due to Online activities	98	18.1%	39.7%
Total	542	100.0%	219.4%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (25.5%) of Discomfort or Pain in Fingers is Due to Texting.

5) Tingling in Fingers (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Tingling in Fingers Due to Texting	102	20.6%	48.1%
Tingling in Fingers Due to Gaming	105	21.3%	49.5%
Tingling in Fingers Due to Study	56	11.3%	26.4%
Tingling in Fingers Due to Calling	68	13.8%	32.1%
Tingling in Fingers Due to Entertainment	84	17.0%	39.6%
Tingling in Fingers Due to Online activities	79	16.0%	37.3%
Total	494	100.0%	233.0%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (21.3%) of Tingling in Fingers is Due to Gaming.

6) Discomfort or Pain in Thumbs (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Thumbs Due to Texting	85	18.4%	42.1%
Discomfort or Pain in Thumbs Due to Gaming	94	20.3%	46.5%
Discomfort or Pain in Thumbs Due to Study	64	13.8%	31.7%
Discomfort or Pain in Thumbs Due to Calling	57	12.3%	28.2%
Discomfort or Pain in Thumbs Due to Entertainment	84	18.1%	41.6%
Discomfort or Pain in Thumbs Due to Online activities	79	17.1%	39.1%
Total	463	100.0%	229.2%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (21.3%) of Discomfort or Pain in Thumbs is Due to Gaming.

7) Discomfort or Pain in Arms (in wrist, in muscles) (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Arms (in wrist, in muscles) Due to Texting	95	18.7%	44.8%
Discomfort or Pain in Arms (in wrist, in muscles) Due to Gaming	81	15.9%	38.2%
Discomfort or Pain in Arms (in wrist, in muscles) Due to Study	63	12.4%	29.7%
Discomfort or Pain in Arms (in wrist, in muscles) Due to Calling	86	16.9%	40.6%
Discomfort or Pain in Arms (in wrist, in muscles) Due to Entertainment	104	20.4%	49.1%
Discomfort or Pain in Arms (in wrist, in muscles) Due to Online activities	80	15.7%	37.7%
Total	509	100.0%	240.1%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.4%) of Discomfort or Pain in Arms (in wrist, in muscles) is Due to Entertainment.

8) Discomfort or Pain in Shoulder (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Shoulder Due to Texting	75	15.1%	34.1%
Discomfort or Pain in Shoulder Due to Gaming	82	16.5%	37.3%
Discomfort or Pain in Shoulder Due to Study	62	12.4%	28.2%
Discomfort or Pain in Shoulder Due to Calling	75	15.1%	34.1%
Discomfort or Pain in Shoulder Due to Entertainment	114	22.9%	51.8%
Discomfort or Pain in Shoulder Due to Online activities	90	18.1%	40.9%
Total	498	100.0%	226.4%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (22.9%) of Discomfort or Pain in Shoulder is Due to Entertainment.

9) Text neck pain (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Text neck pain Due to Texting	123	18.6%	43.0%
Text neck pain Due to Gaming	133	20.2%	46.5%
Text neck pain Due to Study	94	14.2%	32.9%
Text neck pain Due to Calling	71	10.8%	24.8%
Text neck pain Due to Entertainment	123	18.6%	43.0%
Text neck pain Due to Online activities	116	17.6%	40.6%
Total	660	100.0%	230.8%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.2%) of Text neck pain is Due to Gaming.

10) Stiff neck pain (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Stiff neck pain Due to Texting	99	18.5%	40.7%
Stiff neck pain Due to Gaming	117	21.8%	48.1%
Stiff neck pain Due to Study	69	12.9%	28.4%
Stiff neck pain Due to Calling	67	12.5%	27.6%
Stiff neck pain Due to Entertainment	96	17.9%	39.5%
Stiff neck pain Due to Online activities	88	16.4%	36.2%
Total	536	100.0%	220.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (21.8%) of Stiff neck pain is Due to Gaming.

11) Discomfort or Pain in Back (of section 2)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Discomfort or Pain in Back Due to Texting	67	14.8%	35.3%
Discomfort or Pain in Back Due to Gaming	77	17.0%	40.5%
Discomfort or Pain in Back Due to Study	74	16.3%	38.9%
Discomfort or Pain in Back Due to Calling	49	10.8%	25.8%
Discomfort or Pain in Back Due to Entertainment	102	22.5%	53.7%
Discomfort or Pain in Back Due to Online activities	85	18.7%	44.7%
Total	454	100.0%	238.9%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (22.5%) of Discomfort or Pain in Back is Due to Entertainment.

1) Eye Dryness (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Eye Dryness Due to Texting	154	18.2%	59.9%
Eye Dryness Due to Gaming	146	17.2%	56.8%
Eye Dryness Due to Study	139	16.4%	54.1%
Eye Dryness Due to Calling	86	10.1%	33.5%
Eye Dryness Due to Entertainment	170	20.0%	66.1%
Eye Dryness Due to Online activities	153	18.0%	59.5%
Total	848	100.0%	330.0%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.4%) of Eye Dryness is Due to Entertainment.

2) Stain on Eye (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Stain on Eye Due to Texting	189	19.0%	67.5%
Stain on Eye Due to Gaming	170	17.1%	60.7%
Stain on Eye Due to Study	151	15.2%	53.9%
Stain on Eye Due to Calling	95	9.5%	33.9%
Stain on Eye Due to Entertainment	215	21.6%	76.8%
Stain on Eye Due to Online activities	175	17.6%	62.5%
Total	995	100.0%	355.4%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.4%) of Stain on Eye is Due to Entertainment.

3) Stain on Eye (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Eye Burning Due to Texting	162	20.4%	63.8%
Eye Burning Due to Gaming	145	18.2%	57.1%
Eye Burning Due to Study	122	15.3%	48.0%
Eye Burning Due to Calling	70	8.8%	27.6%
Eye Burning Due to Entertainment	160	20.1%	63.0%
Eye Burning Due to Online activities	136	17.1%	53.5%
Total	795	100.0%	313.0%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.4%) of Eye Burning is Due to Texting

4) Tearing (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Tearing Due to Texting	118	16.1%	49.8%
Tearing Due to Gaming	136	18.6%	57.4%
Tearing Due to Study	124	16.9%	52.3%
Tearing Due to Calling	66	9.0%	27.8%
Tearing Due to Entertainment	162	22.1%	68.4%
Tearing Due to Online activities	127	17.3%	53.6%
Total	733	100.0%	309.3%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (22.1%) of Tearing is Due to Entertainment.

5) Frequently Rubbing of Eye (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Frequently Rubbing of Eye Due to Texting	121	16.9%	56.3%
Frequently Rubbing of Eye Due to Gaming	129	18.0%	60.0%
Frequently Rubbing of Eye Due to Study	114	15.9%	53.0%
Frequently Rubbing of Eye Due to Calling	73	10.2%	34.0%
Frequently Rubbing of Eye Due to Entertainment	151	21.0%	70.2%
Frequently Rubbing of Eye Due to Online activities	130	18.1%	60.5%
Total	718	100.0%	334.0%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (21%) of Frequently Rubbing of Eye is Due to Entertainment.

6) Excessive blinking (of section 3)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Excessive blinking Due to Texting	101	16.6%	54.3%
Excessive blinking Due to Gaming	118	19.3%	63.4%
Excessive blinking Due to Study	97	15.9%	52.2%
Excessive blinking Due to Calling	64	10.5%	34.4%
Excessive blinking Due to Entertainment	123	20.2%	66.1%
Excessive blinking Due to Online activities	107	17.5%	57.5%
Total	610	100.0%	328.0%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (20.2%) of Excessive blinking is Due to Entertainment.

1) Restlessness (of section 4)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Restlessness Due to Texting	104	16.9%	44.1%
Restlessness Due to Gaming	89	14.4%	37.7%
Restlessness Due to Study	104	16.9%	44.1%
Restlessness Due to Calling	94	15.2%	39.8%
Restlessness Due to Entertainment	116	18.8%	49.2%
Restlessness Due to Online activities	110	17.8%	46.6%
Total	617	100.0%	261.4%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (18.8%) of Restlessness is Due to Entertainment.

2) Tiredness (of section 4)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Tiredness Due to Texting	107	16.3%	46.9%
Tiredness Due to Gaming	108	16.5%	47.4%
Tiredness Due to Study	90	13.7%	39.5%
Tiredness Due to Calling	112	17.1%	49.1%
Tiredness Due to Entertainment	126	19.2%	55.3%
Tiredness Due to Online activities	113	17.2%	49.6%
Total	656	100.0%	287.7%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (19.2%) of Tiredness is Due to Entertainment.

3) Irritation (of section 4)

Frequencies

	Responses		
	N	Percent	Percent of Cases
Irritation Due to Texting	113	17.4%	50.7%
Irritation Due to Gaming	89	13.7%	39.9%
Irritation Due to Study	96	14.8%	43.0%
Irritation Due to Calling	129	19.9%	57.8%
Irritation Due to Entertainment	120	18.5%	53.8%
Irritation Due to Online activities	101	15.6%	45.3%
Total	648	100.0%	290.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe from our survey that maximum (19.9%) of Irritation is Due to Calling.

Multiple Response Chi-square for Independence of attributes

STEPS TO BE FOLLOWED IN SPSS:

A cross tabulation of a categorical variable and a multiple response set that performs a chi-square test of independence on the cross tabulation.

Open the table builder (Analyze menu > Tables > Custom Tables). Click "Reset" to clear any previous settings. Drag and drop new sources (this is the descriptive label for the multiple dichotomy set $variable name) from the variable list into the Columns area of the canvas pane. Click the "Test Statistics" tab. Select (check) Tests of independence (chi-square). If it is not already selected, select Include multiple response variables in test.

Click OK to run the procedure.

1) Objective: To check association physical health problem (upper limb, neck and back) of section 2 and Gender.

To Test:

Ho: There is no association between physical health problem (upper limb, neck and back) of section 2 and Gender

Vs

H1: There is association between physical health problem (upper limb, neck and back) of section 2 and Gender.

Observed Count:

	Gender			
	Female		Male	
	Count	Column N %	Count	Column N %
Discomfort or Pain in Head	6	8.7%	21	18.9%
Discomfort or Pain in Ear	21	30.4%	21	18.9%
Ringing or Buzzing in the Ear	24	34.8%	29	26.1%
Discomfort or Pain in Fingers	14	20.3%	26	23.4%
Tingling in Fingers	13	18.8%	40	36.0%
Discomfort or Pain in Thumbs	11	15.9%	27	24.3%
Discomfort or Pain in Arms (in wrist, in muscles)	7	10.1%	21	18.9%
Discomfort or Pain in Shoulder	6	8.7%	27	24.3%
Text neck pain	8	11.6%	37	33.3%
Stiff neck pain	14	20.3%	25	22.5%
Discomfort or Pain in Back	10	14.5%	15	13.5%

Pearson Chi-Square Tests

	Gender
Chi-square	36.589
df	11
Sig.	.000*

Results are based on nonempty rows and columns in each innermost subtable.

*. The Chi-square statistic is significant at the 0.05 level.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 11 degree of freedom.
Hence, there is the difference between Male and Female regarding the physical health problem (upper limb, neck and back) of section 2.

2) Objective: To check association physical health problem (upper limb, neck and back) of section 2 and Usage of mobile phone.

To Test:
Ho: There is no association between physical health problem (upper limb, neck and back) of section 2 and Usage of mobile phone.
Vs
H1: There is association between physical health problem (upper limb, neck and back) of section 2 and Usage of mobile phone.

Observed Count:

	usage of mobile phone per day (in hours)							
	0 to 2		2 to 4		4 to 6		More than 6	
	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Discomfort or Pain in Head	7	22.6%	9	15.5%	8	14.8%	3	8.1%
Discomfort or Pain in Ear	1	3.2%	19	32.8%	12	22.2%	10	27.0%
Ringing or Buzzing in the Ear	13	41.9%	21	36.2%	11	20.4%	8	21.6%
Discomfort or Pain in Fingers	4	12.9%	16	27.6%	12	22.2%	8	21.6%
Tingling in Fingers	9	29.0%	18	31.0%	17	31.5%	9	24.3%
Discomfort or Pain in Thumbs	5	16.1%	18	31.0%	7	13.0%	8	21.6%
Discomfort or Pain in Arms (in wrist, in muscles)	6	19.4%	8	13.8%	10	18.5%	4	10.8%
Discomfort or Pain in Shoulder	7	22.6%	11	19.0%	10	18.5%	5	13.5%
Text neck pain	12	38.7%	12	20.7%	15	27.8%	6	16.2%
Stiff neck pain	7	22.6%	10	17.2%	13	24.1%	9	24.3%
Discomfort or Pain in Back	7	22.6%	9	15.5%	6	11.1%	3	8.1%

Pearson Chi-Square Tests

	usage of mobile phone per day (in hours)
Chi-square	41.415
df	33
Sig.	.149

Results are based on nonempty rows and columns in each innermost subtable.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.149

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 33 degree of freedom.
Hence, there is the no difference between four groups of hours of usage of mobile phone regarding the Discomfort or Pain in Head.

There is the no difference between time groups of usage of mobile phone regarding the physical health problem (upper limb, neck and back) of section 2.

3) Objective: To check association physical health problem (Eye problem) of section 3 and Gender.

To Test:
Ho: There is no association between physical health problem (Eye problem) of section 3 and Gender
Vs
H1: There is association between physical health problem (Eye problem) of section 3 and Gender.

Observed Count:

	Gender			
	Female		Male	
	Count	Column N %	Count	Column N %
Eye Dryness	21	45.7%	17	22.4%
Stain on Eye	9	19.6%	17	22.4%
Eye Burning	19	41.3%	19	25.0%
Tearing	12	26.1%	26	34.2%
Frequently Rubbing of Eye	10	21.7%	15	19.7%
Excessive blinking	6	13.0%	17	22.4%

Pearson Chi-Square Tests

		Gender
$p	Chi-square	13.511
	df	6
	Sig.	.036*

Results are based on nonempty rows and columns in each innermost subtable.

*. The Chi-square statistic is significant at the 0.05 level.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.036

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 6 degree of freedom.
Hence, there is the difference between Male and Female regarding the physical health problem (Eye Problem) of section 3.

4) Objective: To check association physical health problem (Eye Problem) of section 3 and Usage of mobile phone.

To Test:

Ho: There is no association between physical health problem (Eye Problem) of section 3 and Usage of mobile phone.

Vs

H1: There is association between physical health problem (Eye Problem) of section 3 and Usage of mobile phone.

Observed Count:

	usage of mobile phone per day (in hours)							
	0 to 2		2 to 4		4 to 6		More than 6	
	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Eye Dryness	10	50.0%	14	32.6%	8	25.0%	6	22.2%
Stain on Eye	4	20.0%	12	27.9%	5	15.6%	5	18.5%
Eye Burning	9	45.0%	16	37.2%	7	21.9%	6	22.2%
Tearing	3	15.0%	9	20.9%	15	46.9%	11	40.7%
Frequently Rubbing of Eye	4	20.0%	11	25.6%	7	21.9%	3	11.1%
Excessive blinking	0	.0%	11	25.6%	10	31.3%	2	7.4%

Pearson Chi-Square Tests

	usage of mobile phone per day (in hours)
Chi-square	34.615
df	18
Sig.	.011*

Results are based on nonempty rows and columns in each innermost subtable.

*. The Chi-square statistic is significant at the 0.05 level.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.011

Conclusion:

As p-value < alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 18 degree of freedom.
Hence,
There is the no difference between four groups of hours of usage of mobile phone regarding the Discomfort or Pain in Head.

There is the difference between time groups of usage of mobile phone regarding the physical health problem (Eye problem) of section 3.

5) Objective: To check association physical health problem (Physical stress) of section 4 and Gender.

To Test:

Ho: There is no association between physical health problem (Physical stress) of section 4 and Gender
Vs
H1: There is association between physical health problem (Physical stress) of section 4 and Gender.

Observed Count:

	Gender			
	Female		Male	
	Count	Column N %	Count	Column N %
Restlessness	7	28.0%	17	68.0%
Tiredness	11	44.0%	9	36.0%
Irritation	8	32.0%	12	48.0%

Pearson Chi-Square Tests

	Gender
Chi-square	9.679
df	3
Sig.	.021*

Results are based on nonempty rows and columns in each innermost subtable.

*. The Chi-square statistic is significant at the 0.05 level.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.021

Conclusion:

As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance and 3degree of freedom.
Hence, there is the difference between Male and Female regarding the physical health problem (Physical stress) of section 4.

6) Objective: To check association physical health problem (Physical stress) of section 4 and Usage of mobile phone.

To Test:
Ho: There is no association between physical health problem (Physical stress) of section 4 and Usage of mobile phone.

Vs

H1: There is association between physical health problem (Physical stress) of section 4 and Usage of mobile phone.

Observed Count:

		usage of mobile phone per day (in hours)							
		0 to 2		2 to 4		4 to 6		More than 6	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
$u	Restlessness	9	52.9%	5	29.4%	4	44.4%	6	85.7%
	Tiredness	5	29.4%	10	58.8%	3	33.3%	2	28.6%
	Irritation	8	47.1%	8	47.1%	2	22.2%	2	28.6%

Pearson Chi-Square Tests

	usage of mobile phone per day (in hours)
Chi-square	12.678
df	9
Sig.	.178[a]

Results are based on nonempty rows and columns in each innermost subtable.

a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.178

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance and 9 degree of freedom.

There is the no difference between time groups of usage of mobile phone regarding the physical health problem (Physical stress) of section 4**.**

Mann -Whitney test:

1) Objective: To check the difference between the rank of Gender based on Sleep Latency.

To Test:

Ho: There is no difference between the rank of Gender based on Sleep Latency.
Vs
H1: There is difference between the rank of Gender based on Sleep Latency.

Observed Ranks:

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Sleep latency	Male	189	163.74	30947.00
	Female	148	175.72	26006.00
	Total	337		

Test Statistics[a]

	Sleep latency
Mann-Whitney U	12992.000
Wilcoxon W	30947.000
Z	-1.217
Asymp. Sig. (2-tailed)	.224

a. Grouping Variable: Gender

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.224

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance.
Hence,
There is no difference between the rank of Gender based on Sleep Latency.
Hence, Male and Female have similar Sleep Latency.

2) Objective: To check the difference between the rank of Gender based on usage of mobile phone after 10 p.m.

To Test:

Ho: There is no difference between the rank of Gender based on usage of mobile phone after 10 p.m.
Vs
H1: There is difference between the rank of Gender based on usage of mobile phone after 10 p.m.

Observed Ranks:

Ranks

	Gender	N	Mean Rank	Sum of Ranks
usage of mobile phone after 10 p.m.	Male	189	174.40	32962.50
	Female	148	162.10	23990.50
	Total	337		

Test Statistics[a]

	V16
Mann-Whitney U	12964.500
Wilcoxon W	23990.500
Z	-1.597
Asymp. Sig. (2-tailed)	.110

a. Grouping Variable: Gender

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.110

Conclusion:
As p-value > alpha, therefore the data provide enough evident to do not reject Ho at 5% Level of significance.
Hence,
There is no difference between the rank of Gender based on usage of mobile phone after 10 p.m.
Hence, Male and Female have similar usage of mobile phone after 10 p.m.

3) Objective: To check the difference between the rank of Gender based on Global Score (seven component score together) of section 1.

To Test:

Ho: There is no difference between the rank of Gender based on Global Score (seven component score together) of section 1.
Vs
H1: There is difference between the rank of Gender based Global Score (seven component score together) of section 1.

Observed Ranks:

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Global score	Male	189	156.16	29513.50
	Female	148	185.40	27439.50
	Total	337		

Test Statistics[a]

	Global score
Mann-Whitney U	11558.500
Wilcoxon W	29513.500
Z	-2.751
Asymp. Sig. (2-tailed)	.006

a. Grouping Variable: Gender

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.006

Conclusion:
As p-value < alpha, therefore the data provide enough evident to reject Ho at 5% Level of significance.
Hence,
There is difference between the rank of Gender based on Global Score (seven component score together) of section 1.

As, Female reporting high Global Score (seven component score together) of section 1then Male.
Hence, Male have good Global Sleep Quality as compared to Female.

Kruskal-Wallis test

1) **Objective: To check the significant difference among the four wards based on Global Score (seven component score together) of Usual sleep habits.**

To Test:

Ho: There is no significant difference among the four wards based on Global Score (seven component score together) of Usual sleep habits.
Vs
H1: There is significant difference among the four wards based on Global Score (seven component score together) of Usual sleep habits.

Ranks

	Address	N	Mean Rank
Global score	Fatehgunj	105	162.10
	Vasna	70	173.54
	Pratapnagar	92	170.96
	Harni	70	172.22
	Total	337	

Test Statistics[a,b]

	Global score
Chi-Square	.801
df	3
Asymp. Sig.	.849

a. Kruskal Wallis Test

b. Grouping Variable: Address

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.849

Conclusion:

Here the p value > alpha, so the data provides the enough evidence to do not reject H_0 at 5% Level of significance and 3 degrees of freedom.
Hence, there is no significant difference among the four wards based on Global Score (seven component score together) of Usual sleep habits.

Multinomial logistic Regression:

To study the placing pattern of their mobile phone based on Age, Gender and Occupation.

For multinomial logistic in Y:
Upper left side of your pocket = 1,
Front side of jeans pocket = 2,
Back side of jeans pocket = 3,
Mobile zipper pouch =4

All are taken as the base with ascending order of categories.

Model is fitted by using forward stepwise multinomial logistic regression.

Results:

Case Processing Summary

		N	Marginal Percentage
Placing pattern of their mobile phone	Upper left side of your pocket	43	12.8%
	Front side of jeans pocket	190	56.4%
	Back side of jeans pocket	21	6.2%
	Mobile zipper pouch	83	24.6%
Valid		337	100.0%
Missing		0	
Total		337	
Subpopulation		51[a]	

Likelihood Ratio Tests

	Model Fitting Criteria			Likelihood Ratio Tests		
Effect	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	501.007	535.387	483.007	97.411	3	.000
Age	429.603	463.983	411.603	26.007	3	.000
Gender	484.304	518.685	466.304	80.708	3	.000
Occupation	410.929	445.309	392.929	7.333	3	.062

The fitted model gives the following hypothesis results Test of Significance

Ho: No significance between null model (model with only intercept) and final model (model with all variable)

Vs

H1: Significance between null model (model with only intercept) and final model (model with all variables)

Model Fitting Information

Model	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC	BIC	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	532.913	544.374	526.913			
Final	409.596	455.437	385.596	141.318	9	.000

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:
Here p-value < alpha. Therefore, Ho is rejected i.e. the fitted model is significant.

Goodness of fit

Ho: Model is not adequately fitted

V s

H1: Model is adequately fitted

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	352.074	264	.000
Deviance	281.911	264	.214

Decision Rule: As p-value < Alpha, then reject Ho.

Here,
Alpha = 0.05
P-value = 0.000

Conclusion:

Since P-value < alpha. Therefore, we reject Ho i.e. model is adequately fitted.

Pseudo R-Square

Cox and Snell	.343
Nagelkerke	.385
McFadden	.190

Here Cox and snell = 0.343

34.3% of variation in Y is explained by fitted model

Overall Significance test of the variables

Likelihood Ratio Tests

Effect	Model Fitting Criteria: AIC of Reduced Model	Model Fitting Criteria: BIC of Reduced Model	Model Fitting Criteria: -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests: Chi-Square	Likelihood Ratio Tests: df	Likelihood Ratio Tests: Sig.
Intercept	501.007	535.387	483.007	97.411	3	.000
Age	429.603	463.983	411.603	26.007	3	.000
Gender	484.304	518.685	466.304	80.708	3	.000
Occupation	410.929	445.309	392.929	7.333	3	.062

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Since Sig. < 0.05 for Age and Gender, hence it can be concluded that the two variables are significant.
But for Occupation, Sig. >0.05
Hence it can be concluded that occupation variable is not significant.

Parameter Estimates

V13[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B): Lower Bound	95% Confidence Interval for Exp(B): Upper Bound
1	Intercept	1.665	1.015	2.688	1	.101			
	Age	.008	.035	.055	1	.814	1.008	.941	1.081
	Gender	-3.207	.533	36.190	1	.000	.040	.014	.115
	Occupation	-.533	.389	1.879	1	.171	.587	.274	1.258
2	Intercept	5.889	.773	58.007	1	.000			
	Age	-.107	.028	14.453	1	.000	.898	.850	.949
	Gender	-2.415	.355	46.406	1	.000	.089	.045	.179
	Occupation	-.413	.237	3.037	1	.081	.661	.415	1.053
3	Intercept	1.776	1.196	2.206	1	.137			

Age	-.029	.048	.358	1	.550	.972	.884	1.068
Gender	-.619	.581	1.135	1	.287	.539	.172	1.681
Occupation	-1.021	.442	5.322	1	.021	.360	.151	.858

a. The reference category is: 4.

Model Classification

Classification

	Predicted				
Observed	1	2	3	4	Percent Correct
Upper left side of your pocket	5	35	0	3	11.6%
Front side of jeans pocket	3	170	0	17	89.5%
Back side of jeans pocket	1	15	0	5	.0%
Mobile zipper pouch	0	34	0	49	59.0%
Overall Percentage	2.7%	75.4%	.0%	22.0%	66.5%

66.5% times the fitted model does the correct classification.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.913
Bartlett's Test of Sphericity	Approx. Chi-Square	4841.931
	df	190
	Sig.	.000

Interpretation:

- **KMO TEST**

- According to data, Kaiser-Meyer-Olkin measure of sample adequacy is 0.913 which is acceptable.
- Data is suitable for factor analysis.

- **BARTLETT'S TEST**

- Test is for homogeneity of variance.

To test H0: $\sigma 1^2 = \sigma 2^2 = \cdots = \sigma k^2$

H1: At least one σ^2 is not equal to the others.

- In above table Bartlett's test of significance is 0.000, which is less than 0.05 therefor, we do not reject H0. We conclude that variance of the variable does not differ significantly.

- **Correlation matrix** (Table not provided due to being too large)

- In correlation matrix, value is greater than or equal to 0.8 that means that two variables are highly correlated.
- According to data, none of the variable have greater than or equal to 0.8
- So, no variable is highly correlated with each other.

- **Communalities Table**

Communalities

	Initial	Extraction
Discomfort or Pain in Head	1.000	.430
Discomfort or Pain in Ear	1.000	.636
Ringing or Buzzing in the Ear	1.000	.641
Discomfort or Pain in Fingers	1.000	.559
Tingling in Fingers	1.000	.744
Discomfort or Pain in Thumbs	1.000	.795
Discomfort or Pain in Arms (in wrist, in muscles)	1.000	.854
Discomfort or Pain in Shoulder	1.000	.749
Text neck pain	1.000	.790
Stiff neck pain	1.000	.664

Discomfort or Pain in Back	1.000	.596
Eye Dryness	1.000	.552
Stain on Eye	1.000	.510
Eye Burning	1.000	.526
Tearing	1.000	.678
Frequently Rubbing of Eye	1.000	.744
Excessive blinking	1.000	.696
Restlessness	1.000	.647
Tiredness	1.000	.707
Irritation	1.000	.772

Extraction Method: Principal Component Analysis.

Interpretation:

- Communalities indicate the common variance shared by factors with given variable.
- A communality is the extent to which an item correlate with all other item.
- Proportion of each variable that can be explained by the factor.
- Initial communalities are generally taken as 1.

➢ Component Matrix

Component Matrix[a]

	Component		
	1	2	3
Discomfort or Pain in Head	.640		
Discomfort or Pain in Ear	.780		
Ringing or Buzzing in the Ear	.770		-.211
Discomfort or Pain in Fingers	.730		
Tingling in Fingers	.735	-.412	
Discomfort or Pain in Thumbs	.729	-.479	
Discomfort or Pain in Arms (in wrist, in muscles)	.735	-.527	
Discomfort or Pain in Shoulder	.776	-.327	
Text neck pain	.789	-.389	
Stiff neck pain	.773	-.259	
Discomfort or Pain in Back	.765		
Eye Dryness	.631	.367	
Stain on Eye	.633		.313
Eye Burning	.581	.400	
Tearing	.531	.592	.211
Frequently Rubbing of Eye	.549	.576	.333
Excessive blinking	.500	.578	.333
Restlessness	.616		-.504
Tiredness	.676		-.475
Irritation	.569	.210	-.636

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Interpretation:

Extraction by Principal Component Analysis. We extract 3 components.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.292	46.461	46.461	9.292	46.461	46.461	7.549
2	2.439	12.196	58.657	2.439	12.196	58.657	5.744
3	1.559	7.794	66.451	1.559	7.794	66.451	6.116
4	.938	4.690	71.141				
5	.855	4.277	75.419				
6	.703	3.517	78.936				
7	.578	2.890	81.827				
8	.504	2.518	84.344				
9	.423	2.113	86.457				
10	.402	2.008	88.465				
11	.367	1.836	90.301				
12	.315	1.577	91.878				
13	.290	1.448	93.325				
14	.265	1.324	94.649				
15	.238	1.192	95.841				
16	.231	1.154	96.995				
17	.189	.943	97.938				
18	.181	.903	98.841				
19	.131	.657	99.498				
20	.100	.502	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

We extract 3 components from the data, where these components extract almost 67% of the variation in the data.

➢ Pattern Matrix

Pattern Matrix[a]

	Component		
	1	2	3
Discomfort or Pain in Head	.309		-.386
Discomfort or Pain in Ear	.504		-.380
Ringing or Buzzing in the Ear	.294		-.521
Discomfort or Pain in Fingers	.270	.241	-.426
Tingling in Fingers	.878		
Discomfort or Pain in Thumbs	.934		
Discomfort or Pain in Arms (in wrist, in muscles)	.982		
Discomfort or Pain in Shoulder	.831		
Text neck pain	.862		
Stiff neck pain	.674		-.228
Discomfort or Pain in Back	.360	.222	-.387
Eye Dryness		.618	
Stain on Eye	.410	.505	
Eye Burning		.653	
Tearing		.833	
Frequently Rubbing of Eye		.904	
Excessive blinking		.890	
Restlessness			-.806
Tiredness			-.803
Irritation			-.956

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Component 1:

According to data Discomfort or Pain in Head, Discomfort or Pain in Ear, Ringing or Buzzing in the Ear, Discomfort or Pain in Fingers, Tingling in Fingers, Discomfort or Pain in Thumbs, Discomfort or Pain in Arms(in wrist, in muscles) , Discomfort or Pain in Shoulder , Text neck pain, Stiff neck pain and Discomfort or Pain in Back are variables which are correlated to each other are defined in <u>first component of section 2</u>.

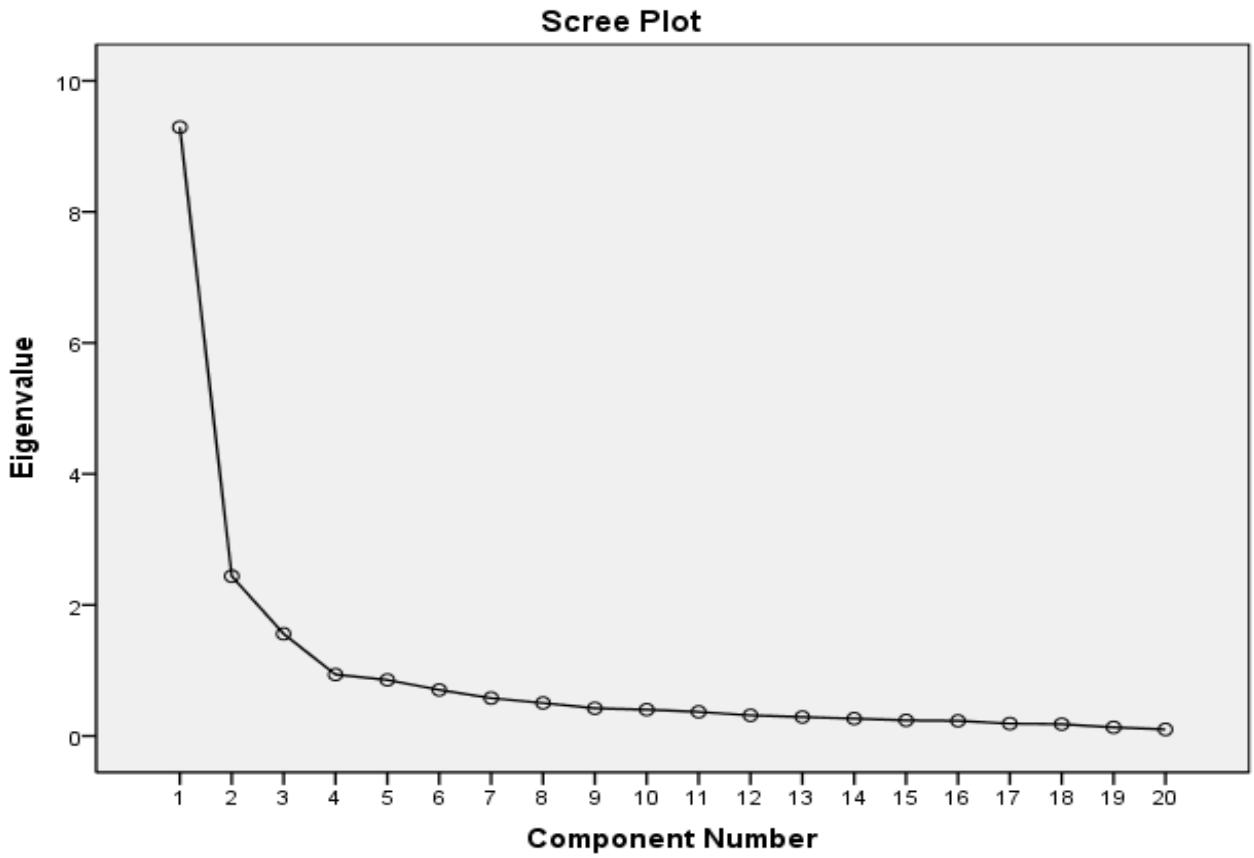
Component 2:

Also, Eye Dryness, Stain on Eye, Eye Burning, Tearing, Frequently Rubbing of Eye and Excessive blinking are correlated to each other which are defined in <u>first component of section 3</u>.

Component 3:

Restlessness, Tiredness and Irritation these all are related with each other and defined in our <u>first component of section 4.</u>

- **Scree Plot**



Interpretation of Scree Plot:

These results show the rotated factor loadings for all the factors using the principal component method of extraction.

In above Scree plot, there are 3 components which are explained by 3 factors having greater than 1 eigen value.

The percentage of variability explained by factor 1 is 46.461% by factor 2 is 58.657% and by factor 3 is 7.794%.

The Scree plot shows that the first three factors account for most of the total variability in data. The remaining factors account for a small proportion of the variability.

References

1st Section references

https://www.psychdb.com/_media/sleep/2-insomnia-disorder/the_pittsburgh_sleep_quality_index_psqi.pdf

http://www.goodmedicine.org.uk/files/assessment,%20pittsburgh%20psqi.pdf

https://www.psychiatry.pitt.edu/sites/default/files/inline-files/PSQI%20Article.pdf

https://www.hindawi.com/journals/sd/2018/9643937/

full pdf with factor analysis reference

https://www.researchgate.net/publication/324489366_Shortening_of_the_Pittsburgh_Sleep_Quality_Index_Survey_Using_Factor_Analysis

Likert scale reference

https://en.wikipedia.org/wiki/Likert_scale#Scoring_and_analysis

Medical terms

1) ringing and buzzing in ear

https://www.webmd.com/a-to-z-guides/understanding-tinnitus-basics

2) tingling in fingers

https://www.webmd.com/brain/tingling-in-hands-and-feet#1

3) discomfort pain

https://www.sciencedirect.com/science/article/abs/pii/S1524904217305222

4) stiff neck pain

https://www.spine-health.com/conditions/neck-pain/stiff-neck-causes-symptoms-and-treatment

5) text neck pain

https://www.physio-pedia.com/Text_Neck#:~:text=Text%20neck%20is%20a%20modern,posture%20or%20anterior%20head%20syndrome.

6) eye dryness

https://www.medicalnewstoday.com/articles/170743

7) frequently rubbing on eyes

https://www.healthline.com/health/eye-health/rubbing-your-eyes#:~:text=Rubbing%20your%20eyes%20can%20mean,too%20hard%20or%20too%20often.

8) excessive blinking

https://www.healthline.com/health/eye-health/eye-blinking

9) restlessness

https://www.sciencedirect.com/topics/medicine-and-dentistry/restlessness

10) tiredness

https://patient.info/signs-symptoms/tiredness-fatigue

Annexure: 1

Observed Frequency tables of Chi square test:

1) Objective: To check the dependency of Usage of mobile phone (in hour) per day on Gender.

Gender * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Gender	Female	27	40	46	35	148
	Male	22	45	57	65	189
Total		49	85	103	100	337

2) Objective: To check association between Usage of mobile phone (in hour) per day and Age.

Age * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Age	18_23	15	28	38	41	122
	23_28	9	13	30	34	86
	28_33	5	17	18	17	57
	33_38	8	16	11	5	40
	38_43	12	11	6	3	32
Total		49	85	103	100	337

3) Objective: To check association between Total number of actual sleeps they get at night and Gender.

Gender * que_1_4 (hours) Crosstabulation

Count

		que_1_4 (hours)									Total
		2	3	4	5	6	7	8	9	10	
Gender	Female	0	3	1	22	54	45	21	2	0	148
	Male	1	0	4	15	41	67	49	11	1	189
Total		1	3	5	37	95	112	70	13	1	337

4) Objective: To check association between Total number of actual sleeps they get at night and Usage of mobile phone after 10 p.m.

Actual sleep * Usage of mobile phone after 10 p.m. Crosstabulation

Count

		Usage of mobile phone after 10 p.m.		Total
		No	Yes	
Actual sleep	2	0	1	1
	3	0	3	3
	4	0	5	5
	5	8	29	37
	6	16	79	95
	7	27	85	112
	8	17	53	70
	9	6	7	13
	10	1	0	1
Total		75	262	337

5) Objective: To check association between How they rate their sleep quality overall and Gender.

Gender * How they rate their sleep quality overall Crosstabulation

Count

		que_1_6			Total
		Fairly bad	Fairly good	Very good	
Gender	Female	8	59	81	148
	Male	12	105	72	189
Total		20	164	153	337

6) Objective: To check association between How they rate their sleep quality overall and Usage of mobile phone after 10 p.m.

How they rate their sleep quality overall * Usage of mobile phone after 10 p.m. Crosstabulation

Count

		Usage of mobile phone after 10 p.m.		
		No	Yes	Total
How they rate their sleep quality overall	Fairly bad	1	19	20
	Fairly good	19	145	164
	Very good	55	98	153
Total		75	262	337

7) Objective: To check association between Usual sleep habits (section 1, Global score) and Gender.

Global score * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Global score	0	1	3	4
	1	4	14	18
	2	10	12	22
	3	12	26	38
	4	14	25	39
	5	25	18	43
	6	14	31	45
	7	22	19	41
	8	17	21	38
	9	19	8	27
	10	2	4	6
	11	3	6	9
	12	2	1	3
	13	3	1	4
Total		148	189	337

8) Objective: To check association between Usual sleep habits (section 1, Global score) and Usage of mobile phone after 10 p.m.

Usual sleep habits (section_1, Global score) * Usage of mobile phone after 10 p.m. Crosstabulation

Count		Usage of mobile phone after 10 p.m.		
		No	Yes	Total
Usual sleep habits (section_1, Global score)	0	3	1	4
	1	7	11	18
	2	13	9	22
	3	7	31	38
	4	12	27	39
	5	9	34	43
	6	8	37	45
	7	4	37	41
	8	6	32	38
	9	4	23	27
	10	1	5	6
	11	0	9	9
	12	1	2	3
	13	0	4	4
Total		75	262	337

9) Objective: To check association between Usual sleep habits (section 1, Global score) and Usage of mobile phone (in hour) per day.

Global score of usual sleep habits * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Global score	0	0	3	0	1	4
	1	3	6	6	3	18
	2	3	5	11	3	22
	3	6	11	11	10	38
	4	5	11	14	9	39
	5	10	12	9	12	43
	6	8	13	10	14	45
	7	5	7	16	13	41
	8	4	7	9	18	38
	9	3	7	6	11	27
	10	0	1	3	2	6
	11	2	1	3	3	9
	12	0	1	1	1	3
	13	0	0	4	0	4
Total		49	85	103	100	337

10) Objective: To check association between Discomfort or Pain in Head (of section 2) and Gender.

Crosstab

Count

		Gender		
		Female	Male	Total
Discomfort or Pain in Head	0	10	34	44
	1	6	21	27
	2	26	40	66
	3	32	17	49
	4	24	26	50
	5	17	14	31
	6	18	12	30
	7	7	12	19
	8	1	3	4
	9	3	4	7
	10	0	1	1
	11	0	2	2
	12	4	2	6
	13	0	1	1
Total		148	189	337

11) Objective: To check association between Discomfort or Pain in Head (of section 2) and Usage of mobile phone (in hour) per day.

Crosstab

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Discomfort or Pain in Head	0	7	17	6	14	44
	1	7	9	8	3	27
	2	8	24	23	11	66
	3	8	10	19	12	49
	4	2	9	19	20	50
	5	3	6	15	7	31
	6	9	7	2	12	30
	7	1	1	10	7	19
	8	0	0	1	3	4
	9	0	0	0	7	7
	10	0	0	0	1	1
	11	0	0	0	2	2
	12	4	2	0	0	6
	13	0	0	0	1	1
Total		49	85	103	100	337

12) Objective: To check association between Discomfort or Pain in Ear (of section 2) and Gender.

Discomfort or Pain in Ear * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Discomfort or Pain in Ear	0	30	64	94
	1	21	21	42
	2	16	17	33
	3	17	22	39
	4	22	14	36
	5	11	16	27
	6	10	7	17
	7	11	10	21
	8	8	4	12
	9	0	10	10
	10	2	2	4
	11	0	1	1
	15	0	1	1
Total		148	189	337

13) Objective: To check association between Discomfort or Pain in Ear (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Ear * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Discomfort or Pain in Ear	0	26	25	30	13	94
	1	1	19	12	10	42
	2	1	11	14	7	33
	3	6	12	9	12	39
	4	3	5	16	12	36
	5	5	3	9	10	27
	6	0	4	4	9	17
	7	4	3	2	12	21
	8	0	2	4	6	12
	9	0	1	1	8	10
	10	2	0	1	1	4
	11	1	0	0	0	1
	15	0	0	1	0	1
Total		49	85	103	100	337

14) Objective: To check association between Ringing or Buzzing in the Ear (of section 2) and Gender.

Ringing or Buzzing in the Ear * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Ringing or Buzzing in the Ear	0	20	42	62
	1	24	29	53
	2	16	28	44
	3	38	23	61
	4	22	10	32
	5	9	15	24
	6	9	16	25
	7	6	12	18
	8	2	7	9
	9	0	2	2
	10	0	2	2
	11	0	2	2
	12	2	0	2
	14	0	1	1
Total		148	189	337

15) Objective: To check association between Ringing or Buzzing in the Ear (of section 2) and Usage of mobile phone (in hour) per day.

Ringing or Buzzing in the Ear * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Ringing or Buzzing in the Ear	0	15	18	19	10	62
	1	13	21	11	8	53
	2	3	15	17	9	44
	3	6	16	17	22	61
	4	3	4	15	10	32
	5	4	2	7	11	24
	6	1	3	12	9	25
	7	0	3	3	12	18
	8	1	1	0	7	9
	9	0	2	0	0	2
	10	0	0	1	1	2
	11	1	0	0	1	2
	12	2	0	0	0	2
	14	0	0	1	0	1
Total		49	85	103	100	337

16) Objective: To check association between Discomfort or Pain in Fingers (of section 2) and Gender.

Discomfort or Pain in Fingers * Gender Crosstabulation

Count

		Gender		Total
		Female	Male	
Discomfort or Pain in Fingers	0	21	45	66
	1	14	26	40
	2	24	22	46
	3	17	14	31
	4	27	23	50
	5	18	13	31
	6	5	16	21
	7	12	12	24
	8	1	4	5
	9	2	8	10
	10	2	5	7
	11	2	0	2
	12	1	1	2
	14	2	0	2
Total		148	189	337

17) Objective: To check association between Discomfort or Pain in Fingers (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Fingers * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				Total
		0 to 2	2 to 4	4 to 6	More than 6	
Discomfort or Pain in Fingers	0	16	20	22	8	66
	1	4	16	12	8	40
	2	7	14	18	7	46
	3	4	8	8	11	31
	4	5	11	17	17	50
	5	7	2	5	17	31
	6	1	2	5	13	21
	7	0	10	8	6	24
	8	0	0	3	2	5
	9	0	1	1	8	10
	10	2	1	1	3	7
	11	2	0	0	0	2
	12	1	0	1	0	2
	14	0	0	2	0	2
Total		49	85	103	100	337

18) Objective: To check association between Tingling in Fingers (of section 2) and Gender.

Tingling in Fingers * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Tingling in Fingers	0	30	44	74
	1	13	40	53
	2	19	28	47
	3	18	9	27
	4	12	9	21
	5	6	4	10
	6	12	16	28
	7	8	6	14
	8	4	9	13
	9	4	2	6
	10	0	7	7
	11	0	3	3
	12	2	0	2
	13	0	1	1
	15	0	1	1
	16	1	1	2
	18	19	9	28
Total		148	189	337

19) Objective: To check association between Tingling in Fingers (of section 2) and Usage of mobile phone (in hour) per day.

Tingling in Fingers * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Tingling in Fingers	0	17	20	22	15	74
	1	9	18	17	9	53
	2	7	18	14	8	47
	3	2	2	14	9	27
	4	0	3	12	6	21
	5	0	3	1	6	10
	6	3	7	4	14	28
	7	0	7	4	3	14
	8	0	0	8	5	13
	9	0	2	1	3	6
	10	0	0	0	7	7
	11	0	0	0	3	3
	12	2	0	0	0	2
	13	0	0	1	0	1
	15	0	0	1	0	1
	16	0	0	1	1	2
	18	9	5	3	11	28
Total		49	85	103	100	337

20) Objective: To check association between Discomfort or Pain in Thumbs (of section 2) and Gender.

Discomfort or Pain in Thumbs * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Discomfort or Pain in Thumbs	0	32	58	90
	1	11	27	38
	2	21	17	38
	3	21	15	36
	4	16	9	25
	5	5	17	22
	6	12	18	30
	7	3	7	10
	8	4	4	8
	9	4	6	10
	10	0	2	2
	12	2	1	3
	18	17	8	25
Total		148	189	337

21) Objective: To check association between Discomfort or Pain in Thumbs (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Thumbs * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Discomfort or Pain in Thumbs	0	23	31	23	13	90
	1	5	18	7	8	38
	2	0	10	18	10	38
	3	1	6	24	5	36
	4	3	3	7	12	25
	5	0	3	8	11	22
	6	4	7	6	13	30
	7	0	0	3	7	10
	8	0	1	3	4	8
	9	2	0	3	5	10
	10	1	1	0	0	2
	12	2	0	0	1	3
	18	8	5	1	11	25
Total		49	85	103	100	337

22) Objective: To check association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Gender.

Discomfort or Pain in Arms (in wrist, in muscles) * Gender Crosstabulation

Count

		Gender		Total
		Female	Male	
Discomfort or Pain in Arms (in wrist, in muscles)	0	28	45	73
	1	7	21	28
	2	25	27	52
	3	14	17	31
	4	11	9	20
	5	17	10	27
	6	8	16	24
	7	2	12	14
	8	1	3	4
	9	9	7	16
	10	3	3	6
	11	1	3	4
	12	0	4	4
	14	1	3	4
	15	3	1	4
	16	1	0	1
	18	17	8	25
Total		148	189	337

23) Objective: To check association between Discomfort or Pain in Arms (in wrist, in muscles) (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Arms (in wrist, in muscles) * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				Total
		0 to 2	2 to 4	4 to 6	More than 6	
Discomfort or Pain in Arms (in wrist, in muscles)	0	19	20	18	16	73
	1	6	8	10	4	28
	2	4	18	18	12	52
	3	0	12	13	6	31
	4	2	2	8	8	20
	5	2	6	11	8	27
	6	3	5	6	10	24
	7	0	6	4	4	14
	8	0	1	1	2	4
	9	0	1	8	7	16
	10	2	0	1	3	6
	11	1	0	1	2	4
	12	0	0	3	1	4
	14	0	0	0	4	4
	15	2	1	0	1	4
	16	0	0	0	1	1
	18	8	5	1	11	25
Total		49	85	103	100	337

24) Objective: To check association between Discomfort or Pain in Shoulder (of section 2) and Gender.

Discomfort or Pain in Shoulder * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Discomfort or Pain in Shoulder	0	22	45	67
	1	6	27	33
	2	23	18	41
	3	18	25	43
	4	20	19	39
	5	6	10	16
	6	19	10	29
	7	4	7	11
	8	2	4	6
	9	1	6	7
	10	2	4	6
	11	1	2	3
	12	20	7	27
	13	1	1	2
	15	2	0	2
	16	1	4	5
Total		148	189	337

25) Objective: To check association between Discomfort or Pain in Shoulder (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Shoulder * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Discomfort or Pain in Shoulder	0	22	14	16	15	67
	1	7	11	10	5	33
	2	2	17	15	7	41
	3	0	11	20	12	43
	4	3	6	12	18	39
	5	0	5	8	3	16
	6	2	6	10	11	29
	7	0	0	4	7	11
	8	0	1	1	4	6
	9	0	6	1	0	7
	10	2	0	3	1	6
	11	1	0	1	1	3
	12	9	6	1	11	27
	13	1	0	1	0	2
	15	0	2	0	0	2
	16	0	0	0	5	5
Total		49	85	103	100	337

26) Objective: To check association between Text neck pain (of section 2) and Gender.

Text neck pain * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Text neck pain	0	10	17	27
	1	8	37	45
	2	19	29	48
	3	24	14	38
	4	17	17	34
	5	12	14	26
	6	8	15	23
	7	10	10	20
	8	6	14	20
	9	1	4	5
	10	10	4	14
	11	1	1	2
	12	2	2	4
	13	18	11	29
	15	2	0	2
Total		148	189	337

27) Objective: To check association between Text neck pain (of section 2) and Usage of mobile phone (in hour) per day.

Text neck pain * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Text neck pain	0	9	7	6	5	27
	1	12	12	15	6	45
	2	2	26	13	7	48
	3	5	10	19	4	38
	4	2	6	13	13	34
	5	3	8	7	8	26
	6	1	3	8	11	23
	7	2	2	9	7	20
	8	1	1	4	14	20
	9	0	0	0	5	5
	10	2	2	5	5	14
	11	0	0	1	1	2
	12	2	0	1	1	4
	13	8	6	2	13	29
	15	0	2	0	0	2
Total		49	85	103	100	337

28) Objective: To check association between Stiff neck pain (of section 2) and Gender.

Stiff neck pain * Gender Crosstabulation

Count

		Gender		Total
		Female	Male	
Stiff neck pain	0	26	53	79
	1	14	25	39
	2	14	15	29
	3	21	22	43
	4	15	14	29
	5	10	11	21
	6	5	16	21
	7	17	12	29
	8	5	10	15
	9	4	1	5
	10	4	4	8
	11	0	1	1
	12	5	4	9
	13	6	1	7
	15	1	0	1
	16	1	0	1
Total		148	189	337

29) Objective: To check association between Stiff neck pain (of section 2) and Usage of mobile phone (in hour) per day.

Stiff neck pain * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				Total
		0 to 2	2 to 4	4 to 6	More than 6	
Stiff neck pain	0	16	29	21	13	79
	1	7	10	13	9	39
	2	2	11	7	9	29
	3	6	6	18	13	43
	4	3	4	12	10	29
	5	0	6	7	8	21
	6	0	5	5	11	21
	7	6	6	7	10	29
	8	0	4	5	6	15
	9	0	0	4	1	5
	10	3	0	2	3	8
	11	0	0	0	1	1
	12	5	1	2	1	9
	13	1	1	0	5	7
	15	0	1	0	0	1
	16	0	1	0	0	1
Total		49	85	103	100	337

30) Objective: To check association between Discomfort or Pain in Back (of section 2) and Gender.

Discomfort or Pain in Back * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Discomfort or Pain in Back	0	30	69	99
	1	10	15	25
	2	17	23	40
	3	24	18	42
	4	17	7	24
	5	2	4	6
	6	26	20	46
	7	5	5	10
	8	0	11	11
	9	6	5	11
	10	3	3	6
	12	5	7	12
	13	2	1	3
	15	1	0	1
	18	0	1	1
Total		148	189	337

31) Objective: To check association between Discomfort or Pain in Back (of section 2) and Usage of mobile phone (in hour) per day.

Discomfort or Pain in Back * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Discomfort or Pain in Back	0	23	35	21	20	99
	1	7	9	6	3	25
	2	4	9	16	11	40
	3	3	9	22	8	42
	4	0	5	11	8	24
	5	1	1	1	3	6
	6	5	5	14	22	46
	7	0	2	3	5	10
	8	0	5	0	6	11
	9	1	2	5	3	11
	10	0	0	2	4	6
	12	3	2	2	5	12
	13	2	0	0	1	3
	15	0	1	0	0	1
	18	0	0	0	1	1
Total		49	85	103	100	337

32) Objective: To check association between Discomfort or Eye Dryness (of section 3) and Gender.

Eye Dryness * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Eye Dryness	0	30	50	80
	1	21	17	38
	2	20	37	57
	3	19	33	52
	4	23	19	42
	5	18	18	36
	6	17	15	32
Total		148	189	337

33) Objective: To check association between Discomfort or Eye Dryness (of section 3) and Usage of mobile phone (in hour) per day.

Eye Dryness * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Eye Dryness	0	17	24	24	15	80
	1	10	14	8	6	38
	2	3	15	25	14	57
	3	5	10	11	26	52
	4	4	11	12	15	42
	5	2	5	17	12	36
	6	8	6	6	12	32
Total		49	85	103	100	337

34) Objective: To check association between Discomfort or Stain on Eye (of section 3) and Gender.

Stain on Eye * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Stain on Eye	0	18	39	57
	1	9	17	26
	2	23	35	58
	3	24	36	60
	4	30	27	57
	5	15	14	29
	6	29	21	50
Total		148	189	337

35) Objective: To check association between Stain on Eye (of section 3) and Usage of mobile phone (in hour) per day.

Stain on Eye * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Stain on Eye	0	11	21	13	12	57
	1	4	12	5	5	26
	2	5	13	19	21	58
	3	8	11	23	18	60
	4	4	12	22	19	57
	5	4	7	10	8	29
	6	13	9	11	17	50
Total		49	85	103	100	337

36) Objective: To check association between Eye Burning (of section 3) and Gender.

Eye Burning * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Eye Burning	0	24	59	83
	1	19	19	38
	2	18	37	55
	3	35	36	71
	4	30	16	46
	5	6	8	14
	6	16	14	30
Total		148	189	337

37) Objective: To check association between Eye Burning (of section 3) and Usage of mobile phone (in hour) per day.

Eye Burning * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Eye Burning	0	16	27	15	25	83
	1	9	16	7	6	38
	2	2	11	31	11	55
	3	13	14	17	27	71
	4	3	7	20	16	46
	5	0	3	5	6	14
	6	6	7	8	9	30
Total		49	85	103	100	337

38) Objective: To check association between Tearing (of section 3) and Gender.

Tearing * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Tearing	0	47	53	100
	1	12	26	38
	2	33	31	64
	3	15	34	49
	4	20	21	41
	5	6	8	14
	6	15	16	31
Total		148	189	337

39) Objective: To check association between Tearing (of section 3) and Usage of mobile phone (in hour) per day.

Tearing * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Tearing	0	27	36	15	22	100
	1	3	9	15	11	38
	2	5	16	25	18	64
	3	5	10	18	16	49
	4	2	5	15	19	41
	5	0	4	5	5	14
	6	7	5	10	9	31
Total		49	85	103	100	337

40) Objective: To check association between Frequently Rubbing of Eye (of section 3) and Gender.

Frequently Rubbing of Eye * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Frequently Rubbing of Eye	0	51	71	122
	1	10	15	25
	2	24	26	50
	3	23	27	50
	4	8	30	38
	5	14	7	21
	6	18	13	31
Total		148	189	337

41) Objective: To check association between Frequently Rubbing of Eye (of section 3) and Usage of mobile phone (in hour) per day.

Frequently Rubbing of Eye * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Frequently Rubbing of Eye	0	29	28	35	30	122
	1	4	11	7	3	25
	2	1	14	18	17	50
	3	7	12	10	21	50
	4	0	9	15	14	38
	5	2	5	9	5	21
	6	6	6	9	10	31
Total		49	85	103	100	337

42) Objective: To check association between Excessive blinking (of section 3) and Gender.

Excessive blinking * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Excessive blinking	0	70	77	147
	1	6	17	23
	2	16	24	40
	3	16	27	43
	4	15	25	40
	5	6	7	13
	6	9	9	18
Total		138	186	324

43) Objective: To check association between Excessive blinking (of section 3) and Usage of mobile phone (in hour) per day (in hour) per day.

Excessive blinking * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Excessive blinking	0	31	39	35	42	147
	1	0	11	10	2	23
	2	6	10	15	9	40
	3	4	11	14	14	43
	4	1	7	17	15	40
	5	0	1	6	6	13
	6	2	3	6	7	18
Total		44	82	103	95	324

44) Objective: To check association between Restlessness (of section 4) and Gender.

Restlessness * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Restlessness	0	18	28	46
	1	7	17	24
	2	10	15	25
	3	16	16	32
	4	21	14	35
	5	5	9	14
	6	15	30	45
	7	13	13	26
	8	15	24	39
	9	6	5	11
	10	3	5	8
	11	4	2	6
	12	2	4	6
	13	9	3	12
	14	0	1	1
	15	2	1	3
	16	2	2	4
Total		148	189	337

45) Objective: To check association between Restlessness (of section 4) and Usage of mobile phone (in hour) per day.

Restlessness * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Restlessness	0	9	18	13	6	46
	1	9	5	4	6	24
	2	3	12	6	4	25
	3	8	7	13	4	32
	4	3	13	13	6	35
	5	0	0	6	8	14
	6	5	12	17	11	45
	7	1	3	9	13	26
	8	4	9	8	18	39
	9	0	2	4	5	11
	10	0	2	1	5	8
	11	2	1	1	2	6
	12	2	0	1	3	6
	13	1	1	6	4	12
	14	0	0	0	1	1
	15	0	0	1	2	3
	16	2	0	0	2	4
Total		49	85	103	100	337

46) Objective: To check association between Tiredness (of section 4) and Gender.

Tiredness * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Tiredness	0	27	44	71
	1	11	9	20
	2	7	22	29
	3	15	20	35
	4	10	18	28
	5	12	11	23
	6	23	37	60
	7	15	4	19
	8	3	9	12
	9	5	3	8
	10	1	2	3
	11	4	3	7
	12	12	2	14
	13	1	2	3
	16	0	1	1
	18	2	2	4
Total		148	189	337

47) Objective: To check association between Tiredness (of section 4) and Usage of mobile phone (in hour) per day.

Tiredness * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Tiredness	0	18	16	17	20	71
	1	5	10	3	2	20
	2	2	12	11	4	29
	3	8	8	14	5	35
	4	1	9	12	6	28
	5	0	2	6	15	23
	6	8	13	20	19	60
	7	0	5	6	8	19
	8	0	2	2	8	12
	9	0	4	3	1	8
	10	0	0	0	3	3
	11	0	0	4	3	7
	12	4	4	2	4	14
	13	0	0	3	0	3
	16	1	0	0	0	1
	18	2	0	0	2	4
Total		49	85	103	100	337

48) Objective: To check association between Irritation (of section 4) and Gender.

Irritation * Gender Crosstabulation

Count

		Gender		
		Female	Male	Total
Irritation	0	18	21	39
	1	8	12	20
	2	12	16	28
	3	9	15	24
	4	11	21	32
	5	6	10	16
	6	18	37	55
	7	2	6	8
	8	9	11	20
	9	9	5	14
	10	5	1	6
	11	3	5	8
	12	12	13	25
	13	5	3	8
	14	2	3	5
	15	12	3	15
	16	4	1	5
	17	1	4	5
	18	2	2	4
Total		148	189	337

49) Objective: To check association between Irritation (of section 4) and Usage of mobile phone (in hour) per day.

Irritation * usage of mobile phone per day (in hours) Crosstabulation

Count

		usage of mobile phone per day (in hours)				
		0 to 2	2 to 4	4 to 6	More than 6	Total
Irritation	0	8	10	10	11	39
	1	8	8	2	2	20
	2	4	8	7	9	28
	3	4	9	8	3	24
	4	4	12	9	7	32
	5	3	5	7	1	16
	6	10	12	16	17	55
	7	0	3	3	2	8
	8	0	3	11	6	20
	9	0	4	7	3	14
	10	2	3	0	1	6
	11	0	0	3	5	8
	12	3	4	8	10	25
	13	0	2	3	3	8
	14	0	0	2	3	5
	15	1	2	6	6	15
	16	0	0	1	4	5
	17	0	0	0	5	5
	18	2	0	0	2	4
Total		49	85	103	100	337

Annexure: 2

Questionnaire:

The Maharaja Sayajirao University of Baroda Faculty of Science
Department of Statistics

PROJECT TITLE:

Analysis of Usage Pattern of Mobile Phone and Its Impact on Human Health in Vadodara City

Instruction:

The following question relate to usage pattern of mobile phone. Your answer should indicate the most accurate reply for the majority of nights.

Please answer all the questions.

1) Age: _____

2) Gender:
Male ☐ Female ☐

3) Occupation: _____

4) Address:
Landmarks [Near/Behind (Optional)]:

_____

Pin code: _____

5) How many mobile phones do you have?

Numbers:	1	2	3	more than 3
	☐	☐	☐	☐

6) How long do you use your mobile phone?

NUMBER OF HOURS:	0-2	2-4	4-6	more than 6
	☐	☐	☐	☐

7) Where do you place your mobile phone?

upper left side of your pocket	front side of jeans pocket	back side of jeans pocket	mobile zipper pouch
☐	☐	☐	☐

8) Do you use your mobile phone after 10 p.m.?

Yes ☐ No ☐

Instruction (Section 1):

The following question relate to your usual sleep habits. Your answer should indicate the most accurate reply for the majority nights.

Please answer all the questions.

1) At what time do you usually go to bed each night (in hours)?

USUAL BED TIME:_____

2) How long does it usually takes you to fall asleep each night (in minutes)?

NUMBER OF MINUTES:_____

3) What time do you usually get up in the morning (in hours)?

USUAL GETTING UP TIME: _____

4) How many hours of actual sleep did you get at night? (this may be different than the number of hours you spend in bed.)

NUMBER OF HOURS: _____

5) How often have you had trouble because you …?

	Never	sometimes	sometimes in month	sometimes in week
(a) …cannot get to sleep within 30 minutes	☐	☐	☐	☐
(b)…wake up in the middle of the night	☐	☐	☐	☐
(c)…had bad dreams	☐	☐	☐	☐

6) How would you rate your sleep quality overall?

Very good	Fairly good	Fairly bad	Very bad
☐	☐	☐	☐

7) How often have you taken medicine (Prescribed or "over the counter") to help you sleep?

Never	Not during the past month	Once or twice a month	Three or more times a month
☐	☐	☐	☐

8) How often have you had trouble (on next day) staying awake while driving, eating meals, or engaging in social activity?

Never	Not during the past month	Once or twice a month	Three or more times a month
☐	☐	☐	☐

9) How much a trouble keeping enough enthusiasm in doing things?

No problem At all	Only a very slight problem	Sometimes a problem	A very big problem
☐	☐	☐	☐

Instruction (Section 2):

The following question relate to your Physical health problem (upper limb, neck and back). Your answer should indicate the most accurate reply.

Please answer all the questions.

1) Have you experienced any discomfort or pain in "Head"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

2) Have you experienced any discomfort or pain in "Ear"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

3) Have you experienced any discomfort or pain in "Ringing or Buzzing in the Ear"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

4) Have you experienced any discomfort or pain in "Fingers"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

5) Have you experienced any discomfort or pain in "Tingling in Fingers"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

6) Have you experienced any discomfort or pain in "Thumbs"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

7) Have you experienced any discomfort or pain in "Arms" (in wrist, in muscles)?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐

Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

8) Have you experienced any discomfort or pain in "Shoulder"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

9) Have you experienced any discomfort or pain in "Text neck pain" (due to looking down at your mobile phone)?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

10) Have you experienced any discomfort or pain in "Stiff neck pain" (due to difficulty moving the neck)?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

11) Have you experienced any discomfort or pain in "Back"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐

Due to Online activities	☐	☐	☐	☐

Instruction (Section 3):

The following question relate to your Physical health problem (Eye Problem). Your answer should indicate the most accurate reply for the majority nights.

Please answer all the questions.

1) Have you experienced any discomfort or pain in "Eye dryness"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

2) Have you experienced any discomfort or pain in "Strain on eye"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

3) Have you experienced any discomfort or pain in "Eye burning"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

4) Have you experienced any discomfort or pain in "Tearing"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

5) Have you experienced any discomfort or pain in "Frequently rubbing of eye"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

6) Have you experienced any discomfort or pain in "Excessive blinking"?

	YES	NO
Due to Texting	☐	☐
Due to Gaming	☐	☐
Due to Study	☐	☐
Due to Calling	☐	☐
Due to Entertainment	☐	☐
Due to Online activities	☐	☐

Instruction (Section 4):

The following question relate to your Physical health problem (Physical stress). Your answer should indicate the most accurate reply.

Please answer all the questions.

1) Have you experienced any discomfort or pain in "Restlessness"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

2) Have you experienced any discomfort or pain in "Tiredness"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐

Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

3) Have you experienced any discomfort or pain in "Irritation"?

	Never	Once or twice a week	Three or four times a week	Five or more times a week
Due to Texting	☐	☐	☐	☐
Due to Gaming	☐	☐	☐	☐
Due to Study	☐	☐	☐	☐
Due to Calling	☐	☐	☐	☐
Due to Entertainment	☐	☐	☐	☐
Due to Online activities	☐	☐	☐	☐

Coding of collected data:

With the Help of questionnaire which has been already discussed, data from 337 respondent are collected and coded from preferential attributes of respondents. Sample collected data as follows.

Scoring for general questions.

Examine question #2 and assign score as follows.

Response	Score
"Male"	1
"Female"	2

Score: _____

Examine question #3 and assign score as follows.

Response	Score
Student	1
Job	2
Housewife	3

Score: _____

Examine question #5 and assign score as follows.

Response	Score
1	1
2	2
3	3
More than 3	4

Score: _____

Examine question #6 and assign score as follows.

Response	Score
0 to 2	1
2 to 4	2
4 to 6	3
More than 6	4

Score: _____

Examine question #7 and assign score as follows.

Response	Score
"upper left side of your pocket"	1
"front side of jeans pocket"	2
"back side of jeans pocket"	3
"mobile zipper pouch"	4

Score: _____

Examine question #8 and assign score as follows.

Response	Score
"NO"	0
"YES"	1

Score: _____

Scoring for 1st section.

It contains 9 self-rated questions, which are included in the scoring.

(Range of 0 – 3 points.)

0 – indicates "No difficulty"

1 – indicates "less difficulty"

2– indicates "Fairly more difficulty"

3 – indicates "sever difficulty"

COMPONENT 1: SUBJECTIVE SLEEP QUALITY

Examine question #6 and assign score as follows.

Response	Score
"very good"	0
"Fairly good"	1
"Fairly bad"	2
"Very bad"	3

Component 1 score: _____

COMPONENT 2: SLEEP LATENCY

Examine question #2 and assign score as follows.

Response	Score
<16 minutes	0
<31 minutes	1
<61 minutes	2
>60 minutes	3

Question #2 score: _____

Examine question #5(a) and assign score as follows.

Response	score
Never	0
Sometimes	1
Sometimes in month	2
Sometimes in week	3

Question #5(a) score: _____

Add #2 and #5(a) score Sum of #2 and #5(a):

Assign Component 2 score as follows.

Sum of #2 and #5(a)	Component 2 score
0	0
1-2	1
3-4	2
5-6	3

Component 2 score: _____

COMPONENT 3: SLEEP DURATION

Examine question #4 and assign score as follows.

Response	Component 3 score
>7 hours	0
>5 hours	1
>4 hours	2
< 5 hours	3

Component 3 score: _____

COMPONENT 4: HABITUAL SLEEP EFFICIENCY

Write the number of hours slept (question #4) here:

Calculate the number of hours spent in bed:

Getting up time (question #3):

Bed time (question #1):

Number of hours spent in bed (question #5):

Calculate habitual sleep efficiency as follows:

$$\left(\frac{Number\ of\ hours\ slept}{Number\ sleep\ efficiency}\right) \times 100 = Habitual\ sleep\ efficiency\ (\%)$$

Assign Component 4 score as follows.

Habitual sleep efficiency (%)	Component 4 score
>85%	0
75 – 84 %	1
65 – 74 %	2
<65 %	3

Component 4 score: _____

COMPONENT 5: SLEEP DISTURBANCES

Examine question #5(b) & #5(c) and assign score as follows

Response	score
Never	0
Sometimes	1
Sometimes in month	2
Sometimes in week	3

Question #5(b) score: _____

Question #5(c) score: _____

Add #5(b) & 5(c)
score Sum of #5(b) and #5(c): _____

Assign Component 2 score as follows.

Sum of #5(b) and #5(c)	Component 5 score
0	0
1-2	1
3-4	2
5-6	3

Component 5 score: _____

COMPONENT 6: USE OF SLEEPING MEDICATION

Examine question #7 and assign score as follows

Response	Component 6 score
Never	0
Not during the past month	1
Once or twice a month	2
Three or more time a month	3

Component 6 score: _____

COMPONENT 7: DAYTIME DYSFUNCTION

Examine question #8and assign score as follows

Response	score
Never	0
Not during the past month	1
Once or twice a month	2
Three or more time a month	3

Question #8 score: _____

Examine question #9and assign score as follow

Response	score
No problem at all	0
Only a very slight problem	1
Sometimes a problem	2
A very big problem	3

Question #9 score: _____

Add #8 & 9 score Sum of #8 and #9: _____

Assign Component 2 score as follows

Sum of #8 and #9	Component 7 score
0	0
1-2	1
3-4	2
5-6	3

Component 7 score: _____

Global Score (Add the seven-component score together): _____

Scoring for 2nd section.

It contains 11 self-rated questions, which are included in the scoring. (Range of 0 – 3 points.)
0 – indicates "No difficulty"
1 – indicates "Fairly less difficulty"
2 – indicates "Fairly more difficulty"
3 – indicates "sever difficulty"

Purpose for using mobile phone – 1) Texting, 2) Gaming, 3) Study, 4) Calling, 5) Entertainment and 6) online activities

Examine questions #1 to #11 and assign score as follows.

Response	score
"Never"	0
"Once or twice a week"	1
"Three or four times a week"	2
"Five or more times a week"	3

Score: _____

Scoring for 3rd section.

It contains 6 self-rated questions, which are included in the scoring. (Range of 0 – 1 point.)
0 – indicates "No difficulty"
1 – indicates "sever difficulty"

Purpose for using mobile phone – 1) Texting, 2) Gaming, 3) Study, 4) Calling, 5) Entertainment and 6) online activities

Examine questions #1 to #6 and assign score as follows.

Response	score
"NO"	0
"YES"	1

Score: _____

Scoring for 4th section.

It contains 3 self-rated questions, which are included in the scoring. (Range of 0 – 3 points.)

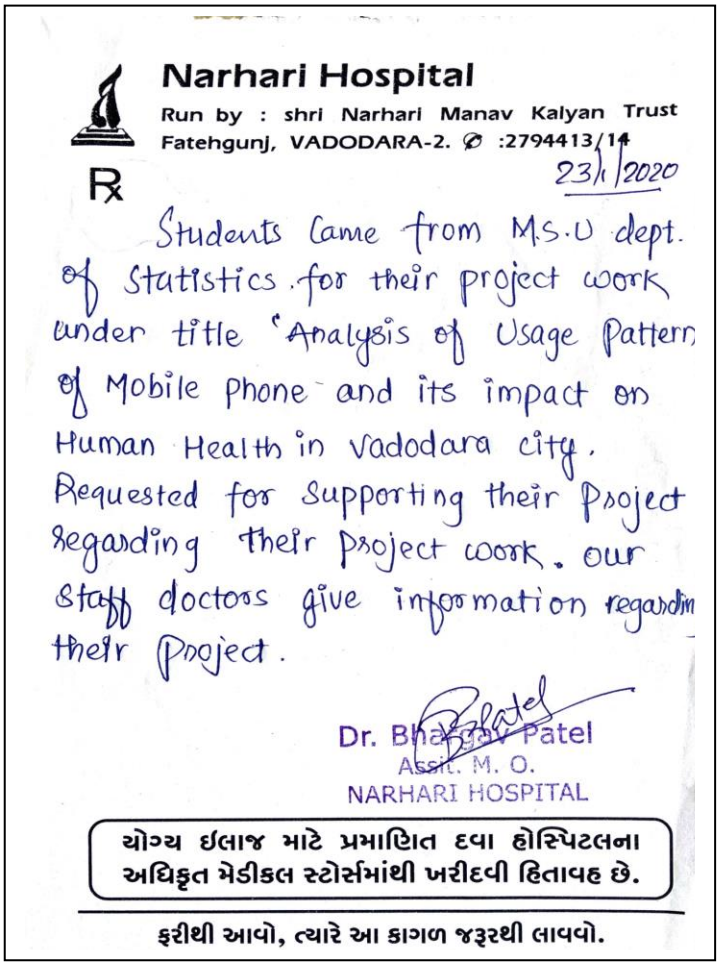
0 – indicates "No difficulty"
1 – indicates "Fairly less difficulty"
1 – indicates "Fairly more difficulty"
2 – indicates "sever difficulty"

Purpose for using mobile phone – 1) Texting, 2) Gaming, 3) Study, 4) Calling, 5) Entertainment and 6) online activities

Examine questions #1 to #3 and assign score as follows.

Response	score
"Never"	0
"Once or twice a week"	1
"Three or four times a week"	2
"Five or more times a week"	3

Score: _____



Narhari Hospital
Run by : shri Narhari Manav Kalyan Trust
Fatehgunj, VADODARA-2. ✆ :2794413/14

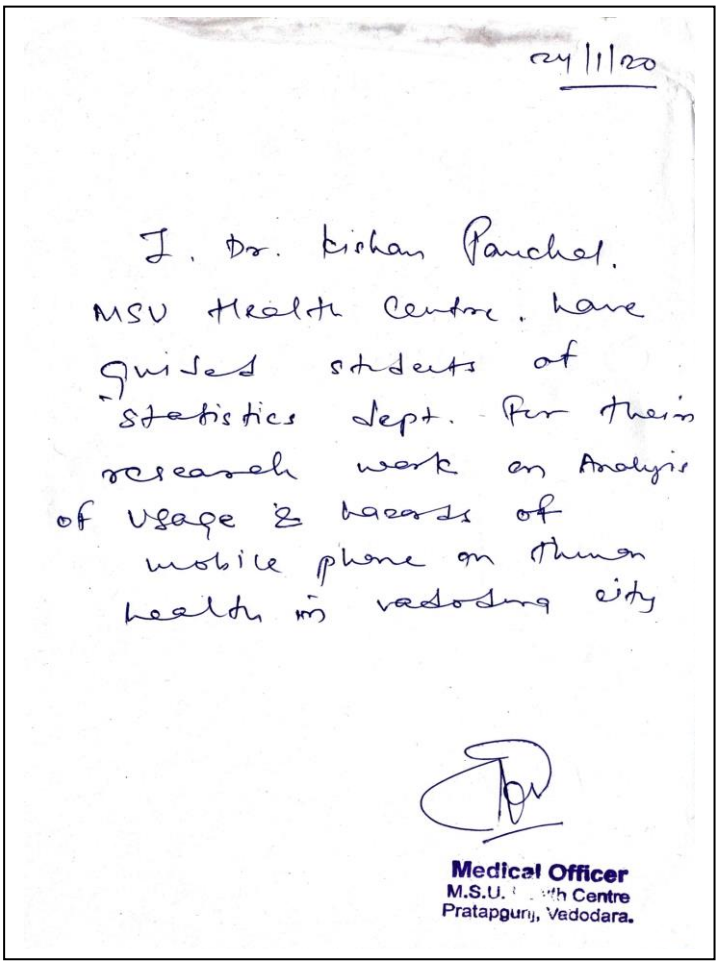
℞ 23/1/2020

Students came from M.S.U dept. of Statistics for their project work under title 'Analysis of Usage Pattern of Mobile phone and its impact on Human Health in Vadodara city. Requested for supporting their project regarding their project work. our staff doctors give information regardin their project.

Dr. Bhargav Patel
Asstt. M. O.
NARHARI HOSPITAL

યોગ્ય ઈલાજ માટે પ્રમાણિત દવા હોસ્પિટલના અધિકૃત મેડીકલ સ્ટોર્સમાંથી ખરીદવી હિતાવહ છે.

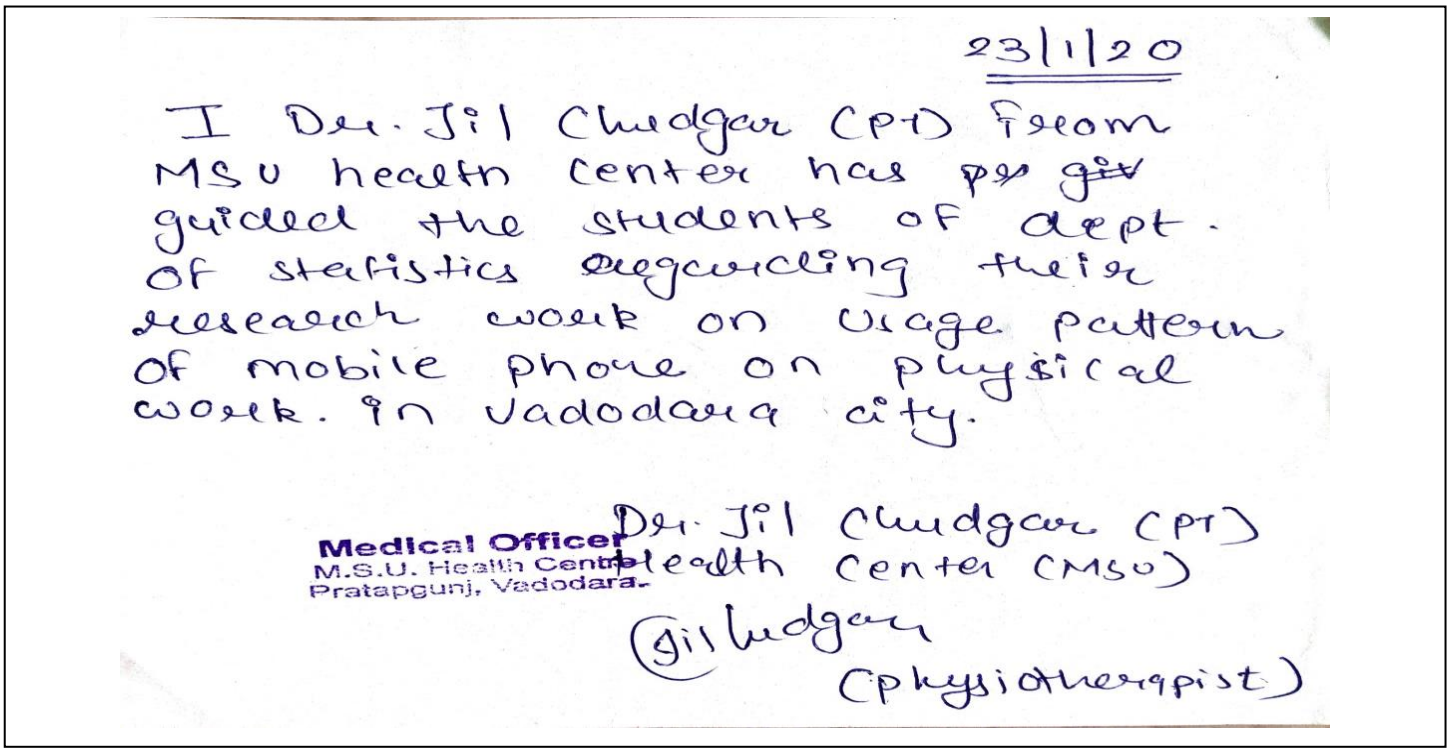
ફરીથી આવો, ત્યારે આ કાગળ જરૂરથી લાવવો.



24/1/20

I. Dr. Kishan Panchal. MSU Health Centre. have guided students of Statistics dept. for their research work on Analysis of Usage & hazards of mobile phone on Human health in vadodara city

Medical Officer
M.S.U. Health Centre
Pratapgunj, Vadodara.



23/1/20

I Dr. Jil Chudgar (PT) from MSU health center has ~~pr~~ ~~giv~~ guided the students of dept. of statistics regarding their research work on Usage pattern of mobile phone on physical work. in Vadodara city.

Medical Officer
M.S.U. Health Centre
Pratapgunj, Vadodara.

Dr. Jil Chudgar (PT)
Health Center (MSU)

Jil Chudgar
(physiotherapist)