Project Report

On

STATISTICAL SURVEY ON VARIOUS FACTORS INFLUENCING THE USE OF MENSTRUAL PRODUCTS WITH PARTICULAR REFERENCE TO MENSTRUAL CUP

Submitted

in partial fulfilment of the requirements for the award of the degree of

BACHELOR OF SCIENCE

in

MATHEMATICS

by

AKSHITHA M PRABHU

AB20AMAT001

Under the Supervision of

Smt. NEENU SUSAN PAUL

DEPARTMENT OF MATHEMATICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM, KOCHI - 682011

APRIL 2022

ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM

CERTIFICATE

This is to certify that the dissertation entitled, **STATISTICAL SURVEY ON VARIOUS FACTORS INFLUENCING THE USE OF MENSTRUAL PRODUCTS WITH PARTICULAR REFERENCE TO MENSTRUAL CUP** is a bonafide record of the work done by Ms.**AKSHITHA M PRABHU** under my guidance in partial fulfillment of the award of the degree of **Bachelor of Science in Mathematics** at St. Teresa's College (Autonomous), Ernakulam affiliated to Mahatma Gandhi University, Kottayam. No part of this work has been submitted for any other degree elsewhere.

Date: 23-02-2023
Place: Ernakulam

ST. TERESA'S COLLEGE DEPT. OF MATHEMATICS ERNAKULAM

Smt. NEENU SUSAN PAUL
Assistant Professor,
Department of Mathematics,
St. Teresa's College(Autonomous),
Ernakulam.

Dr.Ursala Paul
Assistant Professor and Head ,
Department of Mathematics,
St. Teresa's College(Autonomous),
Ernakulam.

External Examiners

1:..... ANISHA ANILKUMAR

2: .....

DECLARATION

I hereby declare that the work presented in this project is based on the original work done by me under the guidance of Smt. NEENU SUSAN PAUL, Assistant Professor, Department of Mathematics, St. Teresa's College(Autonomous), Ernakulam and has not been included in any other project submitted previously for the award of any degree.

Ernakulam. **AKSHITHA M PRABHU**

Date: 23-02-2023 **AB20AMAT001**

ACKNOWLEDGEMENT

I take this opportunity to express my sincere gratitude towards Smt. NEENU SUSAN PAUL of the Department of Mathematics of St. Teresa's College who encouraged me to carry out this work. Her continuous invaluable and knowledgeable guidance throughout this study helped me to complete the work up to this stage. I will always be thankful to you in this regard. I also express my profound thanks to Smt. ROSMIN RAJU and Smt. BETTY JOSEPH of the Department of Statistics and all those who have indirectly guided and helped me in the completion of this project.

Ernakulam. **AKSHITHA M PRABHU**

Date:23-02-2023 **AB20AMAT001**

Contents

Chapter 1

INTRODUCTION

Menstrual hygiene management (MHM) refers to the specific hygiene and health requirements of girls and women during menstruation, such as the knowledge, information, materials, and facilities needed to manage menstruation effectively and privately [11].Over the course of their lives, girls who are teenagers will have to deal with up to 3000 days of menstruation. For women and girls, having access to a safe and respectable menstrual experience is essential.Menstrual hygiene materials are the products used to catch menstrual flow, such as pads, tampons, menstrual cups etc.Among these the most widely used product is the disposable sanitary napkin.

A healthy woman requires on an average 15- 20 sanitary pads per period cycle.It is estimated that a women will have around 456 menstrual cycles between puberty (age 11-15) and menopause (age 45-55). Thus, each women requires around 10, 000 sanitary pads during her reproductive years. Sanitary waste disposal has now become a major concern over these years.

The usage of environmental friendly and ethical menstrual products for the benefit of body and the environment is referred to as Sustainable menstruation. These include biodegradable or organic sanitary pads which claim to be compostable and decompose over time, washable or reusable cloth pads, and menstrual cups.Most menstrual hygiene items are constructed of plastic and are non-biodegradable, requiring 500 to 800 years to break down. According to estimates, an average woman

will have menstruation for 40 years on average, which might result in an annual waste of up to 200 kilograms of menstrual products. Keeping in mind the huge quantum of menstrual waste generated per day, a switch to sustainable menstrual products, like menstrual cups, is the need of the hour.Menstrual cups are a great sustainable and hygienic alternative to other menstrual products and have lower environmental-impact.

For women in under-developed nations who may have limited access to affordable sanitary goods, menstrual cups can be an effective method of managing menstrual hygiene. Lack of accessible hygiene supplies results in the frequent adoption of sub-par, unclean alternatives, which can pose a significant health risk. In contrast to certain other feminine hygiene products, menstrual cups provide a long-term solution because they do not require a monthly replacement. 2019 saw the beginning of a program by the municipality of Alappuzha in Kerala, India, and the free distribution of 5,000 menstruation cups to local women. The first village in India without sanitary napkins is expected to be Kumbalangi in Kerala in 2022. The panchayat under a project called 'Avalkkayi', planned to give 5,700 menstrual cups for free. All of these facts indicate that menstrual cups are getting more and more popular nowadays and are the ideal choice for a healthy cycle and a healthy environment.

This paper is a statistical study of the influence of various factors affecting the use of menstrual products, with particular reference to menstrual cups. The objective of this research assesses and analyses the factors influencing the use of menstrual products especially menstrual cup among women of the reproductive age groups and different localities. The findings of this dissertation work can be an example for the future of sustainable menstrual product alternatives that significantly affect the environment as well as female health.

1.1 STATISTICS

Statistics is a branch of mathematics that deals with the collection, organization, analysis of data and drawing of inferences from the samples

to the whole population.This requires a proper design of the study, an appropriate selection of the study sample and choice of a suitable statistical test.An adequate knowledge of statistics is necessary for proper designing of a study or a clinical trial.

1.1.1 VARIABLES

Variable is the characteristic that can be measured and take on several values. Qualitative variable is a type of statistical variable that expresses values corresponding to attributes or qualities. Quantitative Variables are variables which are measured on a numeric scale.

1.1.2 STATISTICS: DESCRIPTIVE AND INFERENTIAL

Descriptive statistics collect, organize, analyse and display data in a meaningful way. It provides a summary of data in the form of mean, median and mode. Inferential statistics is a type of statistics where conclusions about the population are drawn from sample analysis and observation. It is valuable when it is not possible to examine each member of an entire population.

1.1.3 INFERENTIAL STATISTICS

In inferential statistics, the data is analysed from a sample to make inferences in the larger collection of the population. The purpose is to answer or test the hypotheses. A hypothesis (plural hypotheses) is a proposed explanation for a phenomenon. Hypothesis tests are thus procedures for making rational decisions about the reality of observed effects. In inferential statistics, the term 'null hypothesis' (H_0) denotes that there is no relationship (difference) between the population variables in question. Alternative hypothesis (H_1) denotes that a statement between the variables is expected to be true. The p value (or the calculated probability) is the probability of the event occurring by chance if the null hypothesis is true. The p value is a numerical value between 0 and 1 and is interpreted by researchers in deciding whether to reject or retain the null hypothesis. If p value is less than the arbitrarily chosen value (known as the significance level), the null hypothesis (H_0) is

rejected.

1.1.4 STATISTICAL SURVEY

A statistical survey is the study of the characteristics of a certain population by collecting information from a sample of that population and evaluating their characteristics using a systematic statistical method. There are different stages in conducting a statistical survey. These steps must be done in sequential order.The important stages of statistical research are:

- Defining the problem and determining the objective
- Preparations for data collection
- Collection of data
- Data classification and tabulation
- Analysis and interpretation of data
- Preparation of report

1.2 OBJECTIVES

- To find and interpret if there exist any relation between different age groups and usage of menstrual cups.
- To find and interpret if there is a difference in the acceptance of menstrual cup among women of rural and urban areas.
- To identify which Menstrual product is most preferred among the women.
- To examine whether the concerns about health problems and virginity loss inhibit women from the use of menstrual cup.

1.3 LITERATURE REVIEW

Masih A Babagoli et.al [1], conducted a cost-effective analysis among school girls in rural Kenya providing menstrual cups and sanitary pads.

The study compared and valued health and education benefits with relative program cost. The study highlights menstrual cup provides cost-effective solution for menstrual hygiene management.

Chloé Parent et.al [2], did the first French study based on menstrual hygiene products. They deduced that users of menstrual cups are low as compared to other traditional hygiene products. But the users of menstrual cup were satisfied and recommended it to others. Study also found that menstrual cups are perceived to be the least risky.

Maryam Gharacheh et.al [3], investigated the acceptability and safety of menstrual cups among Iranian women. Due to poor awareness, cultural taboos and myths affect the acceptability of menstrual cups. The study concluded that menstrual cup is a suitable alternative for menstrual hygiene management as it shows high level of acceptability and safety.

Anna Maria Van Ejik et.al [4], studied about the usage, acceptability, safety, and availability of menstrual cups. They found that compared with other menstrual products, no infectional risk or vaginal abnormalities is associated with the usage of menstrual cup. This systematic review claims menstrual cup as a safe option and it can be acceptable in countries but they are not well known.

A study on the menstrual hygiene management of disabled people and problems they face was done by Jane Wilbur et.al [5].

Elizabeth Peberdy et.al [6] in their article titled "A Study into Public Awareness of the Environmental Impact of Menstrual Products and Product Choice" explores about the extent to which people are aware of the environmental impact of menstrual products. They focused on the attitude and awareness of women mainly in UK.

Anne Sebert Kuhlmann et.al [7], studied about menstrual hygiene management mainly in sub-Saharan Africa and South Asia. Girls in these resource-poor countries commonly use old cloths or tissues. This qualitative study concluded that usage of sanitary products among them are less as these commercial products are unavailable and unaffordable.

Dr, Jalpa K. Bhatt et.al [8], aim to assess the adaptive capacity and

efficiency of menstrual cup by naive users. The study claims that cup was preferred for dryness, comfort, and less odour.
Barbara B North et.al [9] studied about the experiences in using vaginal cups. Clinical tests and detailed written questionnaires were enrolled. This study provides solid proof that an intravaginal cervical barrier device can be used successfully by most women without the need of multiple sizes, fit or other medical services.
Baishakhi Paria et.al [10], sought to determine the difference in the awareness regarding menstruation among rural and urban area. The study identified that, as compared to urban area menstrual hygiene management is unsatisfactory in rural areas.

1.4 SIGNIFICANCE OF STUDY

It is a fact that the use of sanitary napkins and tampons has a significantly adverse effect on the environment and it is in this scenario, sustainable menstruation gains importance. The term "sustainable menstruation" encompasses menstrual management practices that are healthy and leave little or no impact on the environment. Menstrual cups are a great sustainable and hygienic alternative to other menstrual products which lead many women to use them over sanitary napkins, tampons, and cloth. Thus, in recent years, there has been a noticeable increase in the interest of using these reusable products, which appears to be the results of greater awareness through mass media and Government promotions of these products. However, there are still women in the society who are not aware about menstrual cups or who are not willing to use them due to different worries. The lack of awareness may be a result of various factors like no availability of mainstream media which is due to residing in an underdeveloped (rural) locality, age of the user or perhaps the profession. So, the purpose of this study is to examine these varied factors effecting the usage of menstrual cup among the women and the results providing an example for the future of these sustainable menstrual products that can significantly increase the quality of the environment as well as female health

1.5 LIMITATIONS OF THE STUDY

Despite the study's significant findings, our survey had certain limitations.

- **The survey is only open to women between the ages of 13 and 55.**
- **The study is restricted to a certain area and hence generalization is not possible.**
- **Qualitative data is only used in the study.**
- **The survey was limited to 310 participants due to the time and other restrictions. There is a possibility that the statistics may or may not be biased because the replies provided were the respondents' personal decisions.**

Chapter 2

METHODOLOGY

2.1 EXPLORATORY DATA ANALYSIS

Exploratory data analysis is an approach for analysing data using visual techniques.It consists of the descriptive characteristics of the data. This data analysis makes use of graphical techniques.Graphical techniques are more subjective and qualitative in nature. Some of the graphical tools utilised in the analysis include bar graphs and pie charts.A bar graph is a graph that displays grouped data with rectangular bars that can be drawn either vertically or horizontally and whose lengths are proportional to their values.It is a type of graph that shows category comparisons using either a horizontal or vertical bar.The graph's other axis depicts the discrete value, while the first axis displays the individual classes that were compared.Another tool employed in this study for data display is a pie chart. An understanding of the data can be gained through a pie chart, which presents data,information, and statistics in an understandable pie-slice format with various-sized slices.

2.2 STATISTICAL TOOLS USED IN THE STUDY

2.2.1 CHI-SQUARE TEST

Chi-square test is a statistical test that is used to determine if there is any relation between two categorical variables.H_0 or Null hypothesis represents that there is no relationship between the two variables.H_1

or the Alternative hypothesis indicates that there exists a significant relation between two variables. The level of significance is the probability of rejecting the null hypothesis when it is true. Usually, we set the level of significance to 0.05. First, a table of observed frequencies (O_i) is created from obtained data.Then expected frequency values are calculated using the following equation:

$$\frac{Row\ Total \times Column\ Total}{Grand\ Total} \tag{2.1}$$

The expected frequency table is created following this.We can calculate the Chi-Square values using the equation:

$$\sum \frac{(Observed\ value - Expected\ value)^2}{Expected\ Value} \tag{2.2}$$

i.e, $\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$

Tabular Chi–Square value can be obtained by using degrees of freedom and significance level.

$$Degrees\ of\ freedom = (column - 1) \times (rows - 1) \tag{2.3}$$

Degrees of freedom in a statistical calculation is number of values in the calculation which has the freedom to vary, in the data sample. If calculated Chi–Square is greater than the tabular Chi–Square, then we reject Null hypothesis and accept Alternative hypothesis.

2.2.2 INDEPENDENT SAMPLES t-TEST

An inferential statistical test known as the independent t-test examines whether there is a statistically significant difference between the means in two unrelated groups. It is also known as the two-sample t-test, independent-samples t-test, or student's t-test. This test is typically used to detect whether two population means differ. This process employs samples to infer information about populations, making it an inferential statistical hypothesis test. The following hypotheses are

tested using independent samples t-tests:

H_0 or Null hypothesis : The means for the two populations are equal,or null.

H_1 or the Alternative hypothesis: The means for the two populations are different from one another.

You must mention the t-statistic value, the degrees of freedom (df), and the test's significance value when reporting the outcome of an independent t-test (p-value). Depending on whether the populations' standard deviations are the same, equal, or different, the T-statistics formula changes.When the two independent samples are assumed to be drawn from populations with unequal variances (i.e., $\sigma_1^2 \neq \sigma_2^2$), the test statistic t is computed as:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} - \frac{s_2^2}{n_2}}} \tag{2.4}$$

Where,

$\bar{x}_1$= Mean of first sample

$\bar{x}_2$ = Mean of second sample

n_1 = Sample size (i.e., number of observations) of the first sample.

n_2 = Sample size (i.e., number of observations) of the second sample.

s_1 = Standard deviation of first sample

s_2 = Standard deviation of second sample

The calculated t-value is compared from the t-value from the t-distribution table.The degrees of freedom is calculated using the formula:

$$df = \frac{(\frac{s_1^2}{n_1} - \frac{s_2^2}{n_2})^2}{\frac{1}{n_1-1}(\frac{s_1^2}{n_1})^2 + \frac{1}{n_2-1}(\frac{s_2^2}{n_2})^2} \tag{2.5}$$

Likert Scale: Likert scale is a rating scale that is used to measure the opinions and attitudes of the respondents quantitatively. It is a very widely used approach in surveys and helps to assess a respondent's opinion quickly. In the above independent samples t-test a 3-point Likert scale was used. The scaling is given by (1) Agree; (2) Neutral; (3)

Disagree. The Likert scale was used in excel and SPSS while performing the independent samples t-test.

Chapter 3

DATA ANALYSIS

3.1 EXPLORATORY DATA ANALYSIS

Questions and responses represented graphically

fig 3.1 shows the number of population categorised according to age groups.

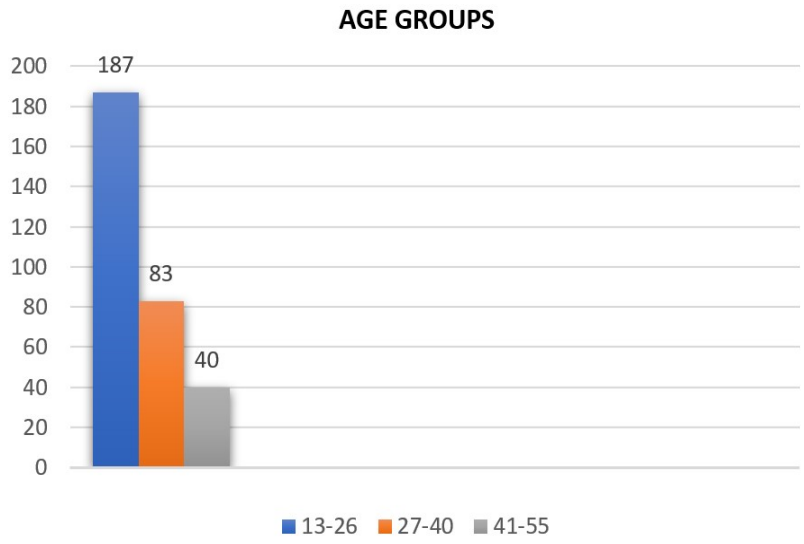


fig 3.2 shows the number of population categorised according to occupation.

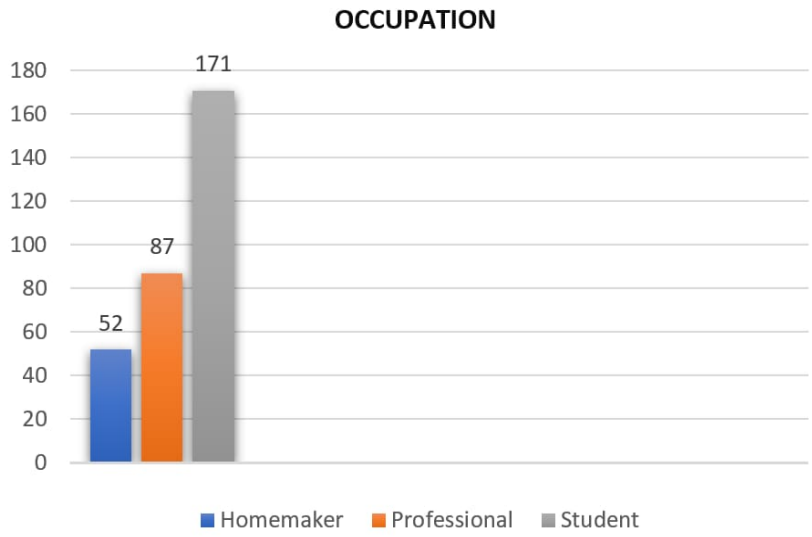


fig 3.3 shows frequency of population categorised according to area of residency.

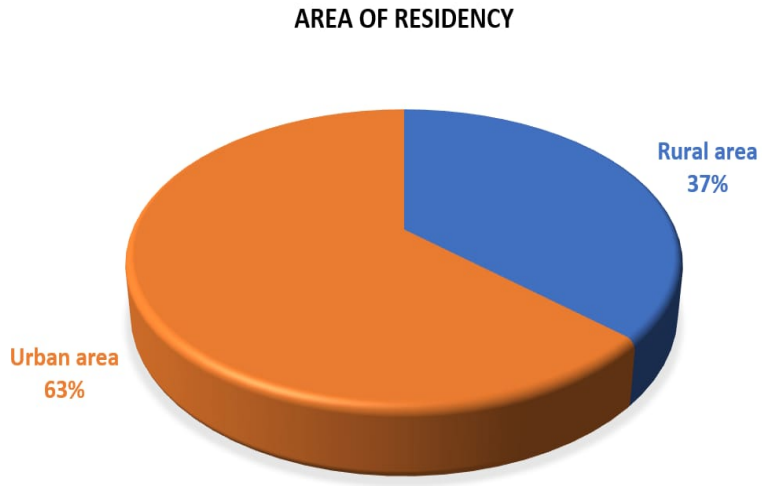


fig 3.4 shows the pie chart of the question "Which menstrual product do you use?"

fig 3.5 shows the pie chart of the question "Which is your preferred disposal method?"

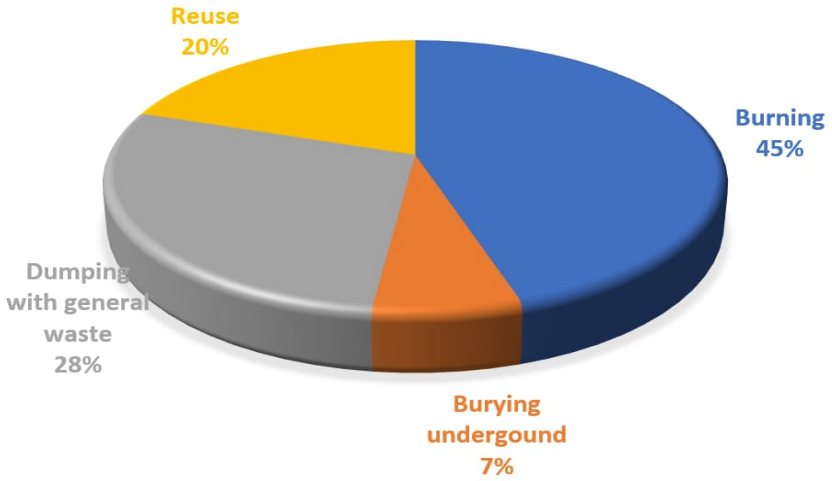


fig 3.6 shows the pie chart of the question "Which menstrual product is more comfortable?"

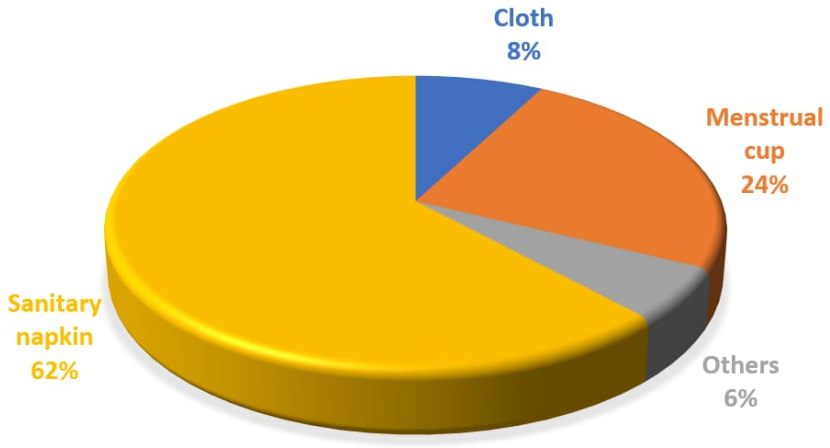


fig 3.7 shows the pie chart of the question "Have you ever used a menstrual cup?"

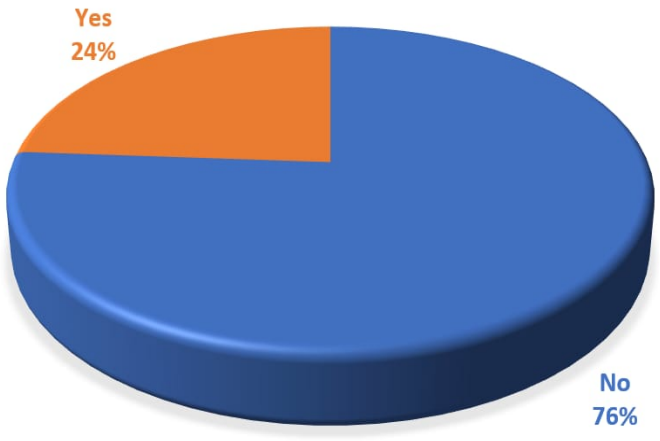


fig 3.8 shows the pie chart of the question "Would you suggest menstrual cup to others?"

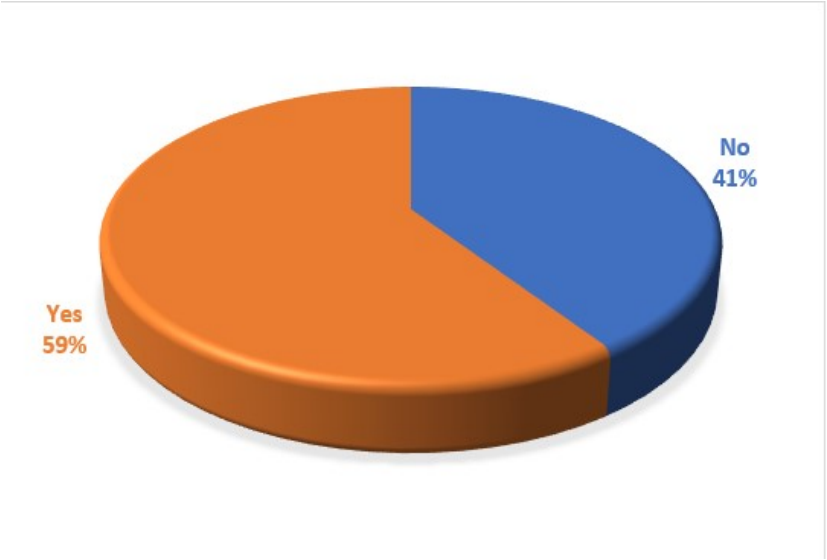


fig 3.9 shows the pie chart of the question "Are you concerned that the use of menstrual cup could lead to health problems?"

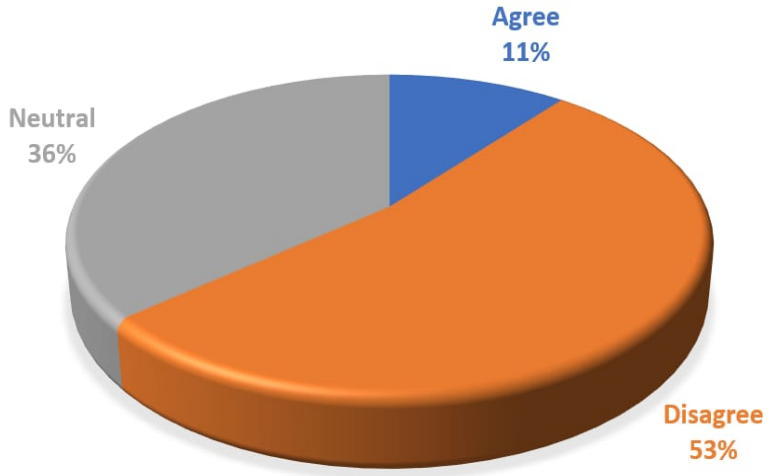


fig 3.10 shows the pie chart of the question "Menstrual cup can affect virginity. Does this myth bother you?"

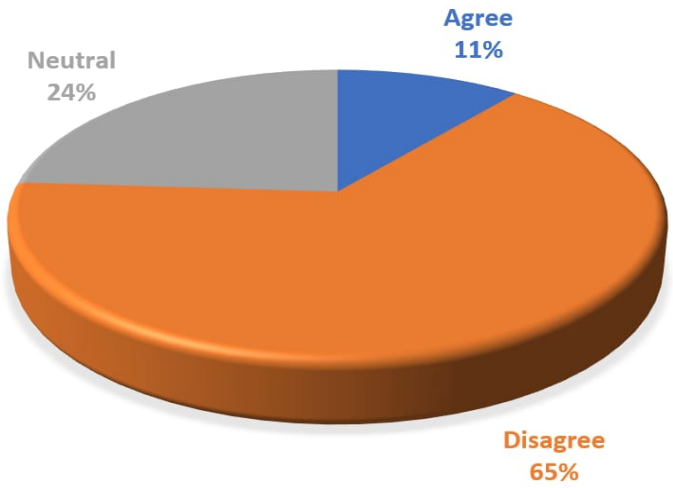


fig 3.11 shows the pie chart of the question "Do you consider menstrual cups to be a sustainable menstrual practice?"

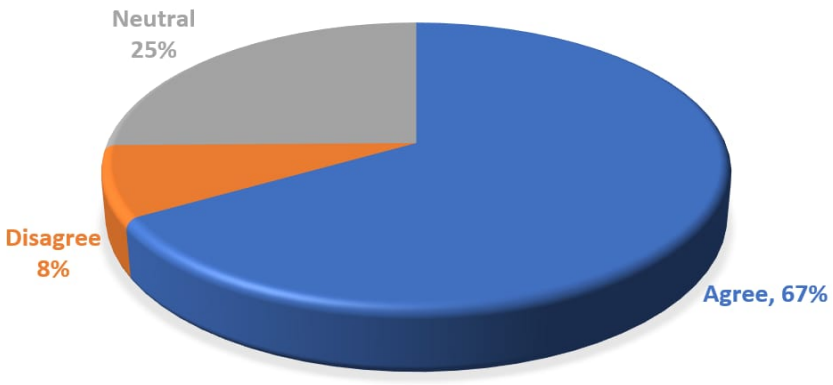
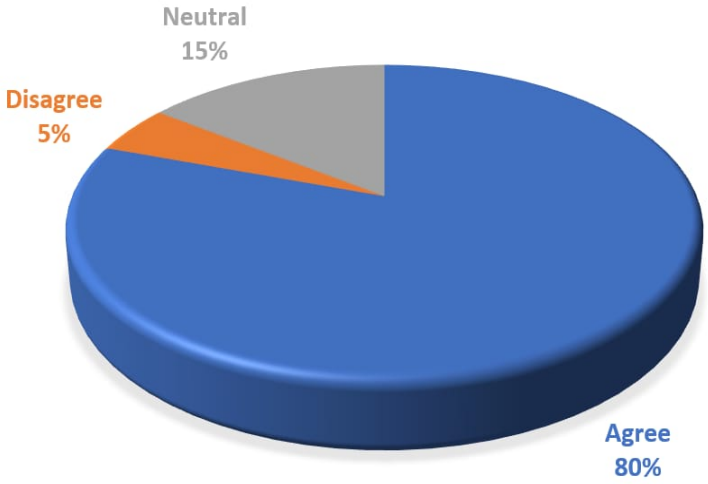


fig 3.12 shows the pie chart of the question "Proper awareness can increase the acceptability of menstrual cups. Do you agree?"



3.2 CHI-SQUARE TEST

1. AGE GROUP AND USAGE OF MENSTRUAL CUP

Q. Have you ever used a menstrual cup?

a) Yes

b) No

OBSERVED FREQUENCY

Age Groups	No	Yes	Grand Total
13-26	142	45	187
27-40	60	23	83
41-55	34	6	40
Grand Total	236	4	310

H_0: There is no relationship between age group and use of menstrual cup.

H_1: There exist a relationship between age group and use of menstrual cup.

Critical value: 0.05

EXPECTED FREQUENCY

Age Groups	No	Yes	Grand Total
13-26	142.3613	44.63871	187
27-40	63.1871	19.8129	83
41-55	30.45161	9.548387	40
Grand Total	236	74	310

EF=CT*RT/GT

p value = 0.299781

Since p value is greater than 0.05, we will accept the null hypothesis. Hence, we can conclude that there exists no relation between menstrual cup use and age groups.

2. AGE GROUP AND VIRGINITY LOSS CONCERNS

Q. Menstrual cup can affect virginity. Does this myth bother you?

a) Agree

b) Disagree

c) Neutral

OBSERVED FREQUENCY

Age Groups	Agree	Disagree	Neutral	Grand Total
13-26	14	128	45	187
27-40	9	54	20	83
41-55	11	20	9	40
Grand Total	34	202	74	310

H_0: There is no relationship between age group and virginity loss concerns.

H_1: There exist a relationship between age group and virginity loss concerns.

Critical value: 0.05

EXPECTED FREQUENCY

Age Groups	Agree	Disagree	Neutral	Grand Total
13-26	20.50968	121.8516	44.63871	187
27-40	9.103226	54.08387	19.8129	83
41-55	4.387097	26.06452	9.548387	40
Grand Total	34	202	74	310

EF=CT*RT/GT

p value = 0.007986

Since p value is less than 0.05, we will reject the null hypothesis.

Hence, we can conclude that there exists relation between Age group

and virginity loss concerns.

3. AGE GROUP AND HEALTH PROBLEM CONCERNS

Q. Are you concerned that the use of menstrual cups could lead to health problems?

a) Agree

b) Disagree

c) Neutral

OBSERVED FREQUENCY

Age Groups	Agree	Disagree	Neutral	Grand Total
13-26	13	106	68	187
27-40	10	44	29	83
41-55	11	14	15	40
Grand Total	34	164	112	310

H_0: There is no relationship between age group and health problem concerns.

H_1: There exist a relationship between age group and health problem concerns.

Critical value: 0.05

EXPECTED FREQUENCY

Age Groups	Agree	Disagree	Neutral	Grand Total
13-26	20.509677	98.929	67.561	187
27-40	9.103225	43.9097	29.987	83
41-55	4.387096	21.1613	14.452	40
Grand Total	34	164	112	310

EF=CT*RT/GT

p value = 0.00331

Since p value is less than 0.05, we will reject the null hypothesis. Hence, we can conclude that there exists relation between Age group and health problem concerns.

4. AREA AND HEALTH PROBLEM CONCERNS

Q. Are you concerned that the use of menstrual cups could lead to health problems?

a) Agree

b) Disagree

c) Neutral

OBSERVED FREQUENCY

Area	Agree	Disagree	Neutral	Grand Total
Rural area	21	54	39	114
Urban area	13	110	73	196
Grand Total	34	164	112	310

H_0: There is no relationship between area and health problem concerns.

H_1: There exist a relationship between area and health problem concerns.

Critical value: 0.05

EXPECTED FREQUENCY

Area	Agree	Disagree	Neutral	Grand Total
Rural area	12.50323	60.30968	41.1871	114
Urban area	21.49677	103.6903	70.8129	196
Grand Total	34	164	112	310

EF=CT*RT/GT

p value = 0.005627

Since p value is less than 0.05, we will reject the null hypothesis. Hence, we can conclude that there exists relation between area and health problem concerns.

5. OCCUPATION AND USAGE OF MENSTRUAL CUP

Q. Have you ever used a menstrual cup?

a) Yes

b) No

OBSERVED FREQUENCY

Occupation	No	Yes	Grand Total
Homemaker	41	11	52
Professional	60	27	87
Student	135	36	171
Grand Total	236	74	310

H_0: There is no relationship between occupation and use of menstrual cup.

H_1: There exist a relationship between occupation and use of menstrual cup.

Critical value: 0.05

EXPECTED FREQUENCY

Occupation	No	Yes	Grand Total
Homemaker	39.58709	12.412903	52
Professional	66.232258	20.76774	87
Student	130.18064	40.81935	171
Grand Total	236	74	310

EF=CT*RT/GT

p value = 0.181286

Since p value is greater than 0.05, we will accept the null hypothesis. Hence, we can conclude that there exists no relation between occupation and usage of menstrual cups.

3.3 INDEPENDENT SAMPLE t-TEST

GROUP STATISTICS

GROUP	N	Mean	Std. Deviation	Std. Error Mean
1	113	1.7103245	.264390570	.02487177
2	195	1.9415385	.220747774	.01580807

INDEPENDENT SAMPLES TEST

	T-test for Equality of Mean				
	t	df	Sig.(2-tailed)	Mean difference	Std.Error difference
AVERAGE	3.557	283	.000	.14993	.04215

Hypothesis under study

H_0**: There is no difference in the acceptance of menstrual cup between the 2 groups.**

H_1**: There is difference in the acceptance of menstrual cup between the 2 groups.**

Decision Criteria: If p-value less than 0.05, we reject null hypothesis at 5% level of significance. If p-value greater than 0.05, we accept null hypothesis at 5% level of significance.

Since the p-value is less than 0.05, we reject the Null hypothesis and accept the alternate hypothesis and conclude that there is difference in the acceptance of menstrual cups between the 2 groups (Group 1 and Group 2).

Chapter 4

RESULT AND CONCLUSIONS

4.1 RESULT

According to the data gathered, out of the 310 respondents, 68% use Sanitary napkins,18% use menstrual cups, followed by 8% using cloth and 6% use others. It was observed that sanitary napkin was the most comfortable menstrual hygiene product for 62% of women, followed by menstrual cup for 28% of women, cloth for 8% and 6% prefer other products. The preferred disposal method of 45% of women is burning, 28% of women dump with general waste, 61% of women reuse the menstrual hygiene product and 7% of women bury it underground.

From the obtained data it was observed that only 24% of women has used menstrual cup. When the results were analysed, it was seen that out of the 310 respondents, 11% of women were concerned that the use of menstrual cups could lead to health problems and 36% of the women had neutral opinion regarding the same. But 53% of the women disagreed.

While examining the data carefully, it was seen that in the 13-26 age group, 7% of the respondents agreed,36% has neutral opinion and 57% disagreed to the myth that use of menstrual cup could lead to virginity

loss. Hence, we discovered that 11% of women mostly belonging to the age group 13-26, had concerns of virginity loss while using menstrual cup and 24% has neutral opinion regarding the same. But majority of the respondents, (66%) were not bothered by this myth.

80% of respondents agreed with the fact that proper awareness can increase the use of menstrual cups among women and considered using menstrual cups to be a sustainable menstrual hygiene practice.

4.2 CONCLUSION

The main purpose of our study was to analyse the factors influencing the use of menstrual products especially menstrual cup among women of the reproductive age groups and different localities and identify some of the potential barriers that inhibit women from the acceptance of menstrual cup.

From our responses we found out that majority of the women prefers sanitary napkins followed by menstrual cups, cloth, and others. Sanitary napkin is the most comfortable menstrual hygiene product among women. We also identified that only 18% of the respondents use menstrual cups.

Additionally, we discovered that majority of the respondents belonging to the 13-26 age group had concerns regarding virginity loss and other health problems which acted as potential barriers that prevented them from the acceptance of menstrual cups.

From our study, we were able to conclude that there is no relation between different age-groups and use of menstrual cups and between occupation and use of menstrual cups. It was also analysed that there

exists relation between the different age-groups and concern about virginity loss due to the use of menstrual cups and between area of residency and health problem concerns. It was also observed that there exists significant relation between the different age-groups and health problem concerns due to the use of menstrual cup. It was found out that there is a mean difference in the acceptance of menstrual cups in rural and urban area.

From the analysis of the data, it was seen that majority of the women agreed that proper awareness can increase the acceptability of menstrual cup.

Hence, we can conclude that sanitary napkin is the most widely used menstrual hygiene product and only small fractions of women prefer menstrual cup. Health problems and concern about virginity loss due to use of menstrual cups persists among women but proper awareness can create a change and inspire more women to accept menstrual cups and promote Sustainable Menstruation.

4.3 SUGGESTIONS

Most menstrual hygiene items like sanitary napkins are made of plastic and are non-biodegradable materials that require 500 to 800 years to break down. Keeping in mind the huge quantum of menstrual waste generated per day, promoting and normalizing the use of Sustainable Menstrual hygiene products like menstrual cups is the need of the hour.To reassure the public that its usage is not hazardous in any manner, the government should support an extensive study, research, and evidence-gathering effort. Also, menstrual cup can be included as a safe

and eco-friendly alternative to sanitary napkins and tampons in school syllabus.

When compared to urban area, the use of menstrual cups in rural area is very low. This can be due to lack of awareness or unavailability. Menstrual hygiene campaigns can be initiated in the rural areas and the availability of menstrual cups must be ensured. Besides, it is important to break the virginity myth and this can be done by conducting seminars regarding the same by knowledgeable people.

Bibliography

[1] **Masih A Babagoli, Anja Benshoul Tolonen, Garazi Zulaika, Elizabeth Nyothach, Clifford Oduor, David Obor, Linda Mason, Emilie Kerubo, Issac Ngere, Kayla F Laserson, Rhiannon Tudor Edwards, and Penelop A Philips Howard (2022), Cost Effectiveness and Cost-Benefit Analysis of providing Menstrual Cups and Sanitary pads to school girls in rural Kenya, Women's Health Reports, 3(1), 773-784.**

[2] **Chloé Parent, Camille Tetu, Coralie Barbe, Stéphanie Bonneau, René Gabriel, Olivier Graesslin and Emilie Raimond (2021), Menstrual hygiene products: A practice evaluation, Journal of Gynecology Obstetrics and Human Reproduction, 51(1), 102261.**

[3] **Maryam Gharacheh, Fahemeh Ranjbar and Negar Hajinasab (2021), Acceptability and Safety of the Menstrual cups among Iranian women-A cross sectional study, BMC Women's Health, 21(1).**

[4] **Anna Maria Van Eijk, Garazi Zulaika, Madeline Lenchner, Linda Mason, Muthusamy Sivakami, Elizabeth**

Nyothach, Holger Unger, Kayla Laserson and Penelope A Phillips-Howard (2019), A systematic review and meta-analysis: Menstrual cup use, leakage, acceptability, safety, and availability, A systematic review and meta-analysis, The Lancet Public Health, 4(8).

[5] Jane Wilbur, Belen Torondel, Shaffa Hameed, Therese Mahon and Hannah Kuper (2019), Systematic review of menstrual hygiene management requirements, its barriers, and strategies for disabled people, PLOS ONE, 14(2).

[6] Elizabeth Peberdy, Aled Jones and Danielle Green (2019), A Study into Public Awareness of the Environmental Impact of Menstrual Products and Product Choice, Sustainability, 11(2), 473.

[7] Anne Sebert Kuhlmann, Kaysha Henry and L Lewis Wall (2017), Study on menstrual hygiene management in resource-poor countries, Obstetrical amp; Gynecological Survey, 72(6).

[8] Dr, Jalpa K. Bhatt, and C.R. Kakani (2017), Study of adaptability and efficacy of menstrual cup in managing menstrual health and hygiene, International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 6(7), 3045.

[9] Barbara B North and Michael J Oldham (2011), Preclinical, clinical, and over-the-counter postmarketing

experience with a new vaginal cup: Menstrual Collection, Journal of Women's Health, 20(2), 303-311.

[10] Baishakhi Paria, Agnihotri Bhattacharyya, and Sukes Das (2014), A Comparative Study on Menstrual Hygiene Among Urban and Rural Adolescent Girls of West Bengal, Journal of Family Medicine, and Primary Care, 3(4), 413.

[11] Davis, Jessica, et al. "Menstrual hygiene management and school absenteeism among adolescent students in Indonesia: evidence from a cross-sectional school-based survey." Tropical Medicine International Health 23.12 (2018): 1350-1363.

ANNEXURE

A study on various factors affecting the usage of menstrual cups

We, the students of third year B.Sc. Mathematics, St. Teresa's College (Autonomous) Ernakulam, are conducting a statistical survey on various factors affecting the usage of menstrual cups. As we know, menstruation, or period, is normal vaginal bleeding that occurs as part of a woman's monthly cycle. We also know that there are quite a few menstrual products available in the market to maintain menstrual hygiene. Menstrual cups, being one of the menstrual hygiene products, have become a popular alternative to sanitary napkins and tampons. Through this study, we are aiming to find out the factors promoting and inhibiting the usage of menstrual cups.

angelgbuz@gmail.com (not shared)
Switch account

* Required


By clicking on the button, I give my full consent to participate in the study. *
I agree.
E-mail address? *
Your answer

Age? *

Your answer

Which category do you belong to? *

- Student
- Professional
- Homemaker

Place of residence? *

- ○ Rural area
- ○ Urban area

Which menstrual product do you use? *

- ○ Cloth
- ○ Sanitary napkin
- ○ Menstrual cup
- ○ Others

Which is your preferred disposal method? *

- ○ Burning
- ○ Reuse
- ○ Dumping with general waste
- ○ Burying underground

Which menstrual product is more comfortable? *

- ○ Cloth
- ○ Sanitary napkin
- ○ Menstrual cup
- ○ Others

Have you ever used a menstrual cup? *

- Yes
- No

Would you suggest menstrual cup to others?

- Yes
- No

Are you concerned that the use of menstrual cups could lead to health problems? *

- Agree
- Disagree
- Neutral

Menstrual cup can affect virginity. Does this myth bother you? *

- Agree
- Disagree
- Neutral

Do you consider using menstrual cups to be a sustainable menstrual practice?

- ○ Agree
- ○ Disagree
- ○ Neutral

Proper awareness can increase the acceptability of menstrual cups. Do you agree?

- ○ Agree
- ○ Disagree
- ○ Neutral

Submit Clear form