EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT

Dissertation submitted to

St. Teresa's College (Autonomous),Ernakulam

(Affiliated to MAHATMA GANDHI UNIVERSITY, KOTTAYAM)

In partial fulfillment of the requirement of the degree of

MASTERS OF ARTS IN ECONOMICS

BY

SUKRITHA S SHENOY

REGISTER NO: AM24ECO018

UNDER THE GUIDANCE OF

Dr. PEARLY ANTONY O

ASSOCIATE PROFESSOR

DEPARTMENT OF ECONOMICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

MARCH 2026

ST.TERESA'S COLLEGE (AUTONOMOUS)
ERNAKULAM

Certificate of Plagiarism Check for Dissertation

Author Name	SUKRITHA S SHENOY
Course of Study	M.A. Economics
Name of Guide	Dr. Pearly Antony O.
Department	Economics & Centre for Research
Acceptable Maximum Limit	20
Submitted By	library@teresas.ac.in
Paper Title	EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT
Similarity	9% AI - 17%
Paper ID	5284827
Total Pages	75
Submission Date	2026-02-20 10:33:59

Signature of Student

Signature of Guide

20/02/26

Checked by
College Librarian

ST.TERESA'S COLLEGE LIBRARY ERNAKULAM

* This report has been generated by DrillBit Anti-Plagiarism Software

CERTIFICATE

This is to certify that the dissertation titled "EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT" Submitted to partial fulfillment of the requirement of M A DEGREE IN ECONOMICS to ST. TERESA'S COLLEGE (AUTONOMOUS) affiliated to MAHATMA GANDHI UNIVERSITY, KOTTAYAM, is a true record completely done by the student under my supervision and guidance

HEAD OF THE DEPARTMENT
Dr.ANUPA JACOB

UNDER THE GUIDANCE
Dr. PEARLY ANTONY O

DECLARATION

I hereby declare that this dissertation entitled, "EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT" submitted by me in partial fulfillment of the requirements for the award of an M.A Degree in Economics is my original work. This work has not previously formed the basis for other academic qualifications.

Signature of the supervisor.
Dr. Pearly Antony O

Signature of candidate
Sukritha S Shenoy

DEPARTMENT OF ECONOMICS
ERNAKULAM
Pin - 682 011
ST. TERESA'S COLLEGE

ACKNOWLEDGMENT

I wish to acknowledge all those who helped me to complete this study. I thank God almighty for helping me and guiding me in the right path.

I would like to express my sincere gratitude to Dr. Pearly Antony O, Assistant professor, Department of Economics, St Teresa's College, Ernakulam for her constant guidance and kind inspiration, without which this work would not have been possible.

I also express my gratitude to Dr. Anupa Jacob, Head of the Department, Department of Economics, St. Teresa's College, Ernakulam for her unconditional help.

I express my sincere thanks to all other faculties of the Department of Economics, St. Teresa's College, Ernakulam for their kind support and valuable suggestions.

I wish to express my sincere thanks to all the respondents of my questionnaire for answering the questions patiently. I also thank the librarians of St. Teresa's College, Ernakulam for their kind cooperation. I would also thank all my friends and my parents for their support and cooperation that helped me to complete this study successfully.

EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT

Dissertation submitted to

St. Teresa's College (Autonomous),Ernakulam

(Affiliated to MAHATMA GANDHI UNIVERSITY, KOTTAYAM)

In partial fulfillment of the requirement of the degree of

MASTERS OF ARTS IN ECONOMICS

BY

SUKRITHA S SHENOY

REGISTER NO: AM24ECO018

UNDER THE GUIDANCE OF

Dr. PEARLY ANTONY O

ASSOCIATE PROFESSOR

DEPARTMENT OF ECONOMICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

MARCH 2026

CERTIFICATE

This is to certify that the dissertation titled “EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT” Submitted to partial fulfillment of the requirement of M A DEGREE IN ECONOMICS to ST. TERESA'S COLLEGE (AUTONOMOUS) affiliated to MAHATMA GANDHI UNIVERSITY, KOTTAYAM, is a true record completely done by the student under my supervision and guidance

HEAD OF THE DEPARTMENT
Dr.ANUPA JACOB

UNDER THE GUIDANCE
Dr. PEARLY ANTONY O

DECLARATION

I hereby declare that this dissertation entitled, "EFFECT OF MENSTRUAL CUP ON ECONOMIC AND ENVIRONMENTAL SUSTAINABILITY IN ERNAKULAM DISTRICT" submitted by me in partial fulfillment of the requirements for the award of an M.A Degree in Economics is my original work. This work has not previously formed the basis for other academic qualifications.

Signature of the supervisor.
Dr. Pearly Antony O

Signature of candidate
Sukritha S Shenoy

ACKNOWLEDGMENT

I wish to acknowledge all those who helped me to complete this study. I thank God almighty for helping me and guiding me in the right path.

I would like to express my sincere gratitude to Dr. Pearly Antony O, Assistant professor, Department of Economics, St Teresa's College, Ernakulam for her constant guidance and kind inspiration, without which this work would not have been possible.

I also express my gratitude to Dr. Anupa Jacob, Head of the Department, Department of Economics, St. Teresa's College, Ernakulam for her unconditional help.

I express my sincere thanks to all other faculties of the Department of Economics, St. Teresa's College, Ernakulam for their kind support and valuable suggestions.

I wish to express my sincere thanks to all the respondents of my questionnaire for answering the questions patiently. I also thank the librarians of St. Teresa's College, Ernakulam for their kind cooperation. I would also thank all my friends and my parents for their support and cooperation that helped me to complete this study successfully.

INDEX

Sl No	Content	Page No
1	**Chapter 1 Introduction**	**1**
1.1	Introduction	**2**
1.2	Review of Literature	**2**
1.3	Statement of the Problem	**12**
1.4	Objectives	**12**
1.5	Theoretical Framework	**12**
1.6	Methodology	**14**
1.7	Limitations of the Study	**14**
1.8	Scheme of Study	**14**
2	**Chapter 2 Menstrual Cup: An Overview**	**15**
2.1	What is Menstruation?	**16**
2.2	Different Types of Menstrual Products	**17**
2.2.1	Sanitary Pad	**17**
2.2.2	Reusable Menstrual Underwear	**19**
2.2.3	Tampons	**20**
2.2.4	Menstrual Cup	**21**
2.3	How to Use Menstrual Cup?	**22**
2.3.1	Pre- Use of Menstrual Cup	**22**
2.3.2	Insertion of Menstrual Cup	**23**
2.3.3	Removal of Menstrual Cup	**23**
2.3.4	Post- Cycle Cleaning and Storage of Menstrual Cup	**24**
2.4	History of Using Menstrual Cup	**24**
2.4.1	History and Origin of Menstrual Cup	**24**
2.4.2	Menstrual Cup in India	**26**
2.4.3	Menstrual Cup in Kerala	**27**

2.4.4	Menstrual Cup in Ernakulam District	**27**
2.5	Economic Sustainability of Menstrual Cup	**29**
2.6	Environmental Sustainability of Menstrual Cup	**30**
3	**Chapter 3 Analysis and Interpretations**	**32**
3.1	Introduction	**33**
3.2	Data Analysis and Interpretations	**33**
3.3	Binary Logistic Regression Analysis	**64**
3.4	Simple Linear Regression Analysis	**66**
3.5	Chi- Square Test Result	**67**
4	**Chapter 4 Findings, Suggestions and Conclusions**	**69**
4.1	Findings of the study	**70**
4.2	Suggestions of the study	**71**
4.3	Conclusion	**72**
	Bibliography	**73**
	Questionnaire	**77**

LIST OF TABLES

Sl No.	Table	Page No.
3.1	Age Group of Users of Menstrual Cup	**33**
3.2	Monthly Income of Users	**35**
3.3	Duration of Menstrual Cup Usage	**36**
3.4	Cost of Purchasing Menstrual Cup	**38**
3.5	Expected Lifespan of Menstrual Cup	**39**
3.6	Perception Towards Menstrual Cup as a Cost- Effective Investment	**43**
3.7	Reduction in Financial Stress due to Menstrual Cup Usage	**43**
3.8	Perception of Waste Reduction using Menstrual Cup	**47**
3.9	Peer Encouragement of Menstrual Cup Adoption	**47**
3.10	Intention to Continue using Menstrual Cup	**49**
3.11	Age Group of Non-Users of Menstrual Cup	**49**
3.12	Employment Status	**50**
3.13	Monthly Income of Non-Users	**51**
3.14	Primary Menstrual Product Used	**52**
3.15	Monthly Expenditure on Menstrual Product used by Non-Users	**54**
3.16	Awareness of Menstrual Cup	**58**
3.17	Source of Awareness about Menstrual Cup	**58**
3.18	Perception on Menstrual Cup	**59**
3.19	Barriers to Menstrual Cup Adoption	**62**
3.20	Willingness to the Awareness Programs	**62**
3.21	Influence of Subsidies on Adoption	**63**

LIST OF FIGURES

Sl No.	Figure	Page No.
3.1	Employment Status of Users	**34**
3.2	Marital Status of Users	**36**
3.3	Motivation for Adopting Menstrual Cup	**37**
3.4	Monthly Expenditure Before Switching to Menstrual Cup	**39**
3.5	Monthly Expenditure After Switching to Menstrual Cup	**40**
3.6	Perceived Financial Savings After Switching	**41**
3.7	Annual Saving After Switching to Menstrual Cup	**42**
3.8	Satisfaction with Comfort of Menstrual Cup	**44**
3.9	Satisfaction with Hygiene of Menstrual Cup	**45**
3.10	Satisfaction with Cleaning and Maintenance of Menstrual Cup	**46**
3.11	Initial Barriers Faced by Users	**48**
3.12	Marital Status of Non-Users	**52**
3.13	Monthly Usage Quantity of Current Product	**53**
3.14	Financial Burden of Current Product	**55**
3.15	Satisfaction with Comfort of Current Product	**56**
3.16	Satisfaction with Hygiene of Current Product	**57**
3.17	Perceived Economic Advantage of Menstrual Cup	**60**
3.18	Perception of Waste Reduction	**61**
3.19	Future Intention to Try Menstrual Cup	**64**

CHAPTER – 1

INTRODUCTION

1.1 INTRODUCTION

Menstruation, is also known as a period, is a monthly shedding of uterine lining (endometrium) in women of reproductive age, resulting in menstrual bleeding. Regulation of menstruation is done by fluctuation of estrogen and progesterone as well as other endocrine and immune pathway. It is a natural biological process that is a normal part of the menstrual cycle for women and girls of reproductive age to prepare her body for a potential pregnancy. (Dividing between sustainable and non-sustainable menstrual products, and also environmental side, economical side Indian Statistical about people not about non- sustainable products.) Management of menstruation is essential and often involves substantial and recurring financial costs, particularly relying on disposable sanitary products such as pads and tampons. These products which are widely used create a long term economic burden for individuals and also contribute significantly to environmental pollution through non-biodegradable waste.

In recent years, menstrual cups have emerged as a sustainable alternative, offering both economic and environmental advantage. It is made from a medical-grade silicone and designed for repeated use over several years, and can drastically reduce the cumulative cost of menstrual hygiene management. From an economic perspective, menstrual cup represent a one-time investment with long-term returns, making them particularly relevant in discussions around economic sustainability and cost-effectiveness in health-related consumer behavior.

1.2 LITERATURE REVIEW

- Weir (2015), analyses the impact of menstrual products on cost, environment and health. The research mainly explores 2 questions, which are, the explicit cost differences between five menstrual products (regular tampons, softcup, divacup and seapearl sea sponges) and the qualitative life cycle description for each menstrual product. Data is analyzed using direct comparison of cost, environmental effects and health implications. For private cost, data is collected through financial cost and here, the variables are menstrual product brands and cost of each menstrual product. For qualitative lifecycle, data is collected through Qualitative Unpriced Input Data Collection and here, the menstrual brands are related to abiotic depletion, fossil fuel depletion, global warming potential, acidification, and

eutrophication. Health implications is collected from academic and research and product websites. They found that the most economical choice was tampons without applicators, sea sponges and reusable menstrual cups. But the menstrual products with least environmental effect turned out to be tampons without applicators and reusable menstrual cup.

- Peberdy et al (2019), analyses public awareness about the environmental impact of menstrual products such as inorganic tampon with/without applicator, organic tampon with/without applicator, inorganic disposable pads, organic disposable pads, reusable pads, menstrual cup and period pants and about public choice. The research mainly focuses on the question, "What level of awareness do people have about the environmental impact of menstrual products in certain parts of UK". Here, a hypothesis is also formulated which states that 'individuals who have greater awareness of the environmental impacts of menstrual products are more likely to choose environmentally friendly product options. Here, the test statistic used is the Chi- square distribution. For that the research mainly employed a mixed method approach collecting both quantitative and qualitative data. An anonymous online survey was used to collect the views of a broad range of participants using a mixture of multiple choice question and open questions. In addition two focus groups were also conducted for deeper understanding and exploration of the menstrual products. They found that about 43.3% respondents are 'very aware' about the environmental impact about menstrual products and about 14% respondents were not previously aware about the same. Also Chi square test also reported a level of awareness which are more likely to correctly answer questions related environmental impact at a statistically significant level. In the focus group discussion, they found that most of the participants were not aware about the organic menstrual products and some of the information about the items were completely new to them. Also a clear example of taboo shown was that one participant came to know about menstrual cup for the first time. The research concluded by saying that even people who are appeared to be highly aware about the impact still do not know about the many of the environmental aspects about menstrual products.

- Koc et al (2023), analyses the use of menstrual cup and also the awareness of environmental effects of menstrual hygiene products. The study carried out as secondary data analysis of prior cross sectional study carried out between April and May 2021 on individuals who are menstruating and use menstrual hygiene products aged between 18 to 49 years among 3365 individuals accessed and 298 individuals were using menstrual cup in Turkey. Data collection was carried out using a survey form consisting of 16 closed items questioning about 'being green' on the environmental effects of menstrual hygiene products(EKMP). Data was analyzed using SPSS Statistical Package Software and statistical significant was set at $\rho < 0.05$. Descriptive characteristics were presented using frequency distribution whereas categorical variables were compared using the Chi square test. Research found out that there was no statistically significant differences between menstrual cup users comparison groups in terms of age, educational status, employment status, and monthly income level. In terms of all items with statistically significant differences between responded questions in terms of 'green answers' percentage in EKMP it was found that menstrual cup users have high percentage of green answers($\rho<0.001$) and also EKMP scores were higher among menstrual cup users. More concerns about the negative effects of menstrual hygiene products on environmental health(77.9%and97.0%, respectively) ($p<0.001$). The research concludes by saying that increased awareness among individuals may replace single use menstrual hygiene products with reusable ones.

- Aujla et al (2024), analyses the environmental impact of menstrual hygiene products in several countries across the globe. The article also highlights the stigmas about the menstruation which affects its effective handling. Here, secondary data collected from World Bank estimates, United Nations(UN) Water Conference 2023, UN Menstrual Health and Dignity Commitment, World Health Assembly May 2023, International Hub Against Plastic Pollution November 2024. The article starts by depicting about the lack of menstrual equity in the luxury of choice regarding the menstrual hygiene management where over 500 million women lack access to menstrual products. As a solution to this , Kenyan Government, Scottish Government and New Zealand worked for menstrual equity by eliminating tampon tax, providing free menstrual products etc. But according UN

Menstrual Health and Dignity Committee, only 40 countries are reporting on menstrual health management and still fewer governments are working on promoting menstrual health products. When depicting the environmental impact, single use pads and tampons are the popular method menstrual care in high income countries which are made of over 90% plastic and in 2022, manufacturing cost comes upto 22 billion USD, which is very huge. Same is the case of UK of Great Britain and Northern Ireland which generate 2,00,000 metric tons of waste from period products annually. Disposal of 80% is in the form of incineration or landfill in US and UK. This shows lack of consensus to hamper the environmental effects of menstrual products. As an alternative to this, UN Menstrual and Dignity Commitment members support local production of reusable menstrual health products like menstrual cups, menstrual underwear, reusable pads and menstrual discs, thus creating jobs and access in rural areas but may upfront the possibility of high production costs. Stigmatization of menstruation is also mentioned in this article which says the concerns of using reusable menstrual products. They concluded by saying that policy makers and government should increase the access to and support least environmentally harmful menstrual products.

- Citta et al (2024), analyses the promotion of menstrual cup as a sustainable alternative and also aims to fill the research gap by investigating consumer's decision making process in the face of a real- life menstrual products. The data was collected using online surveys based on labelled discrete choice experiment on menstrual product consumers in Japan, Indonesia and France and the respondents in each country were split into three groups using a treatment control design to examine the impact of information intervention. Therefore, total nine surveys were conducted and the questionnaires had three versions. One for control group and two for the two treatment groups. The sample size of each country was Japan 1929, Indonesia 2031 and France 2067 with respondents were aged between 18- 49. Data is collected using psychological scales which are MDS, innovation friendliness scale and GCV were using a five-point Likert scale ranging from 1(strongly disagree) to 5(strongly agree) to measure consumer's preference on different menstrual products based on social norms, individual's willingness to switch to new untried products and

environmental consciousness. Data which was obtained from discrete choice experiment was analysed by applying a conditional logit model and computed marginal willingness to pay and Krinsky and Robb method was employed to compute 95% confidence interval of MWTP and also a mixed logit model which is more flexible was adopted. Data were analysed using statistical software R, version 4.3.1. They found that among the menstrual products such as sanitary napkins, tampons and menstrual cups which are related to resource depletion, eutrophication, acidification, ecotoxicity, human toxicity (noncancer), human toxicity (cancer), climate change(biogenic), menstrual cup has least environmental impact(0.00004) and sanitary napkin highest(0.01026). But the use of menstrual cup is limited in all three countries even though their cost- effectiveness was equivocally significant. Also there was a variation in consumers characteristics and the use and perception of menstrual cups. The paper concludes by depicting the need for tailored promotional strategies for each market.

- Thukral et al (2025), analyses the motivations behind the adoption of menstrual cup by women in India, its environmental impact and to understand the factors drives the shift from other menstrual products. The paper also analyses about the various reasons for the re-switching to other menstrual products. The theoretical background of the study include Self Determination Theory (SDT), intrinsic motives for switching from other menstrual products to menstrual products, extrinsic motives of switching from other menstrual products to menstrual products. Data collected through a face-to-face semi structured interview to 39 Indian women aged between 18- 45 who had used or currently using menstrual cup who were chosen using purposive sampling over 3 months from November 2024 to January 2025. Data analyzed using NVivo 15 software. They found the presence of significant intrinsic motives and extrinsic motives of respondents to switch from other menstrual products to menstrual cups. The respondents were mainly between the age group of 25 – 40 years showing younger women are more interested in knowing and adopting innovation. Their findings also indicate that women who are married and have peer support from friends and colleagues are more likely to use menstrual cups. Major reasons for the re-switching from menstrual cups to other menstrual products by 12 respondents from 39

found out to be painful insertion and discomfort. But still rest of the 27 respondents because of their health concerns by the usage of sanitary napkins such as itching, rashes and infections motivated by the role of menstrual cups in reducing waste and simplifying consumption. Additionally, convenience, ease of use, time-saving, and longer wear time were other major drivers. It concludes by giving valuable insights for policy makers and government in promoting a sustainable menstruation and responsible consumer choices.

- Ahuja and Singh (2022), analyses the challenges women face while menstruating, the extent of awareness and knowledge they have regarding Sustainable Menstrual Products (SMP) and the barriers that restrict their use. Data collected using semi structured interviews with topics ranging from general to particular concerns to 25 women in the age group of 15-50 years in three cities- Ludhiana, Patiala and Jalandhar, in the state of Punjab. Samples were selected using convenience and respondent sampling techniques. Several studies were conducted to assess women's awareness, knowledge and perception on menstrual products. They found that women preferred sanitary napkins because of the knowledge passed down to them, comfort of use and accessibility and physical discomfort such as rashes, itches, odor and pimples. During menstruation, women face physiological challenges and the secrecy surrounded due to the use of menstrual products led to an increased bodily insecurities. Findings shown that menstrual discomfort is also due to lack of proper infrastructure, water, and sanitation facilities and another reality was that some women lacked knowledge on proper usage and disposal of traditional products. They found that awareness and knowledge about sustainable menstrual products does not reach to final consumers because of improper communication channels. They concluded by providing future direction for researchers to study some novel menstrual products that are considered sustainable.

- Patel et al (2023), analyses the experiences and challenges encountered by the menstrual cup users. Data collected through a qualitative explorative study among 26 menstrual cup users belonged to the age group of 25 and 37 years, identified and recruited using snowball sampling technique belonged to the states of Odisha 8, Agartala 9 and Assam 9 who were

professionals, working and residing in cities like Delhi, Mumbai, Bhubaneswar and Rourkela. The study was carried out using In-Depth Interview (IDI) guide. Data analyzed using the qualitative thematic analysis method and MAXQDA software. They found that majority of women use menstrual cup as they were reusable, long-lasting and pocket friendly products compared to sanitary pads as they have to spend 150- 300 INR for it whereas menstrual cup costing 300 INR could be used for more than five years which is highly economical. They found that experience of using menstrual cup is easy, convenient and comfortable. But certain participants had apprehensions in using menstrual cup such as lacked information on how to use it, difficulty in inserting in sexually inactive girls and knowing, getting an appropriate sized menstrual cup and lack of confidence in switching to menstrual cup. A main challenge which found regarding the sustainable use its proper sterilization when residing outside home and affordability to a certain income groups even if it is a onetime payment. They conclude by saying that menstrual cup is a effective and alternative period product among self-independent women and its initial challenges such as proper insertion, removal and product hygiene can be resolved by time.

- Sharma and Rawat (2023), analyses use of menstrual cups to manage period hygiene and promoting environmental sustainability. The study, review different types of commonly used menstrual products such as tampons, sanitary pads, reusable cloth pads, menstrual cups, and period underwear including their affordability, environmental impact and health effects. The study also looks into the advantages of menstrual cup empower women and help to eradicate period taboos and aims to eliminate period poverty and help in achieving Sustainable Development Goals including SDG3, SDG6, SDG11 and SDG15. Secondary data was collected from various research articles including Elsevier/Science Direct, Springer Link, Scopus and Wiley and google scholar search engines. They found that 57% women uses menstrual cup and tampons, 41% women uses cloths, and 1% women uses sanitary pads, ash, soil, and dried leaves in India which shows a high usage of menstrual cup which is a reusable, affordable, and does not cause harm to environment and human health. They conclude by saying that menstrual cups bring in a revolution in menstrual health and also help in sustainable hygiene management.

- Kakirde and Sharma (2023), analyzes the concept of green marketing and Consumerism with respect to sustainable menstruation and the health and environmental consequences borne out of the usage of sanitary pads. The study identifies the steps taken and challenges faced in implementing 'green menstruation' which emphasizes eco-friendly menstrual products, as a practice and solutions for the same. Data collected using secondary sources such including web articles, research journals, governmental and non-governmental reports such as those of United Nations, NITI Aayog. They found out that menstruator's health and environment are in danger due to the conventional menstrual products like sanitary pads, tampons and synthetic cloth etc. Phthalates and Volatile organic compounds are the two most commonly used substance in making sanitary pads which have the ability to form cancerous cells results in other health issues such as early onset of puberty, ovulation disorders, and endometriosis which harms menstruator's health. The toxic substances from sanitary pads reaching the soil causes groundwater pollution, soil degradation which results exacerbating greenhouse gas emission and environmental harm. This shows the need to switch to green period practices. Some of the green period practices suggested by them include menstrual cup which comparatively a better alternative along with period panties, reusable menstrual pads, biodegradable pads and organic tampons. They found that more than 70% of Gen Z and 80% of millennial respondents express a strong expectation for brands to prioritize sustainability shows a shift to eco- conscious and green menstruation choices like e-cloth pads, period panties, menstrual cups, and inter labial products. They conclude by saying that shift towards green menstruation is important and timely development is needed to grow awareness of health and economic concerns associated with traditional menstrual products.

- Soy et al (2024), analyses by comparing sustainable menstrual products such as menstrual cups, reusable cloth pads, period underwear and non-sustainable menstrual products such as disposable pads and tampons based on three sections such as consumption patterns, affordability and accessibility. The theoretical background of the study include bounded rationality, which is from behavioral economics. The data collected from 123 women aged

between 18-45 in the year 2024 through multiple choice questions and likert scales and analyzed using visual representations and statistical techniques. They found out that majority of the respondents are younger age belonging to 18-25 which indicate their keen interest in menstrual health and sustainability. In consumption pattern and accessibility, sanitary pad remains dominant showing unsustainable way of practicing menstruation. But in terms of affordability, many respondents are willing to switch to sustainable menstrual products like menstrual cup. They conclude by recommending strongly for sustainable menstrual alternatives for economic savings and environmental benefits.

- Mol N (2024), analyzes the concept of sustainable menstruation in the context of Kerala, focusing on menstrual practices and environmental impact and seeks to investigate the complex relationship between hygienic habits and sustainable menstruation, exploring the effects of various menstrual practices on women's health. Data was collected using questionnaire of 102 women between the age group of 18-55 years and analyzed using Excel and SPSS software . They found that 82.4% of the respondents regularly demonstrated a high level of community awareness regarding sustainable products and 14.7% were only sometimes aware and menstrual cup were the most well- known product, followed by period underwear and reusable cotton pad. They conclude by saying that promoting a sustainable menstrual culture in Kerala requires more environmental knowledge and group effort.

- Babu V and Maliakkal (2023), analyzes the market, factors that influence women on preferring menstrual cups and covers the advantages and challenges the users found while using cups. Data collected using questionnaire from 150 women in Kerala from all ages with majority of the respondents from age group of 20 to 30 and analyzed methods such as percentage analysis, factor analysis and cluster analysis using Statistical Package for Social Sciences (SPSS) software. They found that majority of the respondents know about the menstrual cup but are reluctant to use because of fear of inserting and removing, and discomfort indicates the lack of awareness of using sustainable menstrual cups. But a group of respondents reported negative experiences but still recognized the advantages of

menstrual cups in terms of protection and chemical-free composition. They concluded by saying conducting awareness campaigns for women to give knowledge on the proper use of cups.

- S K et al (2024), analyses menstrual hygiene product choices and the extent of period poverty among young adult females in Kerala. Data was collected using semi-structured questionnaire from 501 young adult female aged between 18-30 years from April to May 2022 and data analysed using SPSS version 23.0 for Windows). Both univariate and bivariate analysis were done. The Chi square test was used to compare the categorical variables. They found that majority of the respondents was 21.7 years and cultural beliefs are the major hindrance for the choice of menstrual cups. They found that higher period poverty was mainly associated with respondents lower income and negative attitudes towards menstruation which indicate about the pathetic situation about the country. They concluded by saying the need for free menstrual products for the financially disadvantaged and gain a comprehensive understanding of period poverty in this community.

- Varghese et al (2023), analyzes the impact of educating and creating awareness among women on Menstrual Cups (M-Cups) as a healthy, safe, easy-to- use and affordable menstrual hygiene product with the support of medical professionals. Data was collected using a non randomized cross- sectional study and it is carried out through the project 'Thinkal', which was founded creating awareness about menstrual cup, and 4345 cups were distributed among the beneficiaries of Alappuzha Municipality in two separate groups, first group with proper awareness through medical professionals whereas other group collected menstrual cup from distribution center along with information pamphlets without attending awareness sessions initially. They found that there was a higher acceptance of the M-Cup among women in the age group of 25–45 years. Among the women who received the M-Cups without attending the awareness session, only 20.7% started using the M-Cup, where as 40.6% who received preliminary awareness, started the usage which is approximately double which shows the importance of proper awareness about menstrual cups, its relevance and its usage. The concluded by saying that creating additional awareness is

extremely important for the usage of menstrual cups which helped them to bust myths and helped to create awareness among a group of women, thereby opening a new phase to menstrual hygiene management.

1.3 STATEMENT OF THE PROBLEM

Menstruation is a natural biological process occurs every month of a healthy female adult, thus menstrual products becomes a necessity for them every month. Traditional menstrual products such as sanitary pads and tampons, while widely used, contribute significantly to environmental pollution and pose long-term financial burdens, especially for women in low and middle-income groups. As the global conversation increasingly shifts toward sustainability, menstrual cups have emerged as a viable alternative offering both economic and ecological advantages. Menstrual cups are both economically and environmentally sustainable due to their reusability and longevity, significantly reducing waste and long-term costs compared to disposable products. They offer a cost-effective alternative to disposable pads and tampons, requiring a one-time purchase that can last for years, and also minimize the environmental impact of menstrual waste. This study concentrates on highlighting the importance of menstrual cups on economic and environmental sustainability.

1.4 OBJECTIVES

- To assess whether adopting menstrual cups leads to significant economic savings.
- To examine how perceptions on menstrual cup influence the willingness of menstruating individuals to switch to menstrual cup.
- To evaluate the influence of environmental consciousness on the adoption of menstrual cup.

1.5 THEORETICAL FRAMEWORK

1.5.1 Theory of Consumer Choice: The theory explains how individuals allocate their scarce resources to maximize the utility. Consumers are assumed to be rational and their main aim is to prefer goods that give them highest satisfaction within their budget constraint. In the context of

menstrual products, sanitary napkins and tampons need recurring monthly expenditure, but for menstrual cup, it requires only one- time initial investment having advantages in long run. So a rational consumer always seek to cut down the long- term expenses may prefer menstrual cups because to reduce the aggregate expenditure over time. Thus, the theory supports the economic sustainability aspect of the study.

1.5.2 Theory of Sustainable Consumption: This theory gives importance to meet present needs without compromising the ability of future generation to meet their needs. It encourages an environmental consciousness among that reduce waste and environmental harm. Disposable menstrual products contribute a huge amount of plastic waste and landfill waste, whereas menstrual cups are reusable and eco- friendly. Individuals with higher environmental consciousness are more likely to adopt sustainable alternatives such as menstrual cup. This theory explains about the environmental sustainability dimension of the study.

1.5.3 Self- Determination Theory: This theory explains about the change in behavioral pattern based on intrinsic and extrinsic motivation. Intrinsic motivation arises from personal values such as comfort, health concerns, and environmental responsibility, while extrinsic motivation is influenced by external factors like financial savings, peer encouragement, and awareness programs. In the context of menstrual cup adoption, both intrinsic and extrinsic motivations influence women's willingness to switch and continue usage. This theory helps explain the role of perception and motivation in adoption behavior.

1.5.4 Diffusion of Innovation Theory: The Diffusion of Innovation Theory, proposed by Everett Rogers, explains how new ideas and products spread within society over time. Adoption depends on factors such as relative advantage, compatibility, complexity, trialability, and observability. Menstrual cups are considered an innovative product, and their adoption increases as awareness spreads and early adopters influence others. This theory explains the gradual increase in menstrual cup usage in Ernakulam District.

1.6METHODOLOGY

1.6.1 Area of Study: The area of study chosen is the Ernakulam District among the menstruating individuals.

1.6.2 Source of Data: The study uses primary data where two questionnaires are circulated one for those who use menstrual cup as their menstrual product and the other one is for those who doesn't use menstrual cup as their menstrual product.

1.6.3 Sample size: The total sample size taken are 100, 50 samples who use menstrual cup and the other 50 samples who use menstrual product other than menstrual cup. Sample size is fixed with 95% confidence interval.

1.6.4 Method of Analysis: The analysis is done using diagrammatic representation, frequency and valid percent analysis etc and the study also uses binary logistic regression, simple linear regression and chi square distribution for a comprehensive study.

1.6.5 Period of Study: Period of study is between 2025- 2026.

1.7 LIMITATIONS OF THE STUDY

- Secondary data regarding the menstrual waste segregated was difficult to collect.
- Time constraint was a major issue for the comprehensive study for the coverage of Ernakulam district as a whole.

1.8 SCHEME OF THE STUDY

This study is divided into four chapters. Chapter 1 includes an introduction, a review of the literature, a statement of the problem, objectives, methodology,
limitations, and scheme of study. Chapter 2 provides a complete overview about menstrual cup. Chapter 3 conducts a comprehensive analysis of the data collected using graphs, frequency and valid percent analysis, binary logistic regression, simple linear regression and chi square distribution. Chapter 4 contains the findings, recommendations and conclusion.

CHAPTER - 2

MENSTRUAL CUP- AN OVERVIEW

2.1 WHAT IS MENSTRUATION?

When a young women reaches her puberty, she starts to ovulate and this is the time when the ovum or matured egg started to release one of the ovaries, which are the female reproductive organ from the pelvis. If the egg is fertilized by the sperm, it travels through fallopian tube and then pregnancy occurs. The eggs which are fertilized attaches to the lining of uterus. Then the placenta develops and they transfer nutrition and oxygen to the fetus from mother. If the eggs do not become fertilized, the lining of the uterus that is endometrium is shed during menstruation. So, menstruation is the blood and tissue discharge which normally occurs from the uterine lining through that occurs as a part of a women's menstrual cycle. This phenomena occurs throughout a women's reproductive life. The endometrium nourishes itself to nourish a fetus in each monthly cycle. The average menstrual cycle lasts for 28 days and starts with the first day of one period and ends with the first day of the next period. Women start to menstruate at the average age of 12 and people stop menstruating at menopause, which happens at the age of 51, and during this time women stop producing eggs or stop ovulation.

During menstrual cycle, women undergo through several physical, mental and emotional rollercoaster and it varies from person to person. Most common problems faced by women are severe cramping and pain, fatigue and weakness caused due to excessive blood loss leading to iron deficiency anemia, skin irritation and infections due to prolonged contact with menstrual blood and other symptoms are nausea, headaches, diarrhea or loose stools, bloating, and a feeling of pressure in the abdomen may also occur. Also the emotional and social discomforts they face during periods are anxiety and fear caused due to 'period mishaps' or 'leaks' and embarrassment and self- consciousness caused due to the thought of leaks in public and emotional distress of managing overall impact of managing heavy flows and leaks can affect mood and mental health and also social withdrawal in fear of leaks and physical discomfort they face.

So it is very important to have menstrual hygiene which is a crucial part of women's health which is constantly disregarded and stigmatized. It states about the customs and methods young females use to stay clean while having their periods. So for maintaining menstrual hygiene it is necessary to use right menstrual products, cleaning and discarding used items properly, and upholding personal cleanliness. So it is highly significant to maintain a proper menstrual hygiene which is

crucial for health and comfort during periods. To mitigate bacteria, odor, and pH imbalances, the best practices to do is to:

Timely changing of period products: Based on the flow, it is crucial to change your menstrual products like tampons, pads and other period products to avoid leaks, infections and discomforts.

Clean your vulva with lukewarm water: It is always safe to use lukewarm to clean vulva. Using soaps, female hygiene products and pH balancing cleansers with added fragrances and chemicals, can lead to disruption in the natural pH balance of body and may result in irritation.

Never clean inside vagina: Cleaning inside vagina may disrupt natural pH balance resulting in irritation because vagina is a self- cleansing organ and no need of internal douching.

Choose fragrance- free menstrual products: Opting fragrance- free period products is important to avoid potential irritation.

Keep your hands clean while using menstrual products: It is important to ensure proper hygiene while changing menstrual products. So we have to clean hands before and after changing the menstrual products.

2.2 DIFFERENT TYPES OF MENSTRUAL PRODUCTS

There are different types of menstrual products which are essential for comfort and convenience while handling menstrual cycle. We can divide the menstrual products into external female hygiene products and internal female hygiene products. Some of the commonly used external female hygiene products are sanitary pads and reusable menstrual underwear and the some commonly used internal female hygiene products are tampons and menstrual cups.

The peculiarity of external female hygiene products are that they are easier to use and require less of a learning curve, which makes the one of the great options in the beginning of the period journey. Some of the external female hygiene menstrual products:-

2.2.1 SANITARY PAD

Sanitary pads or sanitary napkins are the absorbent menstrual product worn in your underwear during menstruation. To stick it to the underwear, the pad has a sticky adhesive. Most of the

sanitary pads have “wings” that fold over the edges of the underwear to help keep it in place and prevent leaks.

For period beginners, Pads are generally very easy to use, making them an excellent option. Sanitary pads make it easy to monitor your period blood flow and help you to understand when to change to a new pad because you can see (and feel) how they absorb over time. Your flow will determine when it’s time to change your pad. Changing it every 3-4 hours is still best practice to prevent odor, irritation, and bacteria growth, even if you have a lighter flow.

There are different sizes and shapes for sanitary pads of several brands which varies with individual to individual based on the size and absorbency rate. Some of the different types of pad options are given below:

Super: They are extra- absorbent, which can used during heavy flow days and overnights.

Slender: They are less absorbent and narrower build than a super pad. Slender pads feel less bulky in your underwear and good option for light to moderate flow days.

Overnight: They are created for overnight use when we do not have to change the pad for 3 – 4 hours. These pads are longer and have high absorbency rate to prevent leaks.

Maxi: They offer maximum coverage and absorbency. Suitable for heavy flow days, and prevents leak by providing front-to-back and side-to-side protection.

Mini: Good option for lighter flow days or used as a backup while wearing internal period products such as menstrual cup or tampons. Ideal for those who prefer minimal coverage, comfort and discreet.

Reusable: They are eco- friendly alternative to disposable pads which are made from alternatives like bamboo and cotton which comes in several sizes and absorbencies. These pads can be washed and dried between uses.

It is best to avoid pads which are having added perfumes or fragrance which are available at the market. These pads include added chemicals which can irritate the vaginal and vulva skin.

2.2.2 REUSABLE MENSTRUAL UNDERWEAR

They act as an alternative to disposable pads and tampons which are eco- friendly in nature. Like a normal underwear, they can be worn, washed and reused which are designed to absorb menstrual flow. They are featured with multiple layers, including moisture- wicking keeping you dry, an absorbent core to capture and hold menstrual fluid and a leak- resistant outer layer.

Changing Frequency and Usage

Depending on the type of menstrual underwear you wear and also period blood flow, the frequency to change varies. Up to 12 hours, we are able to wear menstrual underwear on a light flow day. But during heavier flow days, may require to change underwear in every 4 – 6 hours. There are menstrual underwear which are designed to worn overnight. Menstrual underwear can be wore all day, if they are used as back-up to tampons and menstrual cups.

Menstrual Underwear Styles

Menstrual underwear also comes in various styles and absorbencies, just like pads. Some of them are:-

Bikini: Low- rise underwear with moderate coverage, comes in various absorbency levels.

Briefs: They higher waistband and offers more coverage, providing extra comfort and support.

Boy shorts: They are designed in boxer- brief style and have a wider leg opening, offering full coverage.

High- Waisted: Up to waistline, they provide more coverage helping for extra support especially during heavier flow days.

Thongs: Designed for those prefer minimal coverage and for light flow days.

For cleaning menstrual underwear, it is necessary to follow steps like rinse, pre- treat, wash and drying properly, to maintain menstrual hygiene while using this menstrual product.

The internal female hygiene products are used inside the body during menstruation. Its peculiarity is that they are inserted into the vagina to collect menstrual blood flow. Even though, in initial stages, we may face certain hesitation in terms of using it and also require a bit of a practice, they

offer advantages like being able to swim during periods. Some of the internal female menstrual hygiene products are tampons and menstrual cups.

2.2.3 TAMPONS

They are menstrual products which is inserted inside the vaginal canal and they absorb blood. The fluid is soaked inside this absorbent material in the tampon which eventually expands. They are typically made of rayon, cotton or a mix of both materials.

Insertion and Usage

Its insertion may be tricky at first as it is like learning a new skill, but more the practice, we may become aware of our body. But inserting tampon should not be a painful procedure, it is necessary to remove and insert a new one. It may be the need of changing the angle of insertion of tampon that can help you.

There will be an applicator in most tampons and once inserted it can be thrown away. Some of the types of applicators in a tampon are:

Plastic: There are applicators in tampons which are made of plastics which are commonly used and it is the most comfortable one as it is easy to insert it in vagina.

Extendable: They are expandable applicators which are discreet and ideal for travel. They are also made up if plastic. Before insertion, the bottom tube of the applicators can be extended and clicked into place.

Cardboard: Even though they are cheaper than plastic applicators, it is very difficult to insert and can result in discomfort.

There will be a string attached in tampons that will remain outside of the body after insertion. To slide out the tampon during the time of removal or change of the tampons, we have to gently and firmly pull the string.

Changing and Maintenance of Tampon

It is mainly on the basis of the flow and absorbency of tampon that the frequency of changing depends. For light to moderate flow, tampons should be changed every 4- 6 hours and for heavy flows, it should be changed every 2- 4 hours. They can be worn overnight but it should be changed

immediately after waking up. It is not advisable wear a tampon over 8 hours, even if your flow is light, as there is a chance of increased leaks and toxic shock syndromes . Even if you are having a busy day, which results in inconvenience to change the tampon, still consistency in changing it is very important to halt bacterial growth and to keep yourself hygienic during periods. They should worn only during menstrual cycles, and should not be worn during spotting or discharge, otherwise can lead to discomfort, infection and toxic shock syndrome .

Tampon Sizes and Absorbencies

They usually come in three different absorbencies. If the absorbency is lighter, the tampon will be smaller.

Light: Best for light flow days providing least coverage.

Regular: Opted for average flow days.

Super: Used during overnight and heavy flow days.

Super Plus: Suitable for women who have an extra heavy flow at the beginning of menstrual cycle and also have maximum absorbencies.

It is apt to choose tampons that provides right absorbency for your flow, not that will absorb for the most extended time. Because super absorbency tampons are often linked to possibility of TSS.

2.2.4 MENSTRUAL CUP

Menstrual cup is a female hygiene product, which is having a bell or funnel shape which is made from medical- grade silicon, thermoplastic elastomer (TPE) or rubber (latex). Like tampons, they are inserted inside the vagina to collect menstrual blood. Menstrual cups are used as an alternative to disposable pads and tampons offer an eco-friendly and cost-effective way. Unlike tampons and pads that absorb fluid, cups collect it and are emptied, cleaned, and re-inserted. After the insertion of the menstrual cup, they create a seal against the vaginal walls, thus it prevents the leak and it allows to collect the fluid. Sometimes menstrual cups can be inconvenient to some because at initial stages, there can be difficulties to insert and can take time while getting used to it. If you are starting your menstrual cup journey, carrying a tampon or pad as a backup is best. Although, once you get beyond the learning curve of using a menstrual cup, they are typically easy to insert

and remove. Regarding the convenience of leaving the menstrual cup and tampons, menstrual cup can leave them for a longer time compared to tampons.

2.3 HOW TO USE MENSTRUAL CUP?

Menstrual cup is getting its global attention because of its economic, environmental and health benefits over disposable menstrual products. To realize the benefit, it is equally important to understand the right method to use the menstrual cup. We can classify the method into four: pre-use, while using, while removing and post- use of menstrual cup.

2.3.1 Pre- Use of Menstrual Cup

- Selection of appropriate cup: It is important to choose the apt menstrual cup that suits your own body. Size, firmness and capacity are the deciding factors while choosing and it varies accordingly. Sizes are divided into small, medium and large.

  Small is ideal for teens, users who are under the age of 30, and those women who didn't gave birth vaginally. Best for regular flows, light- to- moderate.

  Medium is considered as a bridge size who need larger capacity compared to small but is find large too uncomfortable, ideal for moderate flows.

  Large is ideal for those women who are above in their 30s, gave birth vaginally and also has heavy periods flow.

  Also there are wide variety of shapes available for menstrual cups like bell- shaped which is more commonly used, V shaped and short and wide according to the individual preferences and physiological differences.

  Appropriate size enhances the comfort, becoming leakage proof and also directly increasing rate of adopting the menstrual cup.

  Top menstrual cup brands include DivaCup, Lunette, Intimina Lily Cup, Sirona, PeeSafe, Asan, Saalt, Carmesi and Lena.
- Sterilization before first use: Before first use, it must be properly sterilized by placing the cup in the boiling water for like 5- 7 minutes. The cup should not touch beneath the vessel which is taken to sterilize the cup to exclude damage. When the cup is sterilized, let it cool naturally. Sterilization is an important step to take before using menstrual cup to avoid infections and to ensure cleanliness.

2.3.2 Insertion of Menstrual Cup

- Step 1 Hand Hygiene: Before inserting menstrual cup, users must wash properly their hands with clean water and hand wash and dry them using clean cloth. Ensure that nails are always neat and tidy. Hand hygiene is critical to prevent the entry of bacteria inside the vaginal canal.
- Step 2 Folding of Menstrual Cup: Menstrual cup must be folded for insertion. There are many folding techniques for inserting the menstrual cup which are C- fold(U- fold), punch down fold, 7- fold etc. The main purpose of folding is reduce the diameter of cup for smooth insertion and selecting the folding technique completely depends on the comfort of user.
- Step 3 Correct Insertion of the Cup: There are many ways for proper insertion of menstrual cup like sit, squat or standing in one leg raised to relax pelvic muscles. Insert the menstrual cup which is folded slightly into vagina at an angle towards tailbone. Ensure that menstrual cup is inserted completely by allowing to open naturally. It is more effective than tampons, as it is settled lower in the vaginal canal, which collects menstrual blood effectively.
- Step 4 Ensure Proper Opening and Seal: After ensuring the cup is very- well inserted, it is important to check the leakage of menstrual cup. For that, rotate the cup gently and run a finger around the rim to ensure that cup is opened completely.
- Step 5 Monitor the Menstrual Flow: About 6- 12 hours, menstrual cup can be worn safely. When compared to disposable sanitary napkins and tampons, it has an extended duration which is suitable to working women and students and reduces long- run expenses.

2.3.3 Removal of Menstrual Cup

- Step 1 Hand Washing: Before removing, wash your hands neatly using clean water and hand wash.
- Step 2 Releasing the Seal: Sit or squat in a relaxed position. Mildly pinch the tip of the cup. Do not pull the stem directly without releasing the seal.
- Step 3 Removal and Emptying: Removal of menstrual cup should be with utmost care. After the removal, empty the substances into the toilet. Wash the cup with water before re-

insertion. Using of fragrance- free soap to wash the menstrual cup is completely optional. It is always important to stay hygienic during this menstrual cycle.

2.3.4 Post- Cycle Cleaning and Storage of Menstrual Cup

- After completing monthly menstrual cycle, sterilize the cup again by boiling.
- Rest the cup to dry it completely.
- Store it in a clean cotton pouch and avoid tight containers to prevent bacterial growth.
- For initial users, time should be given as they experience little bit of discomfort, difficulty in insertion and removal and also anxiety regarding leakages.

2.4 HISTORY OF USING MENSTRUAL CUP

2.4.1 HISTORY AND ORIGIN OF MENSTRUAL CUP

As a sustainable and increasingly mainstream form of a menstrual care, menstrual cup, has a long and complex history. We can witness its development ranging from women's health, product innovation, socio- cultural taboos, and shifting attitude towards bodily autonomy. Even though modern menstrual cup seems like a recent invention, its conceptual origin roots back nearly a century which was shaped by early pioneers and they challenged social norms and superstitions and found practical solutions for managing menstruation cycle.

During early 1800s, the idea of internal and reusable menstrual hygiene products began. During this period, various patents with regard to intra vaginal devices were filed, even though most were never manufactured or widely circulated. These early designs appeared at a time when menstrual products were still in an experimental stage, and menstruation was regarded in culturally enforced concealment actively, often due to power dynamics or deep-seated norms .Disposable pads existed in embryonic form, but the concept of inserting a menstrual device for menstrual collection had yet to gain acceptance in public.

Leona Chalmers, who was an American Actress and Inventor developed the first true menstrual cup as we understand today. From vulcanized rubber, she made a bell shaped cup and patented it in 1937. She had a vision of designing a product that provided a sense of freedom, mobility and

discreet protection to people who are menstruating which reflected the qualities of the then disposable pads were struggling to provide. The design of the menstrual cup she made quite similar to that of the cups which is seen in modern era, which is flexible, bell- shaped and is used to collect menstrual fluid by inserting internally. In her book, "The Intimate Side of a Women's Life", contained information regarding the reproductive health and menstrual cup which was a significant contribution during a time where talk regarding menstruation was social taboo and medically limited.

However, Chalmers had to go through various impediments. There were various stigmas like touching one's own genitals, gender norms which were highly conservative of the 1930s, and a wide discomfort with reusable product made the cup hard to market. Due to World War II, rubber shortages occurred which lead to limited production.

In mid 20th century, early attempts and setbacks took place. In 1950, to re- introduce menstrual cup, Chalmers collaborated with the company Tassette, Inc. As an economic and practical alternative to disposable product, a product named 'Tassette' was promoted. But it failed to achieve widespread popularity even though it earned a small but loyal customer base. Eventually, Tassette Inc, introduced a disposable version called Tassaway. But this product was higher in cost and had short lifespan was not able to resolve the underlying problem and consumers were not ready for this product. The company had ceased operation during 1970s.

In the late 20th century, a revival of the interest towards menstrual cup was seen in 1980s and 1990s, which was aligned with the thriving environmental awareness and openness about women's health. In 1987, a latex rubber cup, 'the Keeper', was introduced in United States which was durable and long- lasting. It was emerged as an alternative to the disposable product at a time where discussions about waste mitigation were becoming more mainstream. But, the material latex created allergies and the emergence of preferences for soft materials pushed innovation to a great extent. By the early 2000s, there was a transformation from latex rubber to medical- grade silicone, which revolutionized menstrual cup design. Its benefits are hypoallergenic, flexible, long- lasting, and easier to sterilize, which marked a turning point in consumer acceptance. During this time, brands like Lunette(Finland, 2005), Mooncup(UK, 2002) and DivaCup(Canada, 2003), were launched products which improved functionally and also by supported strong marketing, better educational resources, and the rising influence of online communities.

During 21st Century, there was an accelerated growth in the usage of menstrual cup. There are multiple factors contributed towards this which are as follows:

- Environmental Awareness: As the talk about plastic waste and disposable product sustainability was dragged, menstrual cup was encouraged as a reusable, eco- friendly solution.
- Facilitated Sex Education and Reproductive Health: Openness about menstruation enabled consumers to explore internal menstrual products.
- Digital and social media platforms: These platforms illustrated information about menstruation and spread among peers.

2.4.2 MENSTRUAL CUP IN INDIA

Menstrual Health Management(MHM) remains as a big distress in public health and gender equality in India. Conventionally, menstrual products used were ruled by sanitary pads which are disposable which is used only once and cloth which are highly unhygienic saw a transition towards sustainable menstrual products like menstrual cup. In recent years, menstrual cup attained a momentum in India, through Government policies and growth in market. In India, market of menstrual cups developed explicitly, showing rising consciousness among consumers regarding sustainable menstrual products and Government's supportive policies.

In India, menstrual cups were adopted during late 2000s to 2010s. During late 2000s, imports of menstrual cup happened for the first time and then menstrual cup came to be known in India. Through menstrual cup brands like The Keeper, Indian women began to order menstrual cup via online after knowing it through friends in 2009. In January 2010s, one of the first menstrual cup brands marketed in India and Asia, 'Shecup' was launched by MediAceso Healthcare Pvt Ltd in Mumbai. This was major milestone for consciousness among local people and commercial availability.

During 2010, several women led enterprises and social enterprises put a lot of efforts to encourage menstrual cups all over India. Around 2011, initiatives like Boondh Cup were found which was based on the gender studies and public health activities which uphold the principles of sustainable cleanliness solution. To create awareness and educate about menstrual cups, Boondh and similar ventures organized workshops, awareness drives and

social media campaigns. During mid 2010s, Indian startups engaged in innovative menstrual hygiene products, offered period panties which lead to gradual growth on product consciousness.

But cultural taboos including insertion of menstrual cup inside the body through vagina, lack of awareness etc remained as major barriers for adoption of menstrual cup leading to low penetration of it and high priority for sanitary pads and other disposable products.

2.4.3 MENSTRUAL CUP IN KERALA

Kerala remains as a prominent state in maintaining menstrual sustainability in terms of economical and environmental perspectives. There are many Governmental initiatives, programs and campaigns Kerala Government has launched for promoting menstrual cup.

Thinkal Project, by HLL Lifecare Ltd in collaboration with state and local bodies, has supplied over 7.5 lakh menstrual cups across India. But among them, a majority of users from Kerala alone with almost 4 lakh who are benefited from the project. The main purpose of this project is to eradicate the problem of disposal of sanitary pads which was witnessed during 2018 floods and thus consolidated in Kerala state's five year plan. A latest statewide initiative, Haritha Keralam Mission, is providing menstrual cups and menstrual waste incinerators in schools, colleges and Kudumbashree units for proper menstrual health management. Villages like Kumbalangi (Ernakulam district) and Kallikkad (Thiruvananthapuram district) Panchayats were proclaimed "napkin- free" after menstrual cup adoption increased. Kerala State Budget 2025- 26 has allocated ample funds for campaigns, awareness drives, which indicates the obligation of Government for sustainable menstrual health management. They also organize awareness campaigns, training sessions and community educational programs to assure the proper usage of menstrual cup and to vanquish socio- cultural barriers.

2.4.4 MENSTRUAL CUP IN ERNAKULAM DISTRICT

Among 14 districts in Kerala, Ernakulam stands out as one of the most important places for taking a lead for menstrual cup campaigns, incorporating fiscal policies, decentralized governance which is community level development towards a sustainable menstrual management. In Kerala, disposable sanitary napkins, which is extensively used across

Kerala, costs a family approximately Rs350- Rs500, which is frequently occurring every month and also very expensive. It ultimately leads to a high economic liability especially for a low- income household. They will also cause massive solid waste which country like India alone disposes billions of sanitary pads which is made up of materials like plastics and other non- biodegradable substances.

In this background, menstrual cup emerges as a best alternative for harmful and expensive sanitary pads. They are made using materials like reusable silicon devices which has life-span of almost 8- 10 years which is affordable and environmental friendly in nature. Ernakulam district, which is having a mixture of urban, semi- urban and rural population is a perfect area which we can assess the economic catalysts, behavioral change and policy impact.

There are many policy and institutional level initiatives in Ernakulam district. Kerala Government supported by allocating Rs10 Crores from state budget to encourage menstrual cups and other eco- friendly menstrual products through programs organized in schools, colleges, workplaces and community settings to spread awareness regarding it.

A major milestone in menstrual health management is the district- level campaign of 'Cup of Life' which is organized in Ernakulam district. It was under the partnership with the Indian Medical Association (IMA), Kochi and social partners has provided over 1 Lakh menstrual cups, free of cost in a 24 hours mass drive- a major step that got acceptance from the Guinness World Records. In this initiative, mass distribution along with educational sessions where demonstration classes on proper usage of menstrual cup and communicating regarding the concerns and myths associated with it instead of mere allocation of the product.

At grass root level, local bodies such as Palakuzha Panchayat in Ernakulam has incorporated menstrual cup allocation into plans, distributing funds for giving- away and organizing awareness campaigns. Registered participants received training to crack taboos and assured informed use. Kumbalangi Panchayat in Ernakulam district has proclaimed as a "napkin- free" when there was an increase in the acceptance of menstrual cup.

2.5 ECONOMIC SUSTAINABILITY OF MENSTRUAL CUP

Menstrual Health Management (MHM) is a significant concept which is a need of the hour for overall development of the economy. Conventional menstrual products such as sanitary napkins, tampons, etc are widely circulated in the market but the frequent financial crisis caused by it among individuals and economic liability created by it to household and public waste management system is unfathomable. In modern times, menstrual cups derived as a best alternative which assures cost- efficiency and economic sustainability. From an economic point of view, menstrual cup can be assessed using cost- benefit analysis, lifecycle costing, externalities and their implications for public expenditure, household welfare and sustainable development.

Economic sustainability is the potential of a commodity to allocate a long- run advantage without imposing excessive burden of costs on individuals, society without compromising it for future generations.

Lifecycle cost structure is the most important benefit of the menstrual product. A menstrual cup usually considered as an initial investment done once but for disposable products like pads and tampons, expenses occurs frequently on a monthly expenditure. Lifespan of menstrual cup is usually between 5- 10 years or even more, which depending mainly on quality and the way of using the product. But on the other hand, disposable pads and tampons are procured every single month during menstrual cycle. Assessing through lifecycle costing, menstrual cup decrease the total cost during menstrual cycle over time. That is, the aggregate amount of disposable sanitary pads over 10 years is higher to a larger extent than the one time purchase of a menstrual cup. Even if we consider the cleaning expenses like water, soap, sterilization, the marginal cost per cycle of a cycle is very petty approaching to zero. From an economic perspective, menstrual cup stands out as a menstrual product with long- lasting in terms of cost of savings and the initial outlay cost is subsided by the lower long run marginal costs.

Among most of the household expenditures, menstrual expenditure is a mandatory frequently occurring particularly affecting lower- income households. For financially weaker sections, monthly expenditure on menstrual product can displace the necessary expenditures like education, healthcare etc. Thus menstrual cup secures the households by reducing the frequently occurring expenditure, lessen the financial dependency during

unforeseen contingencies, diminish the risk of period poverty, thus enhances menstrual security.

In welfare economics point of view, menstrual cup prevents the market failure by internalizing the negative externalities emerging from waste dumping thus minimizing waste at the source. Disposable menstrual products create social costs reflecting it in the market prices, ultimately leading to overconsumption.

In Public Finance, disposable menstrual products indirectly creates tax burden by increasing the cost of municipal waste management which is borne by local government. So to decrease the tax burden, switching to menstrual cup is the best thing to do. Menstrual health is connected to productivity, educational attainment and labor force participation. Improper menstrual health management can cause infection and diseases, negatively affect the academic performance.

Menstrual cups are closely linked with attaining the Sustainable Development Goals (SDG) like SDG3 of Good health and Wellbeing, SDG5 Gender Equality, SDG12 Responsible Consumption and Production.

From an economic point of view, menstrual cup is the best option for a economically sustainable menstrual management. It is having the lowest lifecycle cost among the other menstrual products, minimization of household expenditure and public waste management costs, internalizing negative externalities thus avoiding market failure. For a developing economy like India, where the public resources are limited and the population is unlimited, menstrual cup serves as a best product to tackle the problems faced by these economies in menstrual health management.

2.6 ENVIRONMENTAL SUSTAINABILITY OF MENSTRUAL CUP

In terms of environmental sustainability in menstrual health management, menstrual cups are the best alternatives instead of disposable menstrual products. Disposable menstrual products are the one of the major sources of the environmental pollution. Conventional

menstrual products like sanitary napkins, tampons etc contains plastic and other non-biodegradable materials which remains in earth for many years without decomposing.

When these disposable products are incinerated or landfilled, will lead to air contamination, soil pollution and micro plastic outflow. So people should be more aware of the environmental damage caused by the disposable menstrual products.

Intergenerational equity is the key for ensuring this environmental sustainability, where people should allow present consumption needs without compromising the future generation's ability to meet their own needs.

So for ensuring intergenerational equity, menstrual cup serves this purpose completely as it an important pillar sustainable menstrual waste management. For that, an environmental consciousness creates a positive influence to adopt menstrual cup. So, menstrual cup is an effective solution for ensuring economic as well as environmental sustainability.

CHAPTER – 3

ANALYSIS AND INTERPRETATION

3.1 Introduction

This chapter intends to study the comparison among people who are using menstrual cup and people who are not using menstrual cup instead using other menstrual products like sanitary pads, cloth etc. among women in Ernakulam District. Data was collected via online using Google Forms. For that two questionnaires were prepared, one questionnaire for those who use menstrual cup as their menstrual product and the other for those who are not using menstrual cup as their menstrual product. So we needed 50 women from each category were selected for the study.

This study is analyzed using graphical representation, frequency tables and also percentage analysis. To find the relation between the variables binary logistic regression and also simple regression is used. The study also analyzed shows hypothesis testing through chi- square test of association for detailed analysis to understand differences in sustainable menstrual behavior.

3.2 Data Analysis and Interpretation

Those are using menstrual cup as their menstrual product

3.2.1 Age Group of Respondents

Table 3.1 Age Group of Respondents

Responses	**Frequency**	**Percentage**
Less than 18 years	1	2
18- 25 years	24	48
25- 35 years	13	26
Above 35 years	12	24
Total	50	100

Source: Primary data

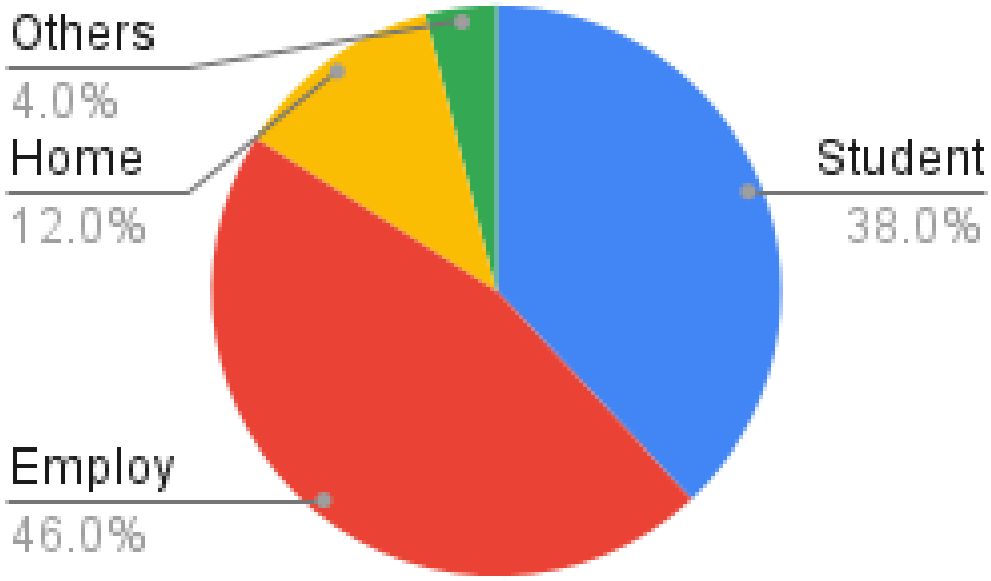
Table portray the age group of respondent who use menstrual cup as their menstrual product. The respondents were classified into four age categories among the highest respondents are from 18-25 years which is 48%. It shows most of the respondents from 18-25 years category and lowest belongs to less than 18 years group.

This data shows that the women who use are young adults between 18-25 years category. This may be because they may be educated regarding the usage of menstrual cup as it is modern

menstrual product emerged amidst the conventional menstrual products like sanitary pads etc and most of them included in the college students category, they may be getting awareness classes regarding menstrual cups and its associated campaigns in the college knowing more about menstrual cup and its usage.

3.2.2 Employment Status

Figure 3.1 Employment Status



Source: Primary data

Figure illustrates the employment status of the women who use menstrual cup as their menstrual product. It shows most of the women who use menstrual cup are employed with 46%. Also the second highest category are students with 38%. The third highest category include homemakers who have 12% and the fourth category of respondents having other employment status include 4%.

This trend shows that majority of the respondents who are included in the employed category shows the convenience of using menstrual cup while doing job. The second highest category of students show the awareness among student groups regarding menstrual cup. The third highest category of homemakers have got least exposure to the awareness and usage of menstrual cup.

3.2.3 Monthly Income

Table 3.2 Monthly Income

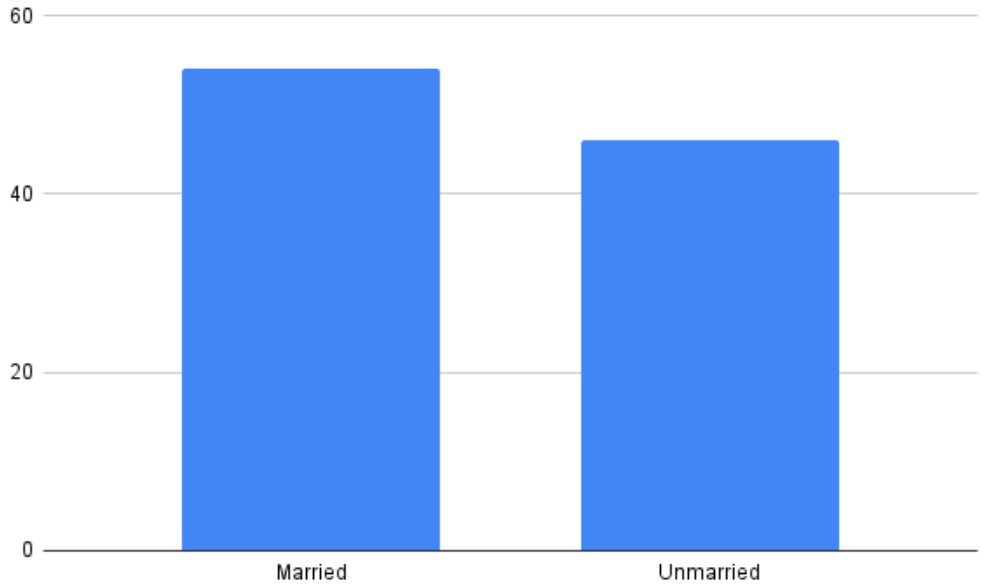
Income Range	Frequency	Percentage
Less than 10,000	23	46
10,000- 20,000	12	24
25,000- 50,000	7	14
Above 50,000	8	16
Total	50	100

Source: Primary Data

Table portrays the monthly income earned by respondents who are using menstrual cup as their menstrual product shows that the respondents from income earning less than 10,000 with 46%. The second highest category include respondents who earn income between 10,000- 20,000 with 24%. The third highest category of income earners include above 50,000 with 16% and the fourth category include respondents with income earning between 25,000- 50,000 with 14%. This indicates that apart from slight high initial outlay cost, there is an affordability of using menstrual cup as low income earners use it more. The second highest category of respondents who earn income between 10,000 and 20,000 also feel the same feeling of affordability and as the high income earning category can afford disposable sanitary pads and they are less bothered about the high expenses but still, in the long run, it can turn to both economic as well as environmental burden to them.

3.2.4 Marital Status

Figure 3.2 Marital Status



Source: Primary data

Figure illustrates the marital status of respondents who use menstrual cup as their menstrual product depicts that married women with 54% use menstrual cups more compared to unmarried women with 46%

This maybe because women who are married and sexually active due to greater ease of vaginal insertion showing a physiological benefit and also have socio- cultural and practical factors.

3.2.5 Duration of Menstrual Cup Usage

Table 3.3 Duration of Menstrual Cup Usage

Period	**Frequency**	**Percentage**
Less than 6 months	8	16
6- 12 months	7	14
1-3 years	21	42
Above 3 years	14	28
Total	50	100

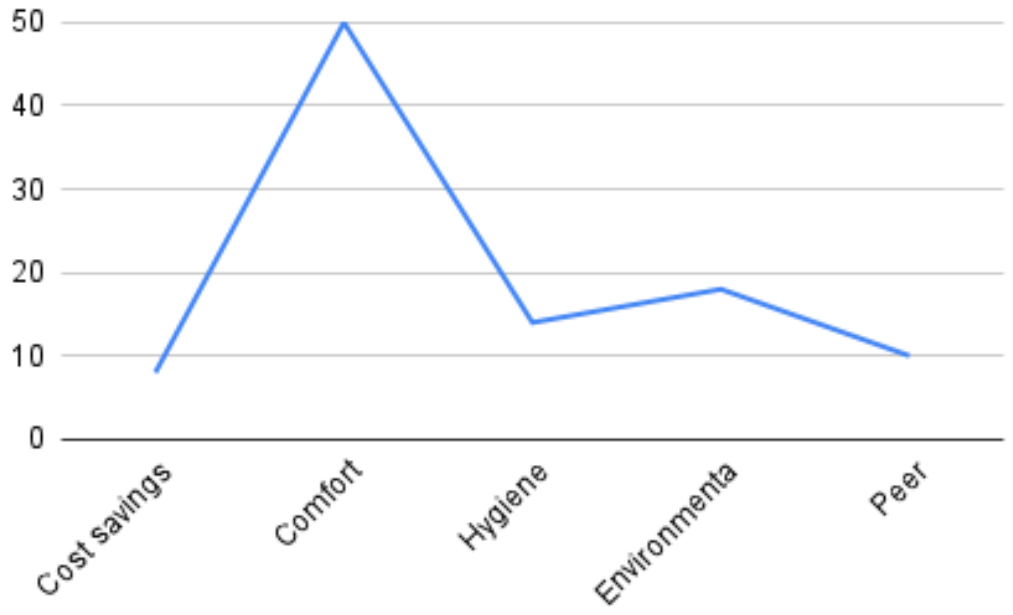
Source: Primary data

Table portrays the duration of using menstrual cup by the respondents and here the highest duration is 1- 3 years shows a consistent usage rather than short run attempts with 42%. The second highest usage period of menstrual cup is above 3 years with 28%. The third highest duration is about 6-12 months with 16% and the least duration period of usage of menstrual cup is 14%.

This trend indicates that menstrual cup is an upcoming sustainable menstrual product of respondents where the duration of usage is less than 6 months and respondents with 6- 12 months. Majority of the respondents with usage period of 1- 3 years and above 3 years shows rising assurance and fulfillment in the usage of menstrual cup in the long run.

3.2.6 Motivation for Adopting Menstrual Cup

Figure 3.3 Motivation for Adopting Menstrual Cup



Source: Primary data

This figure shows the motivational factors for adopting menstrual cup as their menstrual product. The highest motivation for adopting menstrual cup is the comfort level which is provided by menstrual cup to the user with 50%. After that, environmental concern with 18% showing awareness regarding environmental sustainability, hygiene with 14%.

The trend indicates the majority of respondents have an ease of handling during heavy flow days, also making the user free from itching and irritation issues. The next highest respondents implies the increased cleanliness while disposing the menstrual blood. These motivational factors shows

the sustainable menstrual practices and an increased withdrawal from the usage of disposable products.

3.2.7 Cost of Purchasing Menstrual Cup

Table 3.4 Cost of Purchasing Menstrual Cup

Amount Range	**Frequency**	**Percentage**
Less than Rs 100	2	4
Rs 100- Rs 200	8	16
Rs 200- Rs 400	32	64
Above Rs 400	8	16
Total	50	100

Source: Primary data

Table portrays the cost of purchasing menstrual cup for using during menstrual hygiene. Majority of the respondents 64% spent between Rs 200- Rs 400 for purchasing menstrual cup. There are two second highest set of respondents with equal proportion with 16% each which has incurred cost of between Rs100 and Rs200 and Rs200 and Rs400 respectively. The least set respondents with 4% had an expense of less than Rs100.

This implies that moderate upfront costs in exchange for long run benefits of menstrual cups. This indicates that majority of respondents consider it as investment rather than an unwanted expenses which happens on a monthly basis with the usage of conventional menstrual products like sanitary pads. But the respondents who spend two extreme amounts of less than 100 and above 400 should be aware of the quality of the product in the case of first set of users and the unwanted initial outlay cost they incur. In short, proper awareness regarding the criteria of selecting of menstrual cups should be provided.

3.2.8 Expected Lifespan of Menstrual Cup

Table 3.5 Expected Lifespan of Menstrual Cup

Years	Frequency	Percentage
Less than 2 years	7	14
2- 4 years	22	44
5- 7 years	14	28
Above 7 years	7	14
Total	50	100

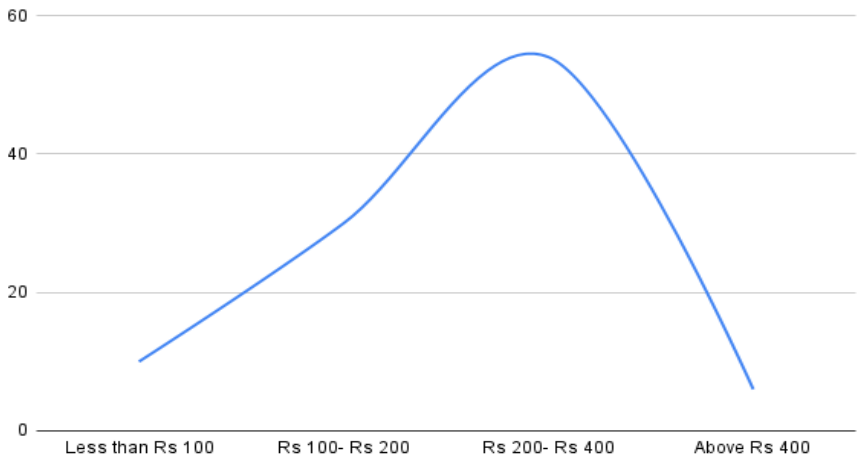
Source: Primary data

Table shows the expected lifespan of menstrual cup. Majority of respondents expect lifespan to be 2- 4 years with 44%, but around 28% of respondents expect to increase the lifespan to be 5- 7 years. The least percentage of respondents are from two categories with equal proportion of 14% each who have opinion of expected lifespan in a contrary manner of less than 2 years and above 7 years respectively.

This signifies that respondents majority of the respondents have a vision regarding the longevity and worth of money associated with menstrual cup. But still in the case of respondents who opines that the expected lifespan of less than years shows lack of clear cut idea regarding the benefits of menstrual cup.

3.2.9 Monthly Expenditure Before Switching to Menstrual Cup

Figure 3.4 Monthly Expenditure Before Switching to Menstrual Cup



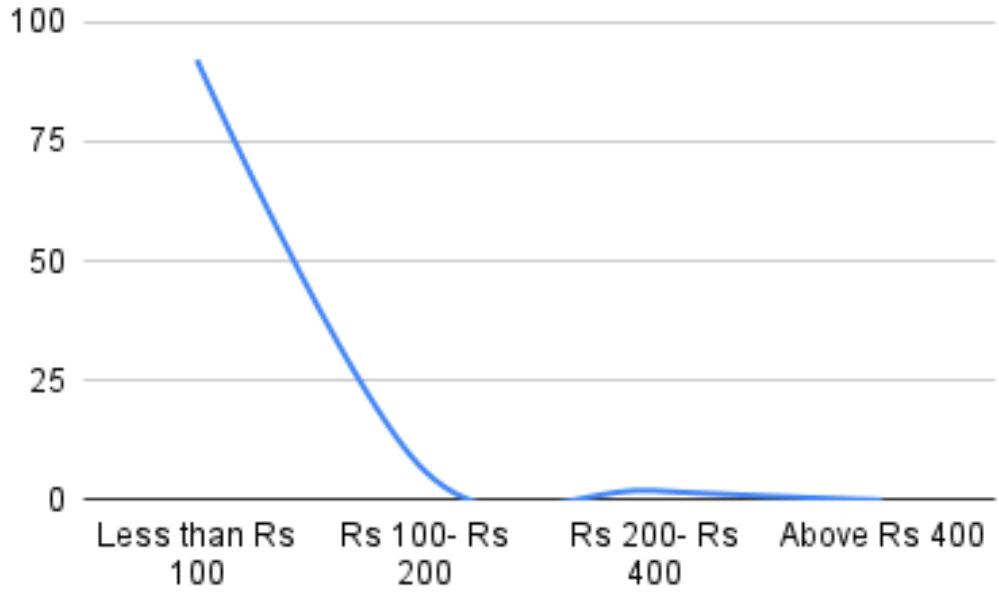
Source: Primary data

This figure shows the monthly expenditures of menstrual cup users before switching to it. Nearly 54% of respondents spend amount between Rs200- Rs400 for menstrual products before switching to menstrual cup. About 30% of respondents had a monthly expenditure between Rs100 and Rs200. 10% respondents had a monthly expenditure of less than Rs100 and the least set of respondents had expenditure of above Rs400.

This trend indicates that majority of the respondents had a frequent monthly expenses occurred for menstrual product highlighting that users always needed a sustainable substitute. Also here the monthly expenditure fluctuated mainly because of the menstrual blood flow that varies between each and every individual. But approximately, most of the respondents had financial burden because of the recurring monthly expenditure before switching to menstrual cup.

3.2.10 Monthly Expenditure After Switching to Menstrual Cup

Figure 3.5 Monthly Expenditure After Switching to Menstrual Cup



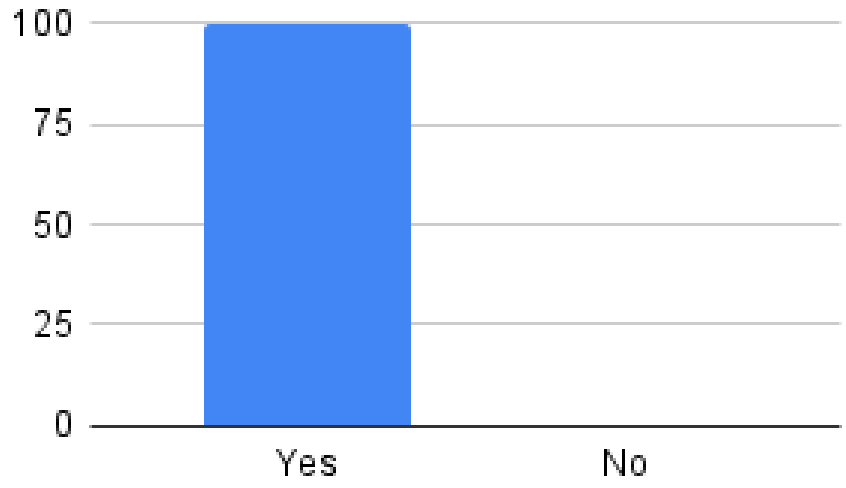
Source: Primary data

Figure portrays the monthly expenditure of respondents after switching to menstrual cup. Majority of the respondents with 92%, have to spend only less than Rs100. The next group of respondents with only 6% have to spend only between Rs100 to Rs200 and the least percentage of only 2% spend between Rs200 to Rs400 and none of the respondents have to spend above Rs400.

This shift of expenditure after switching to menstrual cup showing a remarkable drop in the expenditure. This explicitly shows cost efficiency of menstrual cups over time and assurance this product gives in terms of comfort, hygiene and leakage protection.

3.2.11 Perceived Financial Savings After Switching

Figure 3.6 Perceived Financial Savings After Switching



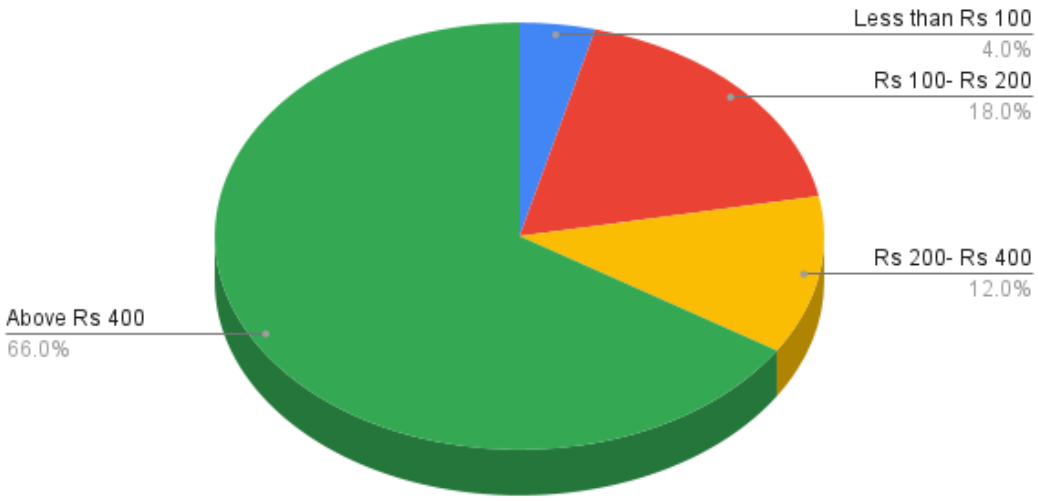
Source: Primary data

Figure indicates the about attitude of people whether they have saved money or not after switching to menstrual cup. Almost all the respondents has a feeling of saving money after switching to menstrual cup and none of the respondents had didn't felt the opposite way.

This indicates that menstrual cup is strengthening the economical advantage of its usage. They have a feeling that menstrual cup will reduce the recurring expenses of menstruation and it is the apt alternative for the traditional menstrual products.

3.2.12 Annual Savings After Switching to Menstrual Cup

Figure 3.7 Annual Savings After Switching to Menstrual Cup



Source: Primary data

Figure indicates the annual savings after switching to menstrual cup. Majority of the respondents with 66% saved above Rs400 annually. The second highest amount of annual savings is between Rs100- Rs200 with 18%. The third highest amount annual savings is between Rs200- Rs400 with 12%. The least amount of annual savings is less than Rs100 with 4%.

The shift generally depicting the long- run economical nature of menstrual cup relative to other single- use menstrual product. Majority of the respondents saved a huge amount which is above Rs400 which implies the economic resilience of menstrual cup. And subsequently, the annual savings is directly related to the number of respondents who saved. The higher the annual savings, the higher the number of respondents.

3.2.14 Perception Towards Menstrual Cup as a Cost- Effective Investment

Table 3.6 Perception Towards Menstrual Cup as a Cost- Effective Investment

Responses	Frequency	Percentage
Yes	48	96
No	2	4
Maybe	0	0
Total	50	100

Source: Primary data

Table portrays the perception of respondents regarding menstrual cup as a cost- effective investment. Majority of respondents with 96%, strongly agree to the fact that menstrual cup is a cost effective investment. The second highest category of respondents who disagree is only 4%.

This table indicates that almost all the respondents agree that menstrual cup is a cost- effective investment states the feasibility factor of menstrual cup and also the rational behavior of the consumers. Even though initial outlay cost is slight higher, there is zero recurring cost incurred which occurs frequently occurs due to the usage of disposable menstrual products. This shows the cost- effective nature of menstrual cup.

3.2.15 Reduction in Financial Stress due to Menstrual Cup Use

Table 3.7 Reduction in Financial Stress due to Menstrual Cup Use

Responses	Frequency	Percentage
Yes	49	98
No	1	2
Total	50	100

Source: Primary Data

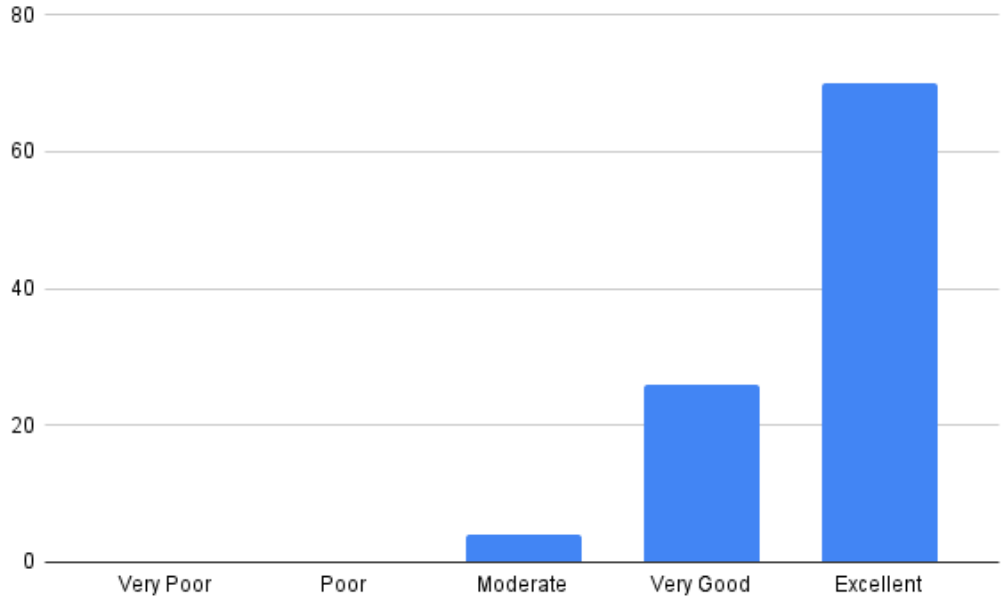
Table shows whether the menstrual cup reduced financial stress or not. Almost 98% respondents admit that menstrual cup usage reduced financial stress. Only 2% do not admit to the fact that menstrual cup adoption reduced financial stress.

Majority of the respondents agree about the financial stress reduction indicate the equality among respondents regarding menstruation and their financial management. But only 2% does not admit about the financial stress reduction due to menstrual cup and there may be other reasons for their

financial stress since most of the respondents had positive response of reduction in financial stress due to menstrual cup.

3.2.16 Satisfaction with Comfort of Menstrual Cup

Figure 3.8 Satisfaction with Comfort of Menstrual Cup



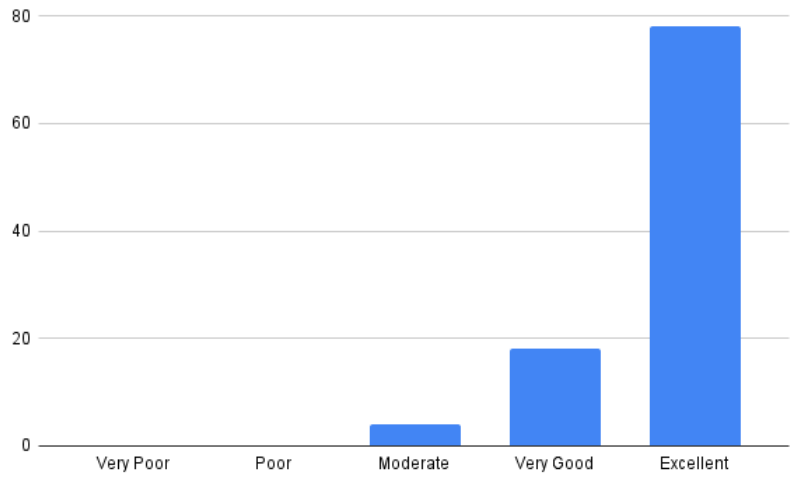
Source: Primary data

Figure illustrates the satisfaction level regarding the comfort of menstrual cup depicts that majority of the respondents with 70% had an excellent comfort with the usage of menstrual cup. Almost 28% of respondents had a very good response with the comfort level of menstrual cup. Only 4% have a moderate satisfaction level with comfort of menstrual cup. None of the respondents had a poor experience regarding the comfort level of menstrual cup.

This trend shows which is for highly satisfied respondents, it leads to the physical as well mental easiness during menstrual cycle every month. For the 'very good' and 'moderate' satisfied respondents, it may be due to initial stages of the usage of menstrual cup and it may take some time to get adjusted to menstrual cup. But none had poor or bad experience with comfort level of menstrual cup, signifying the hope that no one suffered with discomfort while using the product.

3.2.17 Satisfaction with Hygiene of Menstrual Cup

Figure 3.9 Satisfaction with Hygiene of Menstrual Cup



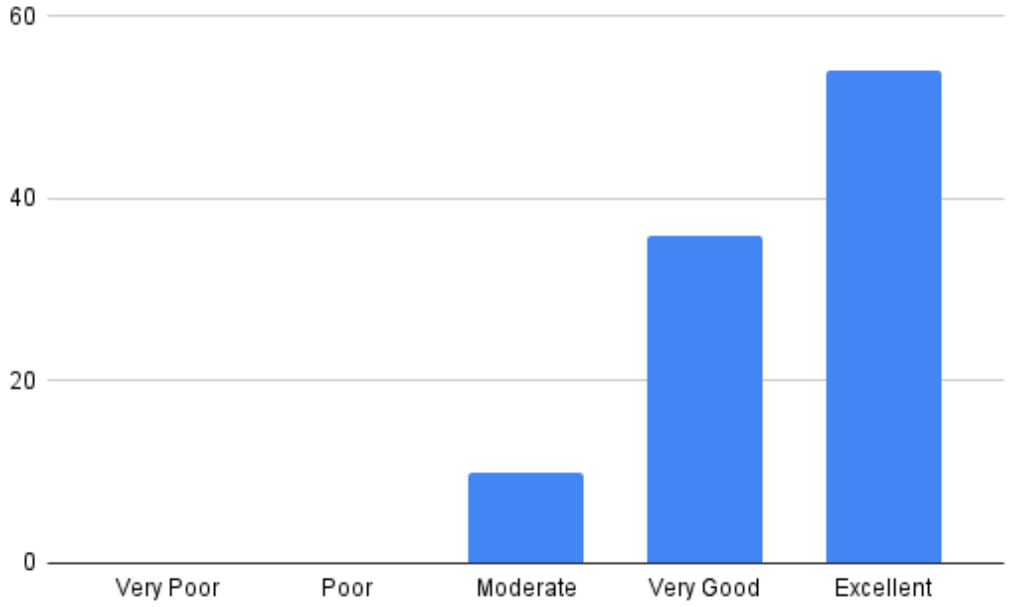
Source: Primary data

Figure illustrates the satisfaction level with regard to hygiene of menstrual cup. Majority of the respondents with 78% has an excellent level of satisfaction with regard to hygiene of menstrual cup. Only 18% of respondents had 'very good' level of satisfaction in terms of hygiene. A very mild percentage of respondents with 4% had a 'moderate' satisfaction level on menstrual cup on hygiene it gives.

This high percentage of respondents in the usage of menstrual cup giving high level of satisfaction in terms of hygiene indicates that menstrual cup gives some sort of assurance regarding the safety and neatness in its usage.

3.2.18 Satisfaction with Cleaning and Maintenance of Menstrual Cup

Figure 3.10 Satisfaction with Cleaning and Maintenance of Menstrual Cup



Source: Primary data

Figure shows the satisfaction level regarding the cleaning and maintenance of menstrual cup. Majority of the respondents with 54% are highly satisfied with the cleaning process of menstrual cup during their menstrual cycle. Almost 36% of respondents had a 'very good' satisfaction level in terms of cleaning of menstrual cup. Only 10% of respondents had a 'moderate' level of satisfaction with the usage of menstrual cup.

This trend indicates that still there is a need to understand the correct cleaning process of menstrual cup. Sometimes, concerns regarding the remaining of stain of blood due to the prolonged usage of menstrual cup, lack of sterilizing facilities for those who are staying in hostels etc is still an issue. For that, proper awareness campaigns regarding how to clean the menstrual cup and Government support regarding the sterilization facilities should be given.

3.2.19 Perception of Waste Reduction using Menstrual Cup

Table 3.8 Perception of Waste Reduction using Menstrual Cup

Responses	Frequency	Percentage
Yes	44	88
No	1	2
Maybe	5	10
Total	50	100

Source: Primary data

Table portrays the respondent's perception of waste reduction using menstrual cup. Majority of respondents with 88% are aware to the fact that menstrual cup decrease waste significantly. But about 10%, respondents has a neutral opinion regarding the waste reduction of menstrual cup. Only 2% of respondents are not aware about the waste reduction which can happen using menstrual cup. The trend indicates that indicating the awareness regarding environmental sustainability. Almost all the respondents are having an opinion about menstrual waste reduction with usage of menstrual cup showing the environmental consciousness of respondents showing the feature of environmental sustainability of menstrual cup.

3.2.20 Peer Encouragement of Menstrual Cup Adoption

Table 3.9 Peer Encouragement of Menstrual Cup Adoption

Responses	Frequency	Percentage
Yes	50	100
No	0	0
Total	50	100

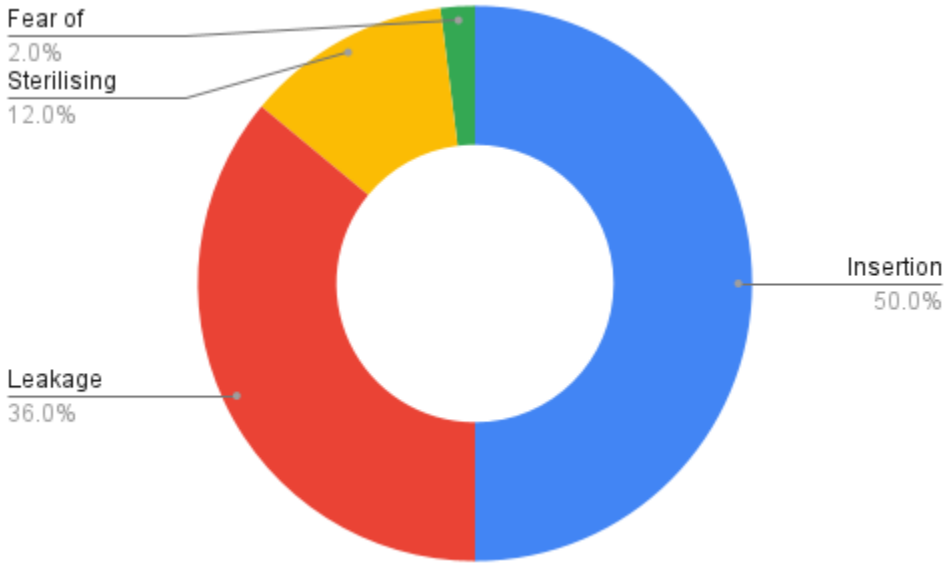
Source: Primary data

Table shows the menstrual cup adoption encouragement among peer by respondents. Almost all respondents are willing to encourage their peers to adopt menstrual cup. None of the respondents have an alternative opinion regarding it.

This indicates the trustworthiness towards menstrual cup by respondents to peers with a guarantee that menstrual cup is the best alternative for other disposable menstrual products. Thus through the verdict of all menstrual cup users and their peer recommendation it clear that menstrual cups are correct option in all terms of comfort, hygiene, cost- effectiveness and reusability.

3.2.21 Initial Barriers Faced by Users

Figure 3.11 Initial Barriers Faced by Users



Source: Primary data

Figure illustrates the initial barriers faced by users of menstrual cup. Half of the respondents with 50% had a fear of insertion of menstrual cup inside the body. The second highest category are having leakage concerns with 36%. The third highest concern is about the sterilization procedure as a major task. Only 2% of respondents had concerns regarding fear of both insertion as well as removal.

This trend shows that the initial discomfort due to unfamiliarity in menstrual cup usage. The obstacles faced due to fear of insertion as well as removal, leakage concerns, confusion of sterilization procedure is temporary in nature and through adaption there can be improvement in the usage. This short run barriers are occurs initially only, once embraced in all means then there will not be any problems like this.

3.2.22 Intention to Continue Using Menstrual Cup

Table 3.10 Intention to Continue Using Menstrual Cup

Responses	Frequency	Percentage
Yes	46	92
No	0	0
Maybe	4	8
Total	50	100

Source: Primary data

Table portrays the respondent's intention to continue the usage of menstrual cup in the future. Majority of the respondents with 92% are willing to continue the usage of menstrual cup and only 8% of respondents are in doubt to try it in the future.

This movement depicts the validation of almost all respondents for menstrual cup as a best option for menstrual health management in all means. The respondents who take the neutral stand to continue to adopt menstrual cup in the future may be due to the confusions which still remains within them with the usage of menstrual cup. This can be eradicated using proper awareness, demonstration and workshops regarding the proper usage of menstrual cup.

Those who are not using menstrual cup as their menstrual product

3.2.23 Age of Respondents

Table 3.11 Age of Respondents

Responses	Frequency	Percentage
Less than 18 years	0	0
18- 25 years	35	70
25- 35 years	13	26
Above 35 years	2	4
Total	50	100

Source: Primary Data

Table portrays the age of respondents who are not using menstrual cup as their menstrual product. The age group is classified into four categories and it shows that the highest number of respondents are from age group of 18- 25 years. The second highest number of respondents are from the

category of 25- 35 years with 13%. Only 4% respondents are from the category of above 35 years and none of the respondents from the category of less than 18 years.

This trend indicates that indicates that still there are young adult women who are not adopting menstrual cup and maybe unaware about the sustainability elements associated with it. Also we can see a positive trend of respondents who are having less than 18 years of age are not all using the disposable menstrual products as they are aware about the harmful side of those products which can create both economical and environmental burden to them. So the women who are still using disposable menstrual products should be well informed about its demerits as soon as possible to build a sustainable economy both economically and environmentally.

3.2.24 Employment Status

Table 3.12 Employment Status

Responses	**Frequency**	**Percentage**
Student	23	46
Employed	23	46
Homemaker	3	6
Research Scholar	1	2
Total	50	100

Source: Primary data

Table portrays the employment status of non- users of menstrual cup. Here the highest category of respondents are included in both student and employed categories form equal proportion of 46%. The second highest category of respondents are from homemakers with only 6%. The least percentage category is included in research scholar section with 2%.

This movement depicts that unacceptance of menstrual cup is not limited to the occupational category. It is spread across the employment status and we can't set any criteria of employment status in the usage of menstrual products. It's all about the peculiar knowledge regarding the sustainable menstruation and it has nothing do with the employment status, whether the respondents are studying, employed or not. Because here the table depicts that the highest number of respondents are students and employed women are considered as educated as well as empowered.

3.2.25 Monthly Income of Non-Users

Table 3.13 Monthly Income of Non-Users

Responses	**Frequency**	**Percentage**
Less than 10,000	24	48
10,000- 25, 000	20	40
25,000- 50,000	5	10
Above 50,000	1	2
Total	50	100

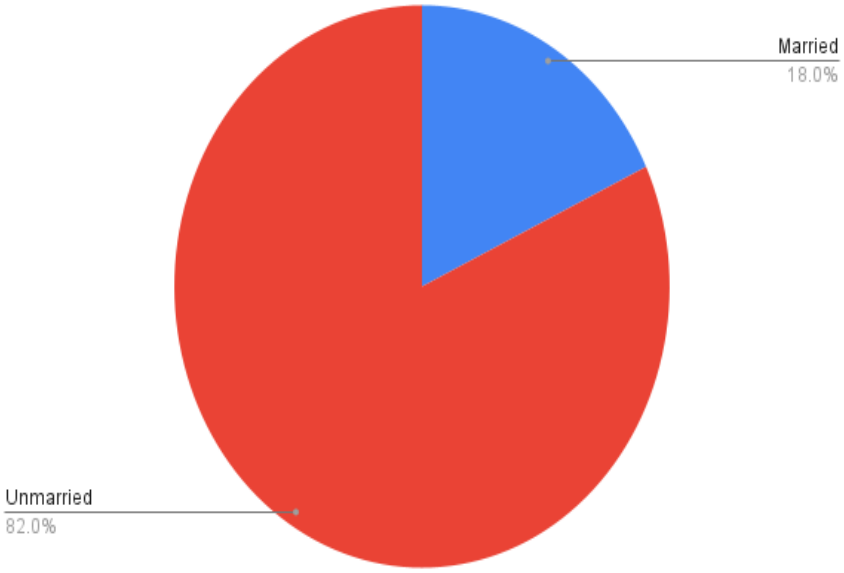
Source: Primary data

Table shows the monthly income of employed non- users of menstrual cup. Majority of respondents belong to income group of less than 10,000 with 48%. The second highest category of respondents are from income group between 10,000 and 25,000 with 40%. The third highest category of respondent are from the income category between 25,000 and 50,000 with 10% and the least category of respondents are from income group of above 50,000 with 2%.

This implies that almost all the respondents are from lower income category may have lack of awareness regarding the elementary cost of menstrual cup. If they are informed about the fact that only the initial outlay cost is higher and the subsequent monthly expenses with the usage of menstrual cup is nil, this high percentage of respondent from first two lower income categories may be reduced significantly.

3.2.26 Marital Status

Figure 3.12 Marital Status



Source: Primary data

Figure illustrates the marital status of the non- users of menstrual cup. Here from the figure, it is clear that majority of the respondents are unmarried women with 82% and the smallest percentage of respondents are from married women with only 18%.

This figure shows that the unmarried women are high in number in using the conventional menstrual products and this maybe because of the cultural barriers of 'virginity myth' and other psychological barriers related to insertion they face during the thought of using menstrual cup. Married women are having less concerns about these kinds of myths and they are more comfortable with the usage of menstrual cup than the traditional menstrual products.

3.2.27 Primary Menstrual Product Used

Table 3.14 Primary Menstrual Product Used

Responses	**Frequency**	**Percentage**
Sanitary Pads	47	94
Cloth	3	6
Tampon	0	0
Total	50	100

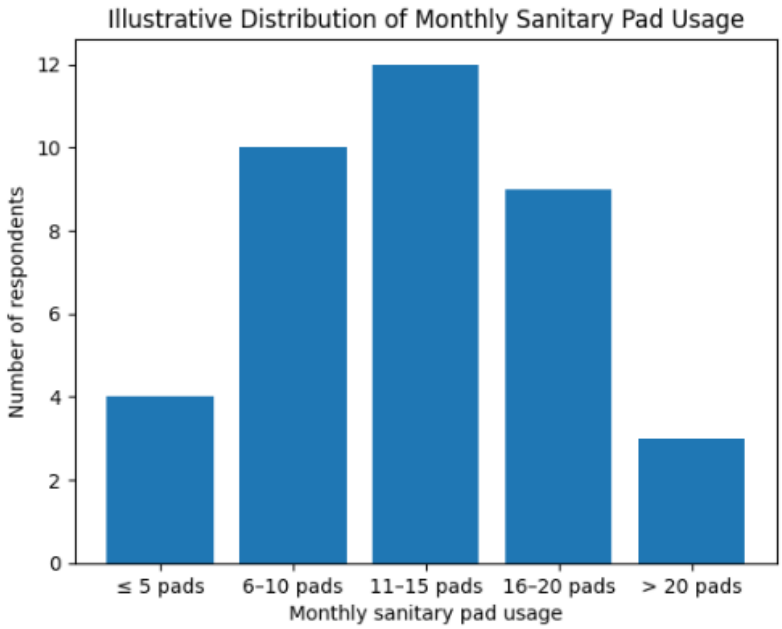
Source: Primary data

Table portrays the menstrual product primarily used by non- users of menstrual product. The highest number of respondents use sanitary pads with 94%. The second highest number of respondents use cloth but it is only 6%. None of the respondents use tampons.

This table indicates that majority of respondents use sanitary pads shows the persistency in the habit and accessibility of the product and lack of consciousness about the long run economic and environmental liability the users of disposable menstrual products can face. Also the second highest product used is cloth which is reusable in nature which satisfies the economic and environmental sustainability element to an extent, but still the issues it creates in terms of hygiene, comfort and leakage is intolerable. None of the respondents use tampons as it is considered as modern menstrual product and it is not that much popular in Ernakulam district also in Kerala, which is a positive sign as tampons are also economically and environmentally not sustainable.

3.2.28 Monthly Usage Quantity of Current Product

Figure 3.13 Monthly Usage Quantity of Current Product



Source: Primary data

Figure depicts the quantity of current product monthly used by the non- users of menstrual cup. Majority of the respondents use approximately 11- 15 pads per menstrual cycle per month. The second highest category of respondents use about 6- 10 pads per month. The third highest category

of respondents use approximately 16- 20 pads per month. The fourth highest category of respondents use less than 5 pads per month and the smallest category of respondents use more than 20 pads per month.

This figure indicates that on an average 11- 15 pads is used by each respondents showing frequent reliance on the disposable menstrual product. Also the usage of these sanitary pads is highly depended on the period blood flow of each respondent and it varies between person to person. But majority of the respondents use sanitary pads which are about 11- 15 in number which is cannot be considered as a handful of number which will ultimately be responsible for economic and environmental damage.

3.2.29 Monthly Expenditure on Menstrual Product by Non-Users

Table 3.15 Monthly Expenditure on Menstrual Product by Non-Users

Responses	**Frequency**	**Percentage**
Less than Rs100	17	34
Rs 100- Rs 200	23	46
Rs 200- Rs 400	8	16
Above Rs 400	2	4
Total	50	100

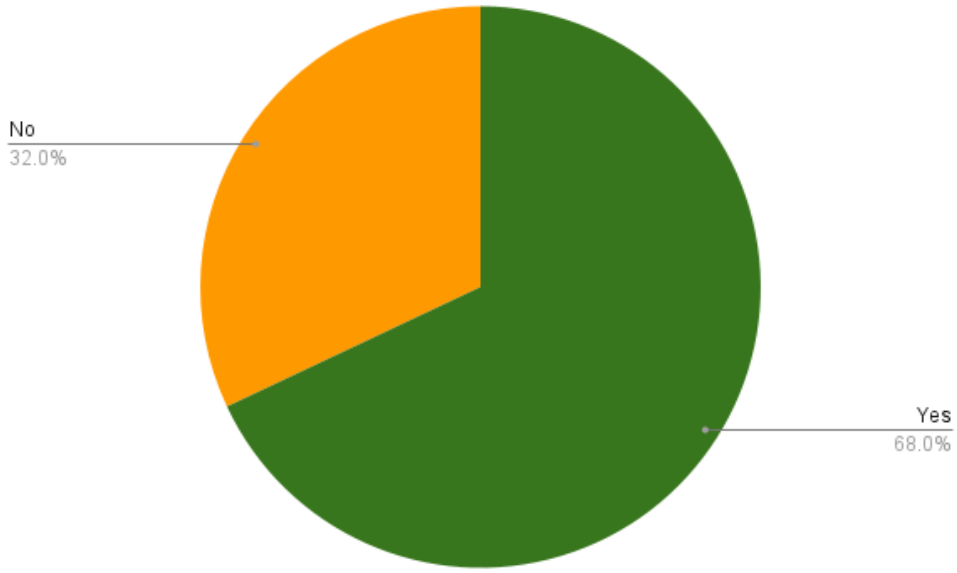
Source: Primary data

Table shows the monthly expenditure by non- users of menstrual cup on menstrual products. The highest category of respondents of about 46% had monthly expenditure between Rs100- Rs200. The second category of respondents are spend less than Rs100 with about 34%. The third highest category of respondents have an expense of Rs200 – Rs400 with 16%. The smallest category of respondents spend a higher amount which is above Rs400 on traditional menstrual products.

This shows that majority of the respondents have an expense of about Rs100- Rs200 which can ultimately result in a higher aggregate annual expenses. For example, if a respondent is spending about Rs200 per month and we know that there are 12 months in a year. So when we multiply monthly expenditure with 12 that is 200 *12, the annual expenditure on traditional menstrual product can result in approximately Rs2400, which is much higher than the initial outlay cost spend on menstrual product which is sustainable in all means.

3.2.30 Financial Burden of Current Product

Figure 3.14 Financial Burden of Current Product



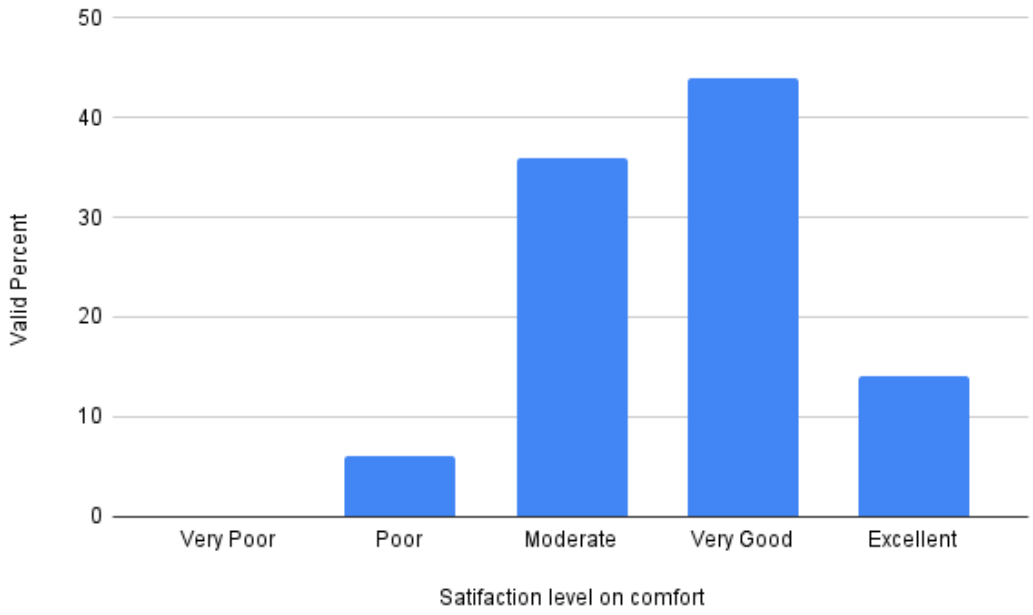
Source: Primary data

Figure illustrates whether the respondents face financial burden due to the usage of current product or not. A highest number of respondents agree to the fact that current product they are using cause financial burden. Only 32% respondents do not agree that current menstrual product can cause financial burden to them.

This opinion regarding the financial burden of traditional menstrual products shows that majority of the respondents suffer with the burden they face financially but still they are yet resistant in switching maybe because of the lack of awareness regarding the sustainable alternative of menstrual product like menstrual cup or maybe they are accustomed with the current product and an instant shift to other products due to their usage and maintenance remains as an obstacle for that.

3.2.31 Satisfaction with Comfort of Current Product

Figure 3.15 Satisfaction with Comfort of Current Product



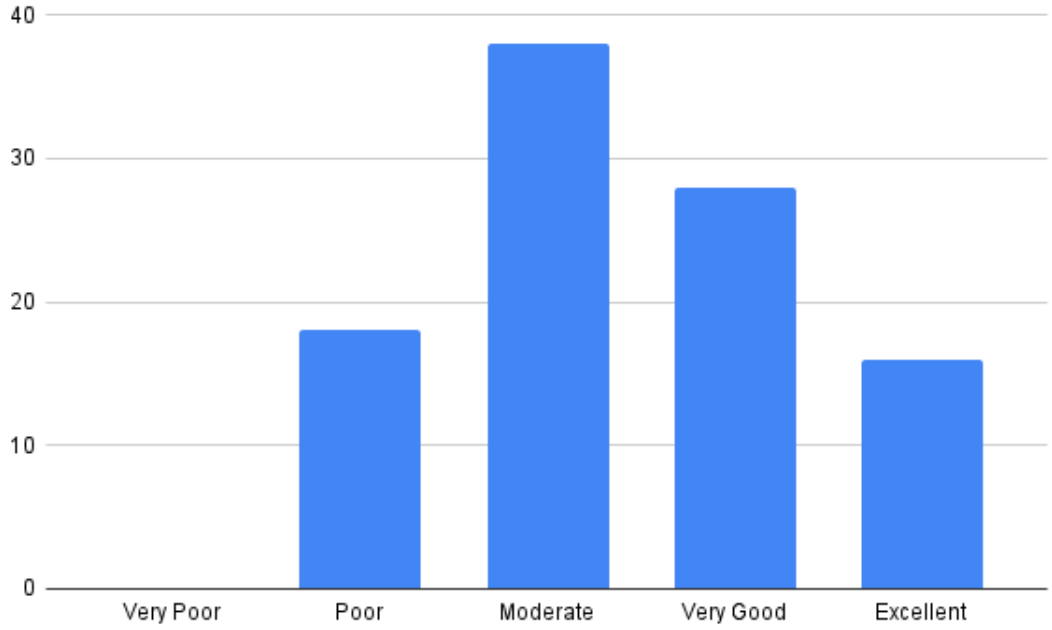
Source: Primary data

Figure depicts the satisfaction level in terms of comfort the current product provide. A highest set of respondents with 44% states that current menstrual product is providing a not so excellent level of comfort. About 36% respondents have an average experience of comfort level on current menstrual product. Only 14% of respondents have excellent level of comfort which constitute only a small amount of respondents. Also there are respondents who got poor satisfaction level of comfort with about 6%.

Since majority of the respondents are having a 'not so excellent' level of comfort, the current menstrual product fails to provide the comfort level which is mandatory during the stressful days of menstruation. Also respondents with a 'very good' and an average or moderate experience are adjusting with the current menstrual product. Also respondents who are suffering through poor experience, should change to a comfortable and sustainable product as soon as possible.

3.2.32 Satisfaction with Hygiene of Current Product

Figure 3.16 Satisfaction with Hygiene of Current Product



Source: Primary data

Figure illustrates the satisfaction level in terms of hygiene of current product used by non- users of menstrual cup. The highest amount of respondents with 38% have a only a moderate level of satisfaction in terms of hygiene. The second highest amount of respondents are having 'very good' level of satisfaction with 28%. The third highest number of respondents are having a poor level of satisfaction in terms of hygiene of current menstrual product with about 18%. Only a few respondents had an excellent level of satisfaction in terms of hygiene with only 16%.

This tendency of current menstrual product indicate that lack of hygiene is a major concern as majority of the respondents have only an average level of satisfaction in terms of hygiene. Poor satisfaction level of respondents shows the pathetic service provided by the current menstrual product which can lead to major health issues in the future with persistent usage of the current product.

3.2.33 Awareness of Menstrual Cup

Table 3.16 Awareness of Menstrual Cup

Responses	Frequency	Percentage
Yes	50	100
No	0	0
Total	50	100

Source: Primary data

Table shows whether respondents are aware about a menstrual product called menstrual cup or not. Almost all the respondents which is a universal awareness regarding menstrual cup and none of the respondents are unheard about the menstrual cup which is a modern menstrual product. This indicates that even though respondents are aware about menstrual cup but still not adopting them which is remains as a serious issue. It may be due to their habituation to the current menstrual product and the lack of consciousness of economic and environmental concerns.

3.2.34 Source of Awareness about Menstrual Cup

Table 3.17 Source of Awareness about Menstrual Cup

Responses	Frequency	Percentage
Friends	25	50
Social Media	20	40
Health Workers	3	6
Advertisement	2	4
Total	50	100

Source: Primary data

Table indicates the source of awareness about menstrual cup. Highest number of respondents with 50% say that they got information regarding menstrual cup through their friends. The second highest source of awareness with 40% is social media platforms. The third highest number of respondents with 6% say that the major source of awareness is from health workers. The smallest number of respondents with 4% got to know about menstrual cup is from advertisement.

Here the trend shows that friends and social media had a great influence on spreading information on topics related to menstrual products and menstrual health management are openly discussed by

ignoring social taboos. So beyond advertisement, which is more artificial in nature, respondents prefer to hear from real examples of women who are friends who use the menstrual cup as well as through social media through their sharing experiences regarding the usage of menstrual cup. But even though, excellent reviews are given by the users of menstrual cup, non-users who are still hesitated to use menstrual cup are going through a miserable situation and they have to break the shell of adjusting in current menstrual product which unhygienic and gives discomfort to most of the non-users.

3.2.35 Perception on Menstrual Cup

Table 3.18 Perception on Menstrual Cup

Responses	**Frequency**	**Percentage**
Hygienic	12	24
Unsafe	1	2
Expensive	0	0
Complicated to use	34	68
Not aware enough	3	6
Total	50	100

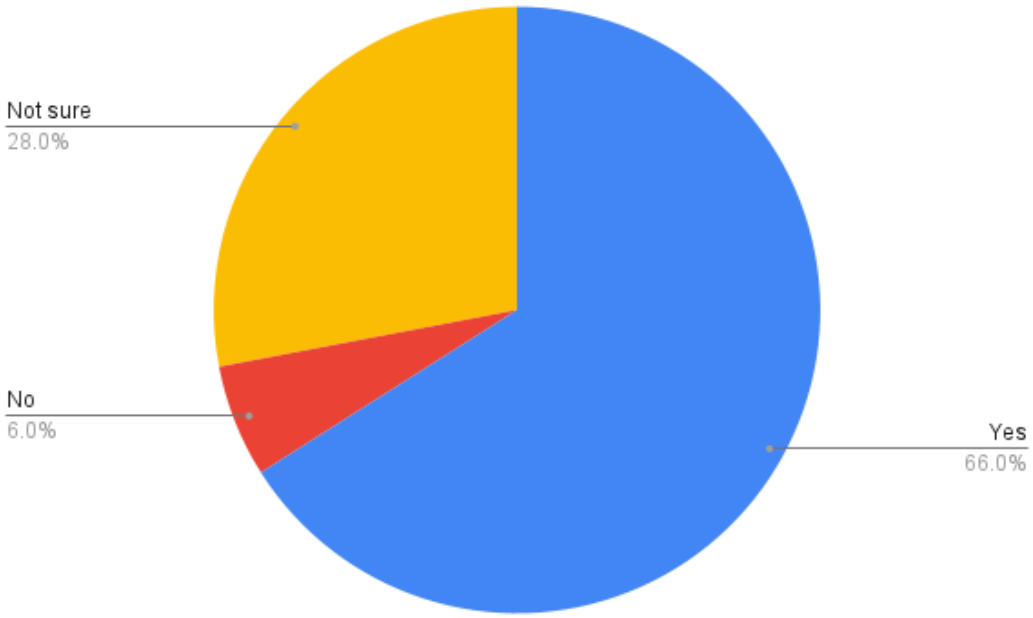
Source: Primary data

Table portrays the perception on menstrual cup by its non- users. Highest number of respondents with 68% perceive menstrual cup as a product which is complicated to use. The second highest number of respondents with 24% do consider it as a hygienic menstrual product which is a positive perception toward menstrual cup. The third highest number of respondents with 6% are not having enough awareness regarding the menstrual cup. Only 2% of respondents with 2% consider it as an unsafe option to use menstrual cup as a menstrual product. None of the respondents consider menstrual cup as an expensive menstrual product again shows a positive sign towards menstrual cup.

This table indicates the majority of the respondents, also the third and fourth highest number of respondents shows the fact that there is a need of proper guidance regarding the importance and usage of menstrual cup and that is why its lacking, cultivate these wrong perceptions regarding menstrual cup which remains in their mind which is needed to be eradicated through apt awareness.

3.2.36 Perceived Economic Advantage of Menstrual Cup

Figure 3.17 Perceived Economic Advantage of Menstrual Cup



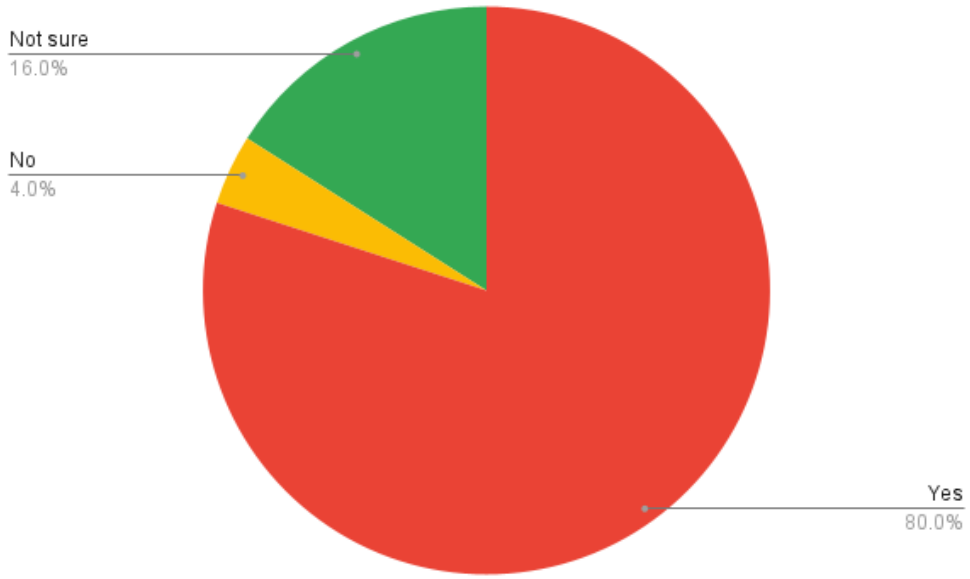
Source: Primary data

Figure illustrates the perceived economic advantage of menstrual cup compared to other menstrual products like pads/ tampons. Highest number of respondents with 66% agree to the economic advantage of menstrual cup compared to other menstrual products. The second highest number of respondents with 28% are not sure about whether there will be an economic advantage while using menstrual cup. Only 6% respondents consider that there will not be any economic advantage regarding the usage of menstrual cup.

This shows that majority of the respondents are sure about the economic savings of menstrual cup but are reluctant to shift towards menstrual cup maybe due to long term conditioning of using disposable product. The 'not sure' and 'no' category respondents are not aware about the economic feasibility and its feature of long term investment.

3.2.37 Perception of Waste Reduction

Figure 3.18 Perception of Waste Reduction



Source: Primary data

Figure illustrates the perception of respondents with respect to waste reduction by menstrual cup. Highest number of respondents with 80% strongly agree to the fact that menstrual cup do reduce waste. The second highest number of respondents with 16% take a neutral stand regarding the waste reduction of menstrual cup. Only 4% of respondents disagree to the fact that menstrual cup reduce waste.

This trend shows that even though majority of the respondents agree about menstrual waste reduction of menstrual cup but also shows the lack of proper awareness regarding the environmental damages that can cause due to long- term usage of disposable menstrual products. That is why still they are not using menstrual cup regardless of the fact about menstrual waste reduction. The other two categories of non-users are not at all having an idea regarding environmental sustainability compared to first category of respondents which shows the urgent need of menstrual education.

3.2.38 Barriers to Menstrual Cup Adoption

Table 3.19 Barriers to Menstrual Cup Adoption

Responses	Frequency	Percentage
Lack of awareness	4	8
Fear of Insertion	41	82
High Cost	1	2
Cultural Reasons	0	0
Hygiene Concerns	4	8
Total	50	100

Source: Primary data

Table shows the barriers to adopt the menstrual cup. The highest number of respondents with 82% are having a fear of insertion as their barrier to adopt menstrual cup. There are two second highest categories with equal proportion of 8%, which is lack of awareness and hygiene concerns regarding menstrual cup. The smallest number of respondents with only 2% are having a concern of high cost of menstrual cup. None of respondents opined cultural reasons as a barrier of menstrual cup adoption.

This clearly indicates that as majority of the respondents are having a fear of insertion, so they should be given proper demonstration classes for teaching and the usage of menstrual cup. The second categories and third category of respondents need awareness classes on the benefits of menstrual cup.

3.2.39 Willingness to the Awareness Programs

Table 3.20 Willingness to the Awareness Programs

Responses	Frequency	Percentage
Yes	22	44
No	12	24
Not sure	16	32
Total	50	100

Source: Primary data

Table depicts the willingness of menstrual cup non- users to attend to the workshops and awareness programs about menstrual cup. Here we can see a mixed response, but highest number of respondents with 44% are willing to take part in the workshops and awareness programs. The second highest category of respondents with 32%, take a neutral stand to participate in awareness programs. Only 24% of respondents, disagree to participate in awareness programs.

This tendency of most of the respondents are willing to participate in awareness programs shows a positive sign of taking initiative by non- users to try the menstrual product. But still, to the respondents who are taking neutral side and disagreeing about classes, Government and health workers should take it as a responsibility by bring the attention of these respondents towards the purpose of the awareness classes.

3.2.40 Influence of Subsidies on Adoption

Table 3.21 Influence of Subsidies on Adoption

Responses	**Frequency**	**Percentage**
Yes	20	40
No	13	26
Not sure	17	34
Total	50	100

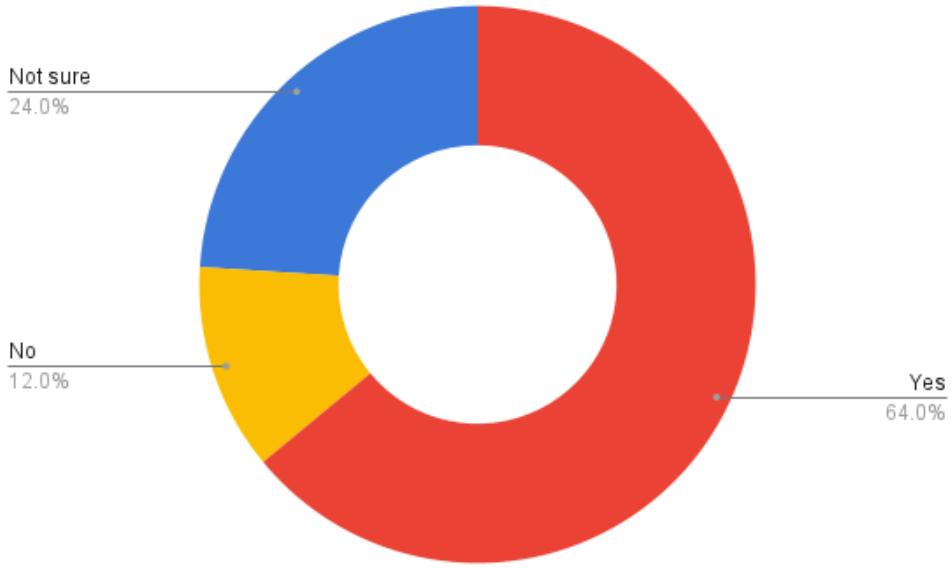
Source: Primary data

Table portrays the influence of Government subsidies for menstrual cup adoption. Highest number of respondents are ready to adopt menstrual cup if they are given ample Government subsidies. The second highest number of respondents are not sure regarding the adoption of menstrual cup when given subsidies on menstrual cup. But still, about 26% respondents are not agreeing that adoption can influence of subsidies on menstrual cup.

Through this data, it depicts that providing subsidies alone cannot suffice the willingness to adopt the menstrual cup by non-users. It is through the answering of why menstrual cups are provided incentives like subsidies will make true sense. Also it also says that it is possible only through Government intervention in menstrual health and menstrual cup adoption can lead to increase in trial and adoption rates.

3.2.41 Future Intention to Try Menstrual Cup

Figure 3.19 Future Intention to Try Menstrual Cup



Source: Primary data

Figure illustrates the future of intention of non- users of menstrual cup to try it. Highest number of respondents with 64%, intent to try menstrual cup in the future. The second highest number of respondents with 24%, are not sure regarding their intention it to use it in the future. The smallest number of respondents with 12%, have no intention to try menstrual cup in the future.

This trend where majority of the respondents having future intention to try menstrual cup in the future indicates a positive sign of increasing the number of users of menstrual cup in future indicating the improving awareness among respondents about sustainability. But to those who are unsure and not having intention to use menstrual cup in the future should be acknowledged in the advantages of menstrual cup regarding its cost- effectiveness and eco- friendliness to make them try it in the future.

3.3 Binary Logistic Regression

It is qualitative response regression models, binary logistic regression model is used as a way to handle a binary dependent variable (where is Y is either 0 or 1). The Logit Model uses the cumulative logistic distribution function to ensure probabilities stay between 0 and 1. It estimates the log- odds of an event occurring. The Logit Equation is:

Li = ln (Pi÷1 - Pi)= β1 + β2Xi+ ui

Here, L is the "logit", the natural log of the odds ratio.

Hypothesis

Ho: There is no significant relationship between monthly expenditure on menstrual products before switching to menstrual cup and the probability of achieving higher annual savings.

H1: There is significant relationship between monthly expenditure on menstrual products before switching to menstrual cup and the probability of achieving higher annual savings.

The estimated logistic regression equation is:

ln (P÷P1−P)=1.1818+0.0328X

Where:

- P = Probability of achieving high annual savings
- X = Monthly expenditure before switching

Table 3.3.1 Logistic Regression Result of Monthly Expenditure Before Switching and After Switching of Menstrual Cup

Variable	Coefficient(β)	Odds Ratio(e^{β})	Interpretation
Intercept	1.1818	---------	Baseline log- odds when expenditure equals zero
Monthly Expenditure	0.0328	1.033	Higher expenditure increases odds of high annual savings

Interpretation of Results

- The coefficient for monthly expenditure before switching is positive(β= 0.0328)
- This depicts that as monthly expenditure before switching increases, the likelihood of achieving higher annual savings after switching also increases.
- The odds ratio of 1.033 shows that for every increase in the expenditure category in terms of unit, the odds of experiencing higher annual savings increase by approximately 3.3% holding other factors constant.

- This direct relationship goes parallel with the economic instinct: individual who spent more on disposable products receive an advantage financially after switching.
- **H1 is accepted:** There is **statistical significance between monthly expenditure before switching to menstrual cup and the probability of achieving higher annual savings.**

3.4 Simple Linear Regression

Simple linear regression model shows the relationship between two variable: dependent variable(Y) and a single independent variable(X). The main aim is to estimate the Population Regression Function (PRF) by finding a straight line that minimizes the sum of squared residuals. The equation for simple linear regression is given below:

$$Yi = \beta 1 + \beta 2Xi + ui$$

Where β1 is the intercept, β2 is the slope coefficient and ui is the stochastic error term representing factors other than X that affecting Y.

Hypothesis

- Ho: There is no significant relationship between perception about menstrual cup by non-users and intention to try it in the future.
- H_1: There is significant relationship between perception of menstrual cup by non-users and intention to try it in the future.

Table 3.4.1 Regression Result Showing Perception about Menstrual Cup and Intention to Try it in the Future

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	2.16	0.194	11.128	6.80823E-15	1.771	2.552	1.771	2.552
Perception	0.22	0.105	2.124	**0.0388**	0.011	0.435	0.011	0.435

Interpretation of Results

- F-value= 4. 51, which computes the overall significance of the regression model.
- The **significant F value is 0.0388** which is less than 5% level of significance(α= 0.05)
- **Since 0.0388 < 0.05, the null hypothesis is rejected.**
- **H_1 is accepted:** There is a **significant association between perception about menstrual cup of non-users and intention to try it in the future.**
- Here, the perception of complicated to use which can be removed by proper guidance, also hygienic factor of menstrual cup which lacks in current menstrual product emerges as an urgent need to adopt menstrual cup.
- Hence, perception plays a crucial role in shaping willingness to switch to menstrual cup in the future.

3.5 Chi- square distribution

It is a sampling distribution used for hypothesis testing, specifically concerning the variance of a normally distributed population.

$$\sum Z^2 \sim \chi^2_{(k)}$$

If $Z_1, Z_2, \ldots\ldots Z_k$ are independent standard normal variables, then the sum of their squares follow a Chi- square distribution with k degrees of freedom(df).

Hypothesis

Ho: There is no significant association between the perception that menstrual cups reduce waste and the willingness to continue using the menstrual cup in the future.

H1: There is a significant association between the perception that menstrual cups reduce waste and the willingness to continue using the menstrual cup in the future.

Table 3.5.1 Association Result Perception of Waste Reduction and Willingness to Continue Using Menstrual Cup

Reduced Waste	Continue= 2	Continue= 3	Grand Total

1	1	0	1
2	0	5	5
3	3	41	44
Grand Total	4	46	50

Test Results

- Chi-Square Value (χ^2) = 12.0183
- Degrees of Freedom (df) = 2
- **p-value = 0.002456**
- Since **p-value (0.002456) < 0.05, we reject the Null Hypothesis (H_0).**
- So there is a **significant association between the perception that menstrual cups reduce waste and the willingness to continue using the menstrual cup in the future.**
- Since, users of menstrual cup have a clear cut perception that menstrual cup reduces the menstrual waste, it reflects their environmental consciousness which makes them continue to use menstrual cup in the future as well.
- The perception of waste reduction acts as a motivating factor for long-term adoption.

CHAPTER – 4

FINDINGS, SUGGESTIONS AND CONCLUSIONS

4.1 FINDINGS OF THE STUDY

The findings are discussed under three sub-sections corresponding to the objectives of the study.

Findings Related to Economic Savings Before and After Switching to Menstrual Cup

- The analysis disseminate that monthly expenditure on menstrual products significantly diminishes after switching to menstrual cups, showing a notable perceived economic savings among menstrual cup users.
- Majority of respondents shows reported a higher initial expenditure for menstrual cup disposable menstrual products like sanitary pads, tampons etc and also are persistently occurring in nature based on monthly basis.
- But after switching to menstrual cup, most menstrual cup users confronted to a sudden decline in persistent menstrual expenses, as menstrual cups can be reused for many years.
- This statistical comparison between the menstruating individuals before and after the switching to menstrual cup depicts that menstrual cup are economically sustainable in the long run, especially for students and people who are belonging to low- income households.
- In spite of a relatively moderate initial expense for menstrual cup, respondents agree that it act as a cost- effective menstrual product within a short period of time.
- Findings suggest that lack of awareness regarding long- term savings remains as a major obstacle among non- users of menstrual cup.

Findings on Perception and Willingness to Switch to Menstrual Cup in Future

- The analysis depicts a strong positive relationship between favorable perceptions on menstrual cups and their willingness to try it in the future.
- Binary logistic regression found a positive perception increases the probability of adopting menstrual cup in the future, keeping other factors constant.
- Fear of insertion, lack of awareness etc are major causes for negative perception among non- users of menstrual cup.
- Peer- influence, social media etc upholds a major role in creating a basic awareness about menstrual cup.
- Respondents who began to use menstrual cup remained as its consistent users showing their intention to continue to use it in the future.

Findings Related to Perception of Waste Reduction and Continued Usage of Menstrual Cup

- The analysis indicates that a majority of respondents believe that menstrual cups significantly reduce menstrual waste, reflecting a profound awareness of environmental sustainability among users.
- Most respondents expressed their willingness to continue using menstrual cups in the future, showing a high level of satisfaction and embracement of the product.
- It is observed that respondents who strongly agree that menstrual cups reduce waste are more likely to continue using them compared to those with lower levels of agreement.
- The findings highlight that environmental consciousness plays an important role in influencing the sustained usage of menstrual cups.
- The perception of menstrual cups as an eco-friendly alternative to disposable sanitary products such as pads and tampons positively affects user commitment.

4.2 SUGGESTIONS OF THE STUDY

Based on the findings of the study, following suggestions are proposed:

- **Awareness programs** are one of the important instrument to create an awareness to propagate the economic and environmental sustainability as of menstrual cup. It should be conducted at schools, colleges, workplaces and community health centers to educate menstruating individuals. They should also stress about the physical, mental, psychological and emotional comfort provided by menstrual cup which encourages the menstruating individuals as a catalyst to try menstrual cup.
- **Subsidies for menstrual cup** should be imposed by Government at Central, State and Local- self governments for students and lower- income groups to mitigate the initial investment burden for menstrual cup.
- **Inclusion of teaching about menstrual cup in school curriculum** can play a vital role in germinating the seeds of economic and environmental sustainability of menstrual cup among students at a very young age can create revolution in the field menstrual health management.
- **ASHA and health workers should be trained** to provide demonstration and counselling to reduce the fear and misinformation regarding menstrual cup, from grass root level itself.

- **Social media platforms and peer- led discussions should be encouraged** to break the cultural taboos and myths on menstrual cup. Matters should be communicated openly and speak about the real- experience regarding the menstrual cup usage and its benefits.
- **Environmental sustainability campaigns** should be organized for creating awareness about the link between menstrual waste and environmental degradation.

4.3 CONCLUSION

Menstrual cup is the best option as a menstrual product in terms of economic and environmental sustainability. It is highly cost- effective investment, environmentally sustainable and apt alternative to disposable menstrual products. The findings explicitly states about the outstanding level of economic savings gained after switching to menstrual cup, a positive perception which leads to shift to menstrual cup and menstrual product choices linking to environmental consciousness to the intention of non- users to try menstrual cup in the future. But lack of awareness, misinformation, social stigma and myths continue as major obstacles which discourages the menstrual cup to create a far reaching impact.

So addressing these barriers is a critical task and this can be done by education, awareness programs, social media platforms, Government policies like subsidies, community engagement program to encourage menstrual cup as a sustainable menstrual management solution which thus ultimately leading economic and environmental sustainability.

BIBLIOGRAPHY

1. Ahuja, S., & Singh, R. (2022). Awareness and barriers toward sustainable menstrual products among women in Punjab. International Journal of Environmental Research and Public Health, 19(4), 215–224.

2. Aujla, K., Sharma, P., & Kaur, R. (2024). Environmental impact of menstrual hygiene products across countries. Journal of Sustainable Development Studies, 16(2), 101–118.

3. Babu, V., & Maliakkal, J. (2023). Market analysis and factors influencing menstrual cup adoption in Kerala. Indian Journal of Economics and Development, 11(3), 45–60.

4. Biology Insights. (n.d.). Who invented the menstrual cup? A look at its history. https://biologyinsights.com/who-invented-the-menstrual-cup-a-look-at-its-history/

5. Citta, A., Verma, S., & Rao, M. (2024). Consumer decision-making and promotion of menstrual cups: A cross-country study. Journal of Consumer Behaviour, 23(1), 67–83.

6. Economic Times. (2023). Winning cup. https://economictimes.indiatimes.com/news/india/winning-cup/articleshow/93241893.cms

7. HLL Lifecare Limited. (2023). Promotion of menstrual cups as sustainable solutions in Kerala.

8. Johns Hopkins Medicine. (n.d.). Menstrual cycle: An overview. https://www.hopkinsmedicine.org/health/wellness-and-prevention/menstrual-cycle-an-overview

9. Kakirde, P., & Sharma, S. (2023). Green marketing and sustainable menstruation practices. Journal of Green Marketing, 8(2), 120–136.

10. Koc, E., Yilmaz, H., & Demir, A. (2023). Environmental awareness and menstrual cup usage: A cross-sectional study. Sustainability, 15(6), 312–329.

11. Medical News Today. (n.d.). Menstrual cycle. https://www.medicalnewstoday.com/articles/10132

12. Moreland OB-GYN. (n.d.). Feminine hygiene products guide. https://www.morelandobgyn.com/blog/feminine-hygiene-products-guide

13. National Institute of Child Health and Human Development. (n.d.). What is menstruation? https://www.nichd.nih.gov/health/topics/menstruation/conditioninfo

14. Onmanorama. (2023, February 3). Menstrual cup awareness: ₹10 crore allocation in Kerala budget. https://www.onmanorama.com/lifestyle/women/2023/02/03/menstrual-cup-awareness-10-crore-kerala-budget.html

15. Orange Healthcare. (n.d.). Menstrual hygiene management: Importance and tips for healthy periods. https://orangehealthcare.in/uncategorized/menstrual-hygiene-management-importance-and-tips-for-healthy-periods/

16. Palaza OB-GYN. (n.d.). Menstrual cups: Different sizes, shapes, and colors. https://palazaobg.com/menstrual-cups-different-sizes-shapes-and-colors/

17. Patel, R., Singh, A., & Thomas, L. (2023). Experiences and challenges of menstrual cup users in India. Indian Journal of Public Health Research & Development, 14(2), 88–102.

18. Peberdy, E., Jones, A., & Green, D. (2019). Public awareness of environmental impact of menstrual products in the UK. Journal of Environmental Health, 81(9), 32–38.

19. S. K., Nair, P., & George, M. (2024). Menstrual hygiene product choices and period poverty among young women in Kerala. Kerala Economic Review, 29(1), 150–168.

20. Sharma, R., & Rawat, P. (2023). Menstrual cups and environmental sustainability. Journal of Environmental Economics, 12(4), 200–218.

21. Soy, A., Menon, S., & Das, R. (2024). Sustainable vs. non-sustainable menstrual products: A behavioral economics perspective. Journal of Behavioral Economics, 10(2), 55–73.

22. The Better India. (2019). Kerala village adopts menstrual cups to reduce waste. https://www.thebetterindia.com/208745/kerala-muhamma-village-women-sanitary-pads-harmful-menstrual-cup-use-environment-god94/

23. The New Indian Express. (2023, January 29). Palakuzha launches menstrual cup initiative in Kerala. https://www.newindianexpress.com/states/kerala/2023/jan/29/palakuzha-launches-menstrual-cup-initiative-in-kerala-2542311.html

24. Thukral, P., Mehta, K., & Roy, S. (2025). Motivations behind adoption of menstrual cups in India. Indian Journal of Social Research, 66(1), 90–110.

25. Times of India. (2022). Kerala distributes one lakh menstrual cups in 24 hours. https://timesofindia.indiatimes.com/city/kochi/kerala-one-lakh-menstrual-cups-distributed-in-24-hours/articleshow/93915474.cms

26. Times of India. (2024). HLL promotes menstrual cups as sustainable solution in Kerala. https://timesofindia.indiatimes.com/city/thiruvananthapuram/hll-promotes-menstrual-cups-as-sustainable-solution-in-kerala/articleshow/114917340.cms

27. Times of India. (2025). Government to expand menstrual cup distribution project in Kerala. https://timesofindia.indiatimes.com/city/kochi/govt-to-expand-menstrual-cup-distribution-project-in-kerala/articleshow/121385272.cms

28. Varghese, L., Joseph, A., & Mathew, T. (2023). Impact of awareness programs on menstrual cup adoption: Thinkal project study. Journal of Rural Development Studies, 18(3), 210–228.

29. Weir, K. (2015). Cost, environmental and health comparison of menstrual products. Environmental Research Letters, 10(8), 084001–084010.

30. Wikipedia contributors. (n.d.). Leona Chalmers. https://en.wikipedia.org/wiki/Leona_Chalmers

31. Wikipedia contributors. (n.d.). Menstrual cup. https://en.wikipedia.org/wiki/Menstrual_cup

32. WinWin Healthcare. (n.d.). Menstrual cups adoption in India waste study. https://winwinhealthcare.com/industry/menstrual-cups-adoption-india-waste-study-11765871180792

33. WinWin India. (n.d.). Menstrual cups: The future of eco-friendly and affordable period solutions. https://winwinindia.org/blog-post/menstrual-cups-the-future-of-eco-friendly-and-affordable-period-solutions

34. WION News. (2019, June 18). Kerala civic body distributes menstrual cups for free. https://www.wionews.com/good-news/2019/jun/18/a-kerala-civic-body-is-distributing-5000-menstrual-cups-for-free-heres-why-1991887.html

QUESTIONNAIRE

I Questionnaire for those who use menstrual cup as their menstrual product

1)Name

2)Age

a. Less than 18 years

b.18 – 25 years

c.25 - 35 years

d.Above 35 years

3)Employment Status

a. Student

b. Employed

c. Home maker

d. Others

4)If employed, Monthly Income:-

a. Less than 10, 000

b. 10,000- 25, 000

c. 25-000- 50, 000

d. Above 50, 000

5)Marital Status

a. Married

b. Unmarried

6) How long have you been using a menstrual cup?

a. Less than 6 months

b. 6 months- 12 months

c. 1- 3years

d. Above 3 years

7)What motivated you to start using a menstrual cup?

a. Cost Savings

b. Comfort

c. Hygiene

d. Environmental Concerns

e. Peer Influence

8)How much did you spend on purchasing your menstrual cup?

a. Less than Rs100

b. Rs100- Rs200

c. Rs200- Rs400

d. Above Rs400

9)How many years do you expect your cup to last?

a. Less than 2 years

b. 2- 4 years

c. 5- 7 years

d. Above 7 years

10) What was your monthly expenditure on menstrual products before switching?

a. Less than Rs100

b. Rs100 – Rs200

c. Rs200- Rs400

d. Above Rs400

11)What is your current average monthly expenditure after switching?

a. Less than Rs100

b. Rs100- Rs200

c. Rs200- Rs400

d. Above Rs400

12)Do you feel you have saved money after switching to a menstrual cup?

a. Yes

b. No

13)Approximately how much do you save per year compared to earlier?

a. Less than Rs100

b. Rs100- Rs200

c. Rs200- Rs400

d. Above Rs400

14)Do you consider the menstrual cup a cost-effective investment?

a. Yes

b. No

c. Maybe

15)Has using the cup reduced your financial stress related to menstrual needs?

a. Yes

b. No

16)How satisfied are you with the menstrual cup in terms of comfort?

a. Very Poor

b. Poor

c. Moderate

d. Very Good

e. Excellent

17) How satisfied are you with the menstrual cup in terms of hygiene?

a. Very Poor

b. Poor

c. Moderate

d. Very Good

e. Excellent

18) How satisfied are you with cleaning of menstrual cup?

a. Very Poor

b. Poor

c. Moderate

d. Very Good

e. Excellent

19) Do you feel menstrual cups reduce menstrual waste significantly?

a. Yes

b. No

c. Maybe

20) Do you encourage peers/friends to adopt menstrual cups?

a. Yes

b. No

21) What barriers did you initially face while using the cup?

a. Insertion Difficulty

b. Leakage Concerns

c. Sterilization

d. Others

22) Would you continue using the menstrual cup in the future?

a. Definitely

b. Maybe

c. Not at all

II Questionnaire for those whose are not using menstrual cup as their menstrual product

1) **Name**

2) **Age**

a. Less than 18 years

b. 18- 25 years

c. 25- 35 years

d. Above 35 years

3) **Employment**

a. Student

b. Employed

c. Homemaker

d. Other

4) **If employed, Monthly Income**

a. Less than 10, 000

b. 10, 000- 25, 000

c. 25, 000- 50, 000

d. Above 50, 000

5) Marital Status

a. Married

b. Unmarried

6) **Which menstrual product do you primarily use?**

a. Sanitary Pads

b. Tampons

c. Cloth

d. Others

7)On average, how many units of your current product do you use per menstrual cycle per month?

8) Approximate monthly expenditure on menstrual products

a. Less than Rs100

b. Rs100- Rs200

c. Rs200- Rs400

d. Above Rs400

9) Do you find your current product financially burdensome?

a. Yes

b. No

10) How satisfied are you with your current product in terms of comfort?

a. Very Poor

b. Poor

c. Moderate

d. Very Good

e. Excellent

11) How satisfied are you with your current product in terms of hygiene?

a. Very Poor

b. Poor

c. Moderate

d. Very Good

e. Excellent

12) Have you ever heard of menstrual cup?

a. Yes

b. No

13) If yes, what is your main source of awareness?

a. Friend

b. Social Media

c. Health Workers

d. Advertisement

e. Others

14) What are your perceptions about menstrual cups?

a. Hygienic

b. Unsafe

c. Expensive

d. Complicated to Use

e. Not aware much

1) Do you think menstrual cups are more economical than pads/tampons in the long run?

a. Yes

b. No

c. Not sure

17)Do you think menstrual cups reduce menstrual waste compared to other products?

a. Yes

b. No

c. Not sure

18) What prevents you from using menstrual cups?

a. Lack of awareness

b. Fear of insertion

c. High cost

d. Cultural Reasons

e. Hygienic Concerns

19) Would you be willing to attend a workshop/demonstration about menstrual cups?

a. Yes

b. No

c. Not sure

20) Do you plan to try a menstrual cup in the future?

a. Yes

b. No

c. Not sure