PRE-AND POST-INTERVENTION EVALUATION OF MENSTRUAL HYGIENE PRACTICES AND NUTRITIONAL AWARENESS AMONG ADOLESCENT GIRLS OF GOVT SCHOOL, SHAMSHABAD"

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Abstract: Adolescence is a critical period of growth, with menarche marking the start of reproductive Life. Menstrual hygiene is often affected by misconceptions, cultural taboos, limited guidance,And poor school facilities, impacting girls' health, self-esteem, and academic participation.Nutrition is equally important, as inadequate intake can cause anemia and fatigue, especiallyDuring menstruation. Integrating hygiene and nutrition education offers a holistic approach Improving adolescent wellbeing. The purpose of this study is to assess and improve menstrual hygiene practices and nutritional awareness among adolescent girls of a government school through an educational intervention, and to determine its impact on their knowledge, practices, and overall wellbeing

IndexTerms
Adolescent girls; Menstrual hygiene; Nutritional awareness; Educational intervention; Anemia awareness; Iron-rich foods; School-based intervention

Introduction

Adolescence is the most crucial period of human development when there is fast physical,psychological, and social changes. One of the most crucial biological changes in girls ismenarche or the onset of menstruation and marks the start of the reproductive life. Menstruation is a physiological process that is, nevertheless, full of misconceptions, cultural taboos, and bad discussions. Most of teenage females lacks sufficient access to accurate information on the hygiene surrounding menstruation and this directly influences their capacity to safely,hygienically and with confidence manage this routine physiological process.

Social norms, family guidance, exposure to education, availability of proper facilities, and products influence menstrual hygiene practices among a group of adolescent girls. In govt schools, the issues that are posed such as poor sanitation, lack of privacy, sporadic access to sanitary supplies, and lack of knowledge on menstrual health issues are also a threat to unsafe behaviour and low level of awareness. These problems affect the self-esteem, academic participation, and wellbeing of girls.

Health awareness as well as nutrition is also important to the adolescent health especially when they are having their menstrual period. Correct nutrition promotes the physical development, hormonal and cognitive and general health. On the other hand, unhealthy eating may result in deficiency of nutrients, fatigue and anemia syndromes, which are further exacerbated by menstrual bleeding. By combining menstrual hygiene education and education on nutrition, the approach is holistic in ensuring adolescent health and enabling girls to lead healthy lives and practices throughout their lives. Because students of Govt School, Shamshabad tend to have little exposure to such guidance, an examination of these factors can be used to create effective educational interventions that would enhance menstrual hygiene practices, dietary knowledge, and overall health.

1.1 Menstruation

Menstruation is a natural biological process in females which is natural and cyclic and characterized by shedding of the uterine lining (endometrium) monthly in the event of pregnancy not occurring. It is controlled by estrogen and progesterone hormones and typically starts in the age group of ten to fifteen age that goes till menopause. Menstrual cycle is a twenty- 2eight day average cycle that comprises of menstrual, ovulatory, follicular, and luteal phases, which are important in reproduction.

Menstruation is a measure of reproductive and hormonal health and changes in flow, cycle time, or symptomatology may be a sign of underlying disorders. The most common physical symptoms are cramps of the abdomen, bloating, fatigue, and mood swings. Education about menstruation will help to ensure correct hygiene, reproductive education, and empowerment of teenage girls and women. Although menstruation is a normal biological process, it is not well viewed because of the myths, taboos, as well as lack of proper education. The ignorance leads to fear, embarrassment, and non-hygienic behavior that consequently Influence the confidence and the health of girls. Good menstrual hygiene is essential as it helps to avoid infection and protect reproductive health, provides physical comfort and mental health (WHO,2023).

1.2 Importance of Menstrual Hygiene Practices

Menstrual hygiene is one of the essential subjects of nagging issues that are very affecting adolescent girls in their general health and well-being. It refers to the proper and secure menstruation methods which are medically recommended such as use of clean and safe absorbents, frequent replacement of pads or cloths, good hygiene of genitals through washing and bathing, and proper disposal of used sanitary pads. Menstrual hygiene is primarily a physical health issue, but it also has a direct impact on psychological health, confidence in the community, and participation in studies (WHO, 2023).

Girls who practice good menstrual hygiene during adolescence face reduced risks of infections and skin problems. The combination of using unclean cloths and infrequent pad changes and inadequate genital area cleaning creates an ideal environment for bacterial and fungal growth which leads to persistent health issues (Kumari et al. 2023 Girls who practice menstrual hygiene without discomfort or shame can maintain their regular activities because they feel confident. The practice of menstrual hygiene helps teenage girls develop self-assurance which allows them to participate fully in their schoolwork and sports activities and social events. Girls who practice good hygiene during their menstrual cycle stay in school because they feel less pain and are less concerned about clothing stains (Bharadwaj et al., 2022).

31.3 Poor Menstrual Hygiene Practices Increase the Risk of Infections practice of poor menstrual hygiene makes adolescent girls more exposed to develop infections including urinary tract infections (UTIs) and reproductive tract infections (RTIs) and skin infections. The combination of menstrual blood accumulation with bacterial growth and unhygienic management of absorbent creates conditions for infection development.

1.3.1 Use of Unclean or Improper Absorbents

The majority of adolescent girls from low-income areas depend on using cloths and inferior uality sanitary pads. The absence of proper absorbent cleaning and drying and insufficient pad replacement creates conditions for bacterial and fungal multiplication. The presence Staphylococcus aureus and Escherichia coli and Candida albicans pathogens thrives on unclean and damp cloths which leads to infections when these materials touch the vulva and vaginal area (Rani et al., 2021)

1.3.2 Infrequent Changing of Pads or Cloths

The extended use of the same pad or cloth beyond six to eight hours creates conditions for bacterial growth because it maintains moisture and generates heat and skin friction which amages the genital skin's natural protective layer. bacterial colonization with infections becomes more likely because of the following reasons: Urinary tract infections: The bacterial migration path from the perineal area to the urethra becomes possible. Vaginal infections: The disruption of vaginal flora leads to yeast infections Skin irritation and rashes: The combination of moisture and friction leads to dermatitis which causes skin irritation and itching and creates open paths for pathogens to enter (Bharadwaj et al., 2022).

1.3.3 Poor Genital Hygiene

Girls who skip genital area washing during their menstrual period face elevated chances of developing infections. The practice of avoiding bathing stems from cultural beliefs which result in menstrual blood and

sweat buildup. The unclean environment creates conditions for bacterial multiplication which results in Foul-smelling discharge, Vulvovaginitis, Persistent infections can lead to pelvic inflammatory disease as a secondary complication (Kumari et al., 2023

41.3.4 Unsafe Disposal of Menstrual Waste

The practice of throwing away used sanitary products by either leaving them exposed or putting them down the toilet creates two major problems for environmental cleanliness and bacterial pathogen exposure. The practice of touching used materials without hand washing creates a path for bacterial transmission to the genital area which raises infection probabilities (Swaroop et al., 2023).

1.3.4 Lack of Awareness and Knowledge

Girls who are unaware of the facts about menstrual hygiene are unlikely to adopt safe practices on the timely changing of absorbents, washing hands before and after handling pads, and leaning the genital area. This ignorance is one of the main contributors to unhealthy practices and susceptibility to infection.

1.4 Role of Nutrition in Menstrual Health

Nutrition is fundamental to regulation of the menstrual cycle, maintenance of hormonal quilibrium, support of the immune system, prevention of fatigue and optimization of academic performance. The adverse effects on menstrual symptoms such as pain from cramps; extreme tiredness; dizziness; irregularity of cycle (delayed) that occur when an individual skips meal or ollows certain dietary restrictions due to culture during their menstrual period are often exacerbated by poor eating habits (Garg et al., 2023). When individuals consume a nutritious meal, they are able to regulate and maintain their energy levels, help in the formation of healthily functioning blood, and stabilize their moods.

A well-balanced diet at this stage will help in hormonal development, regularizing menstrual cycle as well as prevent complications like that caused by anemia. Nutrients including iron, folate, vitamin B12, vitamin C, calcium, healthy fats and protein contribute to reproductive health. Healthy nutrition reduces the pain of menstruation, immune defence and the functioning of the brain as well as general well-being.

Good eating habits also dispel myths around menstruation such that one cannot have healthy foods like curd, green leafy vegetables and fruits- which keeps girls away from much-needed nutrition at the time when they need it most.

51.4.1 Role of Iron-Rich Foods

Iron is essential in the production of hemoglobin and preventing anemia. Foods like leafy green vegetables, jaggery, dates, ragi, meat, sprouts or beans help replace the iron lost in menstruation and increase your energy levels (NIH, 2022)

1.4.2 Role of Folic Acid

Folic acid is involved in the production of red blood cells and helps maintain reproductive health. Legumes, nuts, and fortified grains fatigue and anemia can be avoided by their rich content of Folic (Kaur et al. 2024).

1.4.3 Role of Vitamin C

Vitamin C Better Iron absorption, stronger immunity, and less

Inflammation. Eating of citrus fruits, amla, guava and tomatoes are best for menstrual health and vitality (Chan et al)

1.4.4 Role of Hydration

Sufficient water intake calms period cramps, bloating and tiredness by regulating fluid and electrolyte balance throughout the menstrual cycle

1.4.5 Role of Protein and Healthy Fats

Proteins Improves tissue healing processes and production of hormone, while lipids manage the formation of sex hormones. diet with nuts, seeds, milk, eggs, and pulses promotes balanced metabolic and menstrual well-being (Jain et al., 2023)

1.5 Anemia and Its Relationship with Menstruation

Anemia is a common health problem seen among adolescent girls, Anemia is a common health problem seen among adolescent girls, iron-deficiency anemia, which happens when the body lacks enough iron for sufficient haemoglobin, vital for blood's oxygen delivery, causing reduced physical ability, mental sharpness, and immune function, with monthly periods being a main reason for this iron depletion in adolescence. During each cycle, females shed a significant volume of blood; the quantity varies with the flow's intensity. When

bleeding is 6profuse, iron depletion rises substantially. Should these losses remain unaddressed via diet or supplements, females' susceptibility to anemia increases steadily over time (Kaur et al., 2024).
Incomplete nutrition during adolescence Increases the risk. Cultural practices, dietary restrictions, or lack of knowledge often prevent girls from consuming iron-rich foods, folate, vitamin B12, and vitamin C which slows down haemoglobin production, which leads to low red blood cell counts, poor oxygen transport, Tiredness, paleness, and cognitive issues.
1.6 Role of Iron-Rich Foods in Preventing Anemia During Menstruation Iron rich foods help prevent anaemia and keep monthly courses in order. Eating green vegetables, jaggery, dates, ragi, lentils, beans, eggs, fish, meat, and fortified cereals can make you meet your iron losses during menstruation. Regularly consuming this will form haemoglobin and provide energy to you.
Eating foods that have lots of vitamin C, like oranges, guava, amla and tomato helps in the absorption of iron because of the organic acid, which improves the dietary iron bioavailability.
Eating foods like nuts, dairy and grains can get your body the vitamin B12 and folic acid it needs to make blood. It helps to prevent anemia and keep menstrual flow at regular intervals (Kaur et al., 2024).
A diet that contains protein and healthy fats basically nuts, seeds, milk, eggs, pulses, and omega-3 fatty acids help in the balancing of hormones, repair of body tissue and metabolic activities for regular with minimum complications.
1.7 Impact of Education on Menstrual Health and Anemia
Education plays a significant and major role in the menstrual health of adolescent girls and has the power to completely change the situation, particularly in the kind of communities where there is a prevalence of cultural taboos and misinformation. Girls who are given an education relating to menstruation, gain a better understanding of the biological process, hygiene requirements, and the need to keep themselves clean during their period. As a result, the first periods become less scary since the girls will not experience feelings of fear, shame, and confusion and in addition, they will be practicing the safe and correct use of absorbents such
7as using clean absorbents, changing at the proper times, and ensuring that disposal is done in the right way thus making menarche a positive experience.
The use of safe menstrual hygiene practices is the primary cause of the risk reduction of reproductive tract infections that, if allowed to continue without appropriate treatment, may lead to poor health and make the person more vulnerable to anemia over time.Moreover, education is important in preventing anemia by providing knowledge about nutrition and the body's need for iron during adolescence. Girls through school lessons, and awareness sessions learns about iron-rich foods, dietary habits and the need for eating vitamin C rich foods that support iron absorption. They also learn the outcome of heavy menstrual bleeding, poor diet, or untreated infections, which in turn empowers them to ask for medical support at the right time.
The impact of these interventions is increased by educational measures like health education workshops, sessions, and pre- and post-awareness programs. Such interventions offer a well- organized setting where girls get to learn, clarify their doubts, rectify their wrong notions, and habitually follow the healthier behaviors. After going through such sessions, teenagers are more inclined to make regular use of sanitary pads, keep their genital areas clean, enhance their dietary habits and follow iron supplementation instructions if given. The main goal of this research is to evaluate and improve menstrual hygiene practices and nutritional awareness of adolescent girls attending a Government School in Shamshabad. It goes deep into recognizing the deficiency of knowledge, especially in terms of personal hygiene and dietary habits with a focus on iron-rich food consumption to prevent anemia. This research also wants to acquaint such adolescents with proper management of menstruation, following hygiene practices, and taking healthy nutritional decisions. As a result, the program delivers, through planned educational which provides information, demonstrations and guidance. It aims at girls' empowerment with the knowledge and skills required to keep menstrual health in a confident way. The ultimate objective is to initiate awareness, were healthy habits to be practiced naturally, and be a source of physical, mental, and social well-being among adolescent girls in this community.

Methodology:

A research proposal titled "Pre-and Post-Intervention Evaluation of Menstrual hygiene practices and Nutritional Awareness Among Adolescent Girls of Govt school ,Shamshabad"was presented to the ethical committee involving all the members of the department. Valuable suggestions provided by the committee members were incorporated into the study design, ensuring a comprehensive and ethically sound research approach The data was collected from Govt school, Shamshabad Hyderabad city. Permission was taken from

the school authorities to collect information from adolescent girls by distributing the questionnaires
Study period: 90 days
Study design: This research is a A descriptive cross-sectional KAP study with an embedded quasi-experimental pre-post intervention design. Conducted among adolescent girls of Govt school, Shamshabad, Hyderabad
Study population: The study involved adolescent girls aged 12 to 16 years
Sample size
Population size= n
(Z) = 95%
(E) = 8%
n=Z2x p (1-p) /E2
n = (1.96)2 x 0.5 x (1- 0.5) / (0.08)2
n= 3.8416 x 0.25 / 0.0064 = 150
sample size is 150

Sample method:
This study was conducted in two phases
Phase I – Pre-Intervention Survey:
All 150 adolescent girls were included to assess baseline menstrual hygiene practices nutritional awareness. Convenience sampling was used as participants were selected based on availability and willingness to take part

Phase II – Post-Intervention Evaluation:
30 Adolescent girls with low knowledge were selected using purposive sampling These participants' responses after the educational session were compared with their pre-intervention scores to determine the effectiveness of the educational session.
Inclusion criteria:
Adolescent girls aged 12-16 years
Participants willing to take a part of study and educational intervention
Exclusion criteria:
Adolescents' girls with known medical conditions affecting menstruation or diet
Method of data collection:
1.Structured pre-intervention Questionnaire:
A structured questionnaire was given to 150 adolescent girls which consisted of
Demographic profile
Menstruation knowledge
Menstrual hygiene practices (Types of absorbent used, frequency of changing, disposal methods)
Nutrition related knowledge
2.Educational Intervention:
Awareness session on menstrual hygiene and nutrition was conducted to all 150 participants. The session included discussions, visual aids, demonstrations
3.Post-Intervention Questionnaire:
After 12 days of awareness sessions, Data was collected with a post-intervention questionnaire which was given to 30 participants with low baseline knowledge to assess improvements in menstrual hygiene practices and nutritional awareness.
Statistical analysis:
The data collected was compiled, organized, tabulated and statistically analysed using MS Excel and SPSS software (statistical package for the social sciences). The data was analysed using Chi square depending on the nature of the variable
For the quantitative data like age the range, mean, standard deviation and degree of freedom was calculated.
For n values: x1, x2, …, xn
$\bar{x}$ / n
Maximum value in the dataset is the largest number; it is denoted as Max and Minimum value is the smallest

number in the dataset and is denoted by Min.

$s = \sqrt{\sum(x_i - \bar{x})^2 / n-1}$

Chi-Square test:

In statistics chi square test is used to test a hypothesis against a data set of absorbed components it assesses weather the differences that arise between the two are genuine are merely result of random error when there is a categorical variable from a random sample, the Chi- test can be applied

It is a statistical test used to find out the association between two categorical variables. such as pre-post intervention knowledge levels on menstrual hygiene practises, nutritional awareness

$x^2 = \sum (O-E)^2 / E$

where, O = observed value

E = expected value

Here, the test was used to access associations between

The Chi-Square test was determined in terms of:

• χ^2 value-to measure the difference between expected frequencies and observed o.

• p-value- to determine the observed association is significant.

• Degree of freedom (*df*) usually refers to the values in the dataset can vary freely while having a fixed mean.

$df = n-1$

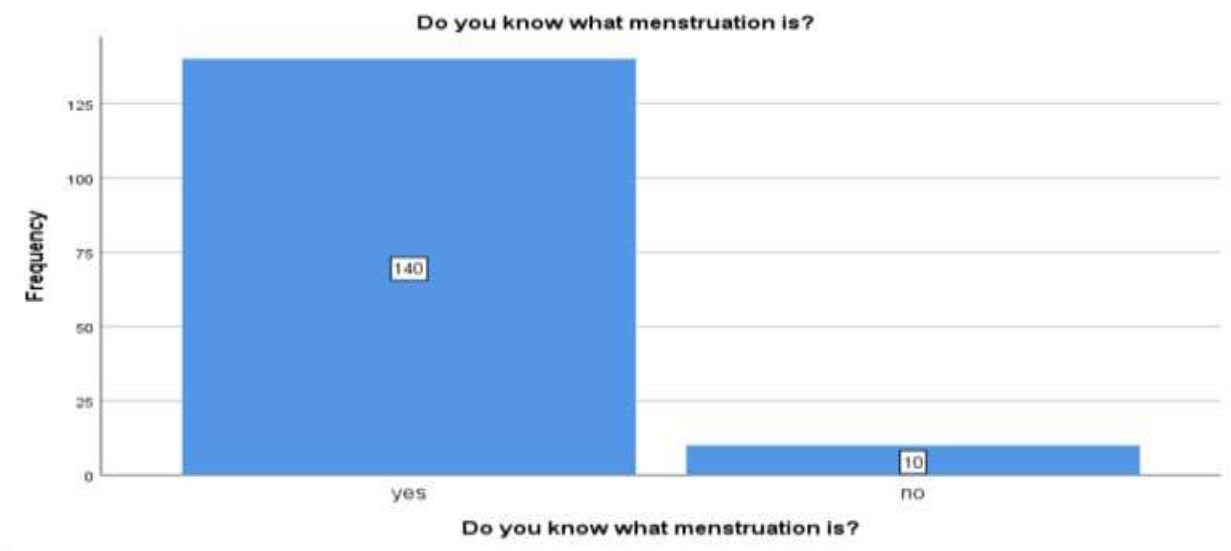
N = number of observations

RESULTS AND DISCUSSION:

Table 1:Descriptive analysis of knowledge of menstruation in the study population (N=150)

Do you know what menstruation is?	Frequency	Percent
Yes	140	93.3
No	10	6.7
Total	150	100.0

Figure 1:: Bar graph shows knowledge of nutrition in the study population

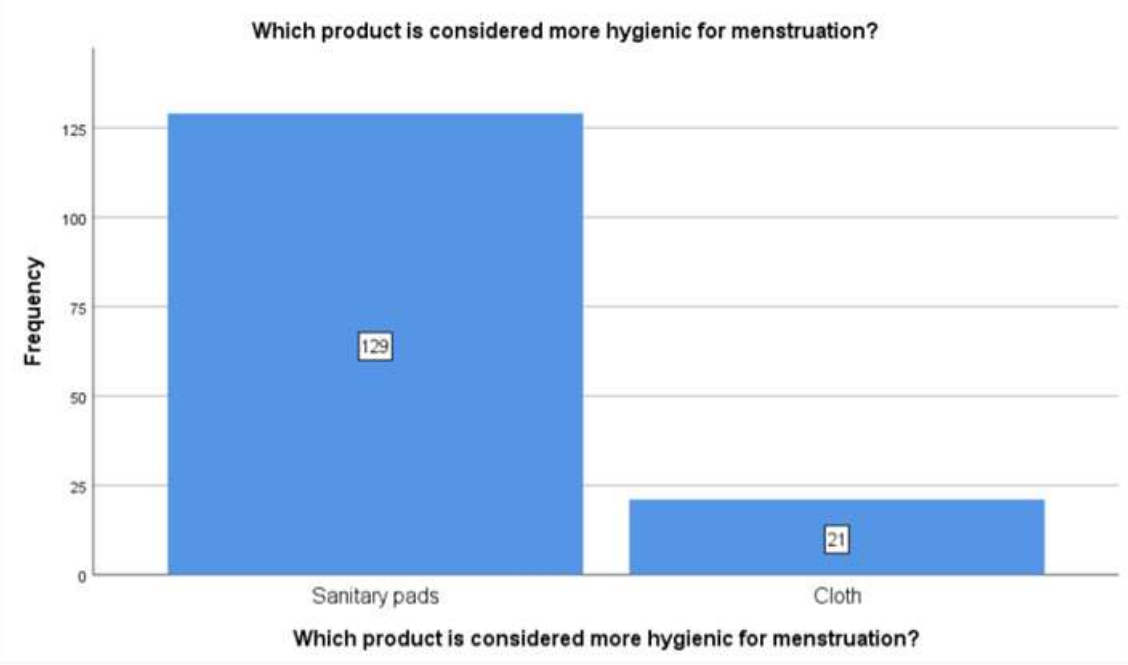


The Descriptive analysis from Table3 shows 93.3% of participants were aware of what menstruation is 6.7% of participants were not aware

Table 7: Descriptive Analysis of knowledge About Hygienic Menstrual product in the study population (N=150)

Which product is considered more hygienic for menstruation?	Frequency	Percent
Sanitary pads	129	86.0
Cloth	21	14.0
Total	150	100.0

Figure 7: Bar graph shows knowledge of Hygienic Menstrual product in the study population (N =150)



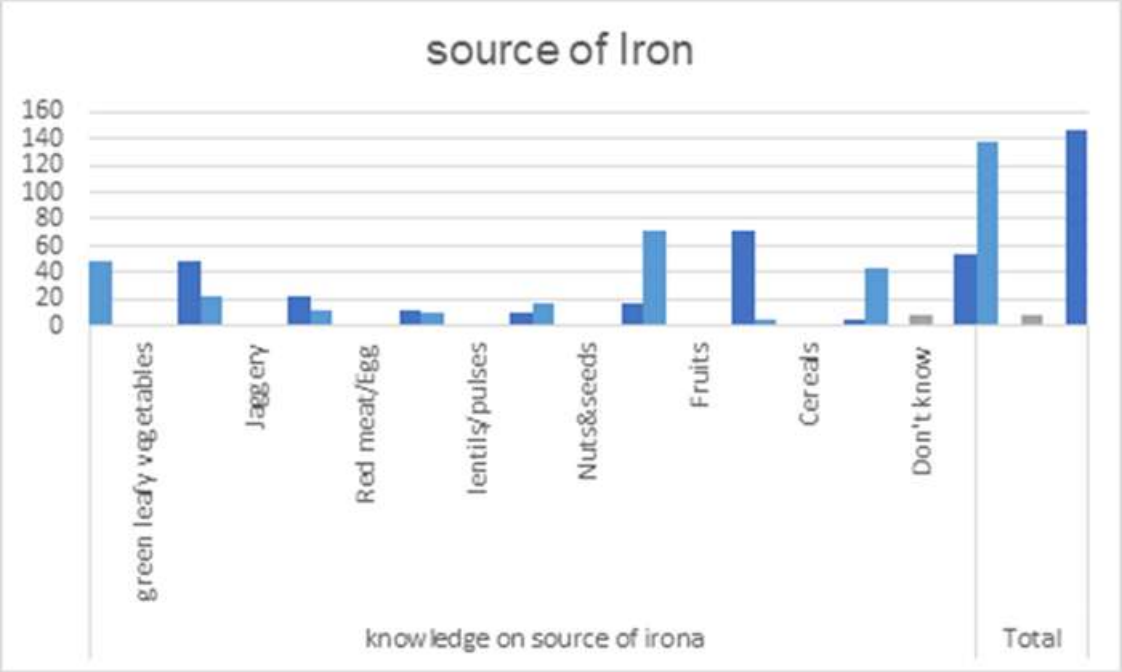
Descriptive Analysis from Table 7 shows 86% Considered Sanitary pads more hygienic than cloth and 21% considered cloth is safe

Table 8:Descriptive Analysis of knowledge on sources of Iron in the study population (N=150)

Which of the following are sources of Iron	**knowledge on sources of Iron**								
	green leafy vegetables	**Jaggery**	**Red meat/Egg**	**lentils/pulses**	**Nuts&seeds**	**Fruits**	**Cereals**	**Don't know**	Total
yes	48	23	12	10	17	71	5	44	138

	34.8%	16.7%	8.7%	7.2%	12.3%	51.4 %	3.6%	31.9%	
No	0	0	0	0	0	0	0	9	9
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0 %	
Total	48	23	12	10	17	71	5	53	147

Figure 8:Bar shows knowledge on sources of Iron in the study population (N=150)

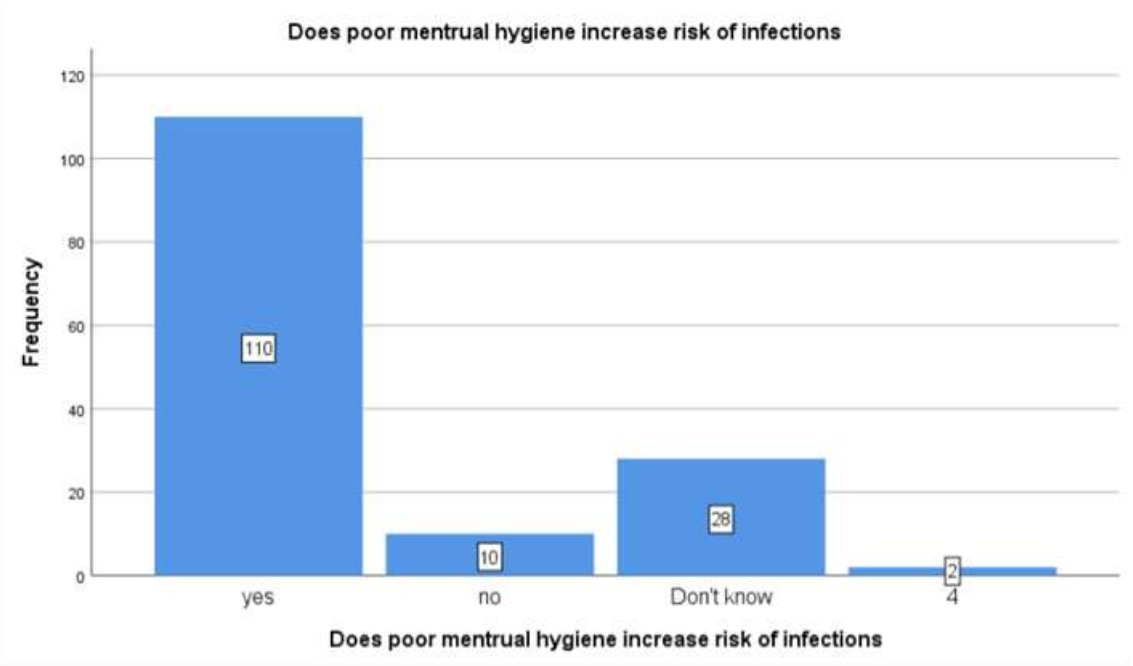


The descriptive analysis from Table 8 shows 51.4% of participants have knowledge about fruits as a source of iron and 34.8% pf participants green leafy vegetables 16.7% participants know jaggery as a source of Iron ,8.7% of participants know Red meat and egg as source of Iron 7.2% of participants know lentils & pulses as a source of Iron , 12.3% of participants know nuts and seeds as a source of Iron only few of participants 3.6% know cereals as a source of Iron and 31.9% of participants Don't know about the sources of Iron

Table 10: Descriptive Analysis of knowledge About Increased Risk of Infection due to poor Menstrual hygiene in the study population (N=150)

Does poor menstrual hygiene increase risk of infections	Frequency	Percent
yes	110	73.3
no	10	6.7
Don't know	28	18.7
4	2	1.3
Total	150	100.0

Figure 10: Bar graph shows knowledge about the Infections risk due to poor Menstrual hygiene in the study population (N=150)

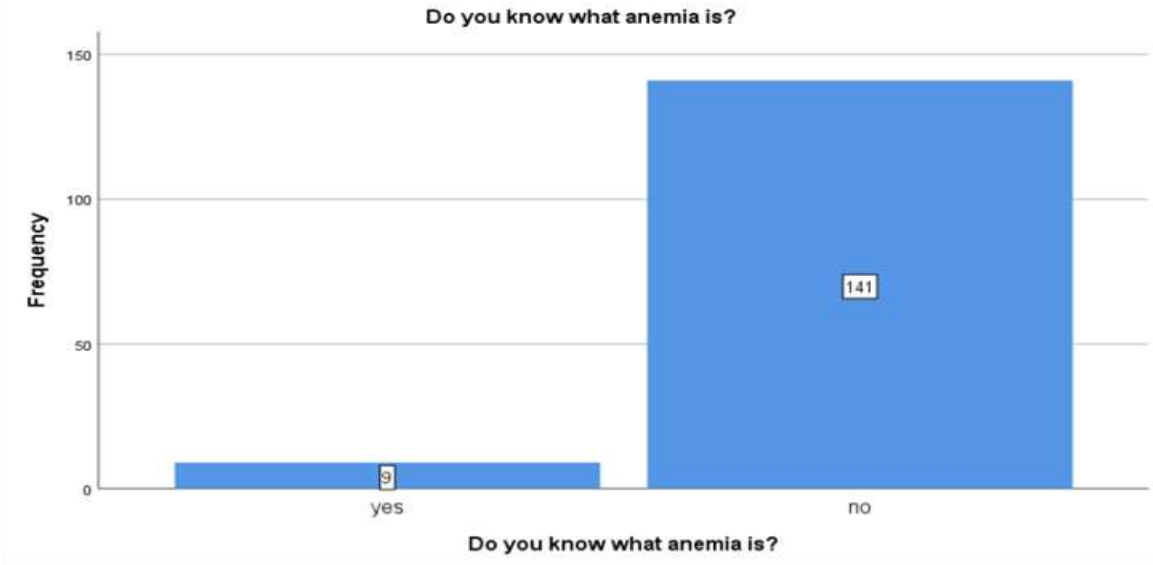


The descriptive analysis from Table shows that 73.3% of participants understood that poor menstrual hygiene increases the Risk of Infections,6.7% did not and 18.7% were unsure

Table 11: Descriptive Analysis of Knowledge about Anemia in the study population (N=150)

Do you know what anemia is?	Frequency	Percent
yes	9	6.0
no	141	94.0
Total	150	100.0

Figure 11: Bar graph shows knowledge of anemia in the study population (N=150)

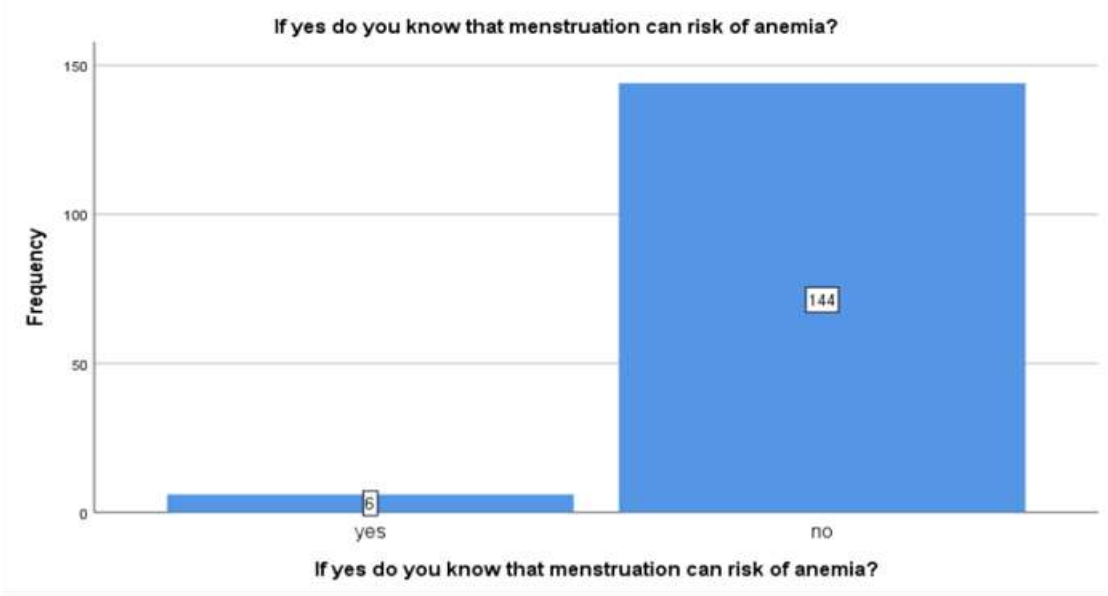


The descriptive Analysis from Table 11 shows only 6% of participants knew what Anemia is and 94% of participants did not. This indicates poor knowledge about anemia among the Adolescent girls in the study population

Table 12: Descriptive analysis of knowledge That Menstruation can Increase Risk if Anemia in the study population (N=150)

If yes, do you know that menstruation can risk of anemia?	Frequency	Percent
yes	6	4.0
no	144	96.0
Total	150	100.0

Figure 12: Bar graph shows knowledge that menstruation can Increase anemia risk in the study population (N=150)

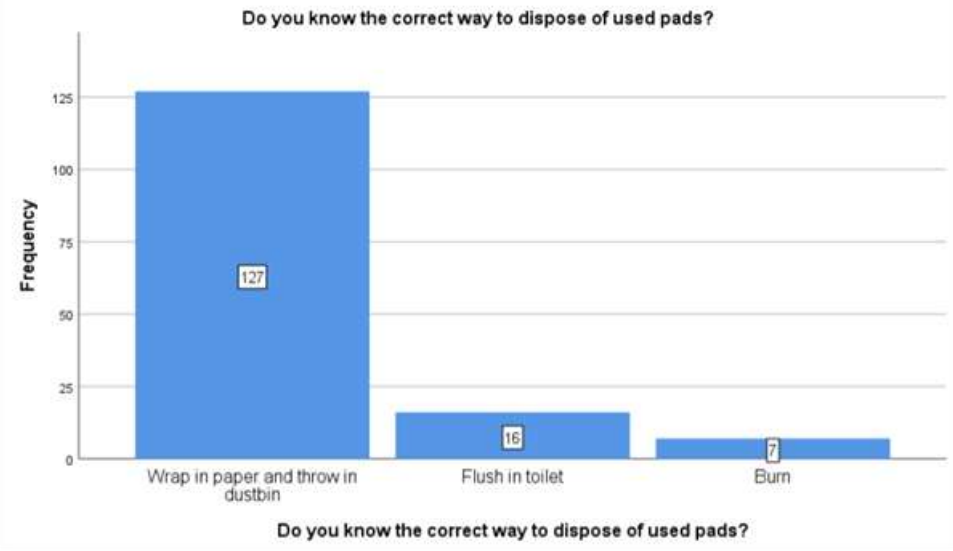


The Descriptive Analysis from Table 12 shows that only 4% of participants were aware that menstruation can Increase the risk of anemia ,while 96% were unaware

Table 13: Descriptive analysis of knowledge about correct Disposal of used pads in the study population (N=150)

Do you know the correct way to dispose of used pads?	Frequency	Percent
Wrap in paper and throw in dustbin	127	84.7
Flush in toilet	16	10.7
Burn	7	4.7
Total	150	100.0

Figure 13: Bar graph shows knowledge about disposal of used pads in the study population (N=150).

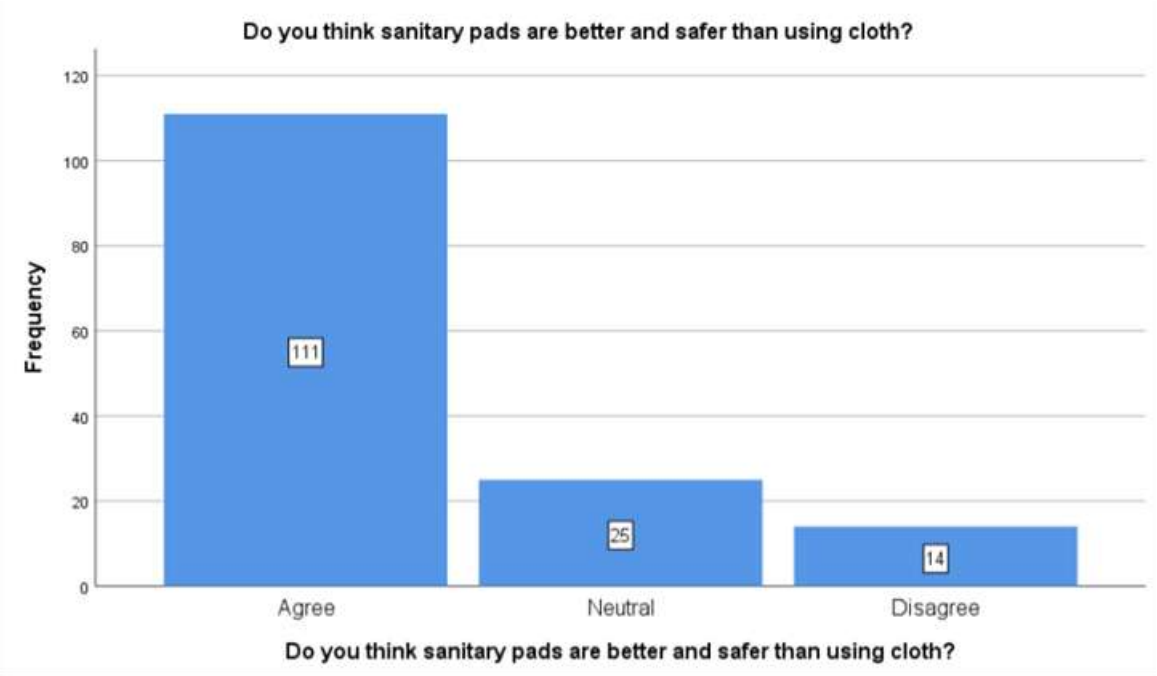


The Descriptive Analysis from Table 13 shows that 84.7% of participants correctly dispose of used sanitary pads by wrapping in paper and throwing in dustbin. 10.7 of participants used unsafe disposal methods like flushing and 4.7% participants used methods like burning

Table 20: Descriptive Analysis of perception of sanitary pads are safe than cloth in the study population (N=150)

Do you think sanitary pads are better and safer than using cloth?	Frequency	Percent
Agree	111	74.0
Neutral	25	16.7
Disagree	14	9.3
Total	150	100.0

Figure 20: Bar graph shows perception of safety between sanitary pads and cloth in the study population (N=150)



The Descriptive Analysis of Table 20 shows 74% of participants believed that pads are safer than cloth ,16.7 % of participants were neutral and 9.3 % of participants disagree

Table 23: Descriptive Analysis of Belief that eating Iron rich foods during periods is Important in the study population (N=150)

Do you think eating Iron rich foods during periods is important?	Frequency	Percent
Agree	89	59.3
Neutral	34	22.7
Disagree	27	18.0
Total	150	100.0

Figure 23: Bar graph shows Eating Iron rich food during periods is Important in the study population (N=150)

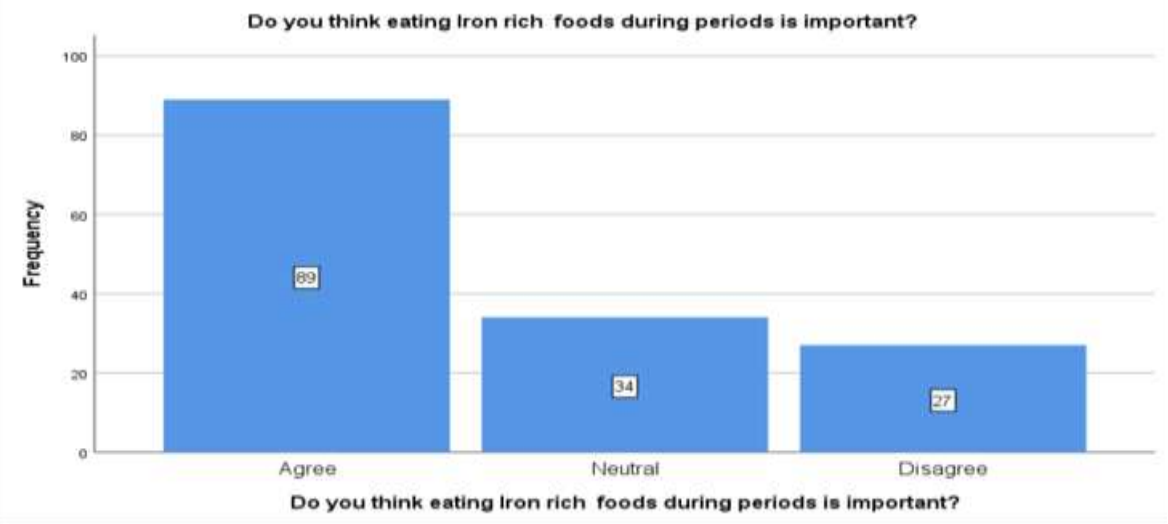
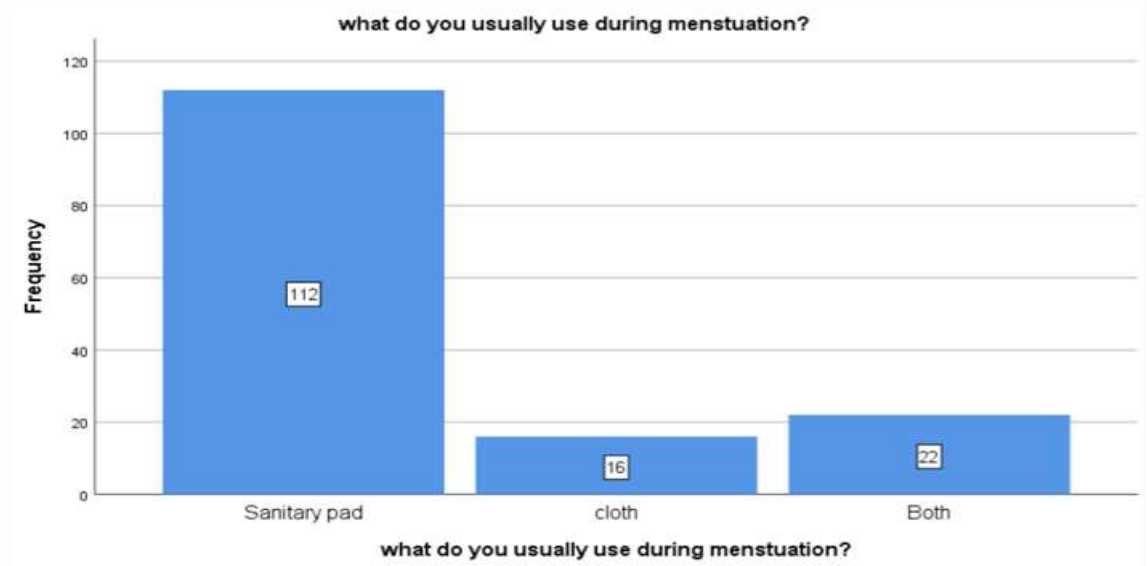


Table 25: Descriptive Analysis of Menstrual product used during Menstruation in the study population (N=150)

what do you usually use during menstruation?	Frequency	Percent
Sanitary pad	112	74.7
cloth	16	10.7
Both	22	14.7
Total	150	100.0

Figure 25: Bar graph shows Menstrual products used during Menstruation in the study population (N=150)

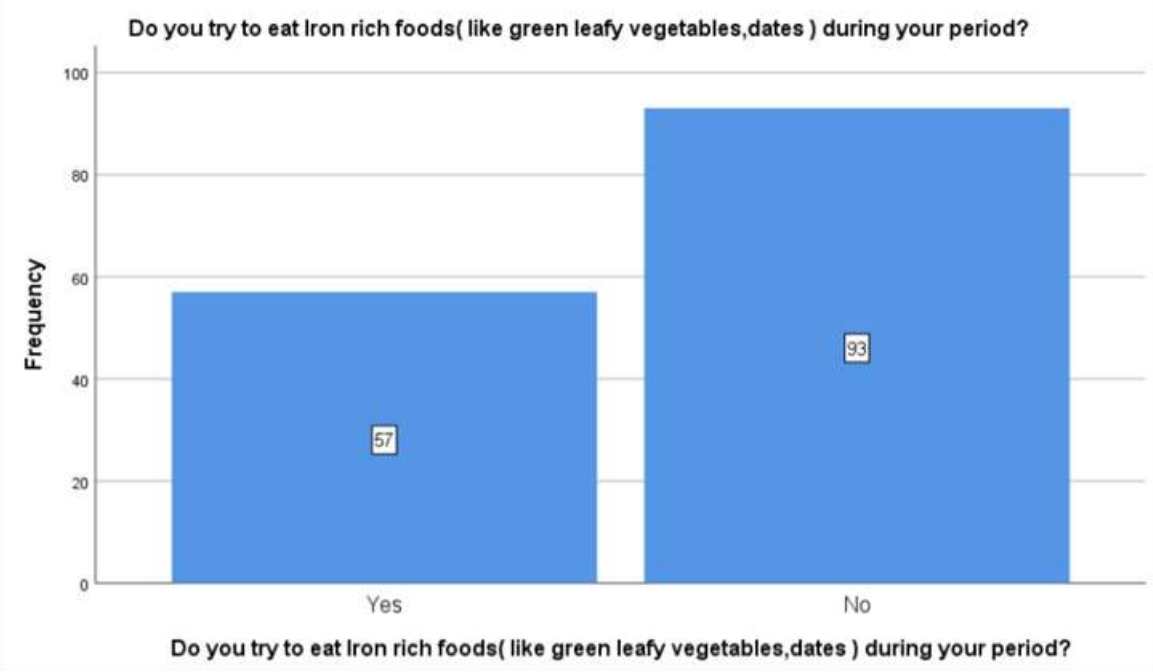


The Descriptive Analysis from Table 24 shows 74.7% of participants used sanitary pads
10.7% of participants used cloth and 14.7% of participants used both the products

Table 33: Descriptive Analysis of Importance of eating Iron-Rich foods During Menstruation in the study population (N=150)

Do you think eating Iron rich foods during periods is important?	Frequency	Percent
Agree	89	59.3
Neutral	34	22.7
Disagree	27	18.0
Total	150	100.0

Figure 33: Bar graph shows eating Iron rich foods During period in the study population (N=150)



The Descriptive Analysis from Table 33 shows 59.3% of participants acknowledged the Importance of consuming Iron rich foods during menstruation, 22.7% were neutral and 27% of participants disagreed

Table 38: Descriptive Analysis understanding of why periods happen in the study population (N=30)

Do you now understand why periods happen?	Frequency	Percent
yes	30	100.0

Figure 38 Bar graph shows understanding of why periods happen in the study population (N=30)

The Descriptive Analysis from Table 38 shows all participants understands why period happens, showing complete Improvement

Table 39 Descriptive Analysis of knowledge of Safe Materials to use During periods in the study population (N=30)

Which things are safe to use during periods?tick all you know	Frequency	Percent
sanitary pad	30	100.0

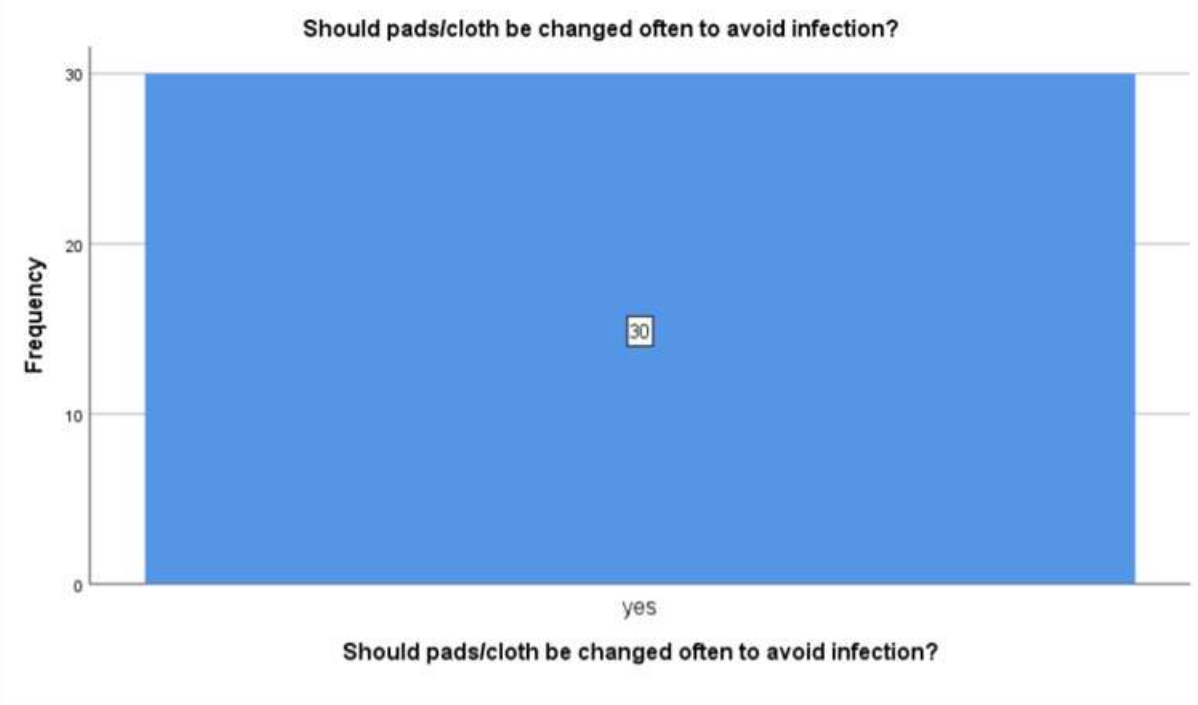
Figure39:Bar graph shows knowledge of safe products to use during periods in the study population (N=30)

The Descriptive Analysis from Table 39 shows 100% of participants identified sanitary pads as safe to use.

Table 40: Descriptive Analysis of knowledge on changing pads/cloth frequency to avoid Infection in the study population (N=30)

Should pads/cloth be changed often to avoid infection?	Frequency	Percent
yes	30	100.0

Figure 40: Bar graph shows responses on the Importance of changing pads/cloth frequency in the study population (N=30)

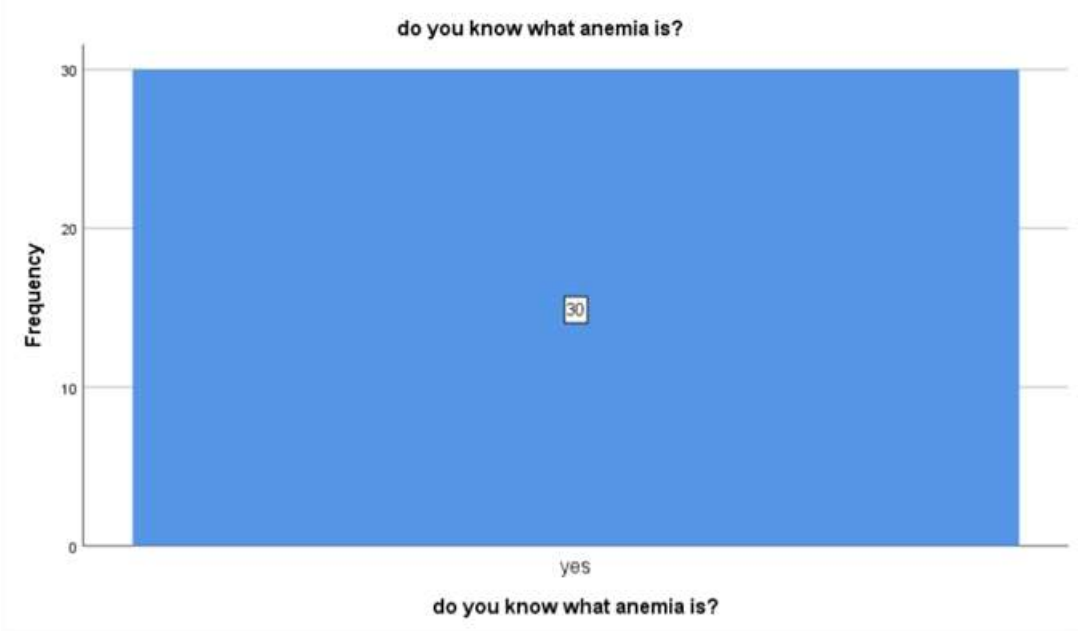


The Descriptive Analysis from Table 40 shows 100% participants acknowledged pads/cloth must be changed to avoid Infection.

Table 43 Descriptive Analysis of knowledge of Anemia in the study population (N=30)

do you know what anemia is?	Frequency	Percent
yes	30	100.0

Figure 43: Bar graph shows knowledge about Anemia in the study population(N=30)

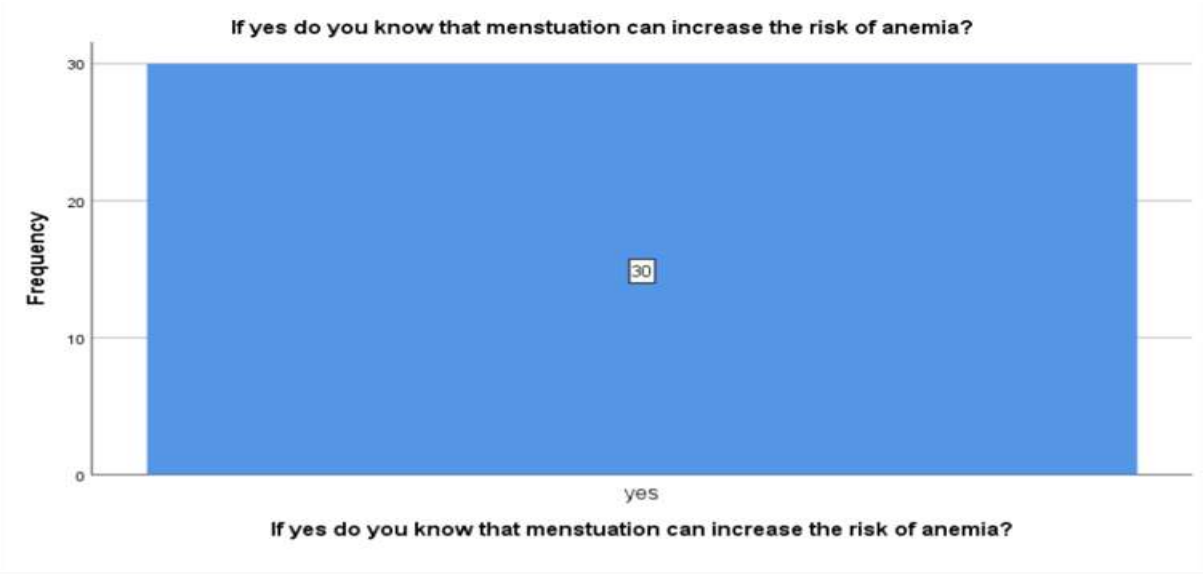


The Descriptive Analysis from Table shows all the participants have knowledge a about Anemia

Table 44 Descriptive Analysis of knowledge about Menstruation can Increase Anemia Risk in the study population (N=30)

If yes do you know that menstuation can increase the risk of anemia?	Frequency	Percent
yes	30	100.0

Figure 44: Bar graph shows knowledge of anemia risk Increase during Menstruation in the study population (N=30)

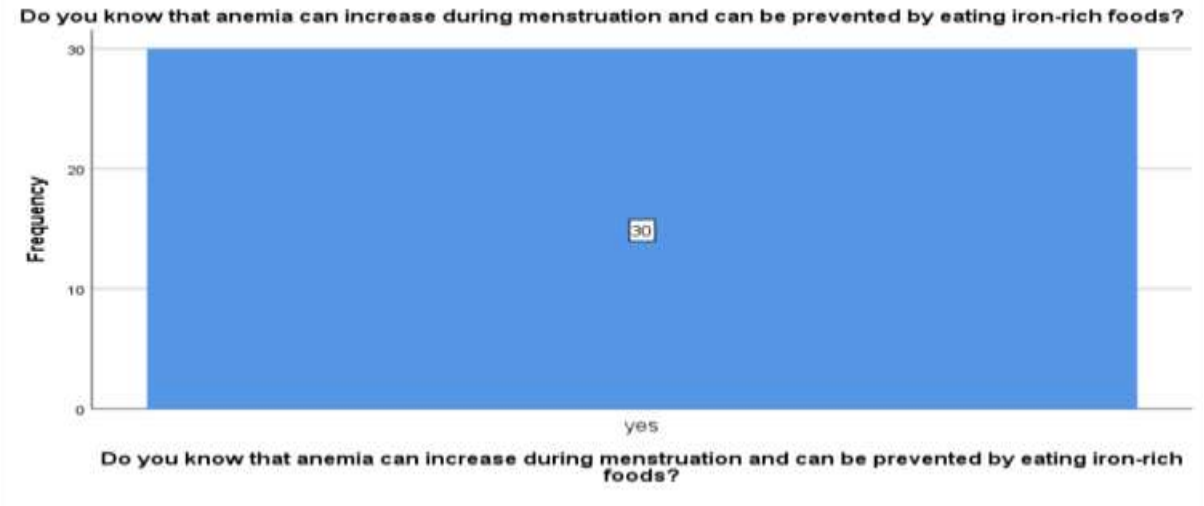


The Descriptive Analysis from Above table shows that all the participants 100% understood Menstruation can Increase. Anemia can risk

Table 45: Descriptive Analysis of knowledge Iron rich foods prevent Anemia during Menstruation in the study population (N=30)

Do you know that anemia can increase during menstruation and can be prevented by eating iron-rich foods?	Frequency	Percent
yes	30	100.0

Figure 45 Bar graph shows Importance of Iron rich foods during menstruation in the study population (N=30)

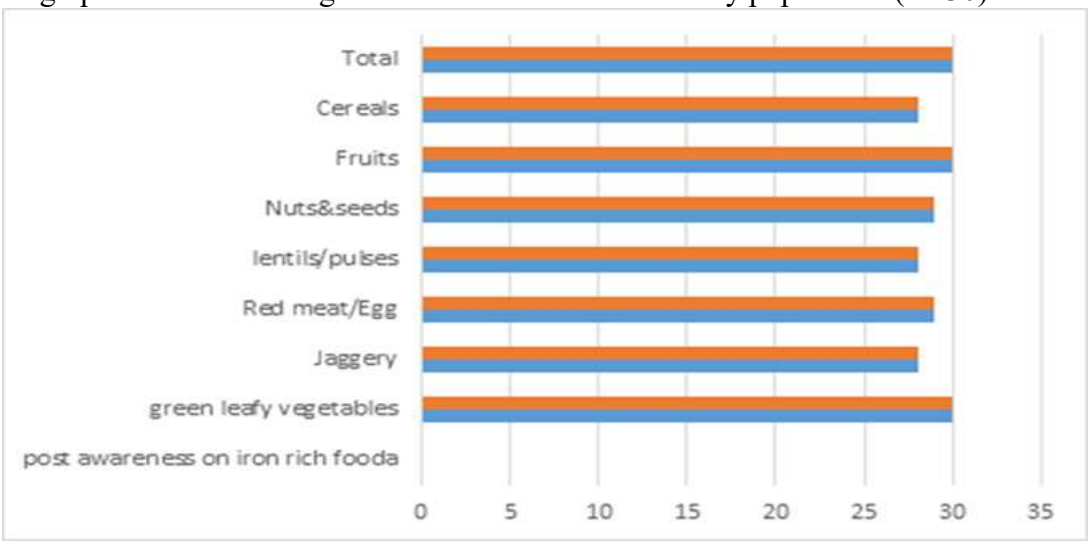


The Descriptive Analysis from Table shows every participant recognized anemia during Menstruation can be prevented by eating iron-rich foods

Table 46: Descriptive Analysis of knowledge on sources of Iron in the study population (N=30)

Which of the following are sources of Iron		
	yes	Total
green leafy vegetables	30	30
Jaggery	28	28
Red meat/Egg	29	29
lentils/pulses	28	28
Nuts&seeds	29	29
Fruits	30	30
Cereals	28	28
Total	30	30

Figure 46: Bar graph shows knowledge of sources of Iron in the study population (N=30)



The Descriptive Analysis from Table shows all 30 participants recognized Green leafy vegetables and fruits as source of Iron while 29 participants recognized nuts and seeds ,Red meat/Egg as Iron source , only 28 participants recognized jaggery, lentils and cereals as a source of Iron

Table 50 Descriptive analysis of Encouragement to eat Iron-Rich foods during periods After the session (N=30)

Do you feel encouraged to eat iron-rich foods during periods now?	Do you now understand why periods happen?	Total
	yes	
yes	30	30
Total	30	30

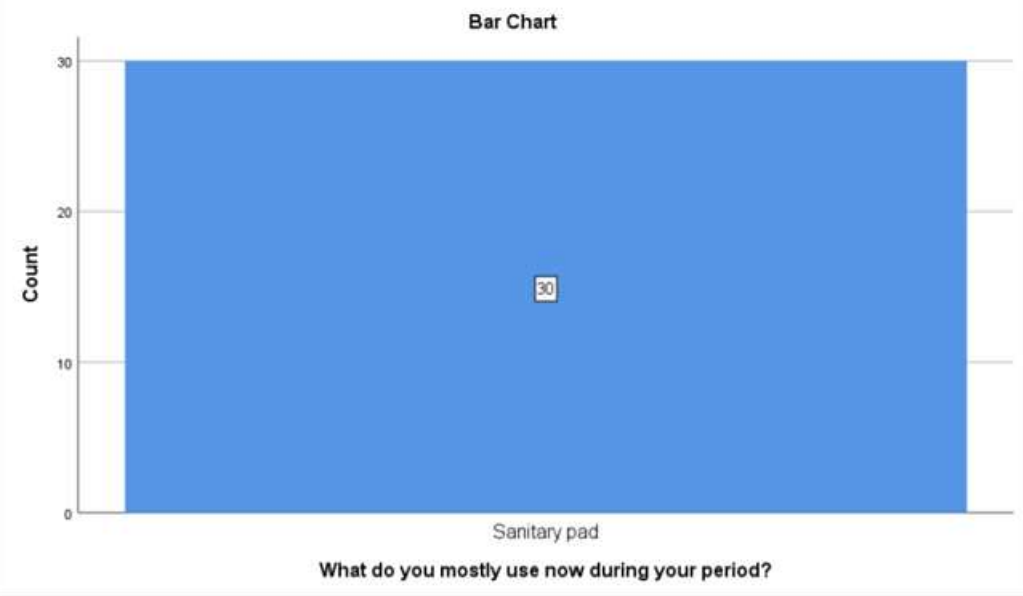
Figure:50 Bar graph shows encouragement to eat Iron rich foods during menstruation in study population (N=30)

The Descriptive Analysis from Table show all 30 participants felt encouraged to eat Iron rich foods during menstruation

Table 51: Descriptive Analysis of current Menstrual absorbent used in the study population (N=30)

What do you mostly use now during your period?	Do you now understand why periods happen?	Total
	yes	
Sanitary pad	30	30
Total	30	30

Figure 51:Bar graph shows current Menstrual absorbent used in the study population (N=30)

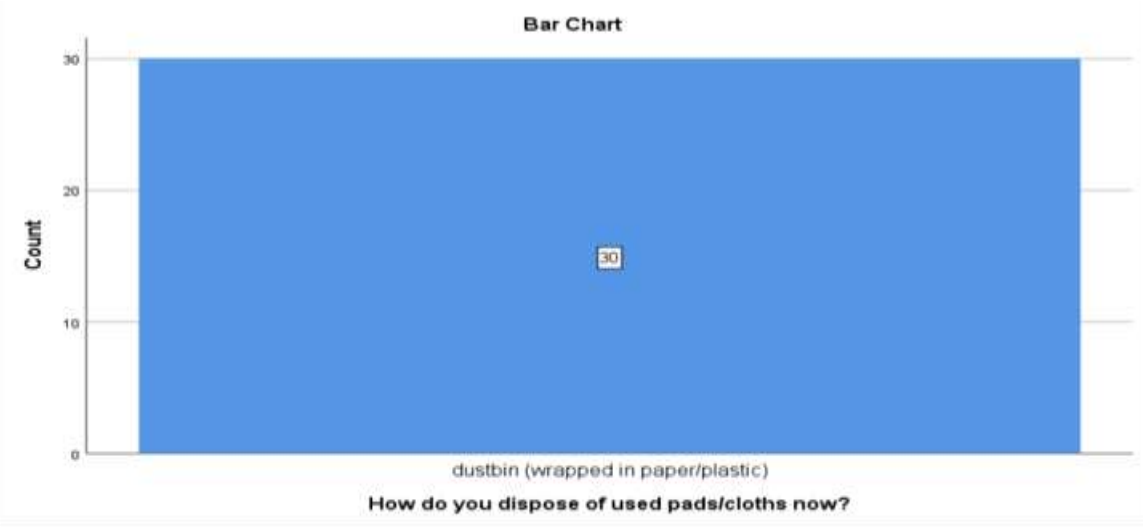


The Descriptive Analysis from table shows All the 30 participants use sanitary pads

Table 54: Descriptive Analysis of Disposal method of used pads/cloth in the study population (N=30)

How do you dispose of used pads/cloths now?	Do you now understand why periods happen?	Total
	yes	
dustbin (wrapped in paper/plastic)	30	30
Total	30	30

Figure54: Bar graph shows disposal methods of Menstrual absorbents in the study population (N=30)

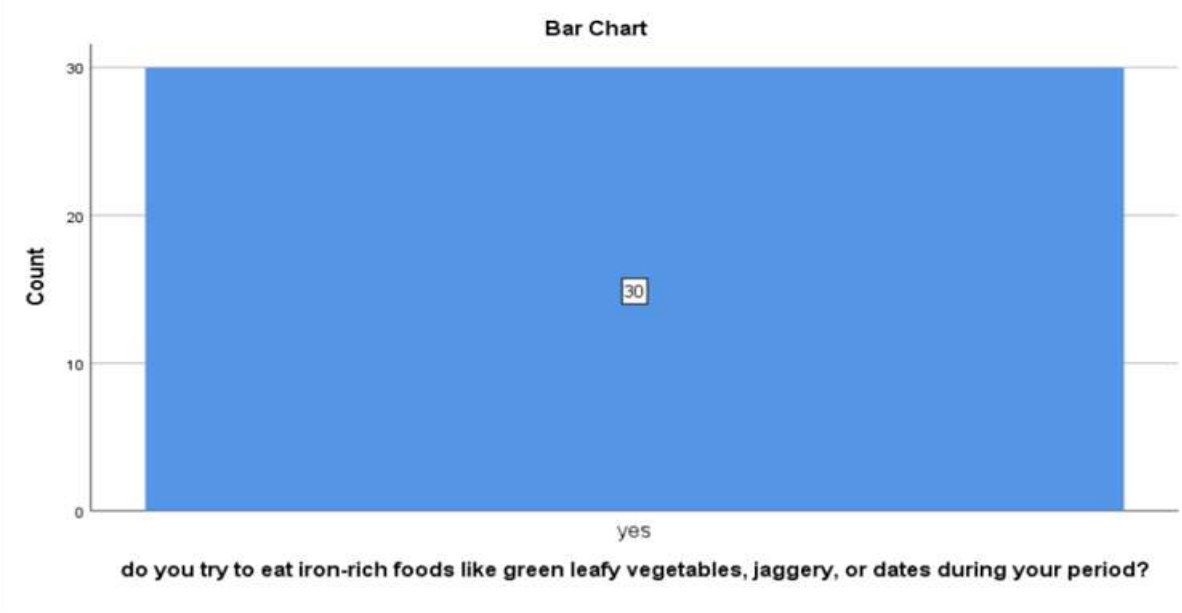


The Descriptive Analysis from table shows all the participants disposed of used pads in dustbin wrapped paper

Table 56: Descriptive Analysis of Eating Iron rich foods during periods after the session (N=30)

do you try to eat iron-rich foods like green leafy vegetables, jaggery, or dates during your period?	Do you now understand why periods happen?	Total
	yes	
yes	30	30
Total	30	30

Figure 56 Bar graph shows eating of Iron-rich foods during period in the study population (N=30)



The Descriptive Analysis from table shows all the participants reported trying to eat Iron rich foods during period

Table 60: Descriptive Analysis of Encouragement to follow hygiene and eat healthy during periods in the study population (N=30)

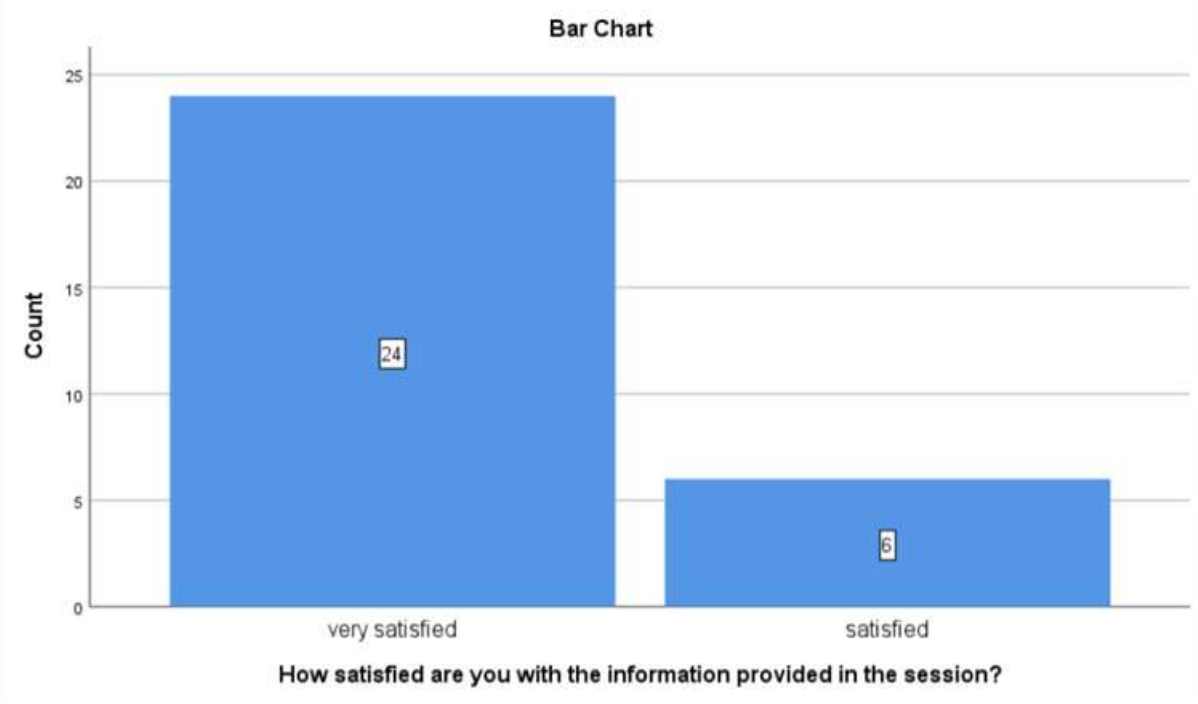
Do you feel encouraged to take care of hygiene and eat healthy during periods now?	Do you now understand why periods happen?	Total
	yes	
yes	30	30
Total	30	30

Figure 60 Bar graph shows encouragement to follow healthy menstrual practices in the study population (N=30)

Table 62: Descriptive Analysis of satisfaction with information provided in the session in the study population (N=30)

How satisfied are you with the information provided in the session?	Do you now understand why periods happen?	Total
	yes	
very satisfied	24	24
satisfied	6	6
Total	30	30

Figure 62: Bar graph shows satisfaction level to the study population (N=30)



The Descriptive Analysis from table shows 24 participants were very satisfied and 6 participants were satisfied with the information provided in the session

The present study was conducted to assess menstrual hygiene practices and nutritional awareness among adolescent girls and to evaluate the effectiveness of an educational intervention. Before the intervention, although about 90% of the girls were aware of menstruation, only 25% correctly understood its biological cause, while nearly 70% had misconceptions. Around 72% used sanitary pads, whereas 28% used cloth or both, and about 40% followed inadequate hygiene practices. Nutritional awareness was also poor, with only 20% aware of anemia and fewer than 25% able to identify iron-rich foods. Psychosocial barriers were evident, as nearly 60% of girls felt uncomfortable discussing menstruation, and about 35% reported school absenteeism. These findings indicate that awareness existed, but accurate knowledge, proper hygiene practices, and nutritional understanding were limited due to lack of education, cultural beliefs, and social stigma.

After the educational intervention, significant improvements were observed across all areas. All participants (100%) correctly understood menstruation, anemia, and the importance of iron-rich foods, and reported proper hygiene practices such as regular pad changing, handwashing, and safe disposal. Around 90% of the girls showed improved confidence and a more positive attitude toward menstrual hygiene and discussion. Overall, the findings demonstrate that lack of awareness was the primary barrier, and the educational intervention was highly effective in improving menstrual hygiene practices, nutritional awareness, and confidence among adolescent girls. These results highlight the importance of regular menstrual health and nutrition education programs in schools to promote better health, dignity, and wellbeing.

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