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## **Empirical Analysis on Knowledge, Attitudes and Practices (KAP): Puberty and Menstrual Hygiene**

By Jisha V. G.<sup>1</sup>, R. Rupashree<sup>2</sup>, T. Somasundaram<sup>3</sup>

### **Abstract**

Puberty and menstruation bring major physical and mental changes in a girl's life; they mark the beginning of procreation. In many countries lack of knowledge and poor hygienic practices during menstruation lead to serious illness ranging from genital tract infections and urinary tract infections to bad odor. This study on Knowledge Attitude and Practice (KAP) aims to understand the awareness level of menstrual health and hygiene among adolescent girls, and the study also focuses on identifying the average age of attaining menarche among early adolescent girls and the problems associated with menstruation. To meet the above objective, a sample of 187 responses was collected by using questionnaires. The various statistical tools that have been used are Reliability Test, Correlation, Chi-square, and Linear Regression analysis. According to the study, most early adolescent girls attain menarche at an early age, and so it is necessary to educate school children about health and hygiene practices during menstruation. Mothers and teachers should educate adolescent girls about hygienic practices and remove the social stigma surrounding menstruation. This paper also covers the feminist view on menstruation which affects women, girls, and non-binary and transgender people across the world. It is an issue that intersects with race, class, culture, and religion and therefore has the power to engage us in a global effort towards equality.

*Keywords:* KAP, Menstruation, Genital infections, Social stigma, Feminism

### **Introduction**

Puberty marks the change from childhood to early adolescence in a girl's life. It involves a rapid change in physical appearance. Menstruation is an important event in a girl's life, and it is a very important marker of the ability to procreate. Ignorance about health and hygienic

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practices during menstruation leads to serious health issues ranging from genital tract infections and urinary tract infections to bad odor.

Meeting the hygiene needs of adolescent girls enables human rights and creates awareness regarding public health. From the varied research conducted across the globe it is evident that belonging to a low- or middle-income country implies that many girls are not able to manage their menstrual needs, and this has an impact on the health and hygiene of every girl. Several adolescent girls are not practicing good menstrual health and hygiene at home, at school, at work, or in other public settings due to a combination discriminatory social environments, inaccurate information, poor facilities, and limited choice of absorbent materials. To promote awareness on menstruation and hygiene, WHO and UNICEF are lending their hands to the members of the nation to spread knowledge and improve society's attitudes towards puberty and menstruation with the aim of removing social stigma. Various MHH activities and programs are promoted by these organizations to promote awareness related to menstruation. UNICEF also works exclusively to improve girl's menstrual health and hygiene in four different areas like social support, knowledge and skills, and access to absorbent material and other facilities. (UNICEF, 2019)

The Karnataka state commission for the protection of child rights is planning to install high equipped toilets called pink toilets. These were inspired by the Delhi Government which has provisions like sanitary napkins, vending machines, and incinerators. It aims to provide a safe and hygienic environment to the adolescent girls and women of Karnataka. Most of the girls and women have little knowledge about menstruation until they encounter their first experience in menstruation and reach puberty. The reason behind this lack of knowledge is that there is a lot of social stigma surrounding menstruation in the community; it is not discussed openly among people in this society. Learning about proper menstrual hygiene is crucial for the education, health, and dignity of adolescent girls. Most of the time, girls are unprepared especially in the non-urban areas in terms of knowledge, practices, and attitudes for managing the menstrual cycle (Karnataka Menstrual Hygiene, 2018).

Knowledge about menstrual hygiene is one of the most important aspects of health education among women and adolescent girls in society. Out of this research, it was found that knowledge and practices regarding hygiene during menstruation (which includes washing of genitals regularly, using a clean cloth, etc.) among adolescent girls and women is very much lacking. Learning healthy and hygienic practices during the menstrual cycle can help young women and girls avoid long term ill effects like stillbirths, miscarriage, toxic shock syndrome, and other major recurrent reproductive tract infections. This can be done only when adolescent girls are empowered with the knowledge of health and hygiene during menstruation.

### **Feminist View on Menstruation**

On average, every woman will experience menstruation for 2,535 days during her life span which comes to around seven years of managing periods. During this time, there are many hygienic practices and health factors that require managing. Today, women—including transgender and non-binary people who menstruate—are speaking out about menstruation more than ever before. Globally, many feminist activists and advocates are also demanding women's right such as the right to manage periods with ease and dignity, a right that would help them lead a happy and fulfilled life. The menstrual cycle is something that is intersectional. It is globally and culturally relative as it affects every aspect of women's lives. Without the basic right to

manage this biological function with dignity and ease, egalitarianism cannot be reached. For many girls especially in rural areas, once their period starts, they stop going to school altogether due to feelings of shame and because of the strict social and cultural barriers which mark the end to their education; they are bound to do household activities only (Feminism in India, 2018).

An organization called “The Cup Effect” has the mission to make it easier for women and girls across the world to live, work, and study with dignity, comfort, and confidence by reducing the number of menstrual products in use. Currently, the organization is operating in Kenya and Malawi with an ambition to expand its operations to the African continent and other parts of the world (The Cup Effect, 2019). There are five reasons why feminist activism should include menstrual equality today. Firstly, the most important fundamental need that women and girls must have access to is education, but in many developing and underdeveloped countries today this is not the case. Due to menstruation, this equal right is withheld from young women and girls. Research shows that even in the UK 20% of girl’s miss school during their periods. Secondly, health and hygiene complications from a lack of education can lead to endometriosis and premenstrual dysphoric disorder which can take years to diagnose and link with menstrual cycle. The main reasons behind these issues are women’s lack of access to menstrual products and hygiene facilities. Thirdly, the effect of climate change and environment plays a vital role in women and adolescent girls’ health. Feminists are increasingly concerned with and advocating for consciousness raising around the menstrual cycle. Fourthly, employment, that is, women’s ability to contribute to the workplace, is being circumscribed by poor menstrual workplace policies. Many European, Asian, and African countries do provide menstrual leave for working women. Even in countries where menstrual leave has become a legal right, these fundamental leaves have not been availed, and many women apply for sick leave instead, proving that the social taboo still exists regardless of this option). Lastly, menstrual equality promotes sisterhood feminist activities and helps to uplift women and children around the world and help them live dignified lives.

While surveying existing research, it was found that there is a huge information gap among adolescent girls when it comes to awareness about menstruation and hygiene factors which can be directly associated with practices they follow during their cycles. Some of the basic tips to maintain hygiene during menstruation are as follows:

1. Choosing the right materials to be used during menstruation which do not negatively affect health and the environment.
2. Change absorbed material regularly.
3. Wash vaginal area regularly with clean water without use of soap etc.
4. The absorbed material used must be disposed of properly to avoid spreading germs.
5. Bathe regularly.

### **Statement of the Problem**

Menstruation and hygiene factors play a significant role in the wellbeing of adolescent girls and women worldwide. Conversations about menstrual hygiene should include not only sanitary pads and toilet facilities but possible long-term illness as well. The researchers have focused on measuring awareness levels among adolescent girls about hygiene factors and the practices they follow during their menstrual cycle. Menstruation and hygiene education also

ensures that girls and women live in an environment that provides value and support wherein they can manage their monthly cycle with dignity.

In a survey conducted by the World Bank (2018), it was found that at least 500 million women and girls have been deprived of proper access to menstrual hygiene facilities. In India, only 1 in every 2 girls has knowledge about menstruation before their first period. Only 1 in every 2 girls are informed regarding menstruation from their mothers (who act as their primary source of information followed by their friends).

This study focuses on the awareness aspect as most of the adolescent girls lack knowledge about menstrual hygiene and health. Girls are most likely to get their first menstrual cycle between the ages of 12-16 years, and most of them lack knowledge of how to handle the situation. This study will help us find the current awareness levels and the factors of hygiene adolescent girls are currently using.

## **Review of Literature**

A study by Saranya *et al.* (2019) aimed at finding the hygiene practices used among adolescent girls during their menstrual cycles. It particularly talks about girls feeling uncomfortable about stains which leads to them missing classes. It also focuses on their knowledge of various hygiene products. The researchers conducted a survey to find out the number of girls missing classes because of their menstrual cycle, number of leaves taken, use of menstrual products, and health ailments. As a result, it was concluded that about 55% of the adolescent girl population skip classes during menstruation, and the predominant factor for this was fear of blood stains on clothes, and 35% of the girls stated that they had itching and allergies.

Tundia and Thakrar (2018) tried to identify the problems amongst adolescent girls and the hygiene practices they followed during menstruation. The study focused on perceptions and practices, which sometimes result in adverse health outcomes. Therefore, the current study was carried out to understand the knowledge and practices of menstruation in adolescent girls and to analyze the related problems they face and the socio-cultural beliefs surrounding this topic

A study conducted by Sinha and Paul (2018) focused on proper menstrual hygiene and how it promotes health, confidence, and self-esteem and is linked to gender equality and basic human rights. Hema Priya (2017) in their study titled “A study of menstrual hygiene and related personal hygiene practices among adolescent girls in rural Puducherry” tried to analyze the menstrual hygiene practices among adolescent girls with reference to rural Puducherry for which the researchers adopted a community based descriptive cross-sectional study. The study was conducted in the rural field practicing area of MGMCRI, Puducherry, from the 15th of March 2013 to the 31st of April 2014 by using a semi-structured questionnaire. 528 adolescent girls were included in this study, and it found that many girls used sanitary pads but when it came to hygiene most of them were unaware of the factors impacting health.

Prakash *et al.* (2017) has accentuated the necessity of adolescent girls to be educated about menstruation before attaining menarche. Anjali and Kanica (2017) focused on the adolescent girls in government school from 9<sup>th</sup> standard to 12<sup>th</sup> standard in Shimla and Himachal Pradesh, and the main objectives were to assess the existing knowledge and practices regarding menstrual hygiene and also to determine the correlation of knowledge and practice scores among the adolescents. The study reinforced the need to bring them out of traditional beliefs and misconceptions and restrictions regarding menstruation.

Hema Priya (2017) concentrated on the menstrual hygiene practices among adolescent girls in rural Puducherry. The objective of the study was to analyze menstrual hygiene practices among adolescent girls in rural Puducherry. The study highlighted the traditional social beliefs among people in the society about menstruation. The study showed that most households in rural areas didn't have separate sanitary latrine facilities even if they could afford it, the reason for this mainly being ignorance or that they felt that it was not necessary. Anchebi *et al.* (2017) tried to assess levels of menstrual hygiene practices and the health factors associated with it when it came to female high school students in Adama Town. A cross sectional study was directed, and they found that most of the female students were aware of proper hygiene practices.

Anna Maria *et al.* (2016) in their study, "Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis", aimed to assess the prominence of menstrual health and hygiene management among adolescent girls. A sample of 138 studies involving 193 subpopulations were analyzed. The research found that solidification of MHM programs in India is vital for women's education so that adolescent girls and women are aware of access to absorbent materials, its disposal, etc. The study undertaken by Srivastava and Chandra (2017) emphasizes the importance of perception in various aspects of menstrual hygiene, nutrition, and marriage. It was found that most adolescent schoolgirls gain knowledge about the menstrual hygiene from their mothers, yet it is still a shameful topic to discuss openly.

Prajapati and Patel (2015) in "Menstrual hygiene among adolescent girls: A cross sectional study in urban community of Gandhinagar" aimed to assess the level of knowledge and the practice of hygienic factors among adolescent girls in the city of Gandhinagar. In order to carry out the study, about 155 girls enrolled with the help of 24 Urban health training centers (UHTC) as a sample. The study concluded that lack of sufficient knowledge and awareness among girls regarding menstruation can be due to low level of education among them and their mothers. Education regarding reproductive health and hygiene should be given by Anganwadi workers and included as a part of school curriculum. Baishakhi *et al.* (2014) tried to measure the discernment of different aspects of menstruation and the associated menstrual hygiene factor. The study concentrates on girls' education about the particulars of menstruation, physiological insinuations, importance of menstruation, and proper hygienic practices during menstruation.

Kamath R *et al.* (2013) explored the knowledge, practices, and sources of statistics regarding monthly periods and hygiene among adolescent girls in Udupi taluk, India. The researcher did a cross sectional study of 550 schoolgirls in the district between the ages of 13 and 16. Out of the total respondents, 270 girls were from urban and 280 were from rural areas. From the survey conducted it was found that girls in the Udupi district lacked knowledge regarding reproductive health.

Kansal *et al.* (2016) in their study titled "Menstrual hygiene practices in context of schooling: A community study among rural adolescent girls in Varanasi" reveals that about 20% of the girls in India are adolescents who undergo menstruation. In India, menstruation is still regarded as a cultural taboo. The study was conducted amongst 650 adolescent girls in the practice area of Rural Health and Training Centre Chiraigaon block of district Varanasi from January-June 2011. Chi Square analysis was used for analysis, and the study stated that there is lack of information about menstruation and health related factors among women and adolescent girls, especially about menarche before its onset. Dasgupta and Sarkar (2008) show that the average age of girls attaining menarche ranged from 14 to 17 years. The study also discloses that menstrual hygiene is far from satisfactory among a large proportion of the adolescents, while

ignorance, false perceptions, unsafe practices regarding menstruation, and reluctance of the mother to educate her child are also quite common among them.

### **Significance of the Study**

India is a land of diversity that nurtures different cultures, religious beliefs, and socio-economic status, which causes disparity in accessing wealth, information, services etc. by the people. It is the responsibility of the wealthy bring the benefits they receive to the less fortunate. Health and hygiene are human rights that are becoming less affordable due to mass consumerism and profit orientation of the MNCs. Basic access to information regarding physical hygiene, for both men and women, is denied to them in the name of culture, taboos, superstitions etc., and children are more likely to suffer especially when they hail from less fortunate families.

Every healthy girl begins menstruation between the age of 13-16, and unfortunately, a large number of these children are raised in families that believe in superstitions, taboos, and indulge in stigmas relating to menstruation. Hence, there is a need to address the negligence that exists towards educating adolescent girls on basic menstrual hygiene dos and don'ts. This study will help address factors that cause negligence regarding menstrual hygiene among adolescent girls and how the information can be passed on to the immediate communities. The government schools are a great place to identify the target respondents for the research and provide access to community homes where other women and girls reside. This research aims to ensure better health to women and girls across the country during their menstrual cycle through facilitating awareness about affordable substitutes that aid in menstrual hygiene.

### **Research Design**

The researcher used descriptive research and the research involves surveys and fact-finding enquiries of different kinds. The data was collected from adolescent girls in North Bangalore.

### **Descriptive Research**

This study describes the characteristics of the population or phenomenon that is being studied, which include surveys, naturalistic observation, and to describe or validate some sort of hypothesis or objectives.

### **Sources of Data**

The primary data was collected from adolescent girls in North Bangalore by using the questionnaire method using Google forms. Secondary data was collected from journals, websites, newspapers, and survey reports.

### **Instrument Design and Validation**

Researchers use various instruments as a measurement device, including a questionnaire using dichotomous scale and various point scales.

### **Sample Size and Sampling Methodology**

The total sample size for this study was 187, and the sampling methodology used for this research was convenience sampling, which involves the sample being drawn from the target population in North Bangalore.

### **Methods of Data Analysis**

The following analysis has been planned to get the consistency of results from the research study: The data analysis methods used are as follows:

- a) *Reliability Analysis* – Using this analysis, we get Cronbach’s alpha, and it is a coefficient of consistency or reliability and, for the data to be reliable, the Cronbach’s alpha should be greater than 0.7 usually.
- b) *Chi Square Analysis* – This test is used to determine whether there is an association between categorical variables. In this study, the age and reaction of respondents during menstruation are the variables used to test their association.
- c) *Correlation Analysis* – This is used for testing the relation between two metric variables in a given population. The null and alternate hypothesis are accepted or rejected in this method.
- d) *Linear Regression Analysis* – This is a technique to discover the complex relationship between one dependent variable and several independent variables. This research intends to examine the factors that influence awareness and knowledge about physiology of menstruation.

### **Objectives of the Study**

- To understand the awareness level of menstrual health and hygiene among adolescent girls.
- To identify the average age of attaining menarche among adolescent girls.
- To identify the problems faced by girls during menstruation.

### **Scope of the Study**

This research study aims to study the awareness adolescent girls studying in government schools in North Bangalore have about basic menstrual hygiene. The geographical area contains a population that is mostly uneducated, and superstitious beliefs are also quite popular in this area. This has led to a gap between the information available about menstrual hygiene and the access to the information to adolescent girls studying in government schools in the area. Most of the Indian states consist of similar population profiles, and this study could be extended and improved through looking at these other areas. Furthermore, researchers can take the results of the study and use it as proof to invest in the improvement of women and girls’ menstrual hygiene across the state.



### Limitations of the Study

- i) The study is restricted to only North Bangalore.
- ii) Respondents are adolescent girls in the North Bangalore area.
- iii) Time constraints.
- iv) Respondents are hesitant to give sensitive information.

### Hypothesis Testing

#### *Null Hypothesis*

a) Age of the adolescent is not associated with the first-time menstruation. b) There is no relationship between use and disposal of materials during menstruation period.

#### *Alternate Hypothesis*

a) Age of the adolescent is associated with the first-time menstruation. b) There is relationship between use and dispose of materials during menstruation period.

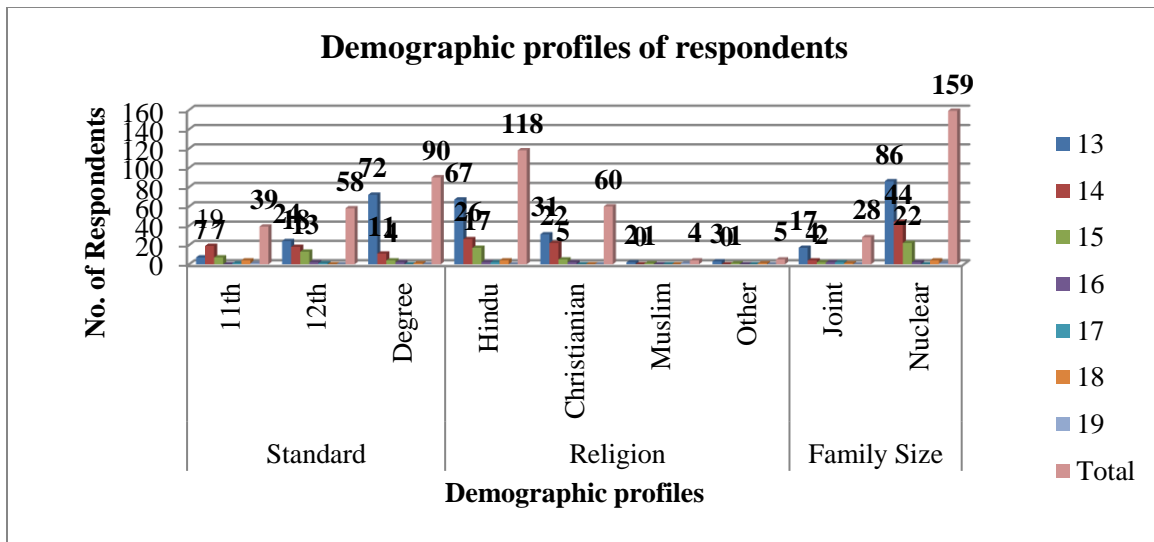
### Results and Discussion

**Table 1: Demographic Profiles of Respondents**

Demographic factors	Standard					Religion						Family			
	11 <sup>t</sup> <sub>h</sub>	12 <sup>t</sup> <sub>h</sub>	D	T	%	H	C	M	O	T	%	J	N	T	%
13	07	24	72	103	55.08	67	31	02	03	103	55.08	17	86	103	55.08
14	19	18	11	48	25.67	26	22	-	-	48	25.67	04	44	48	25.67
15	07	13	04	24	12.84	17	05	01	01	24	12.84	02	22	24	12.84
16	-	02	02	04	2.14	02	02	-	-	04	2.14	02	02	04	2.14
17	01	01	-	02	1.06	02	-	-	-	02	1.06	02	-	02	1.06
18	04	-	01	05	2.68	04	-	-	01	05	2.68	01	04	05	2.68
19	01	-	-	01	0.53	-	-	01	-	01	0.53	-	01	01	0.53
<b>Total</b>	<b>39</b>	<b>58</b>	<b>90</b>	<b>187</b>	<b>100</b>	<b>118</b>	<b>60</b>	<b>04</b>	<b>05</b>	<b>187</b>	<b>100</b>	<b>28</b>	<b>159</b>	<b>187</b>	<b>100</b>
<b>Percentage</b>	<b>20.85</b>	<b>31.02</b>	<b>48.13</b>	<b>100</b>		<b>63.10</b>	<b>32.08</b>	<b>2.14</b>	<b>2.68</b>	<b>100</b>		<b>14.98</b>	<b>85.02</b>	<b>100</b>	

(D – Degree, H – Hindu, C – Christianian, M – Muslim, O – Others, J – Joint, N – Nuclear, T – Total)

**Chart 1: Demographic Profiles of Respondents**



*Interpretation*

From the above table, it is deduced that the majority (55.08%) of the adolescent girls attained menstruation at the age of 13 years, 25.67% of the adolescent’s girls attained menstruation at the age of 14 years, 12.84% of girls at the age of 15 years, 2.68% at the age of 18 years, 2.14% of the respondents at the age of 16 years, 1.06% of the adolescent girls at the age of 17 years and 0.53% at the age of 19 years.

The above table indicates that most (48.13%) of the adolescent girls were seeking a degree, 31.02% of the adolescent’s girls were in 12<sup>th</sup> standard, and only 20.85% of the adolescent’s girls were in 11<sup>th</sup> standard. With respect to religion, the majority (63.10%) of the adolescent girls were Hindu, 32.08% were Christian, 2.68% belonged to other religions, and only 2.14% of the adolescent girls were Islam. With respect to family size, the majority (85.02%) of the adolescent girls belonged to a nuclear family and the remaining 14.98% of the adolescents belonged to a joint family.

**Table 2: Reliability Analysis**

Reliability Statistics	
Cronbach's Alpha	N of Items
.881	17

*Interpretation*

Table 2 shows the reliability test for the actual study for a total 187 respondents and the Cronbach’s alpha coefficient for 17 variables with 0.881, which means the data is consistent and reliable. Cronbach’s alpha coefficient is more than 0.7, so the questionnaire reliability is acceptable.

**Table 3: Chi Square Analysis  
Association between Age and First Reaction during Menstruation**

<b>Chi-Square Tests</b>	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
Pearson Chi-Square	3.803E2 <sup>a</sup>	42	.000
Likelihood Ratio	307.862	42	.000
Linear-by-Linear Association	114.142	1	.000
N of Valid Cases	187		

a. 44 cells (78.6%) have expected count less than 5. The minimum expected count is .05.

*Interpretation*

Table 3 shows that the alternative hypothesis  $H_1$  is accepted since the significance value is less than 0.05. This means that the first reaction of adolescents during first time menstruation is associated with the age of the adolescents. Most of the adolescents informed their mother during first menstruation and the other respondents showed reactions like scared, annoyed, embarrassed, etc. according to their age.

The following table shows the data related to use and disposal of materials during menstruation:

**Table 4: Correlation Analysis**

		<b>Use of materials during menstruation</b>	<b>Disposal of absorbed materials during menstruation</b>
Use of materials during menstruation	Pearson Correlation	1	<b>.777**</b>
	Sig. (2-tailed)		.000
	N	187	187
Disposal of absorbed materials during menstruation	Pearson Correlation	<b>.777**</b>	1
	Sig. (2-tailed)	.000	
	N	187	187

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Interpretation*

Table 4 indicates that the correlation coefficient between use and disposal of materials during menstruation is 0.777 which indicates a 77% relationship between use and disposal of materials during menstruation at a 1% level of confidence, since the P value is < 0.05, and the remaining 23% indicates that there is no significant relationship between use and disposal of materials during menstruation because of age. Few adolescents may not be aware of the use and disposal of materials during menstruation.

**Table 5: Regression Analysis**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.926 <sup>a</sup>	.858	.855	.320

a. Predictors: (Constant), Source of Information regarding menstruation, Source of menstrual blood, Source of awareness about use of sanitary napkins, Age of adolescents

b. Dependent variable: Knowledge about physiology of menstruation

**ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	111.966	4	27.992	<b>273.440</b>	.000 <sup>a</sup>
	Residual	18.529	181	.102		
	Total	130.495	185			

a. Predictors: (Constant), Source of Information regarding menstruation, Source of menstrual blood, Source of awareness about use of sanitary napkins, Age of adolescents

b. Dependent Variable: Knowledge about physiology of menstruation

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.611	.145		4.215	.000
	Age of adolescents	.223	.059	.312	3.798	.000
	Source of awareness about use of sanitary napkins	.318	.053	.348	6.038	.000
	Source of menstrual blood	-.111	.055	-.078	-2.029	.044
	Source of information regarding menstruation	.191	.033	.375	5.745	.000

a. Dependent Variable: Knowledge about physiology of menstruation

*Interpretation*

Table 5 shows that the knowledge about the physiology of menstruation of adolescents is a dependent variable and age of adolescents, source of awareness about use of sanitary napkins, menstrual blood and information regarding menstruation are independent variables. The overall model explains about 92% (R value – 0.926) by predicting independent variable. F Statistics shows higher value which means the model is fit for further interpretation. The significance value is 0.000 which is less than 0.05 at a 5% significance level, and it indicates that the independent variable has a positive and significant impact on the dependent variable.

## **Findings, Recommendations, and Conclusion**

### *Major Findings*

The majority (55.08%) of the adolescent's girls attained puberty at the age of 13 years, while 25.67% of the adolescent girls at the age of 14 years, 12.84% of the adolescent girls at the age of 15 years, and 1 – 2% of the adolescent girls attained menarche between 16-18 years. Most (48.13%) of the adolescent girls were seeking degrees, 31.02% of the adolescent girls were in 12<sup>th</sup> standard, and only 20.85% of the adolescent girls were in 11<sup>th</sup> standard. The majority (63.10%) of the adolescent girls were Hindu, 32.08% were Christian, and 2.68% of the adolescent girls were Islam or another religion. The majority (85.02%) of the adolescent girls belonged to nuclear families, and 14.98% came from joint families.

The majority (57%) of the adolescent girls had prior knowledge about puberty, 27% of the adolescent girls knew few things about puberty, and only 14% of the adolescent girls did not have any knowledge about puberty. Most (58%) of the adolescent girls menstruated at school, 33% of the adolescent girls at home, and only 8% of the adolescent girls menstruated in other places. Most (59%) of the adolescent girls gained information from their mothers regarding menstruation, 10-13% of the adolescent girls from their teachers and friends, and only 4-5% of the adolescent girls got information from their sisters, healthcare providers, or other sources.

Most (34%) of the adolescent girls told their mothers, sisters, grandmothers, friends, and teachers about their first menstruation, 22% of the adolescent girls were scared, and only 5%-9% of the adolescent girls cried, were embarrassed, felt happy, or annoyed during their first menstruation. The majority (98%) of the adolescent girls were aware of sanitary napkins, and only a few adolescent girls were not. The majority (96%) of the adolescent girls used pads during menstruation, 2% of the adolescent girls were using other materials, and few adolescent girls used a new cloth during menstruation. The majority (83%) of the adolescent girls were aware of sanitary napkins due to their mothers, and only 2% - 5% of the adolescent girls know of the usage of sanitary napkins from their sisters, friends, or the media. Most (77%) of the adolescent girls said that the uterus is the source of menstrual blood, 18% of the adolescent girls said that they didn't know about the source of menstrual blood, and only 4% of the adolescent girls said abdomen .

Most (64%) of the adolescent girls said that disposal of bad blood is the only knowledge they receive about the physiology of menstruation, 28% of the adolescent girls said change of hormonal level, and only 7% of the adolescent said that they didn't have awareness regarding the physiology of menstruation. Most (39%) of the adolescent girls change their pad or cloth three times per day, and 29 - 31% of the adolescent girls change their pad or cloth more than two times and three times a day during menstruation. The majority (70%) of the adolescent girls used absorbent material for less than 6 hours during menstruation, 27% of the adolescent girls used it between 6-12 hours, and a rather small percentage of the adolescent girls used the absorbent material between 12-24 hours during menstruation. The majority (72%) of the adolescent girls clean their genitals frequently during menstruation, 20% of the adolescent girls clean twice a day, and only 7% of the adolescent girls clean their genitals only once a day during menstruation.

Most (64%) of the adolescent girls use normal water to clean their genitals during menstruation, 12 - 20% of the adolescent girls use soap and hot water, and a small percentage of adolescent girls use antiseptic or other methods during menstruation. Most (66%) of the adolescent girls face menstrual cramps during menstruation and 4% - 9% of the adolescent girls face different problems like itching, staining on cloth, rashes, and consumption of less food during menstruation. The majority (80%) of the adolescent girls use a dustbin to dispose of the

absorbed material during menstruation, 14% of the adolescent girls burn the absorbed materials, and only 2% of the adolescent girls dispose of their absorbed material in the toilet or other places during menstruation. The age of the adolescent girls is associated with their first reaction during menstruation. While most of the adolescents informed their mother of their first menstruation, the other respondents showed reactions like scared, annoyed, embraced, etc. according to their age. There is a high positive relationship between usage and disposal of absorbent materials during menstruation. Knowledge about the physiology of menstruation of adolescent's girls is highly dependent on their age, source of awareness about use of sanitary napkins, menstrual blood, and information regarding menstruation.

### **Recommendations**

- Every girl should be given prior knowledge about menstruation and hygiene before they attain menarche.
- Parents play a crucial role in educating the girl irrespective of educational status.
- Large numbers of adolescent girls attain puberty in schools so it is necessary that every girl should be educated in schools about the hygiene practices that should be followed to ensure a healthy life.
- Social stigma should be addressed in society, and menstruation should not be treated as dirty or considered as a hindrance to daily activities.
- Regular practices of hygiene should be followed to avoid tract infections and other health issues.
- Adolescents should be educated on nutrition to avoid issues like cramps, nausea, etc.
- Proper cleaning process of the genitals should be encouraged to avoid infection.

### **Conclusion**

Most women and young girls in India experience reproductive tract infections as a result of poor menstrual hygiene. Adolescent girls can be protected from various health issues and suffering during their regular menstruation. This can be avoided by educating girls at the school level and conducting awareness programs on physiological changes, hygienic practices, disposal of absorbent materials, sex education, etc., which would help remove social stigma in the society. Home is the first source of information for every girl. Every mother should educate their daughter about menarche before they reach puberty. The study reveals that there is a good amount of awareness about menstrual hygiene and menstrual waste disposal among adolescent girls in urban areas whereas in rural areas we found that awareness levels are still lacking, and menstruation is considered a social taboo; in many households even today girls are not allowed to enter the kitchen and other utility areas during their menses. Most adolescent girls attain menarche at the age of 13 years but have little knowledge about menstruation. It is very important for parents and teachers to impart knowledge prior to the attainment of menarche and give young women and girls information about hygienic practices.

Tons of menstrual waste fills oceans, sewage, and landfills very day. Every woman who menstruates uses around 11,000 pads in her lifetime which is a massive amount of plastic accumulation. As citizens, it is our role to safeguard the environment by shifting to other sustainable ways of managing menstrual cycles like reusable cups etc. Menstruation affects

women, girls, non-binary, and transgender people across the world. It is an issue that intersects race, class, culture and religion, and, therefore, has the power to engage us in a global effort towards equality. Those who believe in menstrual equality believe that people who menstruate shouldn't be held back by their bodies. Thus, the above findings emphasize the importance of promoting safe and hygienic practices among adolescent girls moving toward bringing them out of social stigma through education.

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