

Assessment of Level of knowledge regarding menstruation, menstrual hygiene and various myths and taboos faced by the Adolescent Girls of Khera Khurumpur a small village in India

Palkin Bhatia¹, Archana Chaudhary^{1*}, Bhupinder Kaur Anand², Manvinder Pal Singh Marwah³, Swamy HM⁴, Dinesh Bhatia⁵

¹Department of Environmental Sciences, Faculty of Medical & Health Science,SGT University, Gurugram-122505, Haryana, India.

²Al Falah School of Medical Sciences, Faridabad-121004, Haryana, India.

³ Aerospace Medicine, Air Force Station, Tezpur-784105, Assam, India.

⁴Ph.D(Agricultural Economics) ICAR- NIVEDI, Bangalore, India.

⁵Department of Biomedical Engineering, North Eastern Hill University, Shillong-793022, Meghalaya, India.

Abstract -

Introduction – Menstruation is the most natural and physiological phenomenon which a female periodically goes through every month. Even today's era witnesses the association of the menstrual phenomenon with stigma and disgrace in several countries. The complete lack of knowledge about this subject which mostly ends up with the rise of myths and taboos in society is even worse. Adolescent girls must get to know about menstruation at an early stage while seeking education during schooling. This study highlights the level of knowledge, menstrual practices adopted and myths and taboos faced by adolescent girls of this area.

Methodology - A cross-sectional study was undertaken among 115 school-going, adolescent girls. The adolescent girls being the respondents agreed to be part of the study and answered questions on the questionnaires which were provided to them. The main objective was to assess the knowledge about menstruation, menstrual hygiene, and the prevalence of various myths and taboos among school girls and their societies. Data analysis was done using SPSS 21.0 software and Chi-squared test with application of the Fisher exact test in few cases. Since 91 out of 115 girls responded, data analysis has been done accordingly for the number of girls who provided response.

Results - Mean age of girls in this study was 13.75 ± 1.62 . 64 (70.3%) and 27(29.6%) girls are menstruating and non-menstruating respectively. The most common response given by 43% of girls was that "periods come regularly every month once for 4 -5 days". Mothers in 66% of cases were the first informant about the phenomenon of menstruation followed by lady teachers at school. 73(80%) had prevalent myths and taboos related to menses which was required to be

addressed. 47.2% of the girls were demonstrated by their teachers regarding the phenomenon of menstruation at school.

Conclusion - Though many of the girls considered menstruation as a normal and physiological process majority were unaware of the uterus being the actual source of bleeding. Fortunately, teachers are acting as the first informant regarding the phenomenon of menstruation in this study for a high percentage of girls thereby addressing the associated myths and taboos related to the process. Gleefully the menstruating girls attended school regularly which is not affecting their education and learning thereby making them more self-reliant and help in overcoming societal issues and discrimination while addressing the menses process.

Keywords- Adolescent, Menstruation, Menstrual Hygiene Management, Menstrual hygiene

Introduction and Background:

Every month millions of adolescent girls around the world face a miserable cycle of pain, discomfort, shame, anxiety, and isolation when their menstrual period arrives [The Lancet, 2018]. The pain caused due to menstruation may not be as disturbing as it is for them to survive in a restrictive manner, facing taboos and myths, denying them chance to accomplish their goals and duties, receiving a refrained behavior of others towards them, lack of privacy and the required materialistic necessities during this period. The increasing number of infections such as Urinary Tract Infections (UTI), Reproductive Tract Infections (RTI), Pelvic Inflammatory Diseases (PID), CA Cervix and CA Vagina, anemic females and the lack of nutrition during menses out of taboo practicing, all have brought the attention of various health associations and ministries around the world including India and led to the devising of various schemes and programs by the government agencies globally. It was realized out of humane that menstruation is a natural phenomenon and menstrual hygiene is fundamental to the dignity and wellbeing of women and girls and an important part of the basic hygiene, sanitation, and reproductive health services to which every woman and girl has a right ensuring their self-respect and dignity. This led to the inclusion of **MENSTRUAL HYGIENE MANAGEMENT (MHM)** in the various national and international schemes and programs formulated to achieve the above objectives by different countries.

The statement which defines MHM:-

“Women and adolescent girls are using a clean menstrual management material to absorb or collect menstrual blood, that can be changed in privacy as often as necessary for the duration of a menstrual period, using soap and water for washing the body as required, and having access to safe and convenient facilities to dispose of used menstrual management materials” [UNICEF].

A taboo prone zone holds a negative attitude towards menstruation. Till today many backward areas of the country menstruating women and girls are considered impure and kept isolated from the society during the menstrual period. They are not allowed to enter the temples, have to stay isolated from the rest of the members of the house, have restrictions on consuming particular food varieties, remain secluded from attending the religious ceremonies/functions, and a much more that could be stated.

The girls have the necessary knowledge of sanitary material, but it can be said that out of negligence or carelessness they compromise the health and do not properly practice the MHM. They still use rags instead of buying sanitary napkins, not changing the absorbent material at the appropriate time, no bathing at the time of menses, and last but not least no proper disposal of the used sanitary material in an eco-friendly manner. Studies indicate that close to 50% of Indian girls have no knowledge of menstruation before their first period and nearly 88% of girls and women who menstruate use unsafe materials to soak up the menstrual discharge [Gopalakrishnan, 2013] leading to heightened health concerns.

Water sanitation and hygiene (WASH) is also an essential part of MHM. In our country, there are nearly 63 million adolescent girls who are living in homes without toilets, appropriate facilities, and community support to manage their menstruation privately and in a safe and dignified manner. A recent survey revealed that in 14,724 government schools only 53% had a separate and usable girl's toilet. According to a report by Water Aid, titled "Out Of Order; The State of the World's Toilets 2017", 355 million women and girls lack access to a toilet in India [Senapathi et al, 2018]. This has led to the attention of the present government to provide enhance facilities for having toilets in each household of the country which the government aims to achieve before 2022.

Hence, MHM can never be one-sided affair as it involves shareholders from both the Government and the menstruating females who need to become efficient donors and recipients respectively for the success of the MHM programme. For this frequent workshops in institutions such as schools, educational institutions, rural areas, organization of monthly campaigns, activation of Anganwadis for the required distribution of sanitary products, and teaching the disadvantages or harms of not adopting safe MHM practices should be adopted. The adolescent girls should be taught about the safe and eco-friendly disposal of used sanitary products. Menstrual waste these days is posing a great problem to the sewage systems as the cloth rags and napkins clog the sewage lines in many areas leading to drainage issues and flooding especially during heavy rains or monsoons. The disposal into pit latrines is also not a good option as the plastic lining of the napkin does not degrade easily and could clog the sewer lines.

Menstruation though a natural phenomenon holds many social stigmas throughout the world including India. By not paying due attention towards this issue this problem would not be solved and considered as a violation of several human rights. Keeping this in mind many reverent associations such as the World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) round the world and Ministry of India have worked for the above cause and launched many schemes. Still Menstrual Hygiene Management (MHM) has been under-researched by the Water sanitation and hygiene (WASH), health and education sectors. Menstruation is a sensitive subject and remains a taboo in many societies. Some cultural beliefs about menstruation reinforce gender inequities and have negative impact on the dignity, health and education of women and girls [UNICEF, 2013]. There is a need to gather more information on MHM via researches to increase the knowledge and awareness regarding this topic, improve WASH in schools, assess the level of restrictions associated with menstruation, to improve disposal methods and last but not the least to create more equal, safe and healthy environments for our future women community. With this aim, this study tried to address most of the issues enlisted above to unveil the condition of menstruating adolescents in India.

For adolescent girls the foremost requirement is having the precise knowledge about the phenomenon of menstruation, its anatomy and physiology and most importantly knowing the actual source of bleeding. There has been a major deficiency amongst girls regarding this which exists even today [Dasgupta and Sarkar, 2007; Chinyama et al, 2019; Sharma et al, 2017]. For this there needs to be adequate and reliable literature sources. All the studies done till date reveal mothers as the first informants followed by friends and relatives but in some parts teachers are even not considered as a source [Maria et al, 2016; UNICEF, 2013; Ramachand et al, 2015]. This is something which is to be worked upon since teachers can be the best source which can explain about this phenomenon effectively accurately to their wards.

Menstrual hygiene is of utmost importance which can prevent various infections amongst girls. Appropriate MHM is lacking in most parts of India and world but is improving since the easy availability of durable and hygienic sanitary product such as pads is increasing [UNICEF, 2015; Dasgupta and Sarkar, 2007; Senapathi et al, 2018]. A major issue which affects girls during menstruation more than it does are the myths and taboos faced by them. There are innumerable restrictions imposed related to entry inside temples, holy places, rituals etc., food restrictions, not going far off and even not at school in some places [Dasgupta and Sarkar, 2007; UNICEF 2013; Chinyama et al, 2019; Bachloo et al, 2016]. It's mainly due to the lack of knowledge amongst the society as a whole.

Inappropriate disposal of used sanitary products is posing a great threat to environment these days. Though majority of girls are disposing inside dustbins or reusing in case of cloth but they are unaware of its significance and considering it as routine solid waste but burning, burying and throwing away in open fields are also some common methods of disposal of used pads [Maria et al, 2016; Sharma et al, 2017].

The main objective of this study was to assess that how the phenomenon such as menstruation is actually considered by the adolescent girls of the researched area and the associated myths and taboos they face. Hence, it is immensely important to know the above points as this would help to decide the behavior and practices adopted by these girls towards menstruation. The myths and taboos are something which are to be legit understood and curbed but still are not fully researched, which we have covered in our study. Although many studies are being conducted throughout India regarding MHM, this one mainly aims at researching the above aspect in India

Material and Methods:

A cross-sectional study was undertaken among 115 school going adolescent girls in one government and two private co-educational schools of village Khera Khurumpur which comes under the field practice area of SGT Medical College, Gurugram. The study was conducted after obtaining ethical clearance from the Institutional Ethical Committee (IEC) of SGT Medical College, Gurugram as it was ICMR- STS approved project. The study was conducted during our special posting in MBBS 2nd Professional from July to August 2019 for data collection, analysis, and report preparation.

The respondents were chosen using simple random sampling and then we introduced to the topic of MHM and were thoroughly explained the purpose and pattern of this study and how this report will help Menstrual Hygiene Management (MHM) in India to become better. The

girls were provided a patient information sheet to understand the purposes, harms, and objectives of this study which was explained to them with the help of the research team volunteers. A pre-tested, pre-designed and structured questionnaire was distributed amongst the adolescent girls after obtaining their written informed consent which included questions related to the topics concerning awareness about menstruation, the sources of information regarding menstruation, the hygienic practices during menstruation, the restricted activities observed during menstruation and methods of disposal. Any queries raised were explained to them and they were asked to fill the questionnaire. The girls were explained that the research undertaken would not pose any kind of harm to their health, mental ability, and reputation. The research team assured the study participants that their responses and identity would not be revealed during the course of communication of the research results.

The girls were made aware regarding the importance of adopting healthy MHM measures and school authorities were also sensitized regarding the provision of appropriate water sanitation and hygiene (WASH) facilities to girls. The completed questionnaires were compiled accordingly out of which 24 girls did not respond. The data were entered into Microsoft Excel and analyzed using SPSS statistics version 21.0 software.

The Chi-square test was employed to evaluate any association between the rows and columns (Categorical Variables) in a contingency table. More specifically, this statistic measure would help to determine whether any difference exists between the qualitative variables.

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad \dots\dots (1)$$

Where,

O_i = Observed Frequency

E_i = Expected Frequency

i is the i^{th} position in the contingency table

1. Degrees of freedom (df) = (Number of categories – 1)
2. In the present study alpha level used was at 0.05 (5%)
3. Chi-squared test often is used as short for *Pearson's* chi-squared test but the present study has used both *Pearson's* Chi-squared test and Fisher's exact test.
4. When the zero cells having the expected frequency less than five then we use the *Pearson's* chi-squared test but in some cases, the cell frequencies were not less than five counts then we considered Fisher exact test as it is superior over the *Pearson's* Chi-square test in the above-mentioned situation.

In some parameters such as the knowledge about periods and myths and taboos associated with menstrual cycle, one respondent had multiple responses so the Chi-squared test could not be applied upon this. Chi-squared has been applied after considering and adding up the number of responses given by one respondent to each of the questions.

Interpretation

If the probabilistic value (p) is less than 0.05, meaning there is a significant association (relationship) between the categories. On the other hand, if the probabilistic value (p) greater than 0.05, tells there is no significant relationship between the groups under the consideration

Observation and Results:

The study was conducted among 115 school going adolescent girls from government and private schools of village Khera Khurumpur, district Gurugram. Only 91(79%) completed the study questionnaire and were considered for the study.

Table – 1 shows the demographic characteristics of girls and their parents. The mean age of girls is 13.75 ± 1.62 years but the age group was 10 – 17 years. All the girls belonged to the Hindu religion.

Table 1. Demographic Profile of the respondents

Demographic Characteristics	Number
Present age in years	
10-11	3 (3.30)
12-13	44 (48.35)
14-15	28 (30.77)
16-17	16 (17.58)
Educational qualification of Father	
Illiterate	4 (4.40)
Primary (1 st to 5 th)	6 (6.59)
Middle (6 th to 8 th)	9 (9.89)
Secondary (9 th to 10 th)	25 (27.47)
Higher secondary (11 th to 12 th)	37(40.66)
Graduate	9 (9.89)
Postgraduate	1 (1.10)
Educational qualification of Mother	
Illiterate	5 (5.49)
Primary (1 st to 5 th)	11 (12.09)
Middle (6 th to 8 th)	14 (15.38)
Secondary (9 th to 10 th)	26 (28.57)
Higher secondary (11 th to 12 th)	31 (34.07)
Graduate	4 (4.40)
Postgraduate	

Note: Parenthesis indicates percentage share

For majority of the respondents, their fathers were skilled workers and mothers were homemakers. The maximum qualification for both fathers and mothers was seen to be higher secondary pass.

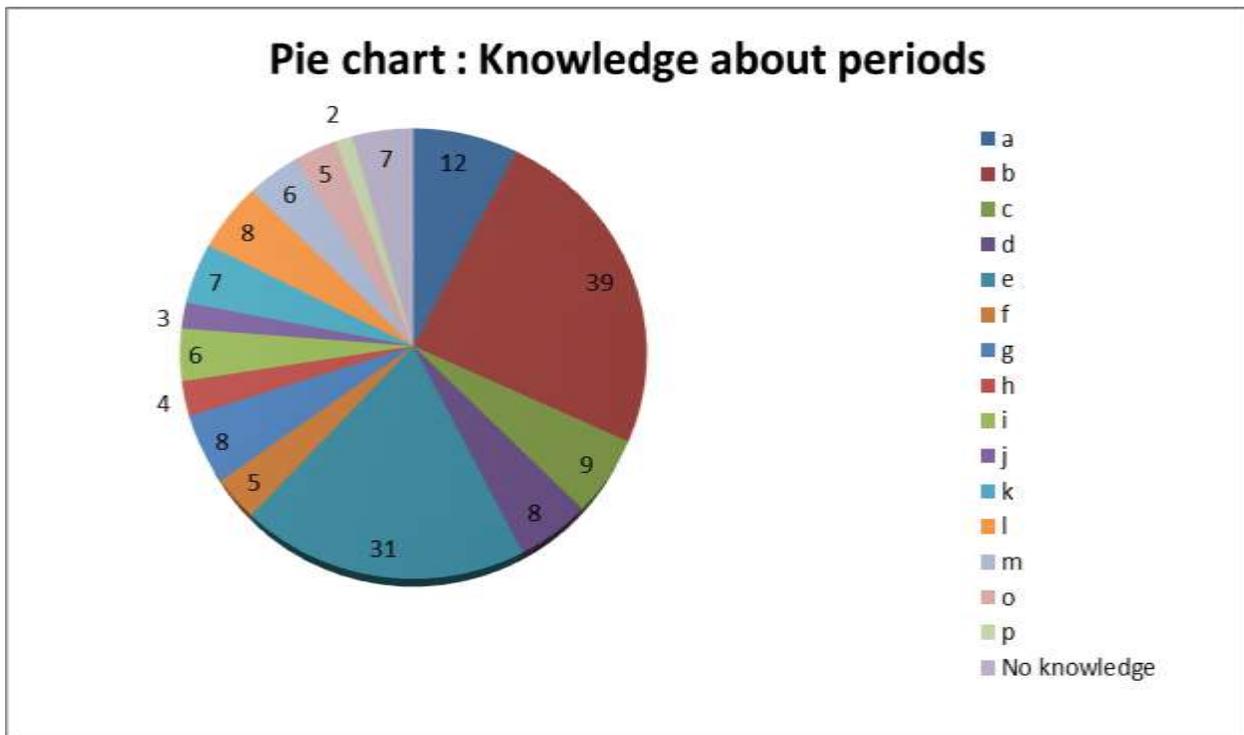
Table 2. Age at which girls attained menarche, knowledge about the period, and first informant regarding the phenomenon of menstruation.

Age of menarche, Knowledge about periods, First informant regarding the phenomenon of menstruation	
	Number (%)
1. Age of menarche	
11-12	24(26.37)
13-14	38 (41.76)
15-16	2 (2.20)
Non-menstruating	27 (29.67)
2. Knowledge about periods showing exact responses given by girls	
a – When no fertilization of the egg occurs then periods come	12 (13.2)
b– Periods come every month once for 4-5 days	39 (42.85)
c – Breakdown and removal of the inner lining of the uterus	9 (9.89)
d – Periods important in every girl's life	8 (8.79)
e – Flow of blood from the uterus	31 (34.06)
f – Ejection of dirty blood from the body	5 (5.49)
g – Onset of periods occur at the time of puberty	8 (8.79)
h – A very common phenomenon	4 (4.39)
i – Pain occurs in the abdomen and back	6 (6.59)
j – Maturity	3 (3.29)
k – Extra collection of blood inside the body	7 (7.69)
l – Bleeding	8 (8.79)
m – Purification of the body's blood	6 (6.59)
o – Hygiene should be maintained	5 (5.49)
p – Cleansing of stomach No knowledge	2 (2.19)
No knowledge	7 (7.69)
3. First informant regarding the phenomenon of menstruation	

Mother	60 (65.93)
Sister	11 (12.08)
Friend Lady teacher	12 (13.18)
Lady teacher	24 (26.37)
Doctor	1 (1.09)

Note: Parenthesis indicates percentage share

The majority of girls attained menarche at 13- 14 years of age. 64 (70.3%) and 27(29.6%) girls were found to be menstruating and non-menstruating respectively. 84 (92.3%) had some knowledge about periods. The most common response given by 43% of girls was that "periods come every month once for 4 -5 days" which showed their acumen regarding the menstruating process.



Mothers in 66% of cases were the first informant about the phenomenon of menstruation surprisingly followed by the lady teachers at school in 26.3% of cases.

Table 3 - Prevalence of myths and taboos related to menstruation in the researched area.

Prevalence of Myths and Taboos related to menstruation	Number
Various restrictions imposed on girls	
1 – Not allowed to enter the temple, be a part of holy ritual or marriage	73 (80.21)
2 – Not to touch pickle	17 (18.68)
3 – Not to go outside or far	2 (2.19)
4 – Not to go outside to play	13 (14.28)
5 – Not to enter the kitchen	3 (3.29)
6 – Not to eat pickles and oily food	11 (12.08)
7 – Not to eat pickles and oily food	1 (1.09)
8 – Not to lift heavyweight	6 (6.59)
9 – Not to touch plants	2 (2.19)
10 – Not to have tea	2 (2.19)
11 – Not to touch cow/ goat	3 (3.29)
12 – Not to talk about menses in front of male members	3 (3.29)
13 – Not allowed to touch holy books and ideals of God	9 (9.89)
14 – Not to eat sour substances	2 (2.19)
15 – Don't wash hair during periods	17(18.68)
No myths and taboos are faced	

Note: Parenthesis indicates percentage share

As reported earlier regarding the societal discrimination and stigma faced during the process of menses, 73(80%) girls were not allowed to enter the temple or become a part of any holy ritual or marriage. According to data collected, only 17(18.6%) girls faced no restrictions in their region during menstruation period.

Table 4. Menstrual Hygiene Management (MHM) measures adopted by the menstruating girls.

Menstrual Hygiene Measures observed amongst the menstruating adolescent girls	
	Number (out of 64)
1. Things used as a sanitary product	
a Pad	57 (89.06)
a,b Both pad and cloth	7 (10.94)
2. No. of times sanitary product is changed	
1	8 (12.50)
2	26 (40.63)
3	17 (26.56)
4	12 (18.75)
5	1 (1.56)
3. Sanitary product obtaining	
Shop	61 (95.31)

Home	3 (4.69)
4. Take a bath daily	
Yes	63 (98.44)
No	1 (1.56)
5. Cleansing of external genitalia	
Yes	54 (84.38)
No	10 (15.63)
6. Changing of Undergarments	
Yes	60 (93.75)
No	4 (6.25)
7. Disposal of sanitary product	
Dustbin	56 (87.5)
Dustbin and Burning	3 (4.69)
Throw in open fields	1 (1.56)
Burying	1 (1.56)
Disposal in a special container	3 (4.69)

Note: Parenthesis indicates percentage share

57(80%) menstruating girls used pads as the sanitary product and the majority changed their sanitary product twice a day. 95.3% of girls obtained their sanitary products from shops, 98.4% of menstruating girls took baths daily during periods. 84.3% of girls cleaned their genitalia once daily and 93.7% changed their undergarments daily. 87.5% disposed of their used sanitary products into the dustbin as a routine solid waste.

Table 5 - Attendance of school during periods and the Demonstrations given regarding menstruation at school

Attending school during periods, Demos given at school regarding the phenomenon of menstruation	Number
1. Attending school during periods (out of menstruating)	
Yes	61 (95.3%)
No	3 (4.69)
2. Demos given at school regarding the phenomenon of menstruation (all the girls)	
Yes	43 (47.2%)
No	48 (52.7%)

Note: Parenthesis indicates percentage share

95.3% of the menstruating girls attended school regularly during periods. 47.2% of the girls were provided demonstrations with regards to the phenomenon of menstruation at school.

Table 6 - Correlation between age of girls and other MHM parameters

PRESENT AGE							
Parameters	Response	10 - 11	12 -13	14 -15	16 -17	Total	Statistic al values
Number of times sanitary product is changed (out of menstruating)	1	0 (0.00)	2 (3.13)	5 (7.81)	1 (1.56)	8 (12.50)	p = 0.083
	2	0 (0.00)	13 (20.0)	8 (12.50)	5 (7.81)	26 (40.63)	
	3	0 (0.00)	3 (4.69)	10 (15.6)	4 (6.25)	17 (26.5)	
	4	0 (0.00)	4 (6.25)	2 (3.13)	6 (9.38)	12 (18.75)	
	5	0 (0.00)	1 (1.56)	0 (0.00)	0 (0.00)	1 (1.56)	
Cleansing of external genitalia (out of menstruating)	Yes	0 (0.00)	14 (21.8)	24 (37.5)	16 (25)	54 (84.37)	p < 0.05 (significant)
	No	0 (0.00)	9 (17.06)	1 (1.56)	0 (0.00)	10 (15.62)	
Knowledge about periods	1	0 (0.00)	15 (23.4)	5 (7.81)	4 (6.25)	24 (37.50)	P <0.05 (highly significant)
	2	0 (0.00)	6 (9.38)	12 (18.7)	6 (9.38)	24 (37.50)	
	3	0 (0.00)	1 (1.56)	6 (9.38)	6 (9.38)	13 (20.31)	
	4	0 (0.0)	1 (1.56)	2 (3.13)	0 (0.00)	3 (4.69)	
Myths and taboos	0		3 (4.69))	4 (6.25)	3 (4.69)	10 (15.15)	p <0.05 (highly significant)
	1		6 (9.38)	11(17.9)	5 (7.81)	22 (33.33)	
	2		7 (10.94)	6 (9.38)	5 (7.81)	20 (30.30)	
	3		6 (9.38)	3 (4.69)	3 (4.69)	12(18.2)	
	4		1 (1.56)	0 (0.00)	0 (0.00)	1 (1.52)	

	5		0 (0.00)	1 (1.56)	0 (0.00)	1 (1.52)	
--	---	--	----------	----------	----------	----------	--

Note: Parenthesis indicates percentage share

The above cross-tabulation (Table 6) shows a strong correlation of present ages of girls with an understanding of periods, with myths and taboos faced due to it, and with the cleansing of genitalia.

Table 7 - Correlation between school attendance during periods and MHM parameters

Attending school during periods				
Parameters answered only by menstruating females	Responses	Yes	No	Statistical values
Age of menarche	11-12	2 (3.28)	0 (0.00)	p = 1.00
	13 -14	23 (37.70)	1 (1.56)	
	15 -16	36 (59.02)	2 (3.13)	
Things used as a sanitary product	Pad	54 (84.38)	3 (4.69)	p = 1.00
	Both pad and cloth	7 (10.94)	0 (0.00)	
Number of times sanitary product is used	1	8 (12.50)	0 (0.00)	p < 0.05 (highly significant)
	2	25 (39.06)	1 (1.56)	
	3	17 (26.56)	0 (0.00)	
	4	11 (17.19)	1 (1.56)	
	5	0 (0.00)	1 (1.56)	

Note: Parenthesis indicates percentage share

The cross-tabulations as shown in Table 7, show a strong correlation between attending schools with repeated and regular changing of sanitary product during menesis.

Table 8 - Correlation between type of sanitary product and MHM parameters

Things used as a sanitary product					
Parameters	Responses	Not using anything	Pad	Both pad and cloth	Statistical values
Disposal of sanitary product	Dustbin	0 (0.00)	49 (53.85)	7 (7.69)	p < 0.05 (highly significant)
	Dustbin and burning	0 (0.00)	3 (3.30)	0 (0.00)	
	Throw in open fields	0 (0.00)	1 (1.10)	0 (0.00)	

	Burying	0 (0.00)	1 (1.10)	0 (0.00)	
	Disposal in special container	0 (0.00)	3 (3.30)	0 (0.00)	
	Non menstruating	27 (29.67)	0 (0.00)	0 (0.00)	
Take bath daily	Yes	0 (0.00)	56 (61.54)	7 (7.69)	p <0.05 (highly significant)
	No	0 (0.00)	1 (1.10)	0 (0.00)	
	Non menstruating	27 (29.67)	0 (0.00)	0 (0.00)	
Cleansing of external genitalia	Yes	0 (0.00)	48 (52.75)	6 (6.59)	p <0.05 (highly significant)
	No	0 (0.00)	9 (9.89)	1 (1.10)	
	Non menstruating	27 (29.67)	0 (0.000)	0 (0.00)	

Note: Parenthesis indicates percentage share

Table 8 - cross-tabulations show a strong correlation of things used as a sanitary product with disposal of the sanitary product, taking of daily bath, privacy, and with the cleansing of external genitalia in the girl participants.

Discussion and Conclusion:

The present cross-sectional study on Menstrual Hygiene Management (MHM) was conducted in the field practice area of SGT University, Gurugram including girls from both private and government schools of village Khera Khurumpur. The mean age was found to be 12-13 years, which is consistent with the findings of other studies [Sharma et al, 2017].

The mean age at menarche was 13 ± 1.08 years which is coherent with [Khanna et al, 2005] but some other studies reveal the variation in age at the time of menarche [Khanna et al, 2005; UNICEF, 2013] which is probably because of the environmental or regional influences.

The study highlighted that majority of girls considered menstruation as a physiological process and considered it as a normal process. However, 32% of the respondents knew that uterus was the actual source of bleeding. It is consistent with other studies [Dasgupta and Sarkar, 2007; Sharma et al, 2017; Maria et al, 2016]. Uterus being the source of bleeding and understanding of the female reproductive system are some important facts to be known by girls since this can help in myth and taboo reduction.

In the present study, some girls were unable to answer when asked regarding the phenomenon of menstruation properly due to the lack of accurate knowledge, this was consistent with some other studies [Chinyama et al, 2019; Bachloo et al, 2016].

It is assumed that with an increase in age the knowledge about periods became better since the elderly girls came up with more physiological and scientific answers which were found to be similar as per an earlier study[UNICEF, 2013]. It may also be due to the inclusion of the phenomenon of menstruation as a part of the curriculum in higher classes that is why the younger

girls do not have accurate knowledge about this topic and are surrounded by negative responses as compared to the girls studying in higher classes.

The present study revealed that mothers (65.9%) were the first informant regarding the phenomenon of menstruation followed by lady teachers (26.3%) at school. This finding was coherent with many of the studies reported in literature [Senapathi et al, 2018; UNICEF, 2013; Dasgupta and Sarkar, 2007; Maria et al, 2016; Ramachand et al, 2015; Kansal et al, 2016; Rani et al, 2019].

Fortunately, teachers were found to be acting as a major source of information in this study whereas all the other studies had different findings in terms of the secondary source of information which were sisters, relatives, friends, or internet/TV. Some studies also came up with highly contrasting findings [UNICEF, 2013; Ramachand et al, 2015] where teachers were not at all considered even as a source of information regarding periods. So for many girls teacher was the first informant, this fact was contradictory to many other studies which means that if this continues the girls would absolutely have a better outcome towards MHM.

In this study, 47.2% of the respondents reported that they have been given demonstrations regarding the phenomenon of menstruation at schools. These findings were found to be slight in accordance with the UNICEF study [UNICEF, 2013]. This is an important issue that should be considered at the international and national levels about the inclusion of the topic of menstruation as an early part of the curriculum in schools. So this is another major factor can help girls to know about menstruation before their first period and adopt correct MHM practices. This is again in contradiction to many other studies.

This study reveals that majority of the menstruating girl's bath daily during menstruation. Similar findings are reported by other studies [Sharma et al, 2017; Maria et al, 2016]. This shows that menstrual hygiene is adequate in the research area and that no bathing during menstruation is no more considered a taboo.

The majority (84.3%) of menstruating girls in this study cleansed external genitalia once daily during menstruation. These findings were similar to other reported studies [Senapathi et al, 2018; Sharma et al, 2017] and highly contrasting with [Dasgupta and Sarkar, 2007] where only 15% cleansed daily. Maybe these regional variations were found to be due to variation in the levels of knowledge regarding MHM among the inhabitants.

Expectedly, the study revealed various myths and taboos prevalent in the researched area as the majority of respondents reported that menstruating girls were not allowed to enter temples or touch holy objects, be a part of any religious functions and rituals; faced food restrictions, and were not allowed to consume sour oily foods and tea; not allowed to go outside, at far off places or to play outside and to enter the kitchen; not allowed to talk or reveal that they are menstruating in front of the male members. Similar findings have been reported strongly by other studies as well [Senapathi et al, 2018; UNICEF, 2013; Dasgupta and Sarkar, 2007; Sharma et al, 2017; Maria et al, 2016; Bachloo et al, 2016]. 18.6% of girls in this study didn't face any restrictions which were reported in other studies but with varying percentages [Dasgupta and Sarkar, 2007; Sharma et al, 2017].

It has been observed in the present study that the majority (89%) of the menstruating girls used pads and the rest 11% used both cloth and pad. These findings were coherent with some other studies [Senapathi et al, 2018; Sharma et al, 2017; Maria et al, 2016]. This may be due to the improvement of socio-economic background as well as the easy availability of pads nowadays. Some studies reported contrasting findings where the majority used cloth or cotton [Dasgupta and Sarkar, 2007; Chinyama et al, 2019]. This can be due to the lack of good socio-economic status of the families or lack of resources. Many of the menstruating girls in this study changed their sanitary products two times a day and quite a less changed five to six times a day. Similar findings were reported by other studies [Senapathi et al, 2018] and some reported contrastingly [UNICEF, 2013]. This must be depending on the sanitary product being used and its durability.

Fortunately, the school dropout rate was found to be quite low in the present study since 95.3% of the menstruating girls attended school regularly during periods which may be because of using an appropriate and durable sanitary product. This was a striking finding as most of the other studies report that the school dropout rates to be quite high.

The study revealed that the majority (85.6%) of the menstruating girls using pads disposed them in dustbin considering as routine waste. Some also burnt, buried, and threw in open fields. These findings are coherent with some other reported studies [Maria et al, 2016; Rani et al, 2019; Dasgupta and Sarkar, 2007]. The knowledge regarding the correct disposal of used sanitary products is increasing in various parts of India but disposing of pads as a part of the routine waste is something that is to be worked upon and requires additional awareness among the girls.

Though many of the girls considered menstruation as a normal and physiological process majority were unaware of the uterus being the actual source of bleeding. Fortunately, teachers are acting as the first informant regarding the phenomenon of menstruation in this study for a high percentage of girls but the percentage needs to rise as teachers can be the best and the most accurate source for making girls understand this phenomenon. Further, more number of girls need to be sensitized regarding this topic at schools at an early age. Gleefully the menstruating girls attended school regularly which is not affecting their education and learning. Also, Menstrual Hygiene Management (MHM) measures amongst adolescent girls were found to be acceptable. Grossly most of the menstruating girls were disposing of the used sanitary products in the dustbin considering it as a routine solid waste. Girls need to be imbibed regarding the correct way of disposing of used sanitary product and what harm it is posing to the environment if such practices are not adopted.

Acknowledgement:

The authors are grateful to the Indian Council of Medical Research (ICMR) which through the medium of Short Term Studentship (STS) programme provided an opportunity to make Undergraduate medical students familiarize themselves with research methodologies and techniques. The research was conducted using the stipend provided by the ICMR. The authors would like to acknowledge the support and cooperation of all participants and their willingness to provide answers to the query raised. The authors also thank S.G.T. University for all the cooperation and support while carrying out this research study.

References:

1. Bachloo, T., Kumar, R., Goyal, A., Singh, P., Yadav, S.S., Bhardwaj, A., & Mittal, A. (2016). A study on perception and practice of menstruation among school going adolescent girls in district Ambala Haryana, India. *International Journal of Community Medicine and Public Health*, 3, 931-937. <https://pdfs.semanticscholar.org/cc76/51c296b0efd0b73c2686e7e91841e516cd20.pdf>
2. Chinyama, J., Chipungu, J., Rudd, C., Mwale, M., Verstraete, L., Sikamo, C., Mutale, W., Chilengi, R., & Sharma, A. (2019). Menstrual hygiene management in rural schools of Zambia: a descriptive study of knowledge, experiences and challenges faced by schoolgirls. *BMC Public Health*, 19 (16). <https://doi.org/10.1186/s12889-018-6360-2>
3. Dasgupta, A., & Sarkar, M. (2008). Menstrual Hygiene: How Hygienic is the Adolescent Girl?. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*, 33(2), 77–80. <https://doi.org/10.4103/0970-0218.40872>
4. Kansal, S., Singh, S., & Kumar, A. (2016). Menstrual Hygiene Practices in Context of Schooling: A Community Study Among Rural Adolescent Girls in Varanasi. *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine*, 41(1), 39–44. <https://doi.org/10.4103/0970-0218.170964>.
5. Khanna, A., Goyal, R. S., & Bhawsar, R. (2005). Menstrual Practices and Reproductive Problems: A Study of Adolescent Girls in Rajasthan. *Journal of Health Management*, 7(1), 91–107. <https://doi.org/10.1177/0972063404007001035>.
6. Ramachandra, K., Gilyaru, S., Eregowda, A., & Yathiraja, S. (2016). A study on knowledge and practices regarding menstrual hygiene among urban adolescent girls. *Int J Contemp Pediatr*, 3, 142-5. <http://dx.doi.org/10.18203/2349-3291.ijcp20160147>
7. Rani, M., Kumari, P., & Rani, N. (2019). Menstrual practices and knowledge among adolescent girls: a cross-sectional study in rural area of Haryana. *Int J Health Sci Res*, 9(1), 132-137. https://www.researchgate.net/publication/330618884_Menstrual_Practices_and_Knowledge_among_Adolescent_Girls_A_Cross-Sectional_Study_in_Rural_Area_of_Haryana
8. Gopalkrishnan, S. (2016). Breaking The Silence: World Menstrual Hygiene Day. *India Water Portal*, 20(43). <https://sanitation.indiawaterportal.org/english/node/4676>
9. Senapathi, P., & Kumar, H. (2018). A comparative study of menstrual hygiene management among rural and urban adolescent girls in Mangaluru, Karnataka. *International Journal Of Community Medicine And Public Health*, 5(6), 2548-2556. doi:<http://dx.doi.org/10.18203/2394-6040.ijcmph20182193>
10. Sharma, M.L., Johal, K.K., Malhotra, V. (2017). To Study, The Knowledge, Attitude, And Practices Regarding Menstrual Hygiene And Restrictions Imposed Upon Them During Menstruation in The Adolescent Girls Studying in A Government And A Private School in Sahibzada Ajit Singh Nagar (Mohali City) In Punjab – A Comparison Pilot Study. *IOSR*

Journal of Dental and Medical Sciences, 16(8), 30-37. 10.9790/0853-1608103037.
<http://www.iosrjournals.org/iosr-jdms/papers/Vol16-issue8/Version-10/F1608103037.pdf>

11. Normalizing menstruation, empowering girls. The Lancet Child & Adolescent Health. 2018 2(6),379. [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(18\)30143-3/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(18)30143-3/fulltext)
[https://doi.org/10.1016/S2352-4642\(18\)30143-3](https://doi.org/10.1016/S2352-4642(18)30143-3)
12. UNICEF. Menstrual Hygiene Day <http://menstrualhygieneday.org/about/why-menstruationmatters/>
13. UNICEF. Menstrual Hygiene in Schools in 2 countries of Francophone West Africa 2013 Available from:
https://www.unicef.org/wash/schools/files/MHM_study_report_Burkina_Faso_and_Niger_English_Final.pdf
14. Van Eijk, A.M., M, Sivakami., Thakkar, M.B., Bauman,A., Laserson,K.F., Coates,S.,& Phillips-Howard,P.M.(2016). Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis.BMJ Open, 6(6), Article e010290. doi:10.1136/bmjopen-2015-010290
<http://www.indiaenvironmentportal.org.in/files/file/Menstrual%20hygiene%20management%20India.pdf>
15. Bhupinder Kaur Anand, Marwaha Manvinder pal Singh, Archana Chaudhary Knowledge Regarding Contraceptives in Women with Unmet Need. Asian Journal of Medical Research July-September 2018 Vol 7(3)
16. Urender Singh, Archana Chaudhary, M Pal Singh, MPS Sawhney, Busi Karunanand, BK Anand (2018) A study of Hormonal Profile (Luteinizing Hormone, Estrogen, Follicle Stimulating Hormone and Prolactin) in the women suffering from Acne Vulgaris. Ann. Int. Med.Den.2018 4(4):BC22-BC24