

## Knowledge and Practices of Menstrual Hygiene among Female Secondary School Students in Iragbiji, Osun State

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**Abstract.** Females reaching the age of puberty are supposed to be informed about menstruation and how to maintain hygienic practices during menstruation which include cleanliness, taking bath regularly during menstruation to avoid bad odour, washing of genitalia area, proper use of sanitary pads or napkins, accessibility to water for washing among others. This study therefore aimed at investigating knowledge and practices of menstrual hygiene among female secondary schools students in Iragbiji, Osun State. The objectives were to (i) assess the level of knowledge about menstruation; (ii) investigate knowledge of personal hygiene (iii) examine practice of use of pad/tissue paper/other materials used during menstruation and (iv) investigate practice of proper disposal of pad/tissue paper/other materials used during menstruation.

Descriptive research design of survey type was adopted for the study, the population comprised of all female students attending senior secondary schools in Iragbiji, Osun State. Proportionate sampling technique was used to select 320 female students. Self designed questionnaire was used to elicit information from the respondents; the questionnaire was validated by three experts in the Department of Health Promotion and Environmental Health Education, University of Ilorin, Ilorin. Reliability of 0.85r was obtained through split half method using Spearman Rank Order; questionnaire was administered and collected by the researcher and research assistants. Four (4) postulated hypotheses were tested using Pearson Product Moment Correlation at 0.05 alpha level.

The findings of this study reveal that:

- (i) Female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation. (calculated  $r = 0.033 < \text{critical } r = 0.095 @ \text{df} = 318$ )
- (ii) Female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene. (calculated  $r = 0.037 < \text{critical } r \text{ of } 0.073 @ \text{df of } 318$ )
- (iii) Female secondary school students in Iragbiji Osun State do not practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene. (calculated  $r = 0.074 < \text{critical } r \text{ of } 0.095 @ \text{df of } 318$ ).
- (iv) Female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation as a measure of menstrual hygiene. (calculated  $r = 0.073 < \text{critical } r \text{ of } 0.095 \text{ at } \text{df of } 318$ ).

The study concluded that female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation, do not have knowledge of personal hygiene, do not practice use of pad/tissue paper/other materials during menstruation and do not practice proper disposal of materials used during menstruation. Based on the findings of the study, this study recommended that Parents should educate their female children about menstruation even before

menarche; teachers should also be enlightened on how to break the silence around menstruation in school through health talk, seminars among others.

### 1. Introduction

Menstruation is one of the most normal biological processes as well as a key sign of reproductive health (Girl Up Initiative Uganda, 2016); it is a phenomenon which is unique to the females, the onset of menstruation is one of the most important changes occurring among the girls during the adolescent years; the first menstruation (menarche) occurs between 11 and 15 years with a mean age of 13 years (Dasgupta & Sarkar, 2008) while Kamaljit, Balwinder, Gurmeet and Neki, (2012) asserted that the first menstruation (menarche) occurs from 10 to 15 years of age with a mean age of 2½years.

It was revealed by Population Reference Bureau (2011) that in some parts of sub-Saharan Africa, this normal process (menstruation) is considered taboo and, consequently, is not discussed often. Due to the lack of knowledge and other essential resources, menstruation is often managed poorly and is described by school girls as a negative and isolating experience (Aniebue, Aniebue & Nwankwo, 2009). Adolescent girls constitute a vulnerable group; particularly in India where female children are neglected, menstruation is still regarded as something unclean or dirty in Indian society, the reaction to menstruation depends upon awareness and knowledge about the subject, the manner in which a girl learns about menstruation and its associated changes may have an impact on her response to the event of menarche, although menstruation is a natural process, it is linked with several misconceptions and practices, which sometimes result into adverse health outcomes (Dasgupta & Sarkar, 2008).

Vaughn, (2013) reported that, in Nigeria, especially in the rural villages, there exist the 'culture of silence' and shame on issues relating to sexuality and menstruation, members in these villages are conditioned to hide everything related to their private lives and public discussions on these are taboos. Menstruation

and its hygiene are rarely discussed openly at homes or in schools in rural villages. In most families, it is often treated with great secrecy and embarrassment. This is clearly attributed to cultural restrictions, preventing sufficient information from reaching women and young girls. The traditional culture and negative attitudes of village members has also strong impact on the discussion of menstruation and menstrual hygiene practices.

Scott, Ryus, Dolan, Dopson and Montgomery (2013) reported from a Ghanaian study which indicates that parents typically do not discuss sex or menstruation with their daughters until menarche. Many parents believe that it is the school's responsibility to teach these subjects. Educators describe the Ghanaian parenting style as cool and non-conversational. Even so, many parents complain that the girls never tell anyone when their menses begin, deciding instead to keep it a secret. Since puberty conversations are rare in the Ghanaian culture, at menarche, approximately half of schoolgirls in the study have no knowledge of menstruation. Some girls immediately tell their mothers, while others confide in a friend or sister. Those who confide in a peer are less likely to inform an adult. While most mothers introduce girls to cloth initially, nearly all girls who confide in their peers are familiar with sanitary pads, (Scott et al., 2013). Vaughn (2013) further maintained that findings from a Nigerian study suggest that women in the rural communities communicate with girls about the onset of menstruation by preparing special food for her and the rest of the house, passing on warnings about staying away from boys and about pregnancy risks. Onyegegbu, (2011) reported that often these messages are delivered in harsh tones, and sometimes false information is passed along. Other families secretly rejoice when a daughter matures to womanhood. When probed further about discussing menstruation with their daughters, the women stated that they often impart traditional practices and knowledge that they learned from their own mothers. Some mothers believe it is important to talk to their daughters about menstruation and they would like to be able to share biological information about menstruation, (Scot et al., 2013). However, the mothers admit not knowing much

correct information to transmit, (Onyegegbu, 2011).

Abioye-Kuteyi (2000) reported that parents especially mothers do not educate their daughters about various age of its onset, its duration and healthy practices during menstruation, due to this, the girls are not motivated to take the event lightly, the inadequate knowledge, misconception and wrong ideas lead to undue fear, anxiety and undesirable attitudes in the minds of the young girls, they often seek information from their peers, friends, or siblings who themselves do not possess adequate information on menstruation and menstrual hygiene.

Vaughn (2013) is of the opinion that, schoolgirls will continue to lack adequate knowledge regarding menstruation due to the absence of accurate information, education, and communication (IEC) materials about menstruation, the unavailability of developed school curriculum materials, and in the culture of silence. Girls may suffer unnecessarily both physically and psychologically during menses without sufficient and correct information. Physically, girls may not understand why they have irregular cycles, dysmenorrhea, and heavy menstrual flow or how to manage menstrual cramps or to prevent unwanted pregnancies, (Gumanga & Kwame-Aryee, 2012).

Bano and Al Sabhan (2015) posited that, 96 subjects (80%) had the knowledge that overall personal hygiene especially during the monthly periods can prevent pain and infections. In spite of the large percentage of girls being aware of this fact, only 10 (8.3%) girls took bath daily. On the other hand, 24 girls (20%) were found with the habit of bathing only after their periods were over. The frequency of cleaning external genitalia during menstruation was found to be satisfactory, among around 74 (62 %) of the subjects. Mutunda (2013) posited that, most participants in the FGDs were knowledgeable about the negative consequences of the unhygienic practices applied to managing their menstruation, such as not changing sanitary pads, or not washing regularly, and using unhygienic sanitary materials. They knew that

such practices can lead to rashes and bruises. Furthermore the girls noted that the use of materials such as rags torn from old textiles can cause vaginal itching, especially when not properly washed and dried. But due to their poverty the girls are unable to practice good hygiene during menstruation:

House, Mahon and Cavill (2012) opined that; to manage menstruation hygienically, it is essential that women and girls have access to water and sanitation. They need somewhere private to change sanitary cloths or pads; clean water for washing their hands and used cloths; and facilities for safely disposing of used materials or a place to dry them if reusable. Hence a lack of hand-washing after going to the toilet or changing a sanitary towel or tampon could spread infection either to the vagina, urethra or to the mouth of another susceptible person

A study by Dasgupta and Sarka, (2008) in a rural community showed that majority of the girls preferred cloth pieces rather than sanitary pads as menstrual absorbent. Only 11.25percent girls used sanitary pads during menstruation. In a study conducted in Rajasthan by Khanna, et al., (2005), it was revealed that three-fourths of the girls used old cloth during their periods and only one-fifth reported using readymade sanitary pads.

Busari, (2012) reported that out of 170 participants from illiterate mothers; (44.1%) used clothing materials as absorbent, 8.8% used sanitary pad, 11.8percent used cotton wool while 35.3percent were using tissue paper. Also, out of 1,330 from literate mothers 3.8percent were using clothing materials, 62.5percent were using sanitary pad, and 15percent were using cotton wool while 18.7percent were using tissue paper as absorbent. Bano and Al Sabhan (2015) posited that majority of the study participants (98.3%) used only readymade sanitary napkins as the absorbent material during their menstrual periods. Remaining 1.7percent used other materials such as homemade cotton pads. Upashe, Tekelab and Mekonnen, (2015), posited that 330 (39.9 %) of the respondents had good practice on menstrual hygiene. Majority 678 (82.2 %) of girls were using absorbent material during menstruation and two third 548 (66.2 %)

of girls were using commercial made sanitary pads as absorbent material during menstruation.

Mutunda (2013) reported that, due to lack of sanitary disposal facilities at the toilets, i.e. lack of bins, the girls usually wrap their used pads in old newspapers, which they put in plastics and hide in their school bags to dispose off after classes in the pit latrine at home, or they burn them, as one of the girls reported. Upashe et al., (2015) reported that out of one hundred fifty seven girls who were using clothes, eighty three (52.9 %) of the respondents were washing clothes with soap and water. Seventy one (45.2 %) of the respondents dried their washed clothes in sunlight. Half 430 (51.9 %) of girls change their pads or clothes three and above times per day. One hundred sixty seven (20.2 %) of the respondents were disposing their used sanitary pads in dustbin, one third 274 (33.3 %) of girls use paper to dispose the pads by wrapping. Subhash, Sushama, Reddy, Rathi, Pathak and Ughade (2011) also reported that, the commonly practiced methods of disposal of the used absorbent were, wrapping it in paper and either disposing it in a place which was used for solid waste disposal or burning it.

Yasmin et al., (2013) reported in their findings that 23(15.7%) of the respondents uses old washed cloth and out of them 16(69.5%) had problem while washing and drying of the cloth which mostly consisted of lack of privacy (93.7%). keeping the cloth in places away from prying eyes became a problem for them and for that they usually dried and stored in un-hygienic places. 98.6percent of the respondents followed some restriction or taboo during menstruation.

## 2. Statement of the Problem

The researcher observed that some female students who have attained menarche (onset of menstruation) do not have adequate knowledge of how to maintain hygienic practices during menstruation; some are not well informed about the practice while some are informed by their parents, teachers or their peers in school. It is also observed that some girls abstain from school during their menstrual period because of

bad odours associated with uncleanliness, improper use of absorbent materials such as new cloth, old cloth (rag), sanitary pad/towels and tissue paper and fear of staining their school uniforms. Inaccessibility to water for washing at school and some of the toilets or latrines in schools where the students are supposed to change their sanitary pads are either locked up or unclean. Adequate attention is yet to be given on the need to educate the female adolescent and the society at large on practices of good menstrual hygiene.

Busari (2012) carried out a study on menstrual knowledge and health care behaviour among adolescent girls in rural, Nigeria. The study revealed that 62% of the respondents had positive attitude towards menstruation, they agreed that menstruation is part of a woman's life. The remaining 38% had negative attitude towards menstruation. 20% were of the opinion that menstruation is a curse on womanhood, 13% agreed that God created menstruation to punish women and 5% agreed that people who are suffering from menstrual problems are suffering from the sins committed by their forefathers.

A large number of girls in the populace seem not to understand the rudiments behind practices of menstrual hygiene. Thus, to this end and to the best knowledge of the researcher, no study has delved into knowledge and practices of menstrual hygiene among female secondary schools in Iragbiji, Osun State. This is the gap the previous studies left unfilled that this researcher intends to fill in this study, thus, investigating the knowledge and practices of menstrual hygiene among female secondary school students in Iragbiji, Osun Sate.

## 3. Research Questions

- (a) What is level of knowledge of female secondary school students about menstruation in Iragbiji, Osun State?
- (b) Do female secondary school students have knowledge of personal hygiene as a measure of menstrual hygiene in Iragbiji, Osun State?

- (c) Do female secondary school students practice use of pad/tissue paper/other materials used during menstruation as a measure of menstrual hygiene in Iragbiji, Osun State?
- (d) Do female secondary school students practice proper disposal of pad/tissue paper/other materials used during menstruation as a measure of menstrual hygiene in Iragbiji, Osun State?

**4. Research Hypotheses**

The following research hypotheses were formulated to guide the study:

- (i) Female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation.
- (ii) Female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene.
- (iii) Female secondary school students do not practice use of pad/tissue paper/other materials used during menstruation as a measure of menstrual hygiene in Iragbiji, Osun State?
- (iv) Female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation as a measure of menstrual hygiene.

**5. Methodology**

Descriptive research design of survey type was adopted for this study, population of this study comprises of females attending senior secondary schools in Iragbiji, Osun State. A multistage

sampling technique was adopted for this study, stage I: purposive sampling technique was used to select only the SSSII and SSSIII female students only, this is because these group of students are likely to have been menstruating for a longer period of time compared to the lower class (SSSI). Stage II: proportionate sampling technique was used to select 63% of the total number of SSSII and SSSIII to arrive at 305, this number/sample is deemed acceptable according to Research Advisor (2010) who stated that, for any population less than 10,000, a minimum sample of 286 is acceptable. However, the researcher added 10% attrition rate to make the total selected sample to be 320.

Both face and content validity of the instrument was ascertained by three (3) experts in the Department of Health Promotion and Environmental Health Education. Split – half method was used to establish the reliability of the instrument, the data collected was split into two equal halves (odd and even numbers) for correlational analysis using Spearman Rank Order Correlation to estimate their degree of relationships, the correlation coefficient obtained 0.85r and this is high enough to show that the instrument is reliable for the study. In order to gain access to the students, the researcher obtained letter of introduction from the Head of Department, Health Promotion and Environmental Health Education, University of Ilorin, Nigeria. Consent of each respondent was sought for voluntary participation in the study; the instrument was administered with the help of two (2) research assistants. Data was sort, collated and coded using inferential statistics of Pearson Product Moment Correlation to analyze the postulated hypotheses at 0.05 alpha level using SPSS 20.0 version.

**6. Results**

**Hypothesis 1:** Female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation.

**Table 1: Pearson ‘r’ showing Relationship between Female Secondary School Students and Knowledge of Menstruation**

Variable	N	Mean	SD	Df	Calc. r-value	Critical value	r-	Decision
Female	320	49.45	5.64	318	0.033	0.095		Accepted
Knowledge of menstruation	320	9.48	1.04					

Table 1 shows the relationship between female secondary school students and knowledge of menstruation. Based on the analysis of the results, it indicated that the calculated  $r$  of 0.033 is less than the critical  $r$  of 0.095 with degree of freedom 318 at 0.05 level of significance. Since the calculated ‘ $r$ ’ value is less than the critical ‘ $r$ ’ value, the null hypothesis is hereby accepted. This implies that, female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation.

**Hypothesis 2:** Female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene.

**Table 2: Pearson ‘ $r$ ’ showing Relationship between Female Secondary School Students and Knowledge of Personal Hygiene**

Variable	N	Mean	SD	Df	Calc. r-value	Critical r-value	Decision
Female	320	49.45	5.64	318	0.055	0.095	Accepted
Knowledge of personal hygiene	320	12.66	1.48				

Table 2 shows the relationship between Female secondary school students and knowledge of personal hygiene. Based on the analysis of the results, it indicated that the calculated  $r$  of 0.037 is less than the critical  $r$  of 0.073 at 0.05 level of significant. Thus, the hypothesis is hereby accepted. This implies that, female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene.

**Hypothesis 3:** Female secondary school students in Iragbiji Osun State do not practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene.

Table 3: Pearson ‘ $r$ ’ showing relationship between Female Secondary School Students in Iragbiji Osun State and practice of use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene

Variable	N	Mean	SD	Df	Calc. r-value	Critical r-value	Decision
Female	320	49.45	5.64	318	0.074	0.095	Accepted
Practices of pad/tissue paper/other materials	320	27.42	3.62				

Table 3 shows the relationship between female secondary school students and practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene. Based on the analysis of the results, it indicated that the calculated  $r$  of 0.074 is less than the critical  $r$  of 0.095 at 0.05 level of significant. Thus, the hypothesis is hereby accepted. This implies that, female secondary school students in Iragbiji Osun State do not practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene.

**Hypothesis 4:** Female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation as a measure of menstrual hygiene.

**Table 4: Pearson ‘ $r$ ’ showing Relationship between Female Secondary School Students and Practice of Proper Disposal of Pad/Tissue/other Materials used during Menstruation**

Variable	N	Mean	SD	Df	Calc. r-value	Critical r-value	Decision
Female	320	49.45	5.64	318	0.073	0.095	Accepted
Practices of proper disposal	320	16.30	2.79				

Table 4 shows the relationship between female secondary school students in Iragbiji, Osun State and practice of proper disposal of pad/tissue/other materials used during menstruation. Based on the analysis of the results, it indicated that the calculated  $r$  of 0.073 is less than the critical  $r$  of 0.095 at 0.05 level of significant. Thus, the hypothesis is hereby accepted. This implies that, female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation.

## 7. Discussion

The tested hypothesis one revealed that female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation. This findings support the view of Vaughn (2013) who reiterated that, schoolgirls will continue to lack adequate knowledge regarding menstruation due to the absence of accurate information, education, and communication (IEC) materials about menstruation, the unavailability of developed school curriculum materials, and in the culture of silence. Girls may suffer unnecessarily both physically and psychologically during menses without sufficient and correct information. Physically, girls may not understand why they have irregular cycles, dysmenorrhea, and heavy menstrual flow or how to manage menstrual cramps or to prevent unwanted pregnancies, (Gumanga & Kwame-Aryee, 2012).

Bano and Al Sabhan (2015) reported in their studies that knowledge of the participants regarding different aspects of menstrual cycle show that 75 (62.5%) of the participants were aware of the menstrual cycle before their first menarche. This figure represents a good percentage, and may be due to better awareness among the population. A lack of knowledge was reported amongst some girls where 36.3% reported menstruation was a disease, 23% thought pregnant women menstruated and 27.8% thought menstrual blood came from the stomach. Even more prevalent were the misconceptions that menstrual blood contains harmful substances (62.4%), pain during menstruation means someone is unhealthy (49.3%) and it is harmful for a woman's body if

she runs or dances during her period (48.9%), (Prestwich, 2013).

The tested hypothesis two revealed that female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene. This finding corroborates with the assertion of House et al., (2012) that; to manage menstruation hygienically, it is essential that women and girls have access to water and sanitation. They need somewhere private to change sanitary cloths or pads; clean water for washing their hands and used cloths; and facilities for safely disposing of used materials or a place to dry them if reusable. Hence a lack of hand-washing after going to the toilet or changing a sanitary towel or tampon could spread infection either to the vagina, urethra or to the mouth of another susceptible person.

The tested hypothesis three revealed that female secondary school students in Iragbiji Osun State do not practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene. This finding is contrary with the view of Busari, (2012) who reported that out of 170 participants from illiterate mothers; (44.1%) used clothing materials as absorbent, 8.8% used sanitary pad, 11.8percent used cotton wool while 35.3percent were using tissue paper. Also, out of 1,330 from literate mothers 3.8percent were using clothing materials, 62.5percent were using sanitary pad, and 15percent were using cotton wool while 18.7percent were using tissue paper as absorbent. Bano and Al Sabhan (2015) posited that majority of the study participants (98.3%) used only readymade sanitary napkins as the absorbent material during their menstrual periods. Remaining 1.7percent used other materials such as homemade cotton pads.

The tested hypothesis four revealed that female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation. This finding is in line with Mutunda (2013) assertion that, due to lack of sanitary disposal facilities at the toilets such as lack of bins, the girls usually wrap their used pads in old newspapers, which they put in plastics and hide in their school bags to dispose off after classes in the pit latrine at home, or they burn them, as one of the girls reported. Subhash

et al., (2011) also reported that, the commonly practiced methods of disposal of the used absorbent were, wrapping it in paper and either disposing it in a place which was used for solid waste disposal or burning it.

## 8. Conclusion

Based on the findings of this study, the following conclusions were drawn:

- Female secondary school students in Iragbiji, Osun State do not have knowledge of menstruation.
- Female secondary school students in Iragbiji, Osun State do not have knowledge of personal hygiene.
- Female secondary school students in Iragbiji Osun State do not practice use of pad/tissue paper/other materials during menstruation as a measure of menstrual hygiene.
- Female secondary school students in Iragbiji, Osun State do not practice proper disposal of pad/tissue/other materials used during menstruation as a measure of menstrual hygiene.

## 9. Recommendations

- Parents should educate their female children about menstruation even before menarche; teachers should also be enlightened on how to break the silence around menstruation in school through health talk, seminars among others.
- Health educators should sensitize females through jingle/advertisement on radio and television on how to maintain hygienic practices during menstruation.
- Government should reduce tax on manufacturers of sanitary products and regulate sanitary products price to make it very affordable for the female folks.
- Health care givers should also be actively involved in promoting female menstrual hygiene to reduce the disease burden associated with poor menstrual hygiene and enlighten the females on proper disposal of pad/tissue paper/other materials by organizing health talks and seminars in schools.

## References

- Abioye-Kuteyi E., (2000). Menstrual Knowledge and Practices amongst Secondary School Girls in Ile - Ife, Nigeria. *The Journal of the Royal Society for the Promotion of Health* 120(1):23-26. <http://rsh.sagepub.com.libproxy.lib.unc.edu/content/120/1/23full.pdf+html> (accessed 20 January 2016).
- Aniebue U. U., Aniebue P.N. & Nwankwo T.O. (2009). The Impact of Pre-Menarcheal Training on Menstrual Practices and Hygiene of Nigerian School Girls. *Pan African Medical Journal*; 2 (9): 25 -30.
- Bano, R. & Al Sabhan F. A. (2015). Study of Knowledge and Practice of University Females regarding Reproductive Health and Hygiene in Hail, Saudi Arabia. *International Journal of Women's Health and Reproduction Sciences*, 3(1) 31 – 39.
- Busari, A. O. (2012). Menstrual Knowledge and Health Care Behavior among Adolescent Girls in Rural, Nigeria. *International Journal of Applied Science and Technology*; 2 (4) 149 - 154.
- Dasgupta A, Sarkar M (2008). Menstrual Hygiene: How Hygienic is the Adolescent Girls? *Indian J. Community Med.* 33(2):77-80.
- Girl Up Initiative Uganda, (2016). The 2030 Agenda: What role does menstrual hygiene play? Global Poverty Project.
- Gumanga, S., Kwame-Aryee, R. (2012). Menstrual characteristics in some adolescent girls in Accra, Ghana. *Ghana Med J.* 46(1): 13 - 16.
- House, S.; Mahon, T. & Cavill, S. (2012): Menstrual hygiene matters. A Resource for Improving Menstrual Hygiene around the World. London: WaterAid. [URL](#) (Accessed: 26.01.2016).
- Kamaljit K., Balwinder, A., Gurmeet K. S. & Neki, N.S. (2012). Social beliefs and practices associated with menstrual hygiene among adolescent girls of Amritsar, Punjab, India. *Journal of International Medical Science Academy*, 25(2), 69 -70.

- 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) 91–97.
- Mutunda, A. (2013). Factors impacting on the menstrual hygiene among school going adolescent girls in Mongu district, Zambia A mini-thesis submitted in partial fulfillment of the requirements for the degree of Master in Public Health at the School of Public Health, University of the Western Cape,
- Onyegebu, N. (2011). Menstruation and Menstrual Hygiene among women and young females in rural eastern Nigeria. *Journal of the Science Teachers Association of Nigeria*. From <http://stanonline.org/journal/pdf/JSTAN-Nkadi%202011.pdf> (Accessed 8 May 2016).
- Population Reference Bureau, (2011). The world's women and girls: 2011 data sheet. Population Reference Bureau. Data sheet, 2011. <http://www.prb.org/pdf11/world-women-girls-2011-data-sheet.pdf> (accessed 20 January 2016).
- Scott, L. M, Ryus, C. R, Dolan, C., Dopson, S. & Montgomery, P. (2013). The power of ordinary objects: investigating menstrual care in Ghana. Working paper. Oxford University; <http://www.sbs.ox.ac.uk/research/people/Documents/Linda%20Scott/Scott%20Power%20of%20Ordinary%20Objects%20.pdf> (Accessed 20 January 2016).
- Subhash B. T., Sushama S. T., Reddy, M., Rathi, N., Pathak, K., Ughade, S. (2011). Menstrual hygiene: knowledge and practice among adolescent school girls of Saoner, Nagpur district. *Journal of clinical and diagnostic research*. 5(5):1027-1033. (Accessed 13 October, 2016).
- Upashe, S. P., Tekelab, T. & Mekonnen, J. (2015). Assessment of Knowledge and Practice of Menstrual Hygiene among High School Girls in Western Ethiopia. *Bio Med Central Women's Health*, 15:84.
- Varghese M., Ravichandran L. & Anandhan, A. K. (2015). Knowledge and Practice of Menstrual Hygiene among Adolescent Girls. *Indian Journal of Youth and Adolescent Health*, 2(3).
- Vaughn, J. G. (2013). A Review of Menstruation Hygiene Management among Schoolgirls in Sub-Saharan Africa. A paper presented to the faculty of The University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Public Health in the Department of Maternal and Child Health.
- Yasmin, S., Manna, N., Mallik, S., Ahmed, A. & Paria B (2013). Menstrual Hygiene among adolescent school students: An indepth cross-sectional study in an urban community of West Bengal, India. *Journal of Dental and Medical Sciences*. 5(6)22-26. [www.iosrjournals.org](http://www.iosrjournals.org)