

Full Length Research Paper

Menstrual health: the unmet needs of adolescent girls' in Sokoto, Nigeria

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The perception and appropriate hygiene practices of girls towards menstruation is closely linked with their level of knowledge and beliefs. This study aimed to assess the level of knowledge on menstruation and hygienic practices among adolescent school girls in an urban city, Nigeria. The study was a cross sectional survey and a total 122 girls from 4 out of the 9 schools' were recruited using a multistage sampling technique to select the schools, and systematic sampling method proportionate to size (proportion of total study unit accounted by each school) after a random selection of the first respondent, using the list of students as the sampling frame and sampling interval of 30. Overall, a total of 79 (65%) of the respondents had high knowledge. 15% of respondents' indicated their major source of information on menstruation from their school teachers. There is a significant gap in knowledge and with minimal role played by the school environment to provide appropriate information during their formative years. The ages of the respondents ($P = 0.93$), education of their mothers ($P = 0.173$) and the sources of information regarding menstruation ($P = 0.575$) were found not to be statistically significant with respect to the knowledge of menstruation while there was a statistically significant relationship between religion ($P = 0.0001$) and level of study of the girls and knowledge of menstruation ($P = 0.048$). Concerning the practice of menstrual hygiene, the majority 106 (87%) of the girls used sanitary pads, only. There was a significant statistically association between education of their mothers ($P = 0.015$), religion ($P = 0.0001$) and occupation of respondents mother ($P = 0.0028$) with respect to the reported menstrual hygiene practices. Hence the need for targeted systematic information to adolescent through curriculum reviews towards better knowledge and practice of menstrual hygiene.

Key words: Menstruation, adolescence, secondary school, menstrual hygiene.

INTRODUCTION

The onset of menstruation is one of the most important changes occurring among girls during the adolescent years. Although menstruation is a natural process, it is linked with several misconceptions and practices which sometimes results in adverse health effects (Dasgupta et al., 2008). While some women take the monthly menstruation for granted finding in it a reassurance of womanhood, fertility and freedom from pregnancy, for others it represent an unhygienic phenomenon and connotes moral and spiritual uncleanliness, a sign of

disease or a curse for evil and several misconceptions which varies with the local socio-cultural and economic context (Umeora et al., 2008; Ten, 2007; Swensen, 1987; Mudey et al., 2010; Garg, 2001; George 1994; Dhingra, 2009; Lawan, 2010). Many young girls often face serious health problems as a result of the strong parental bondage with traditional beliefs about menstruation. These girls suffer many gynaecological problems including infections of the reproductive organs as a result of poor personal hygiene and unsafe sanitary conditions (Bhatia et al., 1995; Avasarala et al., 2008; Khanna et al., 2005; Aniebue et al., 2009). Furthermore, inappropriate disposal of absorbents used during menstruation was reported to contribute to the growing urban waste problem in developing countries (Ten, 2007).

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Good hygiene, such as use of sanitary pads and high washing of the genital area, is essential during menstruation. Women and girls of reproductive age need access to clean and soft absorbent sanitary products, which in the long run protect their health (Lawan, 2010).

The perception and reaction of girls towards menstruation depends to a larger extent upon their awareness and knowledge of this phenomenon. In most cases there is very little awareness about menstruation among girls when they first experience it. Social prohibitions and negative attitude of parents in discussing the related issues openly has blocked the access of adolescent girls to the right kind of information especially in rural and tribal communities. (Swensen, 1987; Mudey et al., 2010; Adinma et al., 2008). This was further under scored by the reported poor levels of knowledge among girls when they had their first menstrual experience (Dasgupta et al., 2008; Swensen, 1987; Mudey et al., 2010; Aniebue et al., 2009).

It has been rightly observed that women having better knowledge regarding menstrual hygiene and safe practices are less vulnerable to RTI and its consequences (Dasgupta et al., 2008; Mudey et al., 2010). In most cases, information received by girls about menstruation is often misleading and or incomplete. There is therefore the need to explore their level of knowledge and practices regarding menstruation and menstrual hygiene which this study aimed to achieve among secondary school girls in Sokoto for evidence based intervention.

METHODOLOGY

This was a cross-sectional descriptive study involving adolescent girls in some selected secondary schools in Sokoto metropolis. The sample size of 122 was estimated using Fishers formulae for descriptive observational studies for target population of more than 10,000 (Lwanga et al., 1991; Araoye, 2003). The student registers in the selected schools were used to draw up a sampling frame of 3620 with a sampling interval of 30. Using a multistage sampling technique, 4 out of 9 girl secondary schools were randomly selected by simple random sampling technique. The proportion of girls in the schools were selected using the proportionate to size sampling method and finally girls recruited for study in each of the schools using the systematic sampling technique after selecting the first respondent by simple random sampling.

Pretested structured self administered questionnaire was used to collect data. The questionnaire sought information on bio data, age at menarche, knowledge of menstruation, menstrual hygiene practices during menstruation and check list to assess menstrual hygiene related topics in the curriculum of integrated/health science subjects.

Approval for the conduct of the study was granted by the Sokoto State School management board and the state ministry of Health. Letters were sent to the Principals of the selected schools. On the appointed days, girls were duly informed by the researcher on the aim and objectives of the study and their willingness to participate in the study and the response was appropriately marked in the space provided on the questionnaire. A 'yes' response led to the full administration of the questionnaire, while a 'no' response automatically resulted in the termination of questionnaire administration.

The questionnaires were sorted out for completeness and accuracy, data entry and analysis done using EPI Info version 3.4.2 (2008) computer soft ware program. Ten questions were used to assess the respondents knowledge on menstruation, each question attract one mark and zero for a wrong answer. A score of 50% and above was considered high knowledge while a score of less than 50% as low knowledge. Five questions were used to assess practice of menstrual hygiene with each correct answer attracting a point and respondents who scored three or more or had less than three marks practiced proper and improper menstrual hygiene respectively, as similarly described by previous studies (Lwanga et al., 1991; Kana et al., 2007; Umar et al., 2008). Association between dependent and independent variables was determined using chi-square and level of significance set at p less than 0.05.

RESULTS

The ages of the girls ranged from 15 to 20 years with a mean age of 16.75 ± 1.25 years. The age at menarche varied from 9 to 16 years, with, 39 (32%) menstruated first at 13 years, 5 (4%) at 16 years and only one (0.8%) at 19 years, with a mean age at menarche being 13.3 ± 1.7 years. Among the 122 respondents, 36 (29.5%) were Hausas, followed by the Yoruba's - 18 (14.8%). More than half, 67 (54.9%) were Christians while Muslims were 55 (45.1%). The majority, 78 (64%) of the girls were in Junior secondary school (JSS) classes while 44 (36%) were of the senior secondary school (SSS) classes. A total of 82 (65.4%) and 40 (34.6%) respondents' live at home with their parents/guardians and in school respectively. A total of 57 (46.7%) mothers of the girls had post secondary education, 4 (3.3%) had only primary education while 12 (9.8%) had no education; 70 (57.4%) were actively working while 20 (16.4%) being full time housewives (Table 1).

With regards to the knowledge of menstruation, a total of 79 (65%) of the respondents had high knowledge while 43 (35%) of them had low knowledge (table 2). More than half, 69 (56.6%) of the girls got information on menstruation from their mothers and grandmothers, 15 (12.3%) from teachers and 25 (20.5%) from friends (Table 3). The majority of the respondents, 118 (96.7%) knew that menstruation is a normal physiologic process and 96 (78.7%) of the respondents reported that the menstrual blood comes from the uterus.

The ages of the respondents ($P = 0.93$), education of their mothers ($P = 0.173$) and the sources of information regarding menstruation ($P = 0.575$) were found not to be statistically significant with respect to the knowledge of menstruation while there was a statistically significant relationship between religion ($P = 0.0001$) and level of study of the girls and knowledge of menstruation ($P = 0.048$) (Table 4). Concerning the feelings the girls had during their first menstruation, 65 (53%) reported fear, 30 (25%) shame while 23 (19%) felt normal (Table 5).

When asked concerning the practice of menstrual hygiene, the majority 106 (87%) of the girls used sanitary pads, 5 (4%) toilet papers with only one (1%) using old piece of cloth; the majority, 73 (60%) changed sanitary

Table 1. Socio-demographic characteristics of respondents' (N = 122).

Age (years)	N (%)
15-17	73 (60)
18-20	49 (40)
$\bar{X} = 17.2 \pm 0.19$	
Age at menarche (yrs)	N (%)
09-Dez	27 (22)
13-16	95 (78)
Level in secondary school	N (%)
JSS	44 (36)
SSS	78 (64)
Mothers' educational status	N (%)
None	12 (10)
Quranic only	15 (12)
Primary	4 (3)
Secondary	34 (28)
Tertiary	57 (47)
Occupation of Respondents' mother	N (%)
Business/ trading	70 (57.4)
Civil servant	31 (25.4)
Farmer	1 (0.8)
Full time housewife	20 (16.4)
Tribe	N (%)
Hausa	36 (29.5)
Ibo	27 (22.1)
Yoruba	18 (14.8)
Fulani	8 (6.6)
Others	33 (27)

Table 2. Respondents' level of knowledge on menstruation (N = 122).

Low (<50%)		High (≥50%)	
N	%	N	%
43	35	79	65

Table 3. Source of information about menstruation.

Source of information	N (%)
Mother/grand mother	69 (56.6)
Friends	25 (20.5)
Teacher	15 (12.3)
Others (Sister, neighbours)	13 (10.7)
Total	122 (100)

Table 4. Factors associated with the level of Respondents Knowledge of menstruation.

Respondents' characteristics	Level of knowledge		Chi square value	P value
	High ($\geq 50\%$)	Low ($< 50\%$)		
Age (yrs) of Respondents'				
<18	48	25	$X^2 = 0.008$	
≥ 18	31	18	Df = 1	P = 0.93
Respondents' Level of study				
JSS	34	10	$X^2 = 3.91$	P = 0.048
SS	45	33	Df = 1	
Religion of Respondents'				
Christianity	58	9	$X^2 = 28.9$	P = 0.0001
Islam	21	34	Df = 1	
Literacy status of Respondents' mother				
Literate	59	36	$X^2 = 1.86$	P = 0.173
Illiterate	20	7	Df = 1	
Source of information				
Friends	16	9	$X^2 = 2.89$	
Teacher	9	6	Df = 1	P = 0.575
Mother/grand mother	48	21		
Sister	3	3		
Others	3	4		

Table 5. Opinion of respondents' on menstruation.

Respondents feeling	N (%)
Fear	65 (53)
Guilt	4 (3)
Normal	23 (19)
Shame	30 (25)
Total	122 (100)

pads three times a day, 81(66%) washed the external genitalia with soap and water and more than half, 65(53%) collected the sanitary pads after usage and burnt them (Table 6). The ages of the respondents ($P = 0.659$), where respondents live ($P = 0.103$), level of study of the respondents ($P = 0.259$) and the sources of information ($P = 0.304$) were found not to be statistically significant while there was a significant statistically association between education of their mothers ($P = 0.015$), religion ($P = 0.0001$) and occupation of respondents mother ($P = 0.0028$) with respect to the reported menstrual hygiene practices (Table 7).

Concerning what participants decided to avoid during menstruation, prayers was found to be the most common restriction 53 (51%) among the girls, followed by avoidance of certain foods 49 (40.4%) (Table 8). Among reasons given for avoiding prayers and certain foods

were religious injunctions 49 (47.1%) and fear for the feeling of discomfort/pain, 50 (48.1%) respectively (Table 9).

DISCUSSION

In northern Nigeria as in most parts of the country, menstruation and other reproductive health issues are often not discussed openly. In this study, the ages of the girls ranged from 15 to 20 years and this was similar to the ages of the subjects in studies from India (Omidvar et al., 2010) but higher than those obtained from other studies in East Delhi, India (Nair et al., 2007), Anand district, Saudi Arabia (Tiwari et al., 2006), Jammu and Kashmir State, India, (Dhingra, 2009) and Masouri Dakahlia Governorate, Egypt (El-Gilany et al., 2005),

Table 6. Respondents menstrual hygiene Practices.

Respondents menstrual hygiene practices	N (%)
Absorbents used	
New piece of cloth	10 (8)
Old piece of cloth	1 (1)
Sanitary pad	106 (87)
Toilet paper	5 (4)
No of times absorbents changed /day	
Once	2 (2)
Twice	35 (28)
Thrice	73 (60)
Four times	10 (8)
Five times	2 (2)
Cleaning of external genitalia	
Soap and water	81 (66)
Water and antiseptic solution	35 (29)
Water only	6 (5)
Disposal of used absorbents	
Cloth are used without washing	7 (6)
Pads collected and burnt	65 (53)
Pads wrapped up and thrown away	50 (41)

where the reported age were between 11 to 18 years. The subjects in our study demonstrated high level of knowledge (65%) with regards to menstruation which is similar to the observations of Omidvar and his colleague (2010). However, lower levels of knowledge were recorded from similar studies elsewhere in India (Dhingra 2009; Adhikari et al, 2007). The high level of knowledge observed in our study may not be unrelated to the diverse socio-cultural background of the respondents and the cosmopolitan nature of the study area in contrast to other studies that had homogenous backgrounds and were mainly rural settings.

Mothers were the commonest source (57%) of information on menstruation reported by the girls and this is consistent with findings from similar studies that reported mothers as the commonest source of information accounting for 48, 54 and 92.2% in studies conducted in East India (Dasgupta et al., 2008), South India (Omidvar et al., 2010) and Egypt (El-Gilany et al., 2005) respectively.. This is not unexpected as mothers are usually the closest confidant and "teacher" of most growing adolescent girls in our environment. Other studies reported the mass media and friends as the main source of information (El-Gilany et al., 2005) and while Jammu and Kashmir State in India, friends was reported to be the commonest source of information about

menstruation for the majority (83%) of the sample girls. (Dhingra, 2009). All most all the respondents' (97%) perceived menstruation to be a normal physiologic process. This is not surprising considering the level of knowledge about menstruation demonstrated by the study subjects and this could also be attributed to the combined effect of level of respondents in secondary schools and the fact that more than a third of their parents had tertiary level of education. The figure obtained from our study is in contrast to the findings in other studies where lower figures were obtained (Adinma et al., 2008; Tiwari et al., 2006, Adhikari et al., 2007). It is instructive to note that the low rating of teachers as a source of information on menstruation and menstrual hygiene is due to the fact that all integrated science and biology text books being used for all levels of the selected schools irrespective of ownership (Federal Government, State or Private) had no topic on menstruation or menstrual hygiene (Jegade et al., 1991, Ndu, 2008; Samuel, 2005). A study in Warha district of India reported that only 11% of the girls received information from their teacher, underscoring menstrual hygiene is not treated as a topic in health related subjects (Mudey et al., 2010).

Despite the lack of any curriculum in our schools on reproductive health issues, the girls in our study had good knowledge about the origin of the menstrual blood

Table 7. Factors associated with respondents menstrual hygiene Practices.

Respondents' characteristics	Menstrual hygiene practices		Statistical test	P value
	Proper	Inproper		
Age(yrs) of Respondents'				
<18	39	34	$\chi^2 = 0.195$	P = 0.659
≥18	29	20	Df = 1	
Level of study of Respondents'				
JSS	40	38	$\chi^2 = 1.28$	P = 0.259
SS	28	16	Df = 1	
Where respondents live				
Home with parents/guardians (day student)	41	41	$\chi^2 = 2.67$	P = 0.103
School hostel (boarding)	27	13	Df = 1	
Religion of Respondents'				
Christianity	25	42	$\chi^2 = 18.83$	P = 0.0001
Islam	43	12	Df = 1	
Literacy status of Respondents' mother				
Literate	59	36	$\chi^2 = 5.94$	P = 0.015
Illiterate	9	18	Df = 1	
Occupation of Respondents' mother				
Business/ trading	47	23	$\chi^2 = 14.06$	P = 0.0028
Civil servant	9	22	Df = 3	
Farmer	0	1		
Full time housewife	12	8		
Source of information				
Friends	10	15	$\chi^2 = 3.63$	P = 0.304
Teacher	10	5	Df = 3	
Mother/grand mother	41	28		
Others (sisters, neighbours)	7	6		

Table 8. Restrictions during menstruation.

Types of restriction	n (%)
Avoid celebration and festivities	6 (4.8)
Avoid certain food	49 (40.4)
Avoid housework	5 (3.8)
Avoid prayers	62 (51)

Table 9. Reasons for restrictions on daily activities during menstruation.

Reasons	n (%)
Feel discomfort/pain	59 (48.1)
My culture	5 (4.8)
Religious beliefs	58 (47.1)

as 79% of them believed that menstrual blood comes from the womb. Knowledge obtained from formal settings as schools will go a long way in impacting better information to the growing adolescent girl as information given by mothers; friends and other relations may be incomplete or incorrect. In other studies, the girls reported that the information they received about menstruation from informal sources (mother/aunts, sisters and friends) was mainly regarding the use of "cloth", practice of rituals and caution about behaviour towards the opposite sex with very little information being shared regarding the physiological process involved (Mahon, 2010).

When asked how they felt the first time the menstruated, the majority (53%) of the respondents' expressed fear or ashamed which was borne out of the fact that even though the majority were aware of menstruation, they were however, ill prepared for it. This finding was similarly reported in studies conducted in urban Karachi, Pakistan (Ali et al., 2009) and Gujrat, India (Tiwari et al., 2006) with 40 and 45% of the girls reported Fear and worry at the first experience of menstruation.

The type of absorbent used during menstruation is of paramount importance since reusable materials could be a cause of infection if improperly cleaned and poorly stored (El-Gilany et al., 2005). Unlike other settings where high cost and non-availability were given as prime reasons for not using sanitary pads, more than two third of the girls used sanitary pads. This is consistent with findings from a similar study where a higher proportion of the girls used sanitary pads as absorbents (Adhikari et al., 2007; Lawan, 2010). Other studies have reported the use of unsanitary absorbents ((Umeora et al., 2008; Dhingra, 2009; Adinma et al., 2008; Abioye-Kuteyi, 2000; Dongre, 2007). As observed by Adinma from South Eastern Nigeria, the type of menstrual absorbent used constitutes a foremost component of menstrual hygiene since unsanitary materials such as toilet tissue paper and clothes may harbour infectious agents which often thrive under blood culture medium, and may therefore constitute a source of pelvic infection (Adinma et al., 2008). The high use of sanitary pad in our study could be attributable to the high proportion of the respondents' mothers who had formal education beyond primary school level (75%) and were gainfully employed (83%). Thus the socio-economic status of the mothers might be contributory to the reported behaviour of the girls as was advanced in a study from Southern India, that mother's socioeconomic status influences the affordability of sanitary pad (Omidvar et al., 2010). Although findings from our study revealed that education and employment of mothers showed significant statistical association with respect to the use of sanitary pad and the practice of proper menstrual hygiene, we opined that, the finding highlighted the need for a controlled study design that will recruit participants based on their mothers socio-

economic status in order to conclude on the role of affordability and proper menstrual hygiene. Only few girls from this study used cotton wool, new and old pieces of cloth as absorbents. These pieces of cloths were sometimes discarded, buried or in some instances washed and dried in hidden places which could further expose them to infections. Studies from other centres have observed similar findings (Umeora et al., 2008; Mudey et al., 2010; Dhingra, 2009; Adinma et al., 2008). For instance a study in Warha district of India reported that two thirds of the girls that developed genital tract infections have been using cloth compared to those using sanitary pads (Mudey et al., 2010). Overall, these studies indicated that use and reuse of unsanitary absorbents' increases the risk of genital tract infections among adolescent girls.

Most (70%), of the study subjects changed their absorbents three times a day. The frequency of change depends to a larger extent on the flow of blood and affordability as it has been observed that girls with heavy flow change their pads quite often. Change of pads at an interval of 3 to 4 h is considered as a healthy behaviour for comfort and to prevent odour, regardless of the extent of staining (Lawan, 2010).

More than half of the girls burn the used pads at the end of the day. The girls believed that blood stained pads should not be disposed of indiscriminately as they will attract witches and other persons who would use the blood for rituals. The practice of burning is to ensure no trace of blood was available for any unpleasant activities. The burning of the used pads by the girls in this study is contrary to the findings from South Eastern Nigeria where it is believed that burning the absorbents amounts to burning of "something" from the womb which could result to cancer and infertility (Umeora et al., 2008). In our study, about 6% of the girls reused cloths after washing and this is in consonance with studies from other centres (Dasgupta et al., 2008; Umeora et al., 2008; Omidvar et al., 2010). The low level of use of cloths as absorbents might be due to the fact that the vast majority of the respondents' mother are gainfully employed and therefore can afford to use modern sanitary pads. This finding contrast with studies from India and Pakistan that reported very high usage of old used cloths as absorbents among both rural and urban girls (Drakshayani et al., 1994; Narayan et al., 2001; Moawed, 2001).

All the girls studied reported washing their genital tracts and perineum with water and soap or antiseptics during menstruation. This is a healthy practice as it is likely to discourage harbouring of micro-organisms through unhygienic menstrual practices. This practice of washing the genital tracts and perineum has been reported in previous studies (Dasgupta et al., 2008; Omidvar et al., 2010). Restrictions of various forms have been placed on the menstruating girl in different societies. In our study, about half, (51%) of the girls reported avoiding prayers

during menstruation which is a common finding among Muslims all over. This practice is in consonance with findings from similar studies in Egypt and India (Dhingra, 2009; Omidvar et al., 2010; Nair et al., 2007). Unlike in some communities where society and culture imposes restrictions on women during their menstrual periods as they are considered impure (George, 1994); Umeora and Egwuatu (2008) observed that the restrictions among some of their study subjects were mainly self-imposed and intended to keep clean, lessen discomfort (for those with abdominal discomfort) and avoid embarrassment especially while in public places (Umeora et al., 2008). Some religions also barred menstruating women from visiting holy places or touching religious texts and instruments (Garg, 2001). Some of the respondents in our study especially those of the Islamic faith reported abstinence from the mandatory prayers and fasting while menstruating which have been reported from a similar study (Ten, 2007). Similarly, some of the girls avoided certain foods including oily and sometimes starchy foods. These findings were also observed in the studies from India (Omidvar et al., 2010; Nair et al., 2007). The avoidance of foods could be attributable to the fear that the abdominal pain some of the girls experienced during menstruation could be aggravated by such foods as was advanced by studies from Pakistan, and India (Nair et al., 2007; Ali et al., 2009; Mudey et al., 2010, 2007). However, there is need for additional research to elaborate the types of foods that do actually aggravate menstrual pain in our local environment.

CONCLUSION

This study reported a about a third of the girls had low level of knowledge of Menstruation and a concomitant low rating of teachers as a source of information on menstruation and menstrual hygiene and the general absence of physiology of menstruation and menstrual hygiene as topics in the text books being used for all levels of the selected schools irrespective of ownership. This might be a reflection of the majority of secondary schools in the country since they are guided, regulated and monitored by Federal Ministry of Education of Nigeria irrespective of ownership and location of such schools and therefore a missed opportunity to provide adolescent girls with appropriate scientific based information.

There is therefore the need to embark on systematic review of integrated science and other health related subjects being taught in secondary schools, mass media sensitization of parents, Community and religious leaders and the entire public as the study demonstrated that they are among the commonest sources of information and behaviour of girls on menstruation and menstrual hygiene. Finally it will be worthwhile to consider further studies on the effectiveness of the current youth friendly services provided by Non Governmental organizations

(what worked well, lessons learned, weaknesses) in order to provide additional evidence for reprogramming of such services.

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