

Awareness about menstruation before its commencement: A cross-sectional study among female high school students in Asmara, Eritrea.

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Abstract

Background: Menstruation is surrounded with a culture of silence in many parts of the developing countries; hence adolescents enter puberty unprepared and the information they get is often selective and surrounded by taboos. This study aimed at determining the awareness level of secondary school female students about menstruation and addressing the factors potentiating awareness. **Methods:** A cross-sectional study was conducted among secondary school female students in selected high schools of Asmara from January to February 2017. Multi-stage sampling method was used to select 300 eligible respondents. A structured and pretested questionnaire was used to collect the data through interview. Data analysis was done using SPSS version 22. Descriptive results were summarized using frequencies and percentages in tables and graphs. Moreover, bivariate and multivariate logistic regression analysis was done to find out the association of awareness about menstruation and the predictor variables. **Results:** Majority of the participants (72.3%) had good level of awareness about menstruation. Participants who were living with both parents (AOR (95% CI):1.9 (0.68, 4.23), p=0.04), discussing the issue of menstruation normally at home (AOR (95% CI): 2.8 (0.98, 5.77), p=0.02) whose mothers' were educated (AOR (95% CI):1.2 (0.45, 2.58), p=0.007), residing in Asmara and being from richer family ((AOR (95% CI):2.5 (1.08, 6.38), p=0.001)) had a significantly higher awareness about menstruation. **Conclusion:** The respondents had relatively good level of awareness about menstruation. Respondents where their mothers were educated, living with both parents, who discuss about menstruation freely at home, from richer family and permanent residents of Asmara were having a significantly higher level of awareness about menstruation. Provision of adequate knowledge on menstruation before menarche is needed at the family and school level.

Keywords: Awareness, School, Female, Menstruation, Cross-Sectional, Eritrea.

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Abbreviations

SPSS: Statistically Package for Social Sciences, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval, SD: Standard Deviation

Introduction

Menstruation, the cyclical shedding of the inner lining of the uterus, is a unique event in the life of a developing girl child [1]. More than half of the world's population is below the age of 25, and one in every two young people in the world is adolescent [2]. If it is not managed well, menstrual period may be accompanied by discomfort, infection, smelling and embarrassment [3]. Though adolescence is considered the healthiest period of life, many adolescents are often less informed, less experienced, and less comfortable regarding reproductive health services than adults [3]. The topic of menstruation is surrounded with a culture of silence in many parts of the developing countries [4], as a result many young girls lack appropriate and sufficient information regarding menstruation. This might have a negative impact during their menstrual period. Additionally, majority of the mothers in the region lack the correct information and skills to communicate about menstruation, leading to false attitudes, beliefs and practices in this regard [2]. In some cultures of the

world, onset of menstruation is celebrated, whereas some other cultures impose dietary and social restrictions on menstruating girl [5]. These sociocultural obligations make's some females perceive the phenomenon as an event that ushers fear, disgust, and shame. Though parents and close relations are expected to provide enough information on menstruation, regrettably, parent-child communication about sexually related matters is poor in Africa; pushing adolescents to acquire incorrect information [6]. Adolescents enter puberty unprepared and the information they get is often selective and surrounded by taboos. Adolescence is a time of vulnerability and thus health care information obtained from different sources is collectively instrumental in enabling adolescents make healthy decisions. Studies regarding awareness of young girls about menstruation has been scarce and very limited in Eritrea. This study was therefore designed to assess the awareness level of secondary school female students about menstruation and addressing the factors potentiating awareness.

Materials and Methods

Cross-sectional study was conducted among secondary school female students in selected high schools of Asmara from January to February 2017. The study was conducted in five high schools

selected from a total of 14 high schools in Asmara.

Study population and subject recruitment

The targeted population was secondary school female students. Students who have already begun their menstruation were the eligible participants for the study. Multi-stage sampling method was used to select 300 eligible respondents. In the first stage: all high schools were stratified based on geographical location and total number of female students. Five secondary schools were then selected by balloting from the list of fourteen secondary schools of Asmara. The number of respondents per school was proportionate to their population sizes. Stage two involved selection of eligible respondents from the grades (9th-11th) of the selected schools. The selection at this stage was equally proportional to grade sizes. At the final stage, simple random sampling method was used in selecting students from the selected grades. For study purpose, LBC were defined as children who stayed at home with extended family members when their parents or one parent relocated elsewhere to work for at least six months. The control group in this study comprised of NLBC, whose parents worked and lived in the same rural area.

Sample size determination

The sample size was determined using a single population proportion by assuming that 50% proportion of the students had good awareness with 95% confidence interval and 5% margin of error. Using population correction formula, design effect size and adding non-response rate the sample size was 300.

Research variables

Awareness of respondents about menstruation before the onset of menarche was the outcome variable. The students were simply asked “whether or not they were aware and well prepared that menarche would occur”. Those who replied that they were knowledgeable, aware, and prepared for menstruation before it begins were considered as “aware” about the event. The independent or predicting variables include demographic characteristics (age, parents educational and employment status, socioeconomic status, residence, etc.) and menstruation related issues (source of information, Reaction to menarche, free discussion about menstruation, etc.).

Data collection tools and methods

A structured and pretested questionnaire was used to collect the data through interview. The questionnaire was developed by conducting an extensive review of the existing literature and it was reviewed by panel of experts for its content and face validity. Before conducting the main study, the questionnaire was self-administered among 30 students at St. Mary Secondary School (one of the non-selected high schools in Asmara) for its sensitivity, comprehensibility, and appropriateness. The questions were found to be clear and consistent, however self-administering the questionnaire was found to have scoring error. Hence, the research team considered the interview method as a procedure for data collection during the main study. Data on the students' demographics and menstruation characteristics including awareness about menstruation was collected using fact to face interview method. All the information was collected

in a separate room under the supervision of trained research assistants in the absence of the teachers.

Ethical considerations

The ethical clearance for conducting the study was granted by the “Ethical and Scientific Clearance Committee” of the School of Nursing, Asmara College of Health Sciences. Permission of the study was obtained from school authorities of the respective schools used for the study. Informed consents (written) were obtained from the parents and assents from the participants. Participation was entirely voluntary, and confidentiality was ensured; codes rather than participants' names were used as personal identifiers and were stored in a computer that was only accessible to the principal investigator.

Data entry and analysis

After data collection was completed, the questionnaires were checked for their completeness and consistency; and the variables (responses) of interest were coded and entered SPSS (statistics package for social sciences, Version 22). Cleaning of the entered data was done to look over the accuracy, consistency, and avoidance of missed values during entry. Data was described using tables and graphs. Continuous variables such as age were summarized using mean \pm standard deviation. The respondent's awareness level (the dependent variable) was computed and described in pie chart. Those participants who responded that they were knowledgeable and aware menstruation before they began menses were considered as “aware about menstruation”. Bivariate analysis was done to see the association of various socio-demographic variables and awareness level of the respondents. Variables that were found significant at the bivariate level were further used for multivariate analysis to find out the association various categories of the predictor variables after controlling the confounding effect. Adjusted Odds Ratio (95% CI) was presented and p-values less than 0.05 were considered as statistically significant during the analysis.

Results

Socio-demographic factors

A total of 300 students participated in the study with a mean age 16 years (SD \pm 1.3). More than half of the participants (57.3%) were between the age group 16-17 years. Majority of them (64.7%) were living with both parents and about 88% were permanent Asmara residents. Majority of the respondent's parents had secondary and above level of education. One hundred sixty-seven (55.7%) of the respondents were from richer family (Table 1).

Issues related to menstruation

The main source of information about the issue of menstruation before the onset of menarche for majority of the respondents (68%) was their mothers. Whenever the issue of menstruation was raised, about 45% of the respondents used to feel embarrassed, while 8% of them considered it as taboo. Majority of the students (74%) defined menstruation as physiological process whereas 8% and 9% defined it as pathological or curse from God respectively. Among all the respondents 28% had normal

discussion, about 48% had partial discussion and the remaining 24.3% of the respondents were found to have no discussion at all about the issue of menstruation at home. Participants were asked how they were handling their underwear at the first time they had their periods and majority of them (74%) reported that they were washing and exposing it to sun (Table 2).

Psychosocial health and influential factors in left-behind children

When the convergent validity between the psychosocial health, social support and rearing behaviour was analyzed in LBC, most correlation coefficients were significant except for objective support. There was positive correlation between psychosocial

health and social support (general support, subjective support, and support utilization). There was positive correlation between psychosocial health and emotional warmth, and inversely, a negative correlation between psychosocial health and rejection or overprotect. The data are reported in Table 2. Multiple linear stepwise regression analyses were used to identify variables that were associated with psychosocial health in different time. The results showed that psychosocial health was related to rejection in LBC. Psychosocial health was negatively influenced by rejection, but positively influenced by subjective support and support utilization (Table 3).

Awareness level of respondents about menstruation before it started

Table 1. Socio-demographic characteristics of respondents, Asmara, 2017 (n=300).

Background characteristics		Frequency (N=300)	Percentage (%)
Age in years (Mean \pm SD: 16.1 \pm 1.3)	14-15	96	32
	16-17	172	57.3
	18-21	32	10.7
Grade	9 th	86	28.7
	10 th	108	36
	11 th	106	35.3
With whom do you live	With both parents	194	64.7
	With mother alone	62	20.7
	With father alone	9	3
	With other relatives	35	11.6
Father employment status	Employed	247	82.3
	Unemployed	53	17.7
Mother employment status	Employed	82	27.3
	Unemployed	218	72.7
Mother's level of education	Primary or lower	114	48
	Secondary and above	156	52
Father's level of education	Primary or below	80	26.7
	Secondary and above	220	73.3
Religion	Christian	268	89.4
	Muslim	32	10.6
Residence in Asmara	Residents	264	88
	Migrants	36	12
Wealth index*	From richer family	167	55.7
	From poorer family	133	44.3

Note: Wealth index*: monthly income >2000 nakfa was considered as rich, SD: Standard Deviation

Table 2. Variables related to menstruation characteristics, Asmara, 2017 (n=300).

Variables		Frequency	Percent
Discussion at home	Normally discuss	84	28
	Partially discuss	143	47.7
	Not at all	73	24.3
Source of information about menstruation	Mother	152	50.7
	Friends	48	16
	Teachers	52	17
	Others*	49	16.3
How do you feel if the issue of menstruation is raised	Nothing	78	26
	Embarrassed	135	45
	Interested	63	21
	Consider it as Taboo	24	8
Care of their Underwear	Wash and expose to sun	222	74
	Wash and hide	42	14
	hide and discard	36	12

How do you define menstruation	Physiological Process	222	74
	Diseases	24	8
	Curse from God	27	9
	Don't know	27	9
Reaction to menarche	Normal	114	38
	Scared	102	34
	Depressed	84	28

Note: Others*: All kinds of media, books

Table 3. Factors influencing respondents' awareness about menstruation before the onset of menses, Asmara, 2017 (n=300).

Variables	Aware N (%)	COR (95% CI)	AOR (95% CI)	p value
Age <16 years	73 (76)	2.3 (1.31, 5.02)**	1.7 (0.96, 4.88)	0.087
Educated mothers	118 (75.6)	4.2 (1.42, 9.98)***	3.8 (1.23, 7.26)	0.007
Employed mothers	67 (81.7)	0.93 (0.25, 2.32)	--	--
Educated father	164 (74.5)	1.54 (0.53, 2.72)**	1.2 (0.45, 2.58)	0.067
Living with both parents	151 (77.8)	2.78 (0.89, 5.73)**	1.9 (0.68, 4.23)	0.03
Employed father	154 (62.4)	1.35 (0.12, 2.93)	--	--
Normally discuss menstruation	72 (85.7)	3.42 (1.23, 8.23)**	2.8 (0.98, 5.77)	0.02
Christian religion	150(56)	0.67 (0.13, 1.98)	--	--
Asmara residents	217 (82.2)	2.42 (1.12, 7.66)**	1.3 (0.92, 4.52)	0.04
From richer family	140 (83.6)	3.2 (1.81,8.94)***	2.5 (1.08, 6.38)	0.001

Note: COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio; **, ***: p value <0.05 and p value <0.001

Awareness About Menarche

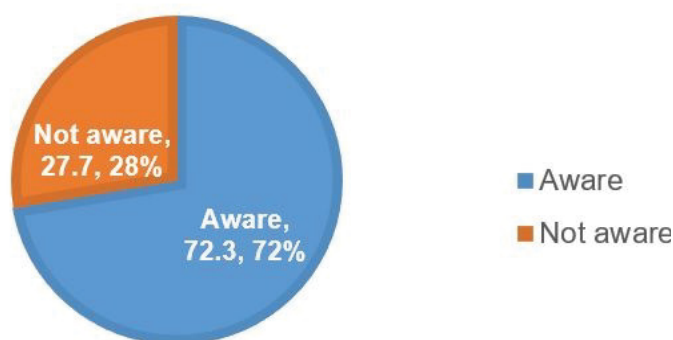


Figure 1. Respondents awareness level of menstruation before it began, Asmara, 2017 (n=300).

Of all the participants, majority (72.3%) had good level of awareness about menstruation before it starts, whereas the remaining 27.7% had poor level of awareness (Figure 1).

Factors influencing respondents' level of awareness about menstruation

Majority (76%) of the respondents aged < 16 years had an overall good awareness about the issue of menstruation, though the results were not significant. Those respondents who had normal discussion about the issue of menstruation at their homes were 2.8 times more likely to be aware about menstruation than those who have never discussed the issue at all (AOR (95% CI): 2.8 (0.98, 5.77), p=0.02). Participants who were living with both their parents (AOR (95% CI):1.9 (0.68, 4.23), p=0.04) and those whose mothers' were highly educated (AOR (95% CI):1.2 (0.45, 2.58), p=0.007) had significantly higher level of awareness than their counter parts. Likewise, socioeconomic status and difference of respondents' permanent residence were found to have significant association. Those

participants living in Asmara city (AOR (95% CI):1.3 (0.92, 4.52), p=0.04) and those from richer family (AOR (95% CI):2.5 (1.08, 6.38), p=0.001) were 1.3 and 2.5 times more likely to be aware about menstruation. Whereas the remaining variables; parents employments status, father's education and religion did not attain significant influence (Table 3).

Discussion

Menstruation is an important pubertal development. Yet, a lot of misconceptions about this process in the developing world makes girls to feel ashamed. In this study, the overall level of awareness of the respondents about menstruation was 72.3% and the remaining 27.7% had poor awareness. The findings indicated higher level of awareness compared to study done in western Ethiopia (60.9%) [7] and west Bengal India [8] where only 37.5% of girls were aware of menstruation before menarche. The difference could probably be due to difference in study sites. The fact that our study was conducted in a capital city might have increased the rate. However, the findings were lower than a study conducted in Ghana showing 74% of the students were aware of menstruation before menarche [9].

It was observed that the respondents' main source of information about menstruation were their mothers and the higher the educational level of the mother the higher was the daughters (students) level of awareness about menstruation. Similar study in India reported that mother was the key informant for 76.8% of the respondents [8]. There was also a positive association between mother's level of education and the respondents understanding about menstruation in Ethiopia [10]. It was also found that majority of those who normally discuss the issue of menstruation at home were found to be highly aware about menstruation and the difference was significant. This indicates that discussion about the issue of menstruation plays a central role on the level of awareness of the adolescent girls prior to their attainment of menarche. Mothers who are educated are more

likely to dialog their children about menstruation compared uneducated mothers. This could be attributed to the increasing means of communication about menstruation if mothers are educated. The fact that adolescent girls feel comfortable to discuss such issues with their mothers might also increase their awareness level. In our study, respondents who had got information about menstruation from mass media and books were rare; however other studies revealed that the main source of information was mass media and teachers [9,11]. The fact that our study reported lower proportion of respondents getting knowledge from teachers and media might be attributed to the level of exposure of the participants, where media, internet and other information gathering systems is severely low in the study setting. Likewise, male teachers are the most abundant in educational institutes of sub-Saharan Africa, which further limits the discussion about menstruation.

When the respondents were asked on how they reacted to menarche, about one-third get scared and a major proportion were depressed. In a similar way, nearly half were embarrassed and one tenth of them considered it as taboo when they were asked on how they used to feel whenever the issue of menstruation is raised. In a study done in West Bengal India, majority of the girls were sad and about one-fifth felt scared at the time of menarche [8]. Studies conducted in Gujarat state of India, Nigeria, Ghana, and Pakistan also reported similar findings [12-14]. This might be because they are not given adequate information or lack the awareness that menstruation is a natural and physiologic process and hence not properly prepared for the process. Surprisingly, our study findings indicated that about one tenth of the respondents used to define menstruation as a curse from God or some kind of pathological process. Similar findings were reported in other studies [8]. The reason for this could be not only lack of prior knowledge regarding menstruation but also due to inadequate or wrong knowledge which needs to be discouraged. Respondents who were permanent residents of Asmara and those from a richer family had significantly better awareness about menstruation. The difference might be attributable to the probability of richer and urbanized families for better access of media and information.

Findings from this study should be interpreted in the light of some limitations. First, it is a cross-sectional study, and this may limit cause-effect relationship. In addition, data were obtained by asking respondents who have already attained menarche to recall their awareness and menstruation experiences before and during first menses. This could have a recall bias, particularly for those with greater time elapsed between menarche and the interview date. The study was conducted only in Asmara due to budget constraints, hence the results might not represent the national picture.

Conclusion

The respondents had relatively good level of awareness before the onset of their menstruation. Respondents where their mothers were educated, living with both parents, from richer family and permanent residents of Asmara were having a significantly higher level of awareness about menstruation. Provision of adequate knowledge on menstruation before menarche is needed at the family and school level. Initiatives concerning awareness creation about menses targeting students could make

young females to view menstruation as an important milestone in their lives and just a natural physiologic phenomenon.

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Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All authors participated in all phases of the study including topic selection, design, data collection, data analysis and interpretation. Idris M. Idris contributed in critical revision of the manuscript for publication.

Availability of Data and Materials

Data supporting the conclusions of this article is available from the corresponding author and can be accessed up on reasonable request.

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