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Knowledge and Emotional Impact of Menarche among Adolescent Secondary School Girls in Uyo, Niger Delta Region of Nigeria

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ABSTRACT

Background: Menstruation is a physiological phenomenon. In some cultures, beliefs and perception of its onset are generally negative. The poor knowledge of its onset could adversely affect young girls, leading to changes in mood and behaviours, which may result in a psychological distress.

Aims: The objective of the study was to assess knowledge and emotional changes associated with onset of menstruation (menarche) amongst secondary school girls in Uyo, South-south, Nigeria.

Methods: Post-menarcheal secondary school girls were assessed for knowledge and recollection of events during menarche, using the Recollection of First Menstruation (RFM) items questionnaire. They also completed the Hospital Anxiety and Depression Scale (HADS) to assess for presence of anxiety/or depression.

Results: A total of 386 girls with a mean age of 15.2 ± 1.4 years were analyzed; 176 (45.6%) had knowledge about menarche, while 210 (54.4%) had none. Of those with knowledge, 67 (17.4%) were from friends, 93(24.1%) parents, 16(4.1%) teachers and 210 (54.4%) did not have any knowledge. Of those without knowledge of menarche, 149 (38.6%) scored high on Anxiety and 138(35.8%) on Depression Scales, compared to 82(21.2%) and 68(17.6%) respectively, of girls with knowledge. Those who received information about menarche from friends were more likely to recall negative responses to menarche while those who received theirs from parents were likely to recall positive responses.

Conclusion: Knowledge of menarche is low among secondary school girls in this study with tendency to develop anxiety and depression.

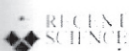
Keywords - Knowledge; psychological symptoms; Menarche; Girls; Secondary School.

1. INTRODUCTION

Menstruation is a physiological phenomenon with physical and emotional influence on women[1]. The first episode of this physiological activity called menarche is the hallmark of female puberty, which heralds reproductive maturity. It

is a memorable and important event for every woman. Large variations exist in its age of onset in different cultures [2][3]. Several studies have reported ages ranging from as early as the 10th year to as late as the 16.5th year [4][5]. Although, onset of menstruation is not a disease, however, its occurrence in early adolescence is critical in sexual, social and personal development of women [6]. The poor knowledge of menstruation right from its onset (menarche) could be detrimental to the overall wellbeing of a developing young girl. This could have adverse effects leading to distortion of both mental and physical growth [7]. Menstruation though a physiological phenomenon, is often regarded as a very private matter and therefore is neither to be taught formally nor opens to public discourse [8]. A growing girl child may be left to wander into menarche ill prepared with serious consequences. At times the lack of adequate information about its onset could lead to poor decision making on sex-related issues. This has been found to contribute majorly to self-objectification, shame with increased incidence of unintended pregnancies, illegal abortions as well as promoting the spread of HIV/AIDS and other sexually transmitted infections[9]-[12]. The increasing number of school drop-outs among girls may be related to the poor knowledge of their sexual development [13][14]. The experience of sudden onset of menstruation with no prior information could be serious and may be associated with inability to adjust and adapt to life and the environment. This could result in a pattern or combination of basic emotions and formation of stable complexes. The effect may be vulnerability to changes in mood and behaviours from a whole spectrum of general psychiatric disorders including anxiety and depressive illness[15][16].

Anxiety and depression are debilitating mental disorders which often may result in functional disabilities, low productivity and loss of valuable time[17]. The psychological stress manifesting with symptoms of anxiety and depression may result in poor self-esteem, feeling of hopelessness and fear[18][19]. Low self-esteem and feeling of hopelessness when present may result in marked acting out behaviours leading to involvement in various antisocial activities including; prostitution and over indulgence in substance use. The implication may



include poor academic performance in school[9]. Students with social maladjustment disorders and antisocial behaviours have been shown to be more likely to fall off in academic performance[9]. Anticipation of monthly menstruation subsequently may accentuate these symptoms and worsen menstrual attitude in young girls. The unremitting nature of this could consequently mark the onset of premenstrual disorder characterized by affective, somatic, behaviour and cognitive symptoms[20][21]. It has been postulated that the experience at menarche could provide the framework for the girl's latter attitude to menstruation, her body image, and general health behavior[2]. In Nigeria with a high level of illiteracy, the combination of factors such as wrong cultural disposition, poor educational planning and deficiencies in school curriculum seem to suggest that information on sex-related issues at home, schools and colleges may not have been appropriately disseminated. This is worse in the rural areas, where many of the schools are located and without basic amenities to attract and retain quality teachers. This study examines the level of knowledge and associated psychological impact of menarche amongst young girls in Uyo, south-south, Nigeria, to determine their coping strategies. It is hoped that the findings will create awareness and the need to include sex education in our school curriculum to guide and direct the young minds while growing up.

3. MATERIALS AND METHODS

3.1 Location of the study

The study was carried out at a Girls' secondary school situated in an outskirt of Uyo, Akwalbom State, Nigeria. The school was established in 1975, but was later taken over by Akwalbom State Government in 1981 at the point of writing the first West African School Certificate Examination (WASCE). It is one of the three girls' secondary school in Uyo. With the recent declaration of free and compulsory education in primary and secondary schools in the State, the school has witnessed increase students' enrolment which presently stands at 2360 students. More than half of this are in the junior secondary (JS 1-3) classes. The choice of this school was informed by the locality in which it is situated.

3.2 Data collection

A total of 1006 girls from classes 1-3 which form the junior classes were recruited into the study. Four hundred and twenty five out of these aged between 9 and 20 years, who met the inclusion criteria, completed the self-administered questionnaires while waiting for lectures. The questionnaire consists of two parts. The first part contained information on socio-demographic characteristics of the subjects such as: date of birth, date/ or year and duration of first menstruation, class level, family type and parents' marital life etc. The second part contains the Recall of First Menstruation (RFM) items and Hospital Anxiety and Depression (HADS) Scale questionnaires as well as a section on information about menarche. The RFM items questionnaire was adapted

from previous study[22]. It is used to reflect the girl's initial experience with menstrual flow and consist of eight stems that describe how the girl felt at menarche. Four items constitute a negative response on the RFM scale (upset, embarrassed, angry, and scared), while three items constituted positive response on the RFM scale (happy, proud, excited). An additional item asks whether the girl felt surprised at menarche. The Hospital Anxiety and Depression (HADS) Scale was adapted from previous study[23]. The HADS consists of seven items of anxiety and depression each, selected to distinguish the effects of physical illness from mood disorders. Some symptoms likely to be present in both; for example, dizziness and headache were not included. This instrument has been validated and used in many countries including Nigeria[24]-[26]. It has been found valid for use as a screening instrument in non-psychiatric settings[27]. Scoring was done on the basis that all 14 items in HADS are rated on a four point scale ranging from the absence of a symptom or presence of a positive scoring (0) to a maximal symptomatology or absence of positive features which score 3. A cut-off point of 8 and above signifies anxiety and/or depression [23][24][28]. This classifies the target population into two broad groups: (0-7) considered being within the normal range clinically and (8-21) considered to be anxious and/or depressed. This was further stratified into (8-10), mild; (11-14), moderate; (15-21), severe. For information about menarche, questions such as have you ever heard the word "menarche" before now?, what do you understand by menarche; what causes it, what is the sources of your knowledge if any and whether it is a disease or not were asked. To guarantee a reasonable level of recalling previous emotional experience and prevent possible effect of comorbid illness, the criteria for inclusion in the study were having first menstruation in the previous six months and not having past/present psychiatric or chronic physical illness. Only data from girls that met these criteria were further analyzed, the rest were discarded. Permission to carry out the study was obtained from the Principal of the school. The assessment took place during 2010/2011 school academic session. Two assistants who were trained also helped in administering the questionnaire on the girls.

3.3 Ethical Issues

The respondents were informed about the research and its objectives. They were assured that confidentiality will be maintained during and after the study and information given would be used only for the research purposes. There was no cost to the participants. Participation was voluntary and the participants were assured that they had the option of withdrawing at any point.

3.4 Data analysis

The results of the study were analyzed using the Statistical Package for social sciences (SPSS 11.0). The proportion of girls who suffered from anxiety and/ or depression was found from the study group. Sample means and percentages were calculated with which simple frequency tables were created. Standard deviation from the mean was

also calculated and comparisons of categorical data were done by Chi-square test (uncorrected). The corresponding P-values were found to determine the level of statistical significance. The p-value of <0.05 was used to determine the level of statistical significance.

4. RESULTS

Of the 425 girls recruited into the study, 386 (90.8) were analyzed and 39 (9.2%) excluded due to incomplete information. Table 1 shows the socio-demographic

characteristics of the girls. Majority 252 (65.3%) of the girls were aged between 13 and 18 years; while 73 (18.9%) aged <12 years and 61 (15.8%) aged 19 years and above. The mean age of the girls was 15.2 ±1.4 years. One hundred and fifty eight (40.9%) were in JS3; 127 (32.9%) in JS2 and 101 (26.2%) in JS1. More than half, 289 (74.9%) of their parents were married; while 54 (14.0%) parents of the respondents were separated, divorced or widowed and 106 (27.4%) of the girls were from polygamous home setting.

Table 1: Showing demographic characteristics, sources of knowledge of menarche among girls

Variables	No. of students		X ²	p-value
	With/know	Without Knowledge		
Age (yrs):				
<12	19 (4.9)	54 (14.0)		
13-15	59 (15.3)	87 (22.5)	36.448	0.000
16-18	52 (13.5)	54 (14.0)		
>18≤19	46 (11.9)	15 (3.9)		
Total	176 (45.6)	210 (54.4)		
Class level:				
JS1	33 (8.5)	68 (17.6)		
JS2	56 (14.6)	71 (18.4)	12.784	0.002
JS3	87 (22.5)	71 (18.4)		
Total	176 (45.6)	210 (54.4)		
P/marital status:				
Never married	16 (4.2)	27 (7.0)		
Married	134 (34.7)	155 (40.1)	2.995	0.559
Separated	13 (3.4)	17 (4.4)		
Divorced	6 (1.6)	3 (0.8)		
Widowed	7 (1.8)	8 (2.1)		
Total	176 (45.6)	210 (54.4)		
Family Type:				
Monogamy	114 (29.5)	118 (30.6)		
Polygamy	46 (11.9)	60 (15.5)	8.702	0.034
Single parents	16 (4.2)	27 (7.0)		
Foster home	-	5 (1.3)		
Total	176 (45.6)	210 (54.4)		

Range=10-19 years Mean=15.2 years SD=1.4

Table 2 shows the respondent's recollection of menarche experiences. Most subjects recalled negative responses. These included being scared; 34.5%, embarrassed; 30.3%, angry; 7.5% and being upset; 3.9%. Only about one-fifth

of the subjects recalled positive responses such as being excited; 7.0 %, being happy; 6.5 % while 1.0% recalled feeling proud. Nine point three percent (9.3%) of the respondents recalled being surprised.

Table 2: Showing the Respondents recollection of first menstruation experience.

Response	No. of students (N=386)	Percentage (%)
Upset	15	3.9
Embarrassed	117	30.3
Angry	29	7.5
Scared	133	34.5
Happy	25	6.5
Proud	4	1.0
Excited	27	7.0
Surprised	36	9.3
Total	386	100.0

Table 3 illustrates scores distribution of psychological symptoms of anxiety and depression among the respondents. Of the 166(43.0%) girls with knowledge of menarche and 220 (57.0%) without knowledge. 229(59.3%) scored 8 and above on the anxiety subscale while 206 (53.4%) scored 8 and above on depression subscale. Stratification of scores showed that on the anxiety scale, 66 (17.1%) of girls with knowledge scored between 8 and 10 while 107 (27.8%) of girls without knowledge scored 8 and above on depression subscale. Fourteen (3.6%) and 33(8.5%) respectively scored between 11 and 14 on anxiety subscale while 2(0.5%) and 7(1.8%) scored between 15 and 21. On the depression subscale, 60 (15.5%) and 104(26.9%), 8(2.1%) and

26(6.7%) respectively scored between 8 and 10 against 11 and 14 respectively while 8 (2.1%) girls without knowledge scored between 15 and 21. Development of positive response to menarche was more likely among those who received information about menarche from their parents (p=0.013). Over 50 % of the respondents declined to state their source of information about menarche. One hundred and sixty six (43.0%) girls had knowledge about menarche, while 220 (54.4%) did not. A total of 16(4.1%) of girls got the knowledge of menarche from teachers, compared to 67(17.4%) from friends and 93(24.1%) from parents while 210(54.4%) of respondents could not recall the source of their knowledge, either from the teachers, parents or friends.

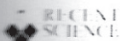
Table 3: Distribution of scores of psychological symptoms of anxiety and Depression on HADS

Score	Anxiety Scale		Remarks
	Girls with knowledge	Girls without knowledge	
0-7	84 (21.8)	73 (18.9)	no anx. symptom
8-10	66 (17.1)	107(27.8)	mild anx. symptom
11-14	14 (3.6)	33(8.5)	moderate anx. symptom
15-21	2 (0.5)	7 (1.8)	severe anx. symptom
Total	166(43.0)	220(57.0)	
Depression Scale			
0-7	87 (22.5)	93 (24.1)	no dep. symptom
8-10	60 (15.5)	104 (26.9)	mild dep. symptom
11-14	8 (2.1)	26 (6.7)	moderate dep. symptom
15-21	-	8 (2.1)	severe dep. symptom
Total	155(40.2)	231(59.8)	
RFM Experience			
Source of Knowledge	No. of students	Positive	Negative
Parents	93(24.1)	61(15.9)	32(8.3)
Teachers	16(4.1)	5(1.3)	11(2.8)
Friends	67(17.4)	13(3.4)	54(14.0)
No response	210 (54.4)	-	-
Total	386 (100.0)		

8 and above=Anxiety and/or depression.
 anx. =anxiety.
 dep. =depression
 RFM =Recollection of first menstruation

Table 4 shows the relationships between the levels of psychological symptoms and demographic variables of the respondents. A total of 49(12.7%) girls aged below 12 years who had no knowledge of menarche compared to 17(4.4%) of girls with knowledge; 53(13.7%) against 43 (11.6%) aged between 13-15 years; 38 (9.8%) against 19 (4.4%) aged between 16-18 years and 83(21.5%) against 146 (37.8%) had anxiety symptoms. Anxiety was statistically significant in girls without knowledge of menarche compared to girls with knowledge (p<0.001). Eighty five(22.0%) girls without knowledge of menarche were from monogamous home setting compared to 46(11.9%) with knowledge; 29(7.5%)

from polygamous setting against 22 (5.7%); 28(7.3%) from single parent against 8 (2.1%) and 2 (0.5%) from foster home compared to none with knowledge had anxiety (p>0.337). This was also not statistically significant. Similarly, depression was more prevalent in girls with no knowledge of menarche. It was variable among different age group of girls. Less than 12 years, 47(12.2%) of girls without knowledge as against 18(4.7%) with knowledge; 13-15 years, 61(15.8%) without knowledge as against 41(10.6%); 16-18 years, 25(6.5%) against 6(1.6%) and 19+ years, 5 (1.3%) against 3(0.8%) had depression (p>0.058). This was not statistically significant. Eighty five (22.0%) girls without



knowledge of menarche were from monogamous home setting compared to 46(11.9%) with knowledge: 22(5.7%) from polygamous setting against 29 (7.5%); 28(7.3%) from single parent against 8 (2.1%) and 2 (0.5%) from foster home compared to none with knowledge had depression ($p<0.008$). This was statistically significant.

Table 4: Relationships between knowledge and psychological symptoms of anxiety and depression

Variables Anxiety	Sw/know.	Swo/know.	X ²	p-value
Age (yrs)				
≤12		17 (4.4)	49(12.7)	15.792 0.001*
13-15		43(11.1)	53(13.7)	
16-18		19(4.4)	38 (9.8)	
>18<19		4 (1.0)	6 (1.6)	
Total		83(21.5)	146(37.8)	
Family Type				
Monogamy		43(11.1)	81(21.0)	3.376 0.337
Polygamy		32(8.3)	33(8.5)	
Single Parent		8(2.1)	29(7.5)	
Foster home		-	3(0.8)	
Total		83 (21.5)	146 (37.8)	
Depression				
Age (yrs)				
≤12		18(4.7)	47(12.2)	7.472 0.058
13-15		41(10.6)	61(15.8)	
16-18		6(1.6)	25(6.5)	
>18<19		3(0.8)	5(1.3)	
Total		68(17.6)	138(35.8)	
Family Type				
Monogamy		46(11.9)	85(22.0)	11.822 0.008*
Polygamy		29(7.5)	22(5.7)	
Single Parent		8(2.1)	28(7.3)	
Foster home		-	2(0.5)	
Total		83(21.5)	137(35.5)	

Sw/know. =Students with knowledge

Swo/know. =Students without knowledge

*= significant.

5. DISCUSSION

The average age of menarche in this study was 15.2 ± 1.4 years. Although different ages of menarche have been widely reported in previous studies from different countries of the world, the present age is in line with reports from other studies in part of Nigeria. It is important to emphasize that apart from factors like hereditary, race, climate and geographical location, nutritional status of the girl child which is directly related to the family income has been shown to affect the age at menarche. Leary[29], almost four decades ago, while reviewing numerous previous reports concluded that dietary improvements could lead to a decrease in mean menarche age. This implies that socioeconomic variables have great influence on the age of menarche.

This study also reveals the level and sources of knowledge about this important sexuality issue among girls in our

environment. More than 17% of the girls got knowledge of menarche from their friends with most of them recalling negative responses. It is possible that such information from friends may have been inappropriate or inadequate to address their concerns thereby raising more questions about menarche than answers. Hennink and coworkers[30] in their study showed that peer-passed information about sexual development most times are incorrectly passed and may in the contrary cause confusion and distress. Such inadequate information may lead to high risk-taking behaviours with attendant complications, which may include teenage pregnancies, illegal abortions, spread of HIV/AIDS and other sexually transmitted infections[13][14]. The complexities and interrelatedness of these complications could pose a great danger to physical and intellectual development of a growing girl[11].

Our study also reveals that less than 30% of girls received knowledge from the parents and a much less percentage (20%) from teachers. Those who received information about menarche from their parents were more likely to recall positive responses to menarche and indeed menstrual health issues than those who got theirs from friends/teachers. This could be due to the fact that those who receive information about menarche from their parents were more confident about the correctness of such information and better prepared about menarche experience than their counterparts who received theirs from friends. It is disheartening to note that over 50% of the girls in this study did not any knowledge about menarche either from parents, teachers or friends. This findings highlights the existence of a gap in formal system of providing information about sexual development to adolescents in our environment. This finding also suggests the possibility of lack of sexual developmental knowledge by the parents themselves. Our finding may not be much different from what is obtainable in other developing societies. Arguably, the failure to nurture these girls with adequate knowledge would only succeed in compelling them to seek for information whether correct or not to fill the gap. This could seriously affect their reproductive life, considering the fact that the age of menarche is a very critical period and events at this stage of development could lead to permanent disability[6][14][19]. Anecdotal evidence shows that most mothers especially the uneducated are recalcitrant in approving the giving of information about menarche and other sexual issues to their children. This for them is not in line with our culture and makes them more promiscuous than they would have been if such information were not made available to them. Also, the low input from the teachers in this study is not surprising, considering the fact that sex education is not included in the school curriculum. The implication is that basic and adequate information on basic developmental issues among girls are lacking.

The results of this study have also shown that even though menstruation is a physiological phenomenon, its onset (menarche) is associated with psychological symptoms of anxiety and depression. The impact of knowledge as a buffer for excessive anxiety and depressive symptoms has been clearly demonstrated in this study. About 22% and 18% of girls with knowledge of menarche compared to 38% and 36% without knowledge scored high on anxiety and depression scales respectively. The scores invariably show the presence of significant psychological distress in girls due to an otherwise normal physiological event. Although the symptoms are much less in those with knowledge of menarche, the mere presence of these symptoms at this tender age could have adverse effect in their overall sexual development as well as academic performance[7][9]. Even though, the symptoms may be devoid of typical clinical conditions characterized by classical vegetative signs, usual report of low self-esteem and agitation, psychological problems in young age could be marked by acting-out behaviours, excessive anger, drug use or falloff in school performance[6]. Judging from the associated functional disability, low productivity and loss

of time in schools, the presence of anxiety and depressive symptoms among young girls could be devastating with respect to their studies. Evidence abounds of impaired physical, occupational and role functioning in individuals with psychological disorders [28]. Surprisingly, those with knowledge about menarche showed more symptoms of depression than those without knowledge. This could mean that information they received in actual sense may have left them more confused [29] thereby making them to develop more negative concerns. The findings collaborate well with the number of subjects who recalled negative responses (85.7%) when compared with those who recalled positive responses.

The social and economic consequences of anxiety and depression are enormous and could result in discrimination and social stigmatization [30]. There is increasing evidence that pervasive negative societal attitude is commonly associated with debilitating mental disorders[31]. Although stigmatization attitudes are not limited to mental illness, however, the public seems to disapprove of persons with psychiatric disabilities more significantly than persons with related physical conditions[31]. The imminent lack of supportive relationships suggested in this study by the number of girls who did not have information about menarche from their parents could further exacerbate or aggravate the symptoms of anxiety and depression. The health hazard could mean anything from more serious and permanent premenstrual disorder to difficulty in interpersonal/intramarrital relationships [15][21][22].

The limitations of this study include lack of comparative studies conducted under similar condition to support our findings. The study was self-reporting and the inability to carry out a diagnostic interview is a major limitation.

In conclusion, the results of this study have clearly demonstrated that although menarche is a normal phenomenon, there could be associated psychological symptoms of anxiety and depression. Therefore, adequate knowledge with respect to sexual development is necessary to reduce tension and high level of psychological symptoms. Efforts aimed at reviewing the schools' curriculum to include sexuality education should be intensified. Parents especially of female teenagers should be equipped with adequate knowledge on sexuality education and encouraged to disseminate the same to their teenagers.

More importantly, improvement in healthcare services would provide adequate and prompt attention to those who may need help and counseling; thereby reducing the high morbidity often associated with anxiety and depression.

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