ORIGINAL ARTICLES

MENSTRUAL CHARACTERISTICS IN SOME ADOLESCENT GIRLS IN ACCRA, GHANA

S. K. GUMANGA[1] and R. A. KWAME-ARYEE[2]
[1]Department of Obstetrics & Gynaecology, University for Development Studies, Tamale, Ghana.
[2]Department of Obstetrics & Gynaecology, University of Ghana Medical School, Accra, Ghana

Corresponding author: *Dr Solomon Gumanga* ***E-mail:*** *gumangask@yahoo.co.uk*

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SUMMARY

Background: Menstruation has a variable pattern within a few years of menarche which may not be well understood by many adolescent girls. Providing accurate information on menstruation is necessary to reduce anxiety, menstrual morbidity and improve reproductive health of these adolescents.

Objective: To determine the age at menarche, duration of menstruation, length of menstrual cycle, regularity of menstrual cycle, prevalence of dysmenorrhoea and sources of information on menstruation.

Setting: S[T] Mary's Senior Secondary School, Accra

Methodology: Cross-sectional descriptive study using self-administered questionnaire

Results: Four hundred and fifty six girls whose ages ranged from 14-19years with mean and median ages of 16 ± 0.93years and 16years respectively were surveyed. Their ages at menarche ranged from 9years to 16years and the mean age at menarche was 12.5 ±1.28years. Their menstrual cycle lengths ranged from 21-35days with mean menstrual cycle length of 27.9± 0.9days; the mode and median were both 28days. The mean duration of menstrual flow was 4.9days with mode and median of 5days. Seventy one percent (n=449) had menses lasting 3-5days while 27.2% had menses lasting over 5 days. Some 24 %(n=409) had irregular menses six months after their menarche and 59.6%(n=453) were experiencing menses with clots. The prevalence of dysmenorrhoea was 74.4% (n=453). Some 80.2 %(n=378) of the girls got counselling and education on care for their menses from their parents.

Conclusion: The age at menarche and other menstrual characteristics observed in this study are similar to adolescent menstrual characteristics described by studies in other populations in the world.

Keywords: Adolescent menstruation, menarche, menarcheal age, menstrual cycle, dysmenorrhoea

INTRODUCTION

Menarche refers to the first menstruation and it is one of the noticeable events of puberty occurring between10 and 16years.[1,2] By the age of eight to nine years, the anterior pituitary gland begins secreting gonadotropin hormones i.e. follicle stimulating hormone (FHS) and luteinizing hormone (LH) under the pulsatile secretion of gonadotropins-releasing hormone (GnRH) from the hypothalamus.[1]

The onset of menstruation is due to activation of the ovaries by the gonadotrophins of the anterior pituitary leading to production of oestrogens by the ovaries.[1,3,4] Production of sufficient amount of oestrogens acts on the endometrium resulting in proliferation of the endometrium leading to the first menstruation (menarche).[4]The action of oestrogens and progesterone on the endometrium develop it into thick layers and is shed in a cyclical manner when these hormones are at low levels in the cycle.[3,5,6] The duration of normal menstrual flow is two to seven days but majority of women experience menstrual flow that last three to five days leading to loss of about 30-80mls of non-clotting blood from the endometrium.[5,7]

The control of menstrual blood flow is achieved by myometrial contractility, vasoconstriction and haemostatic plug formation.[4,5] Following menarche the cycle length may be irregular and are characterized by an ovulation due to immaturity of hypothalamus-pituitary-ovarian axis in the first few years of menarche.[4,8,9] Menstrual cycle length varies among different women and for an individual woman at different times of her life.[8,9] The menses becomes regular and ovulatory one to two years after menarche with mean cycle length of 28±7days and are expected to remain same until perimenopausal years when ovarian function declines.[7,-12]

The length of the menstrual cycle of an individual is determined by a variable follicular phase from one individual to another while the luteal phase is relatively constant in all women and lasts 13-14days.[5,,7] Menstrual disorders are common complaints in the adolescent before normal menstrual patterns are established.[11,12]These disorders include dysmenorrhoea, menorrhagia, hypo-menorrhoea, oligomenorrhoea and dysfunctional uterine bleeding.[11,12]

SUBJECTS AND METHODS

This is a cross sectional descriptive study of menstrual characteristics of 456 Ghanaian girls at S[T] Mary's senior secondary school in Accra. The school is a girls' senior secondary located at Korle-Gonno, about one kilometre from the Korle-Bu Teaching Hospital. It is regarded as a very good senior secondary school in Accra due to the high academic performance of its students. This school was chosen for the study because the students comprised of girls in their early, middle and late adolescence from diverse ethnic and socio-economic class families living in main city of Accra and its suburbs. The number of students enrolled in the secondary school was 723 at the time of the study giving a required sample size of 252 students at 95% confidence intervals.

Meetings were held with some authorities of the school at which all concerns about the study were addressed, the study questionnaires were also discussed after which approval for the study by school authorities was granted. The questionnaire used had been pre-tested in a similar adolescent population at a different site to ensure that it was possible to self-administer it in the target population. On the day of the study in April 2007, the study was explained to the students and with the help some teachers the research team distributed five hundred questionnaires at the same time using simple random sampling of students. The students who were sampled completed the questionnaires with relevant data in their classrooms and returned them to the research team.

The five hundred questionnaires given out was more than the required sample size of 252, this was to ensure that enough properly completed questionnaires were returned for our data analysis. Four hundred and fifty six students completed and returned their questionnaires, a figure larger than the required sample size of 252 students. The larger number of completed forms that were returned by the students had an advantage of making our findings more representative of our study population. Three students, two aged 14 and one aged 15 had not yet had their menarche and were therefore excluded from the study.

The questionnaire had questions on age and date of birth, age at menarche, regularity of menstruation, length of cycle, duration of menstruation, a set of questions which constituted a study of dysmenorrhoea and sources of education on menstruation. The completed questionnaires were coded, entered and analysed using Statistical Package for Social Sciences version10.0 for windows (SPSS Inc, Chicago, II).

RESULTS

Out of 500 questionnaires administered, four hundred and fifty six (91.2%) of the student girls completed and returned their questionnaires. A total of 44 questionnaires were either not returned or returned blank. All the students who returned their completed questionnaires had stated their ages and dates of birth in response to the first question on the questionnaire. Their ages ranged from 14-19 years with a mean of 16 ± 0.93 years and median age of 16 years. Table 1 shows frequency distribution of ages of the respondents in this study as at last birthday.

Table 1 Age distribution of respondents

Age in years	Frequency	Percentage (%)
14	12	2.6
15	89	19.5
16	194	42.5
17	130	28.5
18	27	5.9
19	4	0.9
Total	**456**	**100**

The mean age at menarche was 12.5 ±1.28 years and the modal age at menarche was 13 years. One hundred and five (23.5%) of the girls had their menarche before 12years and four out of every five girls had their menarche before 14years. Three girls had not yet attained their menarche and six girls who did not know their ages at menarche were excluded from calculation of age at menarche. Table 2 shows the frequency distribution of the ages at menarche of 447 respondents.

Table 2 Age at menarche of respondents

Age at menarche in years	Frequency	Percentage (%)
9	3	0.7
10	21	4.7
11	81	18.1
12	121	27.1
13	130	29.1
14	63	14.1
15	24	5.3
16	4	0.9
TOTAL	**447**	**100**

The shortest menstrual cycle length was 21 days and the longest was 35days in 390 respondents. Their mean length of the menstrual cycle was 27.9± 0.9days with the median and mode being 28 days.

Sixty-three (13.9%) of the girls did not know the length of their menstrual cycles. Table 3 shows the frequency distribution of the durations of menstrual cycle in 453 respondents.

Nearly a third (67.5%) of the girls had regular menses from onset and 76% had regular menses established within 6months of menarche whilst about 24% had irregular menses over six months after menarche. Some 59.6% reported experiencing menstrual bleeding with clots.

Table 3 Duration of menstrual cycle of respondents

Cycle length in days	Frequency	Percentage (%)
21-23	43	9.5
24-26	49	10.8
27-29	192	42.4
30-32	77	17
33-35	29	6.4
Not known	63	13.9
Total	**453**	**100.0**

Seventy one percent had menses lasting 3 to 5days and 27.2% have menses lasting more than five days. The mean duration of menstrual flow was 4.9 days with a mode and median of 5 days. Table 4 shows the duration of menstruation of respondents in the study

Table 4 Duration of menses of respondents

Duration of menses in days	**Frequency**	**Percentage (%)**
Less than 2	0	0
2	4	0.9
3	50	11.1
4	108	24.1
5	165	36.7
6	71	15.8
7	46	10.2
More than 7	5	1.1
Total	**449**	**100.0**

The prevalence of dysmenorrhoea was 74.4% among the girls in this study; and 82.9% of those with dysmenorrhoea who stated the duration of dysmenorrhoea had pains that lasted beyond the first day of the cycle. About 59.8% of the girls with dysmenorrhoea have their symptoms recurring in most or all cycles. About 80.2% 0f the girls got counselling and education on care for their menses from their parents.

While 10.8% had their counselling and education about menses from their teachers, 9% had theirs from their sisters, friends, health providers and other sources.

DISCUSSION

The mean age at menarche in this study was 12.5±1.28years which is about 1.5 years earlier than the mean menarcheal age of 13.98 ±1.42years in Ghanaian school girls in a study done about two decades ago and about a year earlier than the mean age at menarche of 13.4 ±1.4years in a study of menstrual patterns of adolescents at the Obafemi Owolowo University Ile-Ife, Nigeria.[13,14] The age at menarche found in this study is however similar to 12.78 years observed among girls in Yaoundé attending privileged schools[15]. Secular trends towards early menarche has been observed by earlier studies in Ghana and other parts of Africa and the World.[13,15,16,17]

Recent studies of menarcheal age in North American adolescents also show trends towards early menarche with mean age at menarche in black American girls ranging from 12.06 to 12.16 years and that of white American girls ranging from 12.55 to 12.88 years with 90% of adolescent girls having attained her menarche by 13.75 years.[4,16] The observed decline in the age at menarche compared to earlier studies is partly due to young girls attaining a certain critical weight at an early age due to improved nutrition, urbanisation and general health.[13,15,18] Some studies have shown that girls from upper socio-economic class have reached menarche at an earlier age than those from the lower socio-economic class.[19, 20, 21]

Early menarche with risky sexual activity in early adolescent ages may lead to sexually transmitted infections, unwanted pregnancy and unsafe abortion and adolescent motherhood all of which constitutes poor reproductive health of the adolescent population. There is therefore the need for sexual and reproductive health education in the pre-adolescent age group to help protect them from risky and early sexual exposure. In this study the menstrual cycle length for 86.1% of the girls ranged from 21 days to 35days and the mean length of the menstrual cycle was 27.9± 0.9days with the median and mode being 28 days. The above characteristics of menstrual cycles of respondents are consistent with what has been described by studies in Nigeria and Ethiopia.[22, 23, 24]

Within the first year of menarche the menstrual cycles may be irregular in nature[8,9] and this may explain why some 13.9% of the girls did not know their menstrual cycle lengths which is in contrast with studies in Nigeria in which less than 5% had abnormal menstrual pattern.[22]

The mean duration of menstrual flow in this study was 4.9 days which compares with the mean duration 4.5 days that was found in Nigeria and 4.0 days in a Ethiopia.[14, 23]

During a normal menstrual cycle the amount of blood loss averages 30-80mls with the first 2 days being the heaviest.[4,7] There were variations in the duration of menstrual flow with 27.2% of the respondents having menstrual flow that lasted more than five days. Prolongation of the menstrual flow beyond the fifth day may result in excess menstrual blood loss.

The adolescent may have a poor understanding of what constitutes a normal menstruation; as a result some may perceive normal menstruation as scanty menses while others with excessive menstrual flow may view it as normal which will result in anaemia eventually. Prolonged menstrual bleeding can result in poor menstrual hygiene since many young girls may not be able to afford costly sanitary pads to take care of the extra days especially when they are on campus. They may resort to the use of toilet paper, cotton and old clothes or rugs resulting in poor menstrual hygiene and increased risk of infection.

In this study about 76% had regular menses established within 6 months of menarche whilst about 24% still had irregular menses beyond six months after menarche. The menstrual cycles within the first year after menarche may be irregular and prolonged with menstrual blood clots. The irregularity is due poor or defective development of follicles during the follicular phase of the cycle resulting in unovulatory cycles or luteal deficiency.[3,5,9] The prevalence of dysmenorrhoea was 74.4%, which compares with 72.4% by a study of all the 19year old women in the city of Gothenburg Sweden[25] and about 72% from Nigeria and Ethiopia.[14,24,26]

Accurate education of the adolescent girl on menstruation is important because some misconceptions exist in the adolescent population about menstruation, some perceive it as a bad or strange thing; others think of it as frightening or an embarrassing experience.[27] In this study less than 10% of the adolescent girls had menstrual education from health providers while over 80% of the adolescent girls got education on their menses from their parents, a finding similar to 84.2% of education from parents and guardians from studies in Nigeria.[22] Education on menstruation should therefore target both the adolescent and adult population using health institutions, schools, print and electronic media.

This approach to menstrual education will eliminate some misconceptions about menstruation and ensure that certain unfounded believes are not passed on from generation to generation where only parents were involved. Mothers are of critical importance and are also the preferred source of education on menstrual hygiene and emotional support to daughters within the family since many daughters find it uncomfortable discussing this topic with their fathers.[27] When girls start menstruating without sufficient and accurate information; they may suffer unnecessary morbidity related to their menstrual cycles such as irregular cycles, dysmenorrhoea, heavy menstrual flow and unwanted pregnancies all of which could be properly understood and prevented or managed if accurate information on menstruation is disseminated.

CONCLUSION

In conclusion, the age at menarche and other menstrual characteristics observed in this study are similar to adolescent menstrual characteristics described by some studies in other populations in the world. Some adolescent girls in the city of Accra could be attaining their menarche at an earlier age than expected; their main source of education on menstruation is from their parents. Adolescent girls suffer some morbidity related to menstruation that makes it necessary for accurate education about menstruation. Health professionals have a greater role to play to complement the current efforts made by parents to accurately educate their daughters about menstruation.

A limitation of this study is that it was done in only one senior secondary school in an urban setting; the findings in this study may not be same for girls from rural populations and lower social class since they may not have been adequately represented.

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