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Menstrual Profile: A Possible Determinant of Dysmenorrhea

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ABSTRACT: *A healthy menstrual cycle i.e eumenorrhea throughout a woman's reproductive years is sign of balanced ovarian hormones as well as other endogenous substances. However, dysmenorrhea compromises a healthy menstrual cycle. This study investigates the menstrual cycle patterns dysmenorrhea and eumenorrhea. We carried out a cross sectional study on 1,124 undergraduates that were selected by a multistaged sampling technique. Ethical approval was obtained from the ethical committee of the university. Subjects gave informed consent for the study and we gave them a semi-structured questionnaire for the study. Age of subjects was 19-23years with mean ages of 20.1 ±1.9 years and 19.7±1.8 years for dysmenorrhea and eumenorrhea respectively; p>0.05. Menarche ranged between 9-19 years and a modal menarche age of 13years. All subjects (8) who had menarche at the age of 9 years had dysmenorrhea. Catamania ranged between between 2-7 days, dysmenorrhea was lowest in these extremes. Subjects with 2 days' menses had no dysmenorrhea while subjects with 7days' menses was (8)1.0%. Menses of 5 days had the highest percentage contribution 304 (36.4%) to dysmenorrhea. Dysmenorrhea and eumenorrhea cut across menstrual cycles < 25 days and >31 days. Dysmenorrhea was commonest in these extremes. Dysmenorrhea was (16)100% for subjects with cycles>31 days and (56)93.3% for subjects with cycles< 25 days. Very early age of menarche i.e. 9 years, menses between 4-5 days, menstrual cycle lengths less than twenty-five days and greater than thirty-one days can predispose females to dysmenorrhea.*

Keywords: dysmenorrhea , eumenorrhea, menstrual cycle, menarche

Introduction

A healthy menstrual cycle (eumenorrhea) throughout a woman's reproductive years is sign of balanced ovarian hormones as well as other endogenous substances. However, a common associate of menses among adolescents and young adults is dysmenorhhea. Thus, dysmenorrhea, which is painful menses, compromises a healthy menstrual cycle .Menstruation seems to be the most obvious sign indicating the positive reproductive health of women. However, there might variations in its onset, its duration, and its periodicity. The menstrual cycle is a series of physiological change that occur in a fertile female. Overt menstruation (bleeding per vaginam from the uterus) primarily occurs in humans and some animals such as chimpanzees[1]. Females of other species of placental mammal undergo estrous cycles in which the endomentrium is completely reabsorbed by the animal (covert menstruation) at the end of its reproductive cycle. The menstrual cycle under the influence of the endocrine system is necessary for reproduction. The menstrual cycle essentially has three phases: the follicular phase, ovulation and the luteal phase; although some sources use a different set of phases; menstruation, proliferative phase and secretory phase[2]. The length of each phase varies from woman to woman and cycle to cycle, though the average menstrual cycle is 28 days[3]. Menstrual cycles are counted from the first day of menstrual bleeding. Hormonal contraceptive interferes with the normal hormonal changes with the aim of preventing reproduction. Menses is perhaps the most obvious event of the menstrual cycle; however some females also have pains associated with it. The duration of menses is called catamania and it varies from individual. This pain called dysmenorrhea, has been classified as primary, secondary and membranous. Primary dysmenorrhea is essentially devoid of any reproductive tract pathology, while secondary dysmenorrhea is traceable to the female reproductive tract pathologies like, endometriosis, ovarian cysts, pelvic inflammatory disease, adenomyosis, cervical stenosis, fibroid polyps and possibly uterine displacement with fixation. Membraneous dysmenorhhea (uterine cast) is rare and causes intense cramping pain as a result of the passage of the intact endometrial cast through an undilated pelvis [4] **.** A healthy menstrual cycle throughout a woman's reproductive years is a sign of balanced ovarian hormones, as well as other endogenous substances. The hormone-like substance, prostaglandin, functions as mediators of a variety of physiological responses such as inflammation, muscle contraction, vascular dilatation and platelet aggregation. They are modified forms of unsaturated fatty acids that are synthesized in virtually all cells of the body[5]. Studies have demonstrated that varying PG levels in the female reproductive tract affect the cyclic regressions of the corpus luteum and the shedding of the endometrium. PGs may also mediate the effect of LH on ovulation[6] . Since PGs are implicated in LH effect on ovulation and dysmenorrhea, one can therefore say that subjects with dysmenorrhea may have a menstrual pattern that is different from their eumenorrheic counterparts. We therefore aim at determining the menstrual pattern in dysmenorrhic and eumenorrhic subjects.

Materials and Methods

Study design: A descriptive cross sectional study was carried out among female Nigerian undergraduates of Ambrose Alli University, Ekpoma, Edo state. One thousand one hundred and twenty four undergraduate students from seven faculties participated in the study. They were selected using a multistage sampling technique as follows; from a list of seven faculties in the university, four were selected by simple random sampling using table of random numbers. Students were then randomly selected from all the lecture theatres of these 4 faculties. The essence of the study was explained to them and consent was taken from those who subscribed to participating in the study. A semi-structured questionnaire containing both open and closed ended question was administered to each subscriber. The questionnaire was used to extract basic demographic data, age at menarche, menstrual cycle lengths, duration of menstrual flow per month. Data obtained were checked for correctness before they were encoded Results were presented in tables and percentages

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Results

A total of 1124 questionnaires were administered, only 938 subjects filled their questionnaires correctly and returned. The response rate was therefore 87.5%. The age range of subjects was 19-23years. The mean ages of 20.1 ±1.9 years and 19.7±1.8 years for dysmenorrhea and eumenorrhea respectively; p>0.05.The modal age of menarche in this study was 13 years. A percentage of (276) 28.0% had menarche at the age of 9years. Those who had menarche at the ages of 10, 11, 12 and 13 years had percentage contributions of (8)0.8%, (12)1.2%, (52)5.3% and (180)18.3% respectively. Subjects who had menarche at the ages of 14, 15, 16, 17, 18 and 19 years had percentage contributions of (204)20.7%, (160)16.3%, 68(6.9%), 12 (1.2%), 8 (0.8%) and 4 (0.4%) respectively. Table 1 shows the age of onset of dysmenorrhea among the subjects. The duration of menstrual flow ranged from 2 to 7 days among subjects with dysmenorrhea . The modal dysmenorrhic menstrual flow was 5 days with a percentage contribution of 304(36.4%). Table 2 shows the menstrual flow pattern for subjects with dysmenorrhea. The menstrual cycle pattern ranged from less than 25 days to greater than 31 days. However, some of the subjects had irregular menses. Subjects with menstrual cycle between 25 and 28 days had the highest percentage contribution 600 (62.0%) in this study. Subjects with irregular menstrual cycles with a percentage of 232 (24.0%) followed this. Thus (736) 74% of the subjects had regular menses. Subjects with menstrual cycles less than 25 days, 29-31 days and greater 31 days had percentages of 60 (6.2%), 76 (7.9%) and 16(1.7%) respectively. Table 3 shows the menstrual cycle length of subjects for the study. Of the 148 (13.6) subjects that were eumenorrheic 104 (70.3%) had cycle length between 25-28 days, 24 (16.3%) had irregular cycle, 16 (10.8%) had cycle length between 29-31 days, while 4 (6.7%) had cycle length less than 25 days. On the hand of the 836 (86.4%) that had dysmenorrhea, 496(59.3%) had cycle length between 25-28 days, 208(24.9%) had irregular cycle, 60 (7.2%) had cycle length between 29-31 days, 56 (6.7%) had cycle length less than 25 days while 16 (1.9%) had cycle length greater than 30 days. The cycle lengths of 25-28 days were highest in both eumenorrheic and dysmenorhheic subjects, although the percentage was more on the eumenorrheic subjects.

TABLE 1: Age of onset of menarche versus dysmenorrhea and eumenorrhea

Age at menarche (yrs)	DYSMENORRHEA n(%)	EUMENORRHEA n(%)	TOTAL n(%)
9	8(100.0)	0(0.0)	8(100.0)
10	8(66.7)	4(33.3)	12(100.0)
11	44(84.6)	8(15.4)	52(100.0)
12	152(84.4)	28(15.6)	180(100.0)
13	228(82.6)	48(17.4)	276(100.0)
14	180(88.2)	24(11.8)	204(100.0)
15	144(90.0)	16(10.0)	160(100.0)
16	56(82.2)	12(17.6)	68(100.0)
17	8(66.7)	4(33.3)	12(100.0)
18	8(100.0)	0(0.0)	8(100.0)
19	0(0.0)	4(100.0)	4(100.0)
TOTAL	**836(85.0)**	**148(15.0)**	**984(100.0)**

TABLE 2: Duration of menstrual flow in relation to dysmenorrhea.

Duration of mentrual flow (days)	Frequency of dysmenorrhea n(%)
2	0 (0.0%)
3	100(12.0%)
4	256 (30.6%)
5	304 (36.4%)
6	24 (2.4%)
7	8 (1.0%)
IRREGULAR	144(17.1%)
TOTAL	**836(100.0%)**

TABLE **3: Length of menstrual cycle versus dysmenorrhea and eumenorrhea**

Length of menstrual cycle (days)	**Dysmenorrhea n (%)**	**Eumenorrhea n (%)**	**Total n (%)**
<25	56(93.3)	4(6.7)	60(100)
25-28	496(82.7)	104(17.3)	600(100)
29-31	60(78.9)	16(21.1)	76(100)
>31	16(100.0)	0(0.0)	16(100)
Irregular	208(89.7)	24(10.3)	232(100)
Total	**836(86.4)**	**148(13.6)**	**984(100)**

Discussion

A healthy menstrual cycle throughout a woman's reproductive years is sign of balanced ovarian hormones as well as other endogenous substances[7]**.** However, this hormonal balance gives rise to various phases of the menstrual cycle that the female reproductive conceals. However, the menstrual phase or menses manifest outwardly as bleeding per vaginam. Normal menstruation is thus the commonest cause of physiologic hemorrhage per vaginam in women in their reproductive age group. However, another cause of physiologic hemorrhage includes lochia. The duration of flow of menses is part of the profile to consider in assessing whether menses is normal or not. In this study, the duration of flow was 2-7 days, which is within normal range. Although menses itself might be physiological, dysmenorrhea might alter this physiologic process. Menstrual difficulties such as primary dysmenorrhea and dysfunctional uterine bleeding can be indicative of a potential hormonal imbalance, which can lead to impaired fertility and menopausal problems in the future[7]. This potential hormonal imbalance has been demonstrated in our study, which revealed a higher percentage (208) 24.9% of irregular menstrual cycle among sufferers of dysmenorrhea compared to eumenorrheic subjects, which had a percentage of 24 (16.2%). Menarche marks the potential capability of a woman to commence a reproductive career. Although It is the first menstrual period and the most significant milestone in a woman's life [8, 9]**.** From this study, all the subjects who had menarche at the age of 9 years had dysmenorrhea. One can speculate that early menarche makes one susceptible to the dysmenorrhea. As if to corroborate this finding our study revealed that all subjects who had menarche at age 19 were eumenorrheic. The menstrual cycle length was also another factor that predisposed subjects to dysmenorrhea as all the subjects in this study that had menstrual cycle length greater than thirty-one days had dysmenorrhea. The catamania in this study was between 2-7 days. This corroborates with a study done by Desalegn TZ et a[8] . It was observed that the extremes of catamania were relatively protective against dysmenorrhea. However, subjects with five days duration of menses had the highest frequency of dysmenorrhea. This was closely followed by menstrual period of 4 days. Therefore menstrual periods between 4 and 5 days can predispose one to dysmenorrhea. In this study the prevalence of dysmenorrhea for subjects whose menstrual cyclec were less than 25days, greater than 31 days and irregular were highest and were outside the normal range of 28% and 89.5%[9-12]. These menstrual cycle pattern are more likely to be associated with pelvic pathologies which can also present as abdominal pains. The additional abdominal pains may be responsible for the increase in the prevalence of dysmenorrhea.

The age of menarche for dysmenorrhea and eumenorrhea were similar, menstrual cycle length between 25-28 days was commonest for both dysmenorrhea and eumenorrhea, followed by subjects with irregular menstrual cycle. However very early age of menarche i.e.9 years, menses between 4-5 days and menstrual cycle length greater than thirty-one days are potential risk factors for dysmenorrhea.

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