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Use of Contraceptives, Menstrual History and Weight Gain among University and Secondary School Adolescents in Abia State, Nigeria

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Abstract: This cross-sectional survey evaluated the effect of contraceptives on menstrual cycle, menstrual flow and weight gain of adolescent female secondary and university students in Abia State, Nigeria. One thousand, six hundred (1600) adolescents aged 10 to 19 years were used for the study. Two secondary schools and two universities [(one secondary school/university from each Local Government Area (LGA)] were randomly selected. A structured self-administered questionnaire designed to collect information on health habits of adolescent girls was given to respondents in their schools. Information gathered from the questionnaires was coded and analyzed using the computer program Statistical Software package (SAS). Descriptive statistics such as frequencies and percentages were used. Results showed that majority (70.5% vs 58.75%) of adolescent university and secondary school girls, respectively described their menstrual cycle as regular (every month). A wide variety of contraceptives namely abstinence, safe period, intrauterine devices, vaginal jellies and creams and oral contraceptives were used by the students. Majority (60.97% vs 48.74%) of the subjects in the university and secondary school respectively reported that the contraceptives they used had no effect on their menstrual flow. Almost equal percentage of respondents (33.92% vs 33.49%) of the secondary school and university adolescents respectively reported that their menstrual cycle was regular every time. The study showed that abstinence and safe period were the most commonly used birth control methods by both secondary and university adolescent girls in Abia State, Nigeria.

Key words: Contraceptives, adolescents, secondary, university, students

INTRODUCTION

The World Health Organization (WHO) recently defines adolescents as persons aged 10 to 19 years old (WHO, 2000). Interest in adolescent health issues has grown dramatically in the past decade, beginning with the International year of Youth in 1985 and the World Health Assembly in 1989, when discussions by the world focused on the health of the youth. The reasons for this growing interest are varied and include the large population of adolescents-1200 million or about 19% of the total world population which makes them an important group (Kurz and Johnson-Welch, 1994). What happens, or does not happen, during adolescence has implications that last throughout a lifetime and affect both individual and public's health. What sets adolescents apart from children is the increasing autonomy they demonstrate. Their own decisions, behaviors and relationships increasingly determine their health and development (WHO, 1999).

The menstrual cycle is repeated throughout the reproductive years unless pregnancy occurs. At each extreme - that is in early adolescence and near menopause - the cycles are less regular. The menstrual cycles tend to be irregular in duration. The duration of menstrual cycles may be as short as 12 days, or as long as 3 or 4 months (Llewellyn-Jones, 1999). The duration and amount of menstrual bleeding are also variable. The duration and amount of menstrual bleeding may be of short duration and scanty or long duration and heavy (Llewellyn-Jones, 1999). At some instances menstruation flow at intervals meaning a break of one or two days after which it resumes. Modern contraceptive practices can significantly modify menstrual blood losses (Cole *et al*., 1971; Guillebaud *et al*., 1976). The use of Oral Contraceptives (OCs) has been shown to cause a number of biochemical changes that indicate alterations in metabolism and nutritional status (van der Vange *et al*., 1989; Massé, 1991). A woman's nutritional status reflects her dietary habits, including exposure to "the pill" (Massé, 1991). Modern contraceptive practices have effect on the menstrual flow (Cole *et al*., 1971; Guillebaud *et al*., 1976).

The objective of this study therefore is to determine the effect of contraceptive methods on menstrual cycle, menstrual flow and body weight of adolescent female students in secondary schools and universities in Abia State, Nigeria.

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MATERIALS AND METHODS

Study area: This study was conducted in Umuahia North and Ikwuano Local Government Areas (LGAs) of Abia State, Nigeria. Umuahia North LGA occupies a land mass of 14464.0 square kilometers while Ikwuano LGA occupies a land mass of 2668.710 square kilometers. Majority of the indigenes in Abia State are farmers and others are civil servants, teachers, business men and craftsmen.

Study design: A structured questionnaire was designed to collect information on health habits of the adolescent girls used for the study. This was validated by lecturers in the Department of Human Nutrition and Dietetics and Department of Home Economics, Michael Okpara University of Agriculture, Umudike (MOUAU). The questionnaire was pre-tested on eleven students from Ibeku High School in Umuahia North LGA before being administered to the respondents for the study.

Sampling/sample - size and population determination: Abia State is made up of seventeen LGAs, out of which two LGAs were randomly selected. The LGAs selected were Umuahia North and Ikwuano LGA. A list of four Girls Secondary Schools and two universities owned by the Federal and State government with boarding facilities in Umuahia North and Ikwuano LGAs were got from Ministry of Education out of which, two secondary schools and two universities (one secondary school/university from each LGA) were randomly selected. The schools selected in Umuahia North LGA were Girls Secondary School Umuahia (GSSU) and Abia State University (ABSU) while in Ikwuano LGA, Senior Science School Ariam (SSSA) and Michael Okpara University of Agriculture, Umudike (MOUAU) were selected. Preliminary visits were also made to the Principals of schools and the Head of Departments of the chosen universities. The purpose of the study and methods of the study were explained to them and their cooperation was sought.

The sample size was calculated using the formula:

$$n = \frac{Z^2 P(100 - P)}{X^2}$$

Since the sample was large n>30 an acceptable margin of error (Z) of 1.96 at 95% Confidence Interval was used. Since Z = 1.96, it was approximated to 2.

P = Percentage of adolescent girls assumed not to use contraceptives. P was taken to be 62% since National Micronutrient Survey (1993) found prevalence of poor iron status in women of reproductive age to be 62%. This was used because in the enlarged study micronutrient status was considered (Anyika, 2006).

100 - P = Percentage of adolescent girls assumed to use contraceptives.

X = Width of Confidence Interval or required precision level taken to be 5%.

n = Sample size

This gave the sample size of 376.96 which was approximated to 377.

This figure for one school was increased to 400 to make up for drop-outs. Four hundred adolescent girls aged 10-19 years were chosen from each school (two secondary schools and two universities). The total population of adolescent girls studied was 1600.

Data analysis: Information gathered from the questionnaires was coded and analyzed using the computer program Statistical Analysis System (SAS) (2003) for descriptive statistics such as frequencies and percentages.

RESULTS AND DISCUSSION

Table 1 shows the socio-demographic characteristics of the students. A good number (43%) of the secondary school respondents were within the age range 13.1-16.0 years. All students in the university (16.1-19.0 years) were above the age group (13.1-16.0 years). In both secondary school and university female adolescents, many (38.70% and 53%) of the respondents respectively claimed that their mother had university education. Some (41.75%) of the adolescent girls in the secondary school claimed that their family size were more than 6 while many (47.62%) of their university counterparts agreed that their family size were 4-6.

Education has been shown in literature to be one of the important factors affecting the ability to make informed choices (Omotola *et al*., 2005). Female literacy is now widely recognized as an important determinant of the health of a nation (Osmani, 1997).

Table 2 summarizes the menstrual history of subjects. Majority (70.50% vs 58.75%) of the female university and secondary school adolescents respectively described their menstrual cycle as regular. Majority (83.75 vs 82.50%) of the female university and secondary school girls respectively, reported the duration of their menstrual flow to be 3-5 days. Many of the girls from the university (50.75%) in comparison with their secondary school counterparts (38.38%) had never experienced amenorrhoea. Majority (57.75%) of the secondary school girls against 43.75% of their university counterparts reported that they had experienced amenorrhoea for less than 1 month to 3 months. Many respondents from the university (55.08%) and fewer from secondary schools (52.74%) attributed the amenorrhoea to pregnancy.

The 3 to 5 days (normal) and regular menstruation reported by many of the respondents in the secondary schools and universities respectively in this study could be that many of students in the secondary schools and universities respectively did not use Oral Contraceptive

Table 1: Socio-demographic characteristics of subjects

	Secondary		University	
Parameters	Frequency	Percentage	Frequency	Percentage
Age range (yrs)				
10.0-13.0	303	37.88	-	-
13.1-16.0	344	43.00	-	-
16.1-19.0	153	19.12	800	100.00
Total	800	100.00	800	100.00
Educational levels of respondents				
Junior secondary school (JSS)	499	62.38	-	-
Senior secondary school (SSS)	301	37.62	-	-
University education	-	-	800	100.00
Total	800	100.00	800	100.00
Mother's educational status				
No formal education	77	9.63	45	5.63
Primary school education	220	27.50	96	12.00
Secondary school education	188	23.50	235	29.30
Tertiary education	311	38.87	424	53.00
No response	4	0.50	-	-
Total	800	100.00	800	100.00
Family size				
<4	182	22.75	99	12.38
4-6	284	35.50	381	47.62
>6	334	41.75	320	40.00
Total	800	100.00	800	100.00

Table 2: Menstrual history of adolescent girls

	Secondary		University	
Menstrual pattern	Frequency	Percentage	Frequency	Percentage
Menstrual Cycle				
Regular (monthly)	470	58.75	564	70.50
Irregular (every 2-3 months)	270	33.75	201	25.13
Extremely irregular (<4 times/year)	60	7.50	35	4.37
Total	800	100.00	800	100.00
Duration of menstrual flow				
<3 days	58	7.25	48	6.00
3-5 days	660	82.50	670	83.75
>5 days	54	6.75	52	6.50
Flows at intervals	28	3.50	30	3.75
Total	800	100.00	800	100.00
Experienced amenorrhoea				
Not at all	307	38.38	406	50.75
<1 month	223	27.87	100	12.50
1 month	166	20.75	175	21.88
2 months	50	6.25	43	5.37
3 months	23	2.88	32	4.00
>3 months	31	3.87	44	5.50
Total	800	100.00	800	100.00
Cause of amenorrhoea				
Pregnancy	260	52.74	217	55.08
Stress	31	6.29	47	11.93
Worry	32	6.49	37	9.39
Sickness	38	7.71	59	14.97
Do not know	132	26.77	34	8.63
Total	493	100.00	394	100.00

Drugs (ORDs), Injectables and Intrauterine Devices (IUDs) as a birth control measure. Menstrual blood losses are very constant from month to month for an individual but vary markedly from one woman to another (Garrow *et al*., 2000). After menstruation begins, girls need more iron than boys to replace menstrual losses (Lufshitz *et al*., 1993). Students from the university and secondary school who reported less regular cycles also attributed their amenorrhoea to pregnancy. The higher irregular, extremely irregular menstrual cycles, short and long duration of menstrual flow experienced by secondary school adolescents in comparison with their

university counterparts could be due to the fact that they have just started menstruating and menarche (onset of menstruation) could be a source of emotion and upsets to them. The ultimate 'controller' of menstruation is hypothalamus. The hypothalamus is affected by emotions and upsets. This is demonstrated by the fact that menstruation may cease after a particular strong emotional upset, or if the girl leaves home and changes occupation (Llewellyn-Jones, 1999). Since these girls are in boarding schools, the emotional problems of leaving home to live with strangers in a boarding facility may also have affected their menstrual cycle.

Table 3 represents the contraceptive devices used by respondents. A wide variety of contraceptives namely abstinence, safe period, intrauterine devices, vaginal jellies and creams and oral contraceptives were used by the students. Surprisingly, only 4 students (0.05%) of the university students used condom. Secondary school students (50.25%) abstained from sex more than their university counterparts (49.25%) while more (29.38%) of the university students used safe period than their secondary school peers (18.50%).

Abstinence and safe period were the most commonly used birth control methods by both secondary and university students. These methods do not modify menstrual blood losses. The choice of contraceptive method greatly influences menstrual losses (Stranfield, 1986). Although there is evidence that hereditary factors may be important in determining the menstrual blood losses (Callender and Wanner, 1974), however, modern contraceptive practices such as Oral Contraceptive Drugs (ORDs), Injectables and Intrauterine Devices (IUDs) can significantly modify menstrual blood losses (Cole *et al*., 1971; Guillebaud *et al*., 1976). The use of IUD as a birth control measure causes a heavy menstrual flow and a great need for iron. The use of Oral Contraceptives (OCs) has been shown to cause a number of biochemical changes that indicate alterations in metabolism and nutritional status (National Micronutrient Survey, 1993). Oral Contraceptive Agents (OCAs), because they are hormones affects the body's metabolism of nutrients. Protein is altered and serum cholesterol and glucose level rise when OCAs are used. Requirements for vitamin C, vitamin B_6 and folic acid are increased in these women (Stranfield, 1986). The mean menstrual blood loss is reduced to 12.7ml in subjects taking the combined variety of oral contraceptives, but is increased to an average of 50 ml in those using intrauterine devices (Cole *et al*., 1971; Guillebaud *et al*., 1976). A woman's nutritional status reflects her dietary habits, including exposure to "the pill" (Massé, 1991). Modern contraceptive practices therefore have effect on the menstrual flow (Cole *et al*., 1971; Guillebaud *et al*., 1976).

Table 4 shows the recognized effects of use of contraceptives on the menstrual flow, weight gain and menstrual cycle of subjects. Majority (60.97%) of the subjects in the university as compared with their secondary school counterparts (48.74%) said that the contraceptives they used had no effect on their menstrual flow. Many (33.92%) of the respondents in the secondary school as compared with their university peers (23.81%) said that the contraceptives they used had no effect on their weights. Many (48.81%) of the university girls as compared with their secondary school counterparts (31.41%) reported that the use of contraceptives made them to loose weight while almost equal percentage (20.85% vs 20.24%) of secondary school and university adolescent girls respectively, agreed that the contraceptives they used made them add weight. Among those who used contraceptives, 33.49% of the secondary school girls and 29.40% of the university students reported that their menstrual cycles were more regular when contraceptives were not used. On the other hand, 39.52% of the university students as compared with their secondary school peers (29.19%) agreed that their menstrual cycles were regular irrespective of the use of contraceptives.

The higher percentage of students who claimed that the contraceptives they used had no effect on their menstrual flow, weight gain and menstrual cycle were due to the higher percentage of students who claimed that they use abstinence, safe periods and vaginal jellies and creams. These contraceptives even though they have high failure rate (Llewellyn-Jones, 1999) did not modify the menstrual blood loss (Callender and Wanner, 1974).

Table 3: Contraceptive devices used by subjects

	Secondary		University	
Conception control methods	Frequency	Percentage	Frequency	Percentage
Contraceptive devices used*				
Abstinence	402	50.25	394	49.25
Oral contraceptive drugs (ORD)	115	14.38	97	12.13
Injectables	50	6.25	12	1.50
Intrauterine device (IUD)	44	5.50	59	7.38
Safe period	148	18.50	235	29.38
Vaginal jellies and creams	42	5.25	37	4.63
Condom	-	-	4	0.50

*Multiple choice answers

Table 4: Recognized effects of use of contraceptives on menstrual flow, weight gain and menstrual cycle of subjects

	Secondary		University	
	Frequency	Percentage	Frequency	Percentage
Menstrual flow				
No effect on menstrual flow	194	48.74	253	60.97
Makes menstrual flow heavy	99	24.88	95	22.89
Makes menstrual flow very heavy	78	19.60	33	7.95
Makes menstrual flow extremely heavy	27	6.78	34	8.19
Total	398	100.00	415	100.00
Weight gain				
Add weight	83	20.85	84	20.24
Reduce weight	125	31.41	203	48.81
No effect on weight	135	33.92	99	23.81
Do not know	55	13.82	29	7.14
Total	398	100.00	415	100.00
Menstrual cycle is more regular when				
Using contraceptives	128	32.06	59	14.22
Not using contraceptives	133	33.49	122	29.40
Every time	116	29.19	164	39.52
Do not know	21	5.26	70	16.86
Total	398	100.00	415	100.00

Conclusion: This study showed that abstinence and safe period were the most commonly used birth control methods by both secondary school and university adolescent girls in Abia State, Nigeria.

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