International Journal of Advanced Nursing Science and Patient Healthcare of Chronic Illness
http://eurekajournals.com/IJANSPHCI.html

The Views of Jamaican Women on Menstrual Cycle and Reproductive Health Matters: Are Women using Contraceptive Method as a Pain Reliever against Menstrual Cycle Challenges?

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Abstract

This study investigated the relationship between menstrual cycle and reproductive matters among Jamaican women. Specifically, the study was conducted to 1) Find out the reproductive health matters of Jamaican women. 2). Determine the statistical relationship between the number of biological children and description of menstrual flow. 3). Determine whether there was any statistical association between ever experienced complications during late pregnancy and description of menstrual flow. 4.) Determine significant statistical relationship between menstrual flow and using a contraceptive method. 5). Find out reasons for using contraceptive methods and description of menstrual flow. 6). Find out whether there is any association between being pregnant and description of menstrual flow and, 7). Determine whether there is any association between women who have experienced a miscarriage and description of menstrual flow. The Study used correlational research design among 1,081 age 18-50+. The data for this research was collected using a questionnaire with a total of 19 questions. The study used purposive sampling procedure in the data collection phase. Data collected was analyzed by IBM Statistical Packages for the Social Sciences (SPSS) version 27.0 software for Windows. The study revealed that 28.7% of respondents

have never been pregnant, 41.3% do not have any biological children, 53.8% used contraceptive method, 39.5% have experienced a miscarriage, 16.7% begun their menstrual period at 9-10 years. The findings revealed that women who indicated having experienced heavy menstrual flow were most likely to have at least a miscarriage (54.2%) compared to those whose menstrual flow is medium (18.1%) and those who had light menstrual flow (43.0%)-[$\chi^2(2)= 102.492$, $P < 0.001$].Women who indicated having at least a biological child experienced heavy menstrual flow (69.4%) compared to those whose menstrual flow is medium (57.2%) and those who had light menstrual flow (52.6%)-[$\chi^2(2)= 18.184$, $P < 0.001$]. Women who experienced heavy menstrual flow are more likely to use a contraceptive method to ease the pain of the flow (43.5%) compared to those with medium flow (24.6%) and those with light menstrual flow (28.8%). In fact, women who experienced heavy menstrual flow least likely to use a contraceptive method to prevent pregnancy (20.5%) compared to those with medium (49.2%) and light menstrual flow (44.2%) [$\chi^2(6)=50.508$, $P < 0.001$]. The current study provides an in-depth understanding of the reproductive health matters of Jamaican women, and that fact that some of them are using contraceptive methods as a pain reliever, and this information must be brought into the public health discourse.

Keywords: Jamaican women, menstrual cycle, reproductive health matters, contraceptive methods, pain reliever, menstrual cycle challenges.

Introduction

Menstrual cycle lengths and early or late onset of menstruation are associated with reduced fertility (Reardon, & Consolini, 2016). According to the article, “Menstrual cycle characteristics and fecundability in a North American preconception cohort” by Wesselink et al., (2016), women with cycle lengths of 27–29 days, cycle lengths of <25 and 25–26 days were associated with reduced fecundability. Also, women who reached menarche at age 12–13 years and those who reached menarche at <12 years also had reduced fecundability (Wesselink et al., 2016). However, bleed length and heaviness of bleeding were not appreciably associated with fecundability (Wesselink et al., 2016). The menstrual cycle is characterized by a series of feedback mechanisms in the hypothalamic-pituitary-ovarian axis (Chedekel, 2016; Wesselink et al., 2016). These changes allow for the release of a mature egg from the dominant ovarian follicle and the development of a receptive endometrial lining that can support a pregnancy (Wesselink et al., 2016; Heffner & Schust, 2011). However, the patterns of the cycle are markers of ovarian and hormonal function and may be related to fecundity (Wesselink et al., 2016). According to Limiñana-Gras, (2017), “fecundability is defined as the probability of achieving a pregnancy within one menstrual cycle or the ability to achieve a live birth from one’s cycle exposure to the risk of pregnancy.”

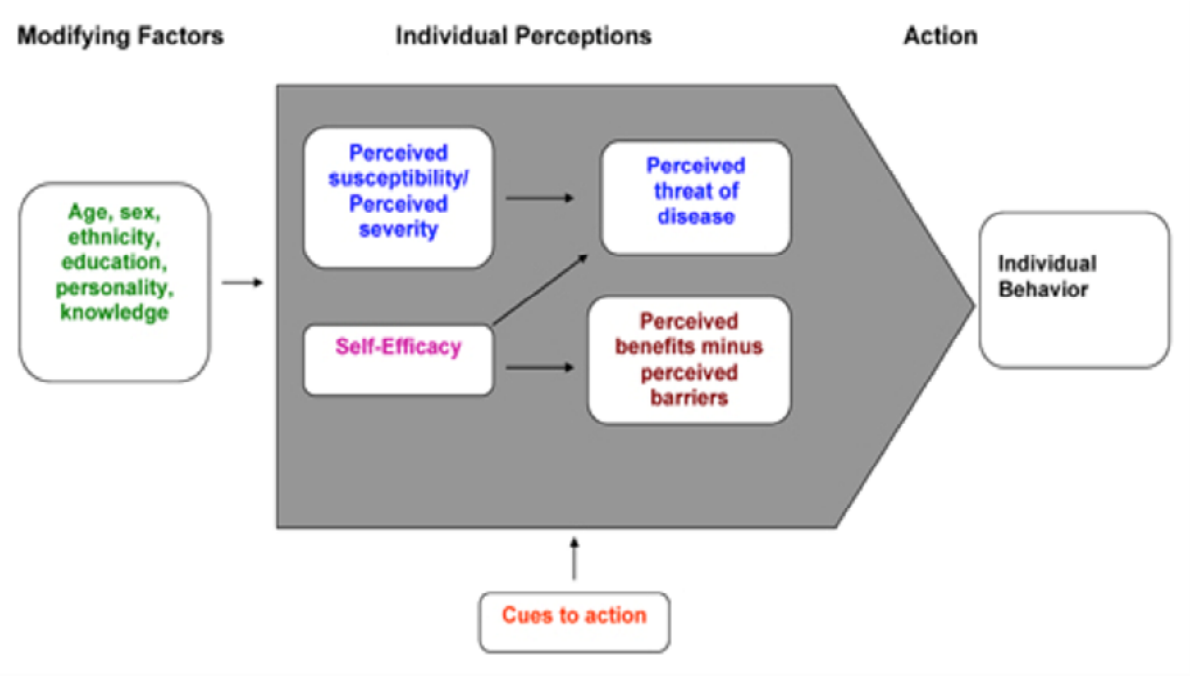
There are several factors affecting the menstrual cycle that can impact a woman’s fecundability; for instance, structural abnormalities such as fibroids, endometriosis or cancer. These can cause intermenstrual bleeding or prolonged bleeding that may disrupt lining of the uterus which can compromise implantation resulting in lower pregnancy rates or an increased chance of miscarriage (Sasson, 2021). In addition, the length of a woman’s cycle, while not on any form of contraceptive, can be a key indicator to hormonal imbalances and whether or

not ovulation is occurring in a predictable manner (Sasson, 2021). Hormonal imbalances can affect if and when ovulation occurs during the menstrual cycle (Sasson, 2021). Hence, if there is no ovulation, pregnancy cannot occur. The purpose of this study was to evaluate menstrual cycle, fecundity, contraceptive usage, and whether contraceptive methods are used to address challenges associated with menstrual cycle issue among Jamaican women. This study is significant in that it could add to and/or complement the knowledge on reproductive health of women during childbearing age and also impact future practice of health care fields especially in Obstetrics and Gynaecology.

Theoretical Framework

The Health Belief Model (HBM) is a commonly used theory in health education and health promotion (Janz & Becker, 1984). This model was developed by social psychologists including Hochbaum, Rosenstock and Kegels in the early 1950s (Rosenstock, 1974; Janz & Becker, 1984). It predicts and explains health-related behaviours in terms of certain belief patterns and helps to increase health promotion and disease prevention programs (Rosenstock, 1974;TK & Chandran, 2017). A person's motivation to undertake a health behaviour can however be divided into three categories: individual perceptions, modifying factors, and likelihood of action (Janz & Becker, 1984; TK & Chandran, 2017). Individual perceptions are factors that affect the perception of illness and with the importance of health to the individual, perceived susceptibility, and perceived severity. Modifying factors include demographic variables, perceived threat, and cues to action. The likelihood of action is the perceived benefits minus the perceived barriers of taking the recommended health action. The combination of these factors causes a response that often manifests into the likelihood of that behaviour occurring (Janz & Becker, 1984; Rosenstock, 1974; TK & Chandran, 2017).

The HBM hypothesizes that health-related behaviour depends on the combination of six factors or key action-related components to aid decision-making to accomplish behavioural changes (Janz & Becker, 1984; Abraham & Sheeran, 2001; Jones et al., 2014). These components are perceived severity, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and cues of action. Perceived susceptibility refers to an individual's opinion of the chances of contracting the illness condition. Perceived severity refers to an individual's opinion of how serious a condition and its consequences are. Perceived benefits refer to one's belief in the efficacy of the recommended health behaviour in reducing the risk or seriousness of the condition. Perceived barriers refer to the perception of cost associated with adhering to a recommended health behaviour if it is likely to be beneficial in reducing or eliminating the perceived threat. Self-efficacy refers to the level of confidence in one's ability to perform the health behaviour in question. Those persons who have low self-efficacy will have low confidence in their ability, which will influence the likelihood of the behaviour being performed. The HBM has been applied with considerable success to a range of health behaviours and populations, particularly preventive behaviours, such as diet, exercise, smoking cessation, vaccination, and contraception and sick role behaviours such as adherence to recommended medical treatments (Abraham & Sheeran, 2001). A representation of the model is shown in Fig. 1.1.



(Janz & Becker, 1984; Abraham & Sheeran, 2001)

Figure 1.1.A representation of the Health Belief Model

The HBM was adopted as a conceptual framework for this research to provide a sound theoretical basis for understanding the factors that influence women's childbirth decisions, as well as how they view their menstrual cycle and its severity. The HBM can specify the relationship between health-related beliefs/factors and maternal behaviours, which can help in predicting the possibility of a woman choosing to give birth or seeking assistance with reproductive health matters. Using the health belief model will explore maternal choices and its determining factors that affect women's fecundity; which can be explored within the six domains of the HBM, (Janz & Becker, 1984; Abraham & Sheeran, 2001).

Explaining the Menstrual Cycle

Menstrual cycle, as the name suggests, is a repetitive occurrence or "process by which a woman's body prepares for pregnancy" beginning " from the first day of a woman's period to the day before her next period" (Loma Linda University, 2017; National Health Service, 2018). Menarche, the first menstrual period, for most women occurs between the age of 11 to 14 and they continue to have them regularly to around age 50 (Loma Linda University, 2017). These ages may differ based on the source of literature for instance, according to Belfield, "girls can start their period anywhere from age 10 upwards, but the average is around 12 years. The average age for menopause… is 50 to 55" (as cited in National Health Service, 2018). Menstrual cycle consists of different phases namely: menses, follicular, ovulation and luteal phases. Menses describe days 1 to 5 when bleeding occurs (Loma Linda University, 2017). Follicular phase occurs when the egg matures in the ovarian follicle and uterine walls prepare for the embryo; days 6 to 14. Ovulation occurs when the ovary releases the egg for fertilization by sperm; days 14 (Loma Linda University, 2017). Lastly, in the luteal phase the egg moves from the fallopian tube to the uterus, where if fertilized it will attach to the uterine lining. Otherwise the endometrium sheds and the cycle starts again; days

15 to 28 (Loma Linda University, 2017). Some of the common problems associated with the menstrual cycle include but are not limited to: amenorrhea, dysmenorrhea, and abnormal uterine bleed (Loma Linda University, 2017).

Factors Affecting the Menstrual Cycle

There are several factors affecting the menstrual cycle that can impact a woman's fecundability. For instance, women with irregular cycles may have longer time-to-pregnancy due to higher risk of anovulation, an underlying disorder of the hypothalamic-pituitary-ovarian axis or the uterus, and/or difficulty timing intercourse to the fertile window (Wesselink et al., 2016). According to Wesselink et al. (2016), "there are also many literatures that support an association between cycle length and fecundity." For example, short cycles may reflect ovarian aging or a narrow fertile window and higher are associated with risk of anovulation and lower fecundability compared with normal length cycles (Wesselink et al., 2016). In addition, bleed length and heaviness of bleeding may act as markers of endometrial development (Dasharathy et al., 2012). Healthy females in the U.S., anovulatory cycles were followed by lighter blood loss and shorter bleed length compared with ovulatory cycles, according to Dasharathy et al. (2012). These findings are however supported by other studies that have found an association between cycle length, bleed length, and heaviness of bleed, in relation to fertility (Wesselink et al., 2016). According to one study, presided by Boston University School of Public Health researchers, it was determined that menstrual cycle of short duration, i.e. 26 days or less, and early or late menarche, i.e. "younger than 12 years, or at age 15 and older as compared with those who started at ages 12 to 13, are associated with reduced fertility" (as cited in Chedekel, 2016). This was also said to be, "independent of age, irregular cycles, and history of reproductive illness" according to the authors of the study (as cited in Chedekel, 2016). "These results indicate that menstrual cycle characteristics may serve as markers of fertility potential among pregnancy planners" (as cited in Chedekel, 2016). This study, however, found "little association between heavy or prolonged menstrual flow and fertility" (as cited in Chedekel, 2016).

According to one study by Chanley et al. (2006, p. 52) it concluded that there was an association between menstrual cycle characteristics with fertility and spontaneous abortion.

Cycle with lengths of 30 to 31 days preceded cycles with the highest fecundity. Shorter cycles were less likely to follow conception. Compared with 30 to 31 day cycles, conceptions after shorter and longer cycles were more likely to be spontaneously aborted. Cycles with 5 days bleeding had the highest fecundity. Cycles of up to 4 days of bleeding had lower fecundity and for bleed length less than 4 days. Spontaneous abortion was less likely after bleeds greater than 5 days when compared with 5 day bleeds.

Methods and Materials

A correlational research design was employed in this study. "Correlational research is a type of non-experimental research in which the researcher measures two variables and assesses the statistical relationship between them with little or no effort to control extraneous variables"

(Jhangiani, et al., 2017). This design is appropriate for the study, likewise Winston-Salem State University (n.d.) highlighted that correlational research endeavors to ascertain the dimension of the relationship between variables, i.e., menstrual cycle and fecundity, through the use of statistical data (p. 1, 2). As well as, trends and patterns that exist in the data are identifiable and the "relationships between and among a number of facts are sought and interpreted" (Winston-Salem State University, n.d., p. 1, 2). However, "correlation does not imply causation" (Jhangiani et al., 2017).

The duration of data collection was in the period of September 22, 2021 to December 14, 2021. The data for this research was collected using a questionnaire created to meet the research questions entailing a total of nineteen (19) questions, eighteen (18) of which were closed ended questions and 1 being both closed and open ended. Three of the total nineteen questions were utilized from Tripathi & Kumar, (2014) Numeric Rating Scale (NRS -11) from the 'Indian Journal of Pain: Challenges in pain assessment: Pain intensity scales' (Tripathi & Kumar, 2014). The questionnaire was confidential and maintained anonymity, it did not require personal identifiers such as name, email address, or any contact information for participants. A web based survey administration software (Google forms) was utilized in the formulation of the questionnaire and distributed via social media platforms such as WhatsApp and email by way of a sharable link. A hands-on approach was taken in various communities where volunteers were allowed to use the researchers' personal device to complete the survey in the condition that their device was not convenient. Volunteers were informed of the nature and purpose of study and conditions necessary to take part, privacy, confidentiality, and research ethics were maintained throughout the process.

Utilizing the 2019 female population ages 15-49 years of 757,890 in Jamaica (Statistical Institute of Jamaica, 2021) at a 95% confidence interval at a 2.97% margin of error, with survey monkey calculator, sample size (n) was 1,088. The sampling technique used was purposive, according to Barratt & Shantikumar, (2021) "this technique relies on the judgment of the researcher when choosing who to ask to participate" The inclusion exclusion criteria was as follows: Jamaican women, 18 years and older, with severe menstrual cycle i.e. light or heavy menses, moderate to extreme pain, and/or greater than 40 days between menses. The female population of those 18-49 years old was 693,465 in Jamaica as of 2019 based on the STATIN (2021). Using 693,465 female ages 18-48 years old at a 95% confidence internal and a 2.97% margin of the error, the actual sample size is 1,088 women.

Research questions and the questionnaire, however, remained the same. Data collected was analyzed by IBM Statistical Packages for the Social Sciences (SPSS) version 27.0 software for Windows, and Microsoft Office and Excel Spreadsheets were used to calculate and present the findings. P value of 0.025 was used to determine the significance level.

Definition of terms

According to the World Health Organization (WHO, 2022) reproductive age of females/women is 15 to 49 years old. Although a female's menarche begins on average between 10-16 years (Malitha, et al., 2020; Rees, 1995), those participants would require consent from their parent(s) or guardian because they are considered minors. Consequently, the age of participation in this study is from 18 to 49 years older from citizens of the three counties of Jamaica: Cornwall, Middlesex, and Surrey.

Findings

Table 1 presents the demographic characteristics of the sampled respondents. Of the sampled respondents (n=1,073), the majority of them were 26-33 years old (31.6%, n=342), and resided in Surrey (35.7%, n=386).

Table 1.Demographic Characteristics of the Sampled Respondents, n= 1,081

Details	**% (n)**
Age cohort	
18-25 years	23.8 (257)
26-33 years	31.6 (342)
34-41 years	27.7 (299)
42-49 years	14.4 (156)
50+ years	2.5 (27)
Area of residence	
Surrey (Kingston, St. Andrew, Portland, & St. Thomas)	35.7 (386)
Middlesex (St. Catherine, St. Mary, St. Ann, Manchester, & Clarendon)	31.0 (335)
Cornwall (Hanover, Westmoreland, St. James, Trelawny, St. Elizabeth)	33.3 (360)

The majority of the sampled women who are their reproductive years have been pregnant (71.3%, n=771), have at least one child (58.7%, n=635), used a contraceptive method (53.8%, n=582), have two children (41.6%, n=209), have never had a miscarriage (60.5%, n=547), the age of first menstrual cycle was 13-14 years old *29.5%, n=319), and menstrual cycle last for 5-7 days (53.0%, n=573). In addition, most of the sampled respondents' menstrual cycle is for 21-30 days (51.6%, n=558) (Table 2).

Table 2.Reproductive Health Matters, N=1,081

Details	% (n)
Ever been pregnant	
No	28.7 (310)
Yes	71.3 (771)
Have biological child/ren	
No	41.3 (446)
Yes	58.7 (635)
Used contraceptive method	
No	46.2 (499)
Yes	53.8 (582)
Fertility	
1	32.9 (165)
2	41.6 (209)
3	25.5 (128)
Ever experienced a miscarriage	
No	60.5 (547)
Yes	39.5 (357)
Every experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby	
No	59.6 (486)
Yes	40.4 (330)
Age did you begin seeing your period	
9-10 years old	16.7 (181)
11-12 years old	29.1 (315)
13-14 years old	29.5 (319)
15-16 years old	19.3 (209)
17+ years old	5.3 (57)
Days does your menstrual (period) usually last	
2-4 days	18.8 (203)
5-7 days	53.0 (573)
8-10 days	19.1 (207)
11+ days	9.1 (98)
Average length of your menstrual cycle	
Less than 21 days	19.8 (214)
21-30 days	51.6 (558)
31-40 days	21.0 (227)
41+ days	7.6 (82)

The majority of the sampled respondents indicated that they use a contraceptive method because it acts as a pain reliever for menstrual cramps (36.1%, n=202) and 31.3% (n=175)

used it to prevent pregnancy. In addition, 63.1% of the women have either fibroids or endometriosis, and 42.7% (n=415) have heavy flowing menstrual cycle (Table 2).

Table 3.Other Reproductive Health Matters, N=1,081

Details	**% (n)**
Use more than 5 pads daily during your period	
No	52.8 (571)
Yes	47.2 (519)
Description of menstrual flow	
Light flow	11.7 (114)
Medium flow	45.6 (444)
Heavy flow	42.7 (415)
Period or menstrual affect your daily activities	
No	21.4 (231)
Yes, Sometimes	40.6 (439)
Yes, always	38.0 (410)
Reason for using contraceptives	
It helps with the pain or menstrual cramps	36.1 (202)
I don't want to get pregnant	31.3 (175)
It helps to regularize my menstruation (period)	24.5 (137)
It makes my period lighter	8.2 (46)
Diagnosed with any of the following	
Polycystic ovarian	17.2 (76)
Fibroids	30.5 (135)
Pelvic Inflammatory disease	14.9 (66)
Primary dysmenorrhea	0.2 (1)
Endometriosis	31.6 (140)
Ovarian cysts	1.1 (5)
Hormone imbalance	0.5 (2)
Ovarian cancer	4.1 (18)

Table 4 presents a cross tabulation between the number of biological children and description of your menstrual flow of the sampled respondents. Of the 635 sampled respondents who indicated that they have given birth to a least a child, 75.1% of them were used for this cross tabulation. The sampled women who indicated a heavy menstrual flow were more likely to have two or more children compared to those who have birth at most 1 child ($\chi^2(4)=14.026$, $P = 0.007$).

Table 4.Cross tabulation of number of biological children and description of menstrual flow

Number of biological children		Description of menstrual flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
	1	49.1 (26)	34.6 (71)	26.9 (59)	32.7 (156)
	2	34.0 (18)	36.6 (75)	48.9 (107)	41.9 (200)
	3	17.0 (9)	28.8 (59)	24.2 (53)	25.4 (121)
Total		53	205	219	477

Table 5 presents a cross tabulation between ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby and description of menstrual flow, with there being a statistical association ($\chi^2(2)=126.271$, $P < 0.001$). The findings revealed that 70.1% (192) of women who indicated that they have experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby stated that their menstrual flow is heavy compared to 31.7% (145) who did not indicate ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby.

Table 5.Cross tabulation of ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby and description of menstrual flow

Description of menstrual flow		Ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby		Total
		No	Yes	
		% (n)	% (n)	% (n)
	Light	10.7 (49)	13.9 (38)	11.9 (87)
	Medium	57.5 (263)	16.1 (44)	42.0 (307)
	Heavy	31.7 (145)	70.1 (192)	46.1 (337)
Total		457	274	731

A significant statistical relationship emerged between description of menstrual flow and using a contraceptive method ($\chi^2(2)=64.026$, $P < 0.001$). Fifty four and one tenth per cent of those who indicated using a method of contraceptive had heavy menstrual flow compared to 28.7% of those who do no utilized a method of contraceptive (Table 6).

Table 6.Cross tabulation of description of menstrual flow and using a contraceptive method

Description of menstrual flow		Using a contraceptive method		Total
		No	Yes	
		% (n)	% (n)	% (n)
	Light	13.9 (61)	9.9 (53)	11.7 (114)
	Medium	57.4 (252)	36.0 (192)	45.6 (444)
	Heavy	28.7 (126)	54.1 (289)	42.7 (415)
Total		439	534	973

The cross tabulation between description of menstrual flow and using a contraceptive method revealed a significant statistical association ($\chi^2(2)=64.026$, $P < 0.001$; see Table 7). The findings revealed that women who experienced heavy menstrual flow are more likely to use a method of contraceptive (69.6%) compared to those with a medium menstrual flow (43.2%), and a light menstrual flow (46.5%).

Table 7.Cross tabulation of description of menstrual flow and using a contraceptive method

Using a contraceptive method		**Description of Menstrual Flow**			**Total**
		Light	**Medium**	**Heavy**	
		% (n)	**% (n)**	**% (n)**	**% (n)**
	No	53.5 (61)	56.8 (252)	30.4 (126)	45.1 (439)
	Yes	46.5 (53)	43.2 (192)	69.6 (289)	54.9 (534)
Total		114	444	415	973

Table 8 presents a cross tabulation between reasons for using contraceptive methods and description of menstrual flow. Chi-square test revealed a significant statistical association between the two previously mentioned variables [$\chi^2(6)=50.508$, $P < 0.001$]. Furthermore, women who experienced heavy menstrual flow are more likely to use a contraceptive method to ease the pain of the flow (43.5%) compared to those with medium flow (24.6%) and those with light menstrual flow (28.8%). In fact, women who experienced heavy menstrual flow least likely to use a contraceptive method to prevent pregnancy (20.5%) compared to those with medium (49.2%) and light menstrual flow (44.2%).

Table 8.A cross tabulation between reasons for using contraceptive methods and description of menstrual flow

Reasons for using contraceptive methods		Description of Menstrual Flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
	It helps with the pain or menstrual cramps	28.8 (15)	24.6 (45)	43.5 (121)	35.3 (181)
	I don't want to get pregnant	44.2 (23)	49.2 (90)	20.5 (57)	33.1 (170)
	It helps to regularize my menstruation (period)	23.1 (12)	23.0 (42)	25.5 (71)	24.4 (125)
	It makes my period lighter	3.8 (2)	3.3 (6)	10.4 (29)	7.2 (37)
Total		52	183	278	513

An Analysis of Variance (ANOVA) was done between 1) severity of the pain experienced by women during menstrual flow (when it is the worst that it gets) and description of menstrual flow, and 2) severity of the pain experienced by women during menstrual flow (when it is the best that it gets) and description of menstrual flow, and these are presented in Table 9. The analyses revealed that a statistical difference emerged among severity of pain owing to menstrual flow (when it is the WORST that it gets) experienced by women with particular menstrual flow ($F[2,970]=44.977$, $P < 0.0001$); but no statistical difference existed among severity of pain owing to menstrual flow (when it is the BEST that it gets) experienced by

women with particular menstrual flow (F[2,970]=1.362, *P* = 0.257). Using the multiple comparisons (Table 10), the findings revealed that severity of pain owing to menstrual flow (when it is the WORST that it gets) are between women who experienced light and heavy menstrual flow (*P* < 0.001), medium and heavy menstrual flow (*P* < 0.001), and no statistical difference between those with light and medium menstrual flow (*P* = 0.627).

Table 9.Analysis of Variance (ANOVA) between severity of the pain experienced by women during menstrual flow and description of menstrual flow

Description of menstrual flow		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval	
						Lower	Upper
Severity of pain owing to menstrual flow (when it is the WORST that it gets)	Light	114	6.78	2.292	0.215	6.36	7.21
	Medium	444	6.97	2.195	0.104	6.76	7.17
	Heavy	415	8.12	1.498	0.074	7.97	8.26
	Total	973	7.44	2.027	0.065	7.31	7.56
Severity of pain owing to menstrual flow (when it is the BEST that it gets)	Light	114	1.88	2.211	0.207	1.47	2.29
	Medium	444	2.10	1.957	0.093	1.91	2.28
	Heavy	415	2.21	1.892	0.093	2.03	2.39
	Total	973	2.12	1.962	0.063	2.00	2.24

Table 10.Multiple Comparisons between severity of the pain experienced by women during menstrual flow and description of menstrual flow

Dependent Variable		(I) 12.How would you describe your menstrual flow ?	(J) 12.How would you describe your menstrual flow ?	Mean Difference (I-J)	Std. Error	*P* value	95% Confidence Interval	
							Lower	Upper
Severity of pain owing to menstrual flow (when it is the WORST that it gets)	Tukey HSD	Light	Medium	-0.188	0.204	0.627	-0.67	0.29
			Heavy	-1.337*	0.205	<0.001	-1.82	-0.86
		Medium	Light	0.188	0.204	0.627	-0.29	0.67
			Heavy	-1.150*	0.133	<0.001	-1.46	-0.84
		Heavy	Light	1.337*	0.205	<0.001	0.86	1.82
			Medium	1.150*	0.133	<0.001	0.84	1.46
Severity of pain owing to menstrual flow (when it is the BEST that it gets)	Tukey HSD	Light	Medium	-0.22	0.206	0.535	-0.7	0.26
			Heavy	-0.335	0.207	0.24	-0.82	0.15
		Medium	Light	0.22	0.206	0.535	-0.26	0.7
			Heavy	-0.115	0.134	0.665	-0.43	0.2
		Heavy	Light	0.335	0.207	0.24	-0.15	0.82
			Medium	0.115	0.134	0.665	-0.2	0.43

*The mean difference is significant at the 0.05 level.

Women whose menstrual flow is heavy are mostly likely to have been pregnant (81.2%) compared to those whose menstrual flow is medium (63.1%) and those who had light menstrual flow (76.3%)-[χ^2 (2) =36.307, $P < 0.001$]-Table 11.

Table 11.A cross tabulation between being pregnant and description of menstrual flow

Details		Description of Menstrual Flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
Being pregnant	No	23.7 (27)	36.9 (164)	18.8 (78)	27.6 (269)
	Yes	76.3 (87)	63.1 (280)	81.2 (337)	72.4 (704)
Total		114	444	415	973

Women who indicated having at least a biological child experienced heavy menstrual flow (69.4%) compared to those whose menstrual flow is medium (57.2%) and those who had light menstrual flow (52.6%)-[χ^2(2)= 18.184, $P < 0.001$]-Table 12.

Table 12.A cross tabulation between being pregnant and description of menstrual flow

Details		Description of Menstrual Flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
Having biological children	No	47.4 (54)	42.8 (190)	30.6 (127)	38.1 (371)
	Yes	52.6 (60)	57.2 (254)	69.4 (288)	61.9 (602)
Total		114	444	415	973

Table 12 presents a cross tabulation between being pregnant and description of menstrual flow among Jamaican women. The findings revealed that women who indicated having experienced heavy menstrual flow were most likely to have at least a miscarriage (54.2%) compared to those whose menstrual flow is medium (18.1%) and those who had light menstrual flow (43.0%)-[χ^2(2)= 102.492, $P < 0.001$]-Table 12.

Table 12.A cross tabulation between ever experienced a miscarriage and description of menstrual flow

Detail		Description of Menstrual Flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
Ever experienced a miscarriage	No	57.0 (53)	81.9 (295)	45.8 (165)	63.1 (513)
	Yes	43.0 (40)	18.1 (65)	54.2 (195)	36.9 (300)
Total		93	360	360	813

Table 13 presents a cross tabulation between menstrual cycle (usually last) and description of menstrual flow. Using chi-square analysis, a statistical relationship existed between the two previously mentioned variables [χ^2 (6) = 169.107, $P < 0.001$]. Furthermore, women who indicated having a heavy menstrual flow were most likely to experienced menstrual flow for

11+ days (13.3%) compared to those who experienced medium menstrual flow (2.3%) or light menstrual flow (2.6%).

Table 13.A cross tabulation between menstrual cycle (usually last) and description of menstrual flow

Details		Description of Menstrual Flow			Total
		Light	Medium	Heavy	
		% (n)	% (n)	% (n)	% (n)
Menstrual cycle (usually last)	2-4 days	49.1 (56)	15.3 (68)	14.7 (61)	19.0 (185)
	5-7 days	37.7 (43)	69.8 (310)	43.6 (181)	54.9 (534)
	8-10 days	10.5 (12)	12.6 (56)	28.4 (118)	19.1 (186)
	11+ days	2.6 (3)	2.3 (10)	13.3 (55)	7.0 (68)
Total		114	444	415	973

Table 14 presents a cross tabulation between description of menstrual flow and ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby. Chi-square test revealed a significant statistical relationship between the two previously mentioned variables [$\chi^2(6)= 126.271$, $P < 0.001$]. The findings showed that 70.1% of women who experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby indicated that their menstrual flow is heavy compared to 31.7% of those who indicated they have never experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby

Table 14.A cross tabulation between description of menstrual flow and Ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby

Details		Ever experienced any complications during late pregnancy (20 weeks or more) that caused you to lose the baby		Total
		No	Yes	
		% (n)	% (n)	% (n)
Description of menstrual flow	Light	10.7 (49)	13.9 (38)	11.9 (87)
	Medium	57.5 (263)	16.1 (44)	42.0 (307)
	Heavy	31.7 (145)	70.1 (192)	46.1 (337)
Total		457	274	731

Table 15 presents a cross tabulation between description of menstrual flow and age at which you had first menstrual flow. Chi-square analysis revealed a significant statistical association between the two previously mentioned variables [$\chi^2(8)= 29.003$, $P < 0.001$]. The findings revealed that women whose first menstrual flow began before 11 years old and at 15+ years old (46.8% and 49.0%, respectively) were more likely to experienced heavy menstrual flow compared to those whose first menstrual flow began at 11-12 years old (36.8%) or 12-14 years old (41.4%).

Table 15.A cross tabulation between description of menstrual flow and age of first menstrual flow

Details		Age of first menstrual flow					Total
		9-10 years old	11-12 years old	13-14 years old	15-16 years old	17+ years old	
		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
Description of Menstrual Flow	Light	20.5 (32)	9.3 (26)	10.8 (32)	10.4 (20)	8.0 (4)	11.7 (114)
	Medium	32.7 (51)	53.9 (151)	47.8 (141)	40.6 (78)	46.0 (23)	45.6 (444)
	Heavy	46.8 (73)	36.8 (103)	41.4 (122)	49.0 (94)	46.0 (23)	42.7 (415)
Total		156	280	295	192	50	973

Table 16 presents across tabulation between descriptions of menstrual flow and diagnosed with a particular health condition. Chi-square analysis revealed a significant statistical association between the two previously mentioned variables [χ^2 (8) = 49.421, $P < 0.001$].

Table 16.A cross tabulation between description of menstrual flow and diagnosed with a particular health condition

Details		Diagnosed with a particular health condition								Total
		Polycystic ovarian	Fibroids	Pelvic Inflamma	Primary dysmenor	Endometr iosis	Ovarian cysts	Hormone imbalance	Ovarian cancer	
Description of Menstrual Flow	Light	8.1 (5)	5.8 (7)	14.3 (9)	0.0 (0)	5.4 (5)	0.0 (0)	0.0 (0)	40.0 (6)	8.9 (32)
	Medium	37.1 (23)	38.3 (46)	22.2 (14)	100.0 (1)	14.1 (13)	75.0 (3)	0.0 (0)	13.3 (2)	28.5 (102)
	Heavy	54.8 (34)	55.8 (67)	63.5 (40)	0.0 (0)	80.4 (74)	25.0 (1)	100.0 (1)	46.7 (7)	62.6 (224)
Total		62	120	63	1	92	4	1	15	358

Discussion

Menstrual cycle is a repetitive occurrence or “process by which a woman’s body prepares for pregnancy” (Loma Linda University, 2017; National Health Service, 2018). However, the challenges that most women face are unpredictable menstrual cycles which can impact their fecundability. Fecundability can be defined as the probability of achieving a pregnancy within one menstrual cycle or the ability to achieve a live birth from one’s cycle. Studies have shown that there are several factors affecting the menstrual cycle that can impact a woman’s fecundability (Wesselink et al., 2016). The current findings revealed that of the sample 71.3% has been pregnant at least once before. Of said respondents, only 58.7% (635) had biological children, with the majority, 19.3% (209), having 2 children. While 3 and 4+ children compete for the minimum of 11.8% (128). Of the eligible respondents, 71.3% (771), who have been pregnant at least once 357 has experienced a miscarriage and 330 experienced some form of complication during their late pregnancy at 20 weeks or more. In addition, 16.7% of the sampled female had their first menarche at 9-10 years old.

On average the sampled respondents' menarche began at 13-14 years old with the majority of 29.5% (319) and close behind at 29.1% (315) beginning at 11-12 years and a minimum of 5.3% (57) having menarche at 17+ years. Chedekel (2016), made reference to a study that stated early or late menarche, “younger than 12 years, or at age 15 and older as compared with those who started at ages 12 to 13, was associated with reduced fertility”. Affirming this, Wesselink et al., (2016), made note that women who started menstruating younger than 12 years old or at age 15 and older also had reduced fertility compared to those who started at ages 12 to 13. Based on this criterion it would suggest that 29.5% of the sampled Jamaican females would have normal fertility, ages 13-14 years. Those younger than 12 years at menarche (496) and those 15 and older (266) would result in a shocking 70.4% (762) of the sample would have a reduced fertility according to these prior studies. However, 58.3% (630) of the sample have biological children which would suggest otherwise, with a difference of 12.2% (132).

Of the sampled female respondents 53.0% (573) of menstrual (period) lasted for 5-7 days and a minimum lasting 11+ days, 9.1% (98). The average menstrual cycle length was 21-30 days with the majority of 51.6% (558), and a minimum 7.6% (82) spanning 41+ days. According to one study, presided by Boston University School of Public Health researchers, it was determined that a menstrual cycle of short duration, “26 days or less, was associated with reduced fertility”(Chedekel, 2016).Short menstrual cycle length and early or late onset are said to be associated with reduced fecundity. This was also said to be, “independent of age, irregular cycles, and history of reproductive illness” according to the authors of the study (as cited in Chedekel, 2016). Short cycles may reflect ovarian aging or a narrow fertile window and are associated with risk of anovulation and lower fecundability compared with normal length cycles (Wesselink et al., 2016). In addition, bleed length and heaviness of bleeding may act as markers of endometrial development (Dasharathy et al., 2012).

The severity of menstrual characteristics of the respondents, 52.8% (571) do not use more than 5 pads per day during their menstrual flow, in contrast to, 47.2% (510) of the respondents used more than 5 pads per day. It is a basic assumption that persons using more than five pads daily would be an indication of how heavy-severe their flow is, not taking into consideration that persons may change more pads for hygienic reasons. In this study, the minority, 48.3% (523) of respondents described their menstrual flow to be heavy or severe. The majority 51.6% (558) responded they had light to medium menstrual flow. Comparing 47.2% (510) of the respondents using more than 5 pads per day and 48.3% (523) of respondents having heavy or severe menstrual flow this affirms the nature of menstrual flow severity. The majority 40.7% (440) of the respondents recorded that the menstrual cycle affects their day to day activities, whilst the least 37.9% (410) of respondents recorded that sometimes their menstruation affects their daily activities. The pain severity rating of menstrual cycle for the sample most frequently selected for being at its worst, 21.2% (229), rated 8/10, at an acceptable level, it is rated at a 3/10 by 22.7% (245), and the best it gets is rated a 1/10 by 36.8% (398).

Respondents were asked about their reproductive health, 58.0% (627) were not diagnosed with any of the conditions mentioned or other, the remaining 42% (454) had been diagnosed with either 1 (337 respondents) or more (117 respondents) of the mentioned conditions or other which is inclusive of: cysts; hemorrhagic or ovarian, hormonal imbalance, adenomyosis, and primary dysmenorrhea. A majority of (181), of the individuals affected by a condition, had fibroids and a minority of 9 having others. Respondents were asked about their use of contraception, 53.8 % (582) of the respondents are using contraceptives. A majority of 18.7% (202) of the individuals using contraception used it to help with the pain or menstrual cramps. On the contrary, the minority of 4.3% (46) use it to make their menses lighter.

A series of cross-tabulation were done utilizing the data collected to find a relationship or association between menstrual cycle and fecundity. In doing so we used menstrual cycle characteristic of menstrual flow description and fecundity characteristic of: pregnancy, biological children, miscarriage, and complications during 20 weeks+. The result showed that there was a statistically significant association between menstrual cycle characterises and fertility characteristics. Of the sample, the majority who have been pregnant before are those who had a heavy flow 81.2% (337), while the 18.8% (78) of these individuals, being the minimum, had never been pregnant. The majority who have never been pregnant before are those who had a severe menstrual flow which is 39% (41), while the 61% (64) of these individuals, being the minimum, have been pregnant. 58.8% of respondents have had biological children. It was determined that persons with biological children were more likely to experience light to heavy menstrual flow, while those with severe menstrual flow were more likely to have no biological children. Other researchers, however, found “little association between heavy or prolonged menstrual flow and fertility” (as cited in Chedekel, 2016).

Of the sampled population (n=1,081) the valid response is n=1,078. From the findings 71.2% (768) of respondents are applicable for a miscarriage. It was determined that of that amount

46.2% had a miscarriage. So plainly, 46.2% of women who got pregnant had a miscarriage. Of the total valid respondents that figure drops to 32.9%. Among respondents that have severe menstrual flow showed a greater affinity to miscarriage, 52.4%. The respondents that showed the least affinity to miscarriage had a medium menstrual flow, 14.6%.

Of the sampled population (n=1,081) the valid response is n=1,078. From the findings 71.2% (768) of respondents are eligible for having complications after 20 weeks that caused them to lose the baby. It was determined that of that amount 42.7% had complications during late pregnancy. So bluntly, 42.7% of women who got pregnant had lost the baby after 20 weeks. Of the total valid respondents that figure declined to 30.4%. Among respondents that have severe menstrual flow showed a greater affinity to have complications late in pregnancy, 51.4%. The respondents that showed the least affinity to miscarriage had a medium menstrual flow, 9.9%.

Conclusion

After the analysis and discussion of this study, women whose menstrual flow is heavy are mostly likely to have been pregnant compared to those whose menstrual flow is medium and those who had light menstrual flow. In addition, women who indicated having a biological child experienced heavy menstrual flow compared to those whose menstrual flow is medium and light menstrual flow. Women who indicated having experienced heavy menstrual flow were most likely to have at least a miscarriage compared to those whose menstrual flow is medium and those who had light menstrual flow. Respondents whose menstrual cycle lasted for 5-7 days had medium menstrual flow while those whose menstrual cycle lasted for 2-4 days had light menstrual flow. A crucial finding of this study is that some Jamaican women are using a contraceptive method as a pain reliever from challenges experienced during their menstrual cycle and not to prevent pregnancy. Such a findings must be brought into the public health discourse as this highlights a new phenomenon in health matters.

Recommendation

Further study could be conducted to find out whether there is statistical association between health lifestyle and normal reproduction matters.

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