ORIGINAL RESEARCH

Discrepancy in Menstrual Cycle Relates to Diverse Profession and Age Cluster of District Mardan Khyber PakhtoonKhwa, Pakistan

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Abstract— Menstruation cycle is the discharge of blood from the inner uterine lining of female reproductive tract. About 500 females from 6 different professions from district Mardan were included in this study. These 500 working females were divided into different age groups starting from 13 to 50 years to examine the length of menstrual cycle in relation to different professions and age. Number of Menstruating days of each female was recorded. Observation was recorded from the 1st day of menstruating till the end of menstruation period. An unlimited relation of profession and menstruation period was observed in this study, a decreased or prolonged menstrual period was observed in those women who were having more physical or mental activities as compare to sedentary ones. The same case is also found in start of teenage and in aged women. In different professional females about 29.2% respondents were reported with 3-4 days of menstrual period, 40.4% respondents were observed with 5-6 days of menstrual period, 23.2% respondents were reported with 7-8 days of menstrual period while only 7.2% respondents were observed with the longest menstrual period i.e. 9-10 days. About 15.49% Teachers and 15.39% Maids had the longest menstruation periods i.e. 9-20 days. A fairly normal menstruation (5-6 days) period of 69.31% respondents was observed in household females while in students about 48.63% respondents had least days of menstruation period i.e. 3-4 days. In different age groups about 32.8% female population had 3-4 days' menstruation period which is measured to be short period, a total of 44.4% female population had 5-6 days' menstruation period, 15.6% female population had 7-8 days' menstruation period while only 7.2% female population of this study had the longest (9-10 days) menstruation period. About 11.11% aged female population had the longest menstruation periods i.e. 9-20 days. A comparatively normal menstruation (5-6 days) period of 59.09% respondents was observed in age group 26-30. About 37.41% respondents of age group 21-25 and 37.70% respondents of age group 31-35 had least days of menstruation period i.e. 3-4 days. This reveals that the mental activity as well as the age has also an effect on menstruation period. This study reveals that the menstrual period is also reliant upon the nature of the job/profession of a female. Period may be shortened as 3 days or prolonged as 10 days depend upon the nature of physical and mental activity.

Keywords: Menstrual Cycle, Profession, Age, Respondents.

INTRODUCTION

Menstruation cycle also known as menstrual period and it is an example of biological rhythm of natural changes that occurs in the female reproductive systemin the uterus and ovariesfor about 28 days throughout the reproductive phase of women from puberty to menopause that make pregnancy possible (Seenivasan and Priya, 2015; Silverthorn, 2013). The cycle is obligatory for the production of oocytes, and for the preparation of the uterus for pregnancy (Silverthorn, 2013). Menstruation cycle also called menstrual period is the liberation of blood from female uterus (Dye and Blundell, 1997; Ellison and

Lager, 1986). Bleeding usually lasts around 2 to 7 days (McCarroll et al., 2015; Nelson, 2009). The typical length of time between the first day of one period and the first day of the next is 21 to 45 days in young women and 21 to 35 days in adults (an average of 28 days) (Diaz et al., 2006; Nelson, 2009). The first period usually begins between twelve and fifteen years of age, a point in time known as menarche(Dye and Blundell, 1997; Zareen et al., 2016a). They may occasionally start as early as eight, and this onset may still be normal (Nelson, 2009). Menstruation stops occurring after menopause which usually occurs between 45 and 55 years of age. Amenorrhea refers to a condition which is characterized with lack of menstrual periods from three to sixmonths during a women's reproductive years (Burger et al., 1985; Soleymani et al., 2014).Short or tremendously small periods are termed as hypomenorrhea while those which last more than 7 days are called hypermenorrhea (Fraser et al., 2007). This cycle can be reformed/changed by using contraceptives (oral or injectable) (Klump et al., 2013). Premenstrual syndrome is recurrent moderate psychological and physical symptoms that occur during the luteal phase of menses and resolve with menstruation. Menstruation period is totally controlled by hormones (McCarroll et al., 2015). Up to 80% of women report having some symptoms during the one to two weeks prior to menstruation (Biggs and Demuth, 2011). Common symptoms include exhausted sensation, touchiness, mood-swings acne, tender breasts, bloating, feeling tired, irritability and mood changes (Biggs and Demuth, 2011). These symptoms interfere with normal life and therefore qualify as premenstrual syndrome in 20 to 30% of women. In 3 to 8%, they are severe (Biggs and Demuth, 2011). The menstrual cycle is governed by hormonal changes (Zareen et al., 2016b). In human, the levels of these ovarian hormones during the menstrual cycle have been found to influence binge eating (Klump et al., 2008). Females have been found to experience different eating habits at different stages of their menstrual cycle, with food intake being higher during the luteal phase than the follicular phase (Buffenstein et al., 1995; Dye and Blundell, 1997). Food intake increases by approximately 10% during the luteal phase compared to the follicular phase (Buffenstein et al., 1995). These changes can be altered by using hormonal birth control to prevent pregnancy (Klump et al., 2013). Each cycle can be divided into three phases based on events in the ovary (ovarian cycle) or in the uterus (uterine cycle) (Silverthorn, 2013). The ovarian cycle consists of the follicular phase, ovulation, and luteal phase whereas the uterine cycle is divided into menstruation, proliferative phase, and secretory phase. Physical activities have a great effect on menstrual period as physical activity induces bleeding (Ellison and Lager, 1986; Shangold et al., 1979). Basic objective of this study was to investigate the number of days of menstruation period as well as the effect of profession on the duration of menstruation period in females of different areas of district Mardan.

MATERIALS AND METHODS

Ethical Consideration

Approval for this research study were got from Institutional Harassment Committee (Ethical Review Board) at Abdul Wali Khan University Mardan, Khyber Pakhtoon Khwa, Pakistan.

Data Collection

The Study was conducted in the Female population of district Mardan from May 2016 to August 2016. About 500 adult Menstruating females of different professions i.e. unmarried Households, Housewives, Teachers, Students, Tailors and Maids of district Mardan were included in this study. In addition to Profession the Respondents were divided into different age groups starting from 13 years as this age is considered to be an average age of start of menstruation. Number of Menstruating days of each female was recorded on questionnaire. Observation was recorded from the 1st day of menstruating till the end of menstruation period.

Statistical Analysis

All data were compiled by Minitab 17 statistical software.

RESULTS

Variation in Menstrual Period among Different Professions

About 88/500 (17.6%) respondents were household females, they were neither married nor doing any job, out of them 9/88 (10.22%) had 3-4 days' menstrual

period, 61/88 (69.31%) had 5-6 days' menstrual period, 15/88 (17.04%) had 7-8 days' menstrual period while 03/88 (3.409%) had 9-10 days' menstrual period.

A total of 128/500 (25.6%) respondents were housewives, out of them 31/128 (24.21%) had 3-4 days' menstrual period, 49/128 (38.28%) had 5-6 days' menstrual period, 44/128 (34.37%) had 7-8 days' menstrual period while 4/128 (3.12%) had 9-10 days' menstrual period.   A total of 71/500 (14.2%) respondents were Teachers, out of them 15/71 (21.12%) had 3-4 days' menstrual period, 24/71 (33.80%) had 5-6 days' menstrual period, 21/71 (29.57%) had 7-8 days' menstrual period while 11/71 (15.49%) had 9-10 days' menstrual period.

About 150/500 (30.00%) respondents were Students, out of them 73/150 (48.67%) had 3-4 days' menstrual

period, 47/150 (31.33%) had 5-6 days' menstrual period, 20/150 (13.33%) had 7-8 days' menstrual period while only 10/150 (6.67%) female had 9-10 days' menstrual period.

About 24/500 (4.8%) respondents were Female tailors, out of them 08/24 (33.33%) had 3-4 days' menstrual period, 09/24 (37.5%) had 5-6 days' menstrual period, 05/24 (20.83%) had 7-8 days' menstrual period while 02/08 (8.33%) respondents with 9-10 days' menstrual period was observed.

About 39/500 (7.8%) respondents were Maids, out of them 10/39 (25.64%) had 3-4 days' menstrual period, 12/39 (30.76%) had 5-6 days' menstrual period, 11/39 (28.21%) had 7-8 days' menstrual period while only 06/39 (15.39%) respondents with 9-10 days' menstrual period was observed. (**Table. 1 and Fig. 1**).

Table 1. Variation in menstrual period among different professions

Profession	Total No of Respondents (%)	Menstruation Period (Days) Number (%)			
		3-4	5-6	7-8	9-10
House hold	88 (17.6)	9 (10.22)	61 (69.31)	15 (17.04)	3 (3.409)
House wives	128 (25.6)	31 (24.21)	49 (38.28)	44 (34.37)	4 (3.12)
Teachers	71 (14.2)	15 (21.12)	24 (33.80)	21 (29.57)	11 (15.49)
Students	150 (30)	73 (48.67)	47 (31.33)	20 (13.33)	10 (6.67)
Maids	39 (7.8)	10 (25.64)	12 (30.76)	11 (28.21)	6 (15.39)
Tailors	24 (4.80)	8 (33.33)	9 (37.5)	5 (20.83)	2 (8.33)
Total	500	146 (29.2)	202 (40.4)	116 (23.2)	36 (7.2)
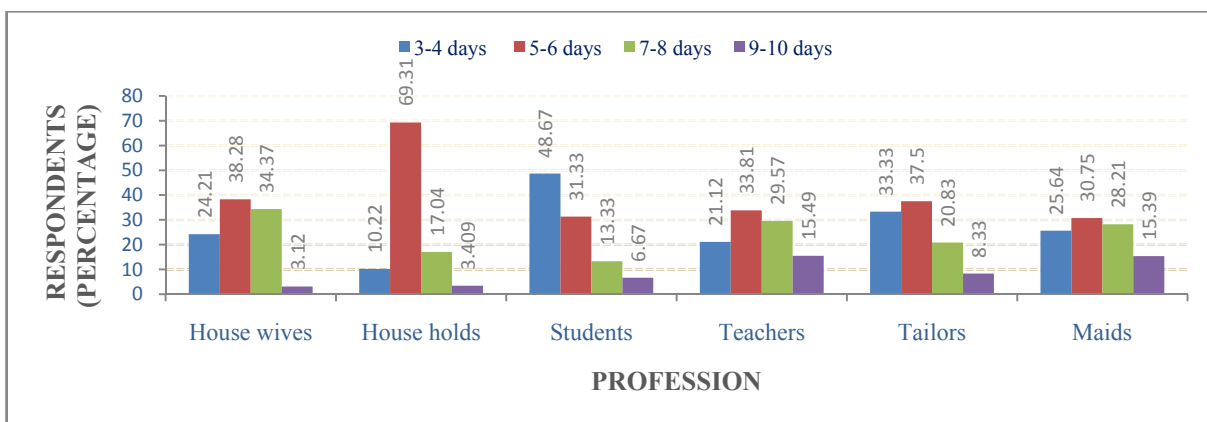
Figure 1. Variation in menstrual periods among different professions.

Menstrual Cycle Relates to Diverse Profession and Age Cluster

Contrast of Menstruation Period in Different Professions

About 29.2% respondents were reported with 3-4 days of menstrual period, 40.4% respondents were observed with 5-6 days of menstrual period, 23.2% respondents were reported with 7-8 days of menstrual period while only 7.2% respondents were observed with the longest menstrual period i.e. 9-10 days (**Fig. 2**).
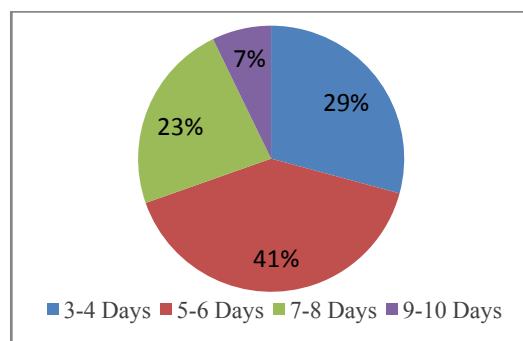

Figure 2. Contrast of Menstruation Period in Different Professions.

Variation in Menstruation Period In Relation To Age

Respondents were divided into different age groups starting from 13 years as this age is considered to be an average age of start of menstruation.

About 22/500 (4.4%) respondents were included in this study whose age was 13-15 years. Out of them 06/22 (27.27%) had 3-4 days menstruating period, 09/22 (40.91%) had 5-6 days menstruating period, 03/22 (13.64%) had 7-8 days menstruating period while 04/22 (18.18%) had maximum menstruating period i.e. 9-10 days.

Similarly, in age group 16-20 years, 103/500 (20.6%) female respondents were included in the study. Among them 29/103 (28.15%) had 3-4 days' menstruation, 48/103 (46.61%) had 5-6 days' menstruation, 21/103 (20.38%) had 7-8 days while 05/103 (4.85%) had maximum menstruating period i.e. 9-10 days.

In age group 21-25 years, 139/500 (27.8%) females were included in the study, among them 52/139 (37.41%) had 3-4 days' menstruation, 44/139 (31.65%) had 5-6 days, 29/139 (20.86%) had 7-8 days while 14/139 (10.07%) respondents had 9-10 days' menstruation period.

In age group 26-30 years, 110/500 (22.00%) females were included in the study, among them 32/110 (29.09%) had 3-4 days' menstruation, 65/110 (59.09%) had 5-6 days, 10/110 (9.091%) had 7-8 days while 03/110 (2.72%) respondents had 9-10 days' menstruation period.

In age group 31-35 years, 61/500 (12.2%) females were included in the study, among them 23/61 (37.70%) had 3-4 days' menstruation, 27/61 (44.26%) had 5-6 days, 06/61 (9.83%) had 7-8 days while 05/61 (8.19%) respondents had 9-10 days' menstruation period.

In age group 36-40 years, 36/500 (7.2%) females were included in the study, among them 13/36 (36.11%) had 3-4 days' menstruation, 18/36 (50.00%) had 5-6 days, 03/36 (8.33%) had 7-8 days while 02/36 (5.56%) respondents had 9-10 days' menstruation period.

In age group 41-45 years, 18/500 (3.6%) females were included in the study, among them 05/18 (27.78%) had 3-4 days' menstruation, 06/18 (33.33%) had 5-6 days, 05/18 (27.78%) had 7-8 days while 02/18 (11.11%) respondents had 9-10 days' menstruation period.

In age group 46-50 years, 11/500 (2.2%) females were included in the study, among them 04/11 (36.36%) had 3-4 days' menstruation, 05/11 (45.45%) had 5-6 days, 01/11 (9.091%) had 7-8 days while 01/11 (9.091%) respondents had 9-10 days' menstruation period (**Table. 2, Fig. 3**).

Table 2. Variation in Menstruation Period In Relation To Age

| Age Group (Years)	Total No of Respondents (%)	Menstruation Period			
		3-4 No. (%)	5-6 No. (%)	7-8 No. (%)	9-10 No. (%)
13-15	22 (4.4)	6 (27.27)	9 (40.91)	3 (13.64)	4 (18.18)
16-20	103 (20.6)	29 (28.15)	48 (46.61)	21 (20.38)	5 (4.85)
21-25	139 (27.8)	52 (37.41)	44 (31.65)	29 (20.86)	14 (10.07)
26-30	110 (22)	32 (29.09)	65 (59.09)	10 (9.091)	3 (2.72)
31-35	61 (12.2)	23 (37.70)	27 (44.26)	6 (9.83)	5 (8.19)
36-40	36 (7.2)	13 (36.11)	18 (50)	3 (8.33)	2 (5.56)
41-45	18 (3.6)	5 (27.78)	6 (33.33)	5 (27.78)	2 (11.11)
46-50	11 (2.2)	4 (36.36)	5 (45.45)	1 (9.091)	1 (9.091)
Grand Total	500	164 (32.8)	222 (44.4)	78 (15.6)	36 (7.2)
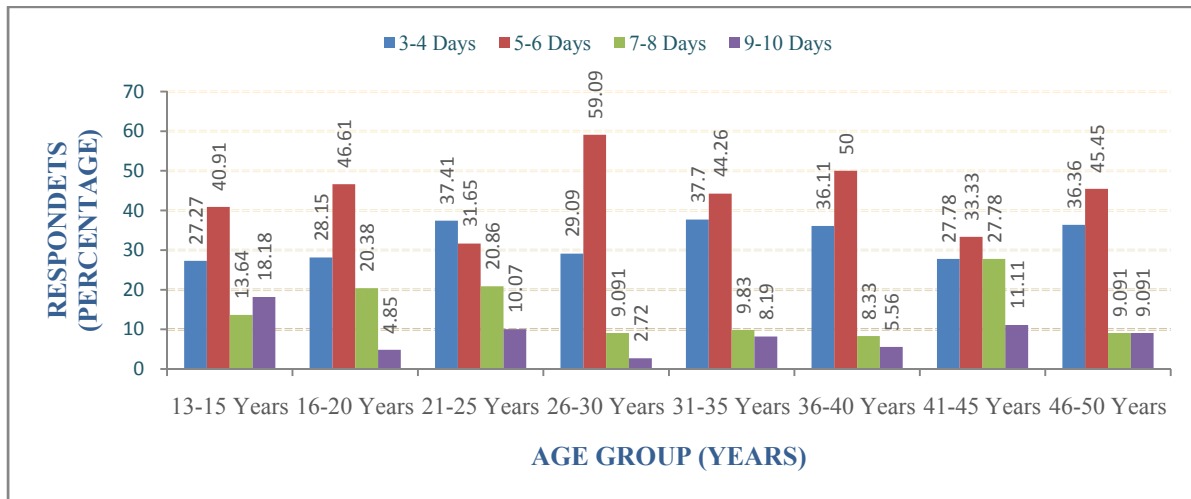
Figure 3. Variation in Menstruation Period In Relation To Age.

Contrast of Menstruation Period in Different Age Groups

About 32.8% female population had 3-4 days' menstruation period which is considered to be short period, a total of 44.4% female population had 5-6 days' menstruation period, 15.6% female population had 7-8 days menstruation period while only, 7.2% female population of this study had the longest (9-10) day's menstruation period (**Fig. 4**).
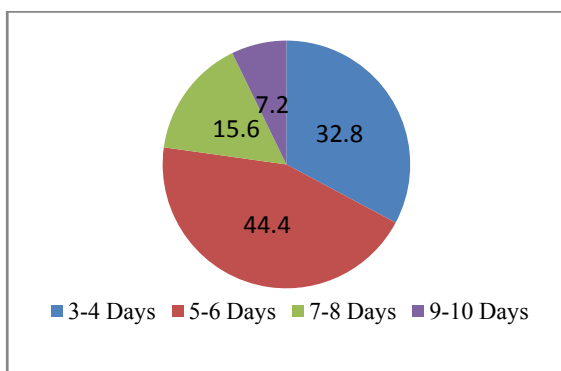

Figure 4. Contrast of Menstruation Period In Relation To Age.

DISCUSSION

Current findings are parallel with the study of (Cooper et al., 1996; Harlow and Matanoski, 1991) who indicated that menstrual cycle is much variable in women who is involved in different activities, as compared to that female who is sedentary. The similarities to the results from the North Carolina study, which used a highly accurate surrogate for ovulation day based on urinary hormone metabolites, (Baird et al., 1991) suggest that bias caused by measurement error in our BBT-based marker of ovulation may be low.

A comparatively normal period of menstrual cycle 5-8 days was observed in household females, tailors and housewives who were almost free from studies as well as from job (Zareen et al., 2016c). Tailors, household and house wives showed least elevated menstrual periods as there is either no or less physical activity. Only 3.409% household, 3.12% house wives and 8.33% tailors have the longest menstrual period i.e. 9-10 days. A comparatively normal menstruation (5-6 days) period of 30.76% respondents were observed in maids, about 25.64% maids had shortest menstrual period (3-4 days). Physical job stress and mental job stress were not related to ovulatory disturbances in 156 Japanese student nurses (Nagata et al., 1986). No association between perceived levels of stress due to medical school and the prevalence of amenorrhea and Oligomenorrhea was found by evaluating questionnaire data in 159 medical students (Clarvit, 1988).

Physical activity of maids leads to prolong the menstrual period. About 15.39% maids had the longest menstruation periods i.e. 9-20 days in this

study. Only half number of teachers and students had normal menstrual period. 21.12% teachers and 48.67% students had a short menstrual period i.e. 3-4 days. As students and teachers are mostly involved in mental activities, this reveals that the mental activity has also an effect on menstruation period. The prevalence of polymenorrhea persisted with similar levels since the second gynecological year (about 2%). An ovulatory cycles with unopposed estrogen stimulation may lead to endometrial proliferation and hyperplasia. Without sufficient progesterone to stabilize and differentiate the endometrium, this mucous membrane becomes fragile and sloughs irregularly. Estrogen also affects uterine vascular tone, angiogenesis, prostaglandin formation, and endometrial nitric oxide production (Livingstone and Fraser, 2002).

With the start of teenage (13-15 years), menstruation cycle is considered to be not normal, in this study almost half i.e. 40.91% of the teenagers had normal menstruation period, rest of the 59.09% respondents had irregular days of menstruation period either less than normal or it was higher than normal number of days. In 16-20 age group, 46.61% of the teenagers had normal menstruation period, rest of the 53.39% had irregular days of menstruation period, as these teenagers are mostly involved in studies. A comparatively normal menstruation (5-6 days) period of 31.65% respondents was observed in age group 21-25 while in same age group about 37.41% respondents had least days of menstruation period i.e. 3-4 days. About 59.09% respondents of age group (26-30 years) had normal menstruation period (5-6 days). Only 2.72% respondents of this group had longest menstruation period (9-10 days). 44.26% respondents had normal menstrual period in age group (31-35 years) while in same group about 37.70% respondents had shortest menstruation period (3-4 days). In 36-40 age group 50% respondents had normal menstrual period while 50% had irregular days of menstruation period. With the increasing age menstruation cycle is observed to be increased or decreased. Only 33.33% respondents of age group 41-45 had normal menstruation period, while rest had either short or long periods. About 11.11% respondents of same group and 9.091% respondents of 45-50 age group had the longest menstruation periods (9-10 days).

CONCLUSION

This study reveals that the menstrual period is not only dependent upon age but also on the nature of the job/profession of a female. Periods may be shortened or prolonged depend upon the age and nature of physical and mental activity. Furthermore it also indicated that the menstrual period can be as short as 2 days while as long as 10 days, and it is concluded and recorded that the normal period of menstruation cycle was 5-6 days in females of different areas of district Mardan.

Competing Interests

The authors declare they have no competing interests.

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