

# Variation in Menstrual Characters: A Study between Married and Unmarried Women of West Bengal

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## ABSTRACT

*Menstrual cycle is an endocrine function of the ovary, controlled by the hypothalamus-pituitary-gonadal axis. Variation in menstrual characters across different ages, socioeconomic status, place of residence, ethnic groups and so on suggests that the function of hypothalamus-pituitary-gonadal axis is influenced by some internal and external factors. The objectives of the present study are to understand the variation in menstrual characters with respect to differential marital status of women and as well as to find out whether marital status can be a significant predictor of any menstrual character. Data have been collected on a total number of 200 participants (unmarried 100 and married 100) with the help of a well-tested questionnaire/schedule. Unmarried participants who are aged between 18 and 21 years and their closest blood related married kin members who are in the age group 25–35 years, have given birth to at least one child, presently not lactating or family way and are not using any hormonal contraceptives for the last one year period have been selected for the study. Bivariate analysis reveals that significant differences exist between married and unmarried women in menstrual characters like menstrual cycle length, nature of menstrual discharge and presence of premenstrual problems. Multivariate analysis also shows that marital status of a woman is one of the significant predictors of these menstrual characters (except nature of menstrual discharge). It may be concluded that probably a relationship exists between marital status of a woman and some of the menstrual characters.*

**Key words:** marital status, menstrual characters, variation

## Introduction

Menstrual cycle is a consequence of secretion of sex hormones from the ovary following a cyclic pattern. The secretion of these hormones is controlled by the activity of hypothalamus-pituitary-ovary axis. It is also supposed that the function of this pituitary-hypothalamus-ovarian axis is influenced by a number of endogenous and exogenous factors<sup>1,2</sup>. Studies across the world suggest that menstrual characters vary with respect to reproductive life, age groups, socioeconomic condition, place of residence, physical activity, lifestyle, body composition, ethnicity and so on<sup>3–18</sup>. These findings indicate that there are certain sociocultural and other biological concomitants to the functioning of the reproductive endocrine system.

In general, women pass through certain hormonal changes involving increases and decreases in the levels of reproductive steroids, such as estrogens and progester-

one, during key lifecycle transitions like, first menstrual period, pregnancy, childbirth, lactation, perimenopause, and menopause. In practice, a woman makes her sexual debut when she enters into a marital union from an unmarried state. As a consequence, in course of time, she is likely to become pregnant, give birth, pass through a lactating period and adopt certain family planning practices (like hormonal contraceptives). Therefore, after marriage, the reproductive vis-à-vis the endocrine system of a married woman undergoes certain change, which may affect their menstrual characteristics.

There is hardly any published literature on the variations in menstrual characteristics between unmarried and married women. Therefore, in the present study, an attempt has been made to understand the variation in menstrual characters and in »other gynaecological« problems between married and unmarried women and to find

out whether marital status can significantly predict these menstrual and »other gynaecological« variables.

## Materials and Methods

The present study has been conducted on married and unmarried (Bengali speaking Hindu) women of the State of West Bengal, India. Initially, the city of Kolkata (the state capital) and Howrah were selected as study areas. These two are the oldest cities of this state and are located on either side of the river Ganga. However, due to shortage of fund and time, the authors have been compelled to restrict the study in the city of Howrah only.

Data on menstrual and related variables have been collected on a total number of 200 women (married 100 and unmarried 100). Unmarried women who are aged between 18 and 21 years and have attained menarche at least two years prior to the date of survey have been selected for the study. The selection of unmarried women has been made from three randomly selected undergraduate colleges of the city of Howrah. On the other hand, the married participants have been chosen from the closest blood related kin members of the unmarried ones (selected for the present study), who are in the age group 25–35 years, have given birth to at least one child, presently not lactating or family way and are not using any hormonal contraceptives for the last one year period. All the participants reported to have neither smoked nor consumed alcohol, excepting a few who have smoked and consumed alcohol in a few occasions. At the time of interview, none of the participants reported to have suffered or presently suffering from any major gynaecological health problem. Prior to the collection of data, the nature of research was explained to and a verbal consent was taken from all the participants. The entire data have been collected by one of the authors (DD) with the help of a well-tested questionnaire/schedule canvassed among the participants in person, during the period November 2006–June 2007.

Data on socioeconomic condition includes age and educational levels of the participants, educational level and occupational types of their parents. The age at menarche was collected from these women by recall method (to the nearest month, if not the exact date). A few of these women were not able to recall their age at menarche. In such cases, they were asked to recall the season or some festivals nearest to their onset of menstruation, so that their age at menarche can be assessed. Information on menstrual cycle length has been taken on the basis of the number of days between the start of one menstrual discharge period to the start of the next discharge period. Since the starting points of the consecutive cycles usually do not take place exactly at the same interval of time, the participants were asked to mention the range of time interval between consecutive cycles. Data on menstrual characters (premenstrual and at the time of menstruation) and other gynaecological problems have been collected on the basis of the reported experience and/or perception of the participants during the last three months

period preceding the date of interview. Premenstrual problems are defined as the problems, which the women have experienced few days before the start of each menstrual discharge. Premenstrual problems include, abdominal pain, back pain, vomiting, headache, flatulence, diarrhoea, feeling of heaviness, tenseness, irritability, acne and breast tenderness. Data on other menstrual characters (including some problems) include, abdominal pain, heavy menstrual discharge, scanty discharge, days of peak discharge, duration of discharge and nature of discharge. Data on »other gynaecological« problems includes, white discharge, itching around the genital area, pain like menstrual cramps, vaginal odors, white patches, blister, permanent scarring, burning sensation of urine and continuous leakage of urine.

Menstrual hygienic practices have been assessed in terms of the type of absorbent used at the time of menstrual discharge and on the type of perineum care taken by the participants. Data on hygiene behaviour have been considered to understand its effect on »other gynaecological health«.

Both bivariate and multivariate analyses of the data have been done with the help of the software »Statistical Package for Social Sciences«, version 7.5. Bivariate analysis ( $\chi^2$ ) has been done to find out the association between marital status and the menstrual characters. A multivariate analysis (stepwise logistic regression) has further been conducted (after controlling certain other variables) to see whether marital status is a significant predictor to these menstrual characters.

## Results

### *Socioeconomic condition*

All the unmarried women of the present study group are presently enrolled in colleges for graduation course. On the other hand, most of the married women have successfully completed their graduation course (64, 64.0%), few have completed the postgraduate course (16, 16.0%) and the rest have achieved school level education (20, 20.0%). In both the groups, the fathers of these women, in majority, have received college level education (unmarried 67, 67.0%; married 61, 61.0%) followed by that of school (unmarried 30, 30.0%; married 26, 26.0%) and postgraduate levels (unmarried 3, 3.0%; married 13, 13.0%). On the other hand, more than half of the mothers of these women (unmarried 61, 61.0%; married 68, 68.0%) have received school level education followed by college level (unmarried 39, 39.0%; married 32, 32.0%). Around 40.0% of the fathers of these women are engaged in business (unmarried 38, 38.0%; married 45, 45.0%) followed by the rest who are in service or other professional jobs (unmarried 62, 62.0%; married 55, 55.0%). The overwhelming majority of the mothers of the participants are homemakers (unmarried 80, 80.0%; married 76, 76.0%) followed by the rest who are in service (unmarried 20, 20.0%; married 24, 24.0%).

*Menstruation and its related aspects*

The mean age of the unmarried women is  $19.23 \pm 1.05$  years (CI 95% 19.02–19.44 years; range 18–21 years) and that of married participants is  $30.03 \pm 3.29$  years (CI 95% 29.38–30.68 years; range 23–35 years). The age at menarche of the women of both these groups are similar (unmarried  $12.80 \pm 1.62$  years, married  $12.89 \pm 1.24$  years).

Table 1 shows that the menstrual cycle length varies significantly between the married and unmarried women. Majority of the married women has a cycle length that ranges between 25 and 29 days and between 30 and 34 days in similar frequencies. On the other hand, most of the unmarried women have a cycle length that varies between 25 and 29 days compared to half of them whose cycle length varies between 30 and 34 days. An attempt has also been made to estimate the mean cycle length by considering the reported ranges of time interval as grouped data. It has also been observed that the median cycle length (in days) of married (33.0) is higher than that of the unmarried women (27.5). The duration of menstrual discharge varies between married and unmarried wo-

men. It appears from the table that although most of the women of both the groups experience a menstrual discharge for more than four days, the frequency is higher among the married ones compared to their counterparts. The mean days of discharge of the married and unmarried women are  $4.67 \pm 0.89$  and  $4.61 \pm 0.88$  respectively, which is statistically not significant. Again, an overwhelming majority of the women of both the groups experienced peak menstrual discharge at least for »any one day«, followed by »more than one day« (Table 1). However, lesser number of unmarried women seems to have experienced peak discharge for the categories »none of the days« and »any one day« compared to the married ones. Among the ones whose peak menstrual discharge lasts for »any one day« only, majority reported the happening on the 2<sup>nd</sup> day (unmarried 42, 43.75%; married 48, 52.75%) followed by 1<sup>st</sup> (unmarried 9, 9.37%; married 10, 10.99%), 3<sup>rd</sup> (unmarried 1, 1.04%; married 4, 4.30%) and 4<sup>th</sup> day only (unmarried 1, 1.04%, married 4, 4.30%). However, a section of the women have also experienced peak menstrual discharge for two days or more – 1<sup>st</sup> and 2<sup>nd</sup> day (unmarried 23, 23.96%; married 15, 16.48%), 2<sup>nd</sup>

**TABLE 1**  
PRESENCE OF PREMENSTRUAL AND MENSTRUAL PROBLEMS AND THE NATURE OF MENSTRUAL DISCHARGE

	Unmarried	Married	$\chi^2$	Odds ratio, 95% CI
1. Cycle length (in days)				
<24	3.0 (3)	4.0 (4)		
25–29	62.0 (62)	40.0 (40)		
30–34	29.0 (29)	36.0 (36)	18.61***	
35–39	4.0 (4)	18.0 (18)		
≥40	2.0 (2)	2.0 (2)		
2. Duration of Menstrual discharge (days)				
2–4 days	46.0 (46)	39.0 (39)	1.003	
More than 4 days	54.0 (54)	61.0 (61)		
3. No. of peak discharge days				
None	4.0 (4)	11.0 (11)	1.657	
Any one day	53.0 (53)	62.0 (62)		
More than one day	43.0 (43)	27.0 (27)		
4. Nature of discharge				
Fluid	28.0 (28)	10.0 (10)		
Fluid and clot	72.0 (72)	90.0 (90)	10.52**	3.50 (1.5952–7.6790)
5. Presence of premenstrual problems				
Present	77.0 (77)	41.0 (41)	26.79***	4.818 (2.6099–8.8927)
Absent	23.0 (23)	59.0 (59)		
6. Problems at the time of menstrual discharge				
Present	75.0 (75)	76.0 (76)	0.027	
Absent	25.0 (25)	24.0 (24)		
7. Presence of other gynaecological problems				
Present	61.0 (61)	80.0 (80)	8.679**	2.5573 (1.3570–4.8194)
Absent	39.0 (39)	20.0 (20)		

\* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The figures in the parenthesis indicates the actual numbers

and 3<sup>rd</sup> day (unmarried 12, 12.50%; married 8, 8.79%), 1<sup>st</sup> and 3<sup>rd</sup> (unmarried 4, 4.17%; married (0), 1<sup>st</sup> to 4<sup>th</sup> (unmarried 4, 4.17%; married 2, 2.10%).

The nature of menstrual discharge varies significantly between the women of these two groups. Most of the women of both the categories have a menstrual discharge which is a mixture of fluid and clot. However, the unmarried women are 3.5 times more likely than the married ones to have a fluid kind of discharge (Table 1).

Around three fourth of the women, irrespective of the marital status, have experienced some problems related to menstrual discharge (Table 1), of which a small section (unmarried 15, 20.0%; married 21, 27.63%) has sought medical help to ameliorate these problems. Of the different problems related to menstrual discharge, majority of the unmarried women suffer from pain (50, 66.67%) followed by the pain with heavy discharge (17, 22.67%), pain with scanty discharge (4, 5.33%) and heavy discharge only (4, 5.33%). In contrast, the married ones mostly suffer from heavy discharge (24, 31.58%), followed by pain only (23, 30.26%), pain with scanty discharge (16, 21.05%) and lastly pain with heavy discharge (13, 17.0%).

Although a considerable section of the women of both the groups suffer from premenstrual problems, the frequency is more among the unmarried group than the married ones, which is also statistically significant (Table 1). The unmarried women are almost five times more likely to be affected with various premenstrual problems compared to the ones who are married. Among the various types of premenstrual problems encountered by these women, an overwhelming majority of them of both the groups suffer from back and/or abdominal pain during the premenstrual period (unmarried 63, 81.81%; married 38, 92.68%), followed by a feeling of weakness (unmarried 32, 41.56%; married 16, 39.03%), feeling of heaviness in the body and headache in equal frequency in both the groups (unmarried 9, 11.69%; married 2, 4.88%), vomiting (unmarried 5, 6.49%; married 2, 4.88%) and other premenstrual problems like, fever and breast pain (unmarried 3, 3.80%; married 1, 2.44%). Some of the unmarried women also reported premenstrual problems like acne (18, 23.38%) and diarrhoea (1, 1.20%).

#### »Other gynaecological« problems

Table 1 also shows that women of both the groups suffer from various types of »other gynaecological« problems (like, white discharge and burning sensation during urination), but the frequency is higher among the married women than the unmarried ones, which is statistically significant. The married women seem to be 2.5 times more likely to be affected with »other gynaecological« problems than their counterpart. Of the various types of »other gynaecological« problems, majority of them (unmarried 88.53%, married 90.0%) suffer from white discharge, followed by burning sensation during urination (unmarried 14.75% and married 16.25%) and itching around genital area (unmarried 24.59%, married 31.25%).

#### Hygienic practices at the time of menstrual discharge

In the present study, women of both the groups adopt similar types of hygienic practices in relation to menstruation. Hence, the data of both the groups have been presented together.

Majority of the women, irrespective of the marital status, use commercial sanitary absorbent (142, 71.0%) compared to those who use a piece of cloth as an absorbent (58, 29.0%). Seven of these cloth users dispose the cloths after using for once only. Among those who use the cloths repeatedly, majority clean the soiled cloths inside the bathroom (34, 65.38%) and the rest do it anywhere (18, 34.62%). These washed cloth absorbents are generally dried at a place where sunlight is insufficient (35, 64.31%) and the rest dry those at a place, which is debarred from any sunlight (17, 32.69%).

Majority of the women clean their genital area regularly at the time of menstruation more than two times (124, 62.0%) followed by twice (63, 31.5%) and once only (13, 6.5%). Most of the women clean their genital area with normal water (174, 87.0%), followed by the ones who use soap and normal water (43, 21.5%) and the rest with warm water only (3, 1.5%).

#### Multivariate analysis

Logistic regression (backward conditional) analysis has been conducted to identify the significant predictor variables of some of the menstrual characters like premenstrual problems, menstrual cycle length and nature of menstrual discharge after controlling certain variables like age, marital status and age at menarche. An attempt has also been made to find out the significant predictors of prevalence of »other gynaecological problems«, after controlling variables like age, marital status, age at menarche, cycle length, duration of menstrual discharge, number of days of peak discharge, use of absorbent types and the modes of cleaning of genitals (Table 2).

The results show that after controlling other related variables, marital status has been found to be a significant predictor to the presence of premenstrual problems, cycle length and »other gynaecological problems«. Unmarried women are 5.9 and 2.1 times likely than their married counterpart to have premenstrual problems and a cycle length of 25–29 days respectively. In addition to this, the presence of premenstrual problems and cycle length can also be predicted by the nature of menstrual discharge. Women who have a fluid type of menstrual discharge are 0.39 and 3.02 times likely to suffer from premenstrual problems and have a cycle length of 25–29 days respectively than the ones, whose nature of discharge is a mixture of »fluid and clot«. However, the logistic regression failed to identify marital status as a significant predictor of the nature of menstrual discharge, as found by the bivariate analysis (table 1); here, age of a woman and her menstrual cycle length have been found to be the significant predictors. The chance of having a fluid type of discharge increases by 1.5 times with the in-

**TABLE 2**  
MULTIVARIATE ANALYSIS

	Presence of PMS	Cycle length (25–29 days)	Duration of menstrual discharge (<5 days)	Nature of menstrual discharge (fluid)	Presence of »other gynaecological« problem
Age (years)	ns <sup>o</sup>	ns	ns	1.1567** (1.0594–1.2629)	ns
Age at menarche (years)	ns	ns	0.7142* (0.5340–0.9551)	ns	ns
Marital status					
Married (ref.)	1.0	1.0			1.0
Unmarried	5.9878 *** (3.0504–11.7540)	2.1363* (1.1732–3.8900)	ns	ns	0.3978** (0.2017–0.7844)
Premenstrual problem(s)	–	ns	ns	ns	ns
Cycle length					
>29 days (ref.)				1.0	
25–29 days	ns	–	ns	2.7965* (1.1662–6.7058)	ns
Duration of menstrual discharge	ns	ns	–	ns	ns
Number of days of peak discharge	ns	ns	ns	ns	ns
Nature of discharge					
Fluid and clot (ref.)	1.0	1.0			1.0
Fluid	0.3903* (0.1692–0.9007)	3.0207* (1.2666–7.2044)	ns	–	0.3686* (0.1666–0.8152)
Absorbent type	na <sup>o</sup>	na	na	na	ns
Genital cleaning	na	na	na	na	ns

ns – non significant, na<sup>o</sup>– not applicable

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

crease in age of the woman. Again, women who have a cycle length of (25–29) days are 2.8 times likely to have a fluid type of menstrual discharge than the ones who have a cycle length beyond 29 days. The possibility of experiencing duration of menstrual discharge of <5 days increases, with the increase in age at menarche (0.71 times).

The multivariate analysis also conform the association of marital status with the presence of »other gynaecological problems«. Married women are 2.56 (1/0.39) times likely to suffer from »other gynaecological problems« than the unmarried ones. Moreover, women who have fluid type of menstrual discharge are 0.36 times likely to suffer from »other gynaecological problems« than those having a discharge with a mixture of »fluid and clot«.

## Discussion and Conclusion

The present study attempts to understand the variation in menstrual characters and »other gynaecological« problems between married and unmarried women and also to observe whether marital status is a significant predictor of these menstrual variables.

So far as the socioeconomic status is concerned, it seems that the women of both the groups are similar both in terms of the educational levels and occupational types of self and also of their parents. Similarities also exist between these two groups in menstrual characters like age at menarche, frequency of problems at the time of menstrual discharge, number of days of peak discharge and duration of menstrual discharge in general. In terms of health behaviour related to menstruation, women of both the groups show resemblance in the use of absorbent types, cleaning and drying of absorbents and in taking care of genitals. In spite of these similarities, bivariate analysis show that these two groups differ significantly in some traits like menstrual cycle length, occurrence of problems related to premenstrual period and at the time of menstrual discharge, nature of menstrual discharge and in the presence of »other gynaecological« problems. However, multivariate analysis shows that marital status of a woman can significantly predict all these traits, barring the nature of menstrual discharge. Thus, it appears that there exists variation in some of the menstrual characters between married and unmarried women and some of these variations can be predicted from marital status.

The authors are aware of the limitations of the study, like small sample size, spatial limitation of the popula-

tion and lack of hormonal profile of the participants at different stages of the menstrual cycle. In spite of these limitations, the present study opens up certain areas for future research. A detailed investigation into the changes in the functioning of hypothalamus-pituitary-gonadal axis and also of the endometrial environment needs to be done in order to have a better understanding of the reason(s) behind the variation in menstrual characters between these two groups of women who are at the different stages of their reproductive life.

The authors are of the opinion that a comparison of menstrual characters along with the hormonal profile between married and unmarried women of matching age groups would be more appropriate to probe this research

## REFERENCES

1. HARLOW SD, EPHROSS SA, Epidemiol Review, 17 (1995) 265. —
2. JABBOUR HN, KELLY RW, FRASER HM, CRITCHLEY HOD, Endocr Rev, 27 (2006) 17. —
3. CHOMPOOTAWEEP S, TANKEYOON M, POMSUNWAN P, YAMARAT K, DUSITSIN N, Ann of Hum Biol, 25 (1997) 427. —
4. COOPER GS, SANDLER DP, WHELAN EA, SMITH KR, Epidemiology, 7 (1996) 624. —
5. DUTTA S, RAY S, J Fam Welf, 52 (2006) 73. —
6. HARLOW SD, What we do and do not know about menstrual cycle; or questions scientists could be asking (The Population Council, New York, 1995). —
7. MOAWED S, East Mediterr Health J, 7 (2001) 197. —
8. MUNSTER K, SCHMIDT L, HELM P, Br J, Obstet Gynaecol, 99 (1992) 422. —
9. POURESLAMI M, OSATI-ASHTIANI F, Arch Iranian Med, 5 (2002) 219. —
10. POWER C, MATTHEWS S, Lancet, 350 (1997) 1584. —
11. RAHAMAN MM, KABIR M, SHAHIDULLAH M, J Ayub Med Coll

problem. Another way of approaching this problem would be a follow-up study of menstrual characters on the same group of women both during their unmarried and married stages of their reproductive life (following the selection criteria of the participants of the present study).

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## RAZLIKE U MENSTRUALNIM KARAKTERISTIKAMA – ISTRAŽIVANJE UDANIH I NEUDANIH ŽENA ZAPADNOG BENGALA

### SAŽETAK

Menstrualni ciklus je endokrina funkcija jajnika, a kontrolirana je hipotalamo-pituitarno-gonadalnom spregom. Razlike u menstrualnim karakteristikama uslijed godišta, socioekonomskog statusa, mjesta stanovanja, etničke pripadnosti itd. sugerira da je funkcija hipotalamo-pituitarno-gonadalne sprege pod utjecajem unutarnjih i vanjskih faktora. Namjera ovog istraživanja je razumjeti razlike u menstrualnim ciklusima s obzirom na bračni status žena i otkriti da li bračni status može biti značajan prediktor bilo koje menstrualne karakteristike. Podaci su sakupljeni na sveukupno 200 ispitanika (100 udanih i 100 neudanih žena) uz pomoć dobro-testiranog upitnika. U istraživanje su uključene neudane ispitanice, koje su između 18 i 21 godine starosti, i udane pripadnice njihove najbliže obitelji, koje su između 25 i 35 godina starosti, koje su rodile najmanje jedno dijete, koje trenutačno ne doje i ne uzimaju hormonalnu kontracepciju već barem jednu godinu. Bivarijatna analiza pokazala je značajne razlike između udanih i neudanih žena u njihovim menstrualnim karakteristikama kao što su trajanje menstrualnog ciklusa, priroda menstruacijske krvi i prisutnost predmenstrualnih problema. Multivarijatna analiza također pokazuje da je bračni status jedan od značajnih prediktora ovih menstrualnih karakteristika (isključujući prirodu menstruacijske krvi). Može se zaključiti da vjerojatno postoji odnos između bračnog statusa i nekih menstrualnih karakteristika.