

Dysmenorrhea and its Effect on Quality of Life of Muslim Women in North India

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Abstract: Dysmenorrhea during menstruation is characterized by the beginning of a crampy pelvic pain shortly before or on the onset of menstrual cycle and last for 1-3 days. As a debilitating condition, dysmenorrhea has a major impact on a woman's quality-of-life, social and occupational roles which results in significant school and work absences. Objective: The main objective of the present study was to calculate the prevalence of dysmenorrhea and the factors affecting and to find association of dysmenorrhea with quality of life. Methods: A cross-sectional study among adult Muslim women from Delhi was conducted. Socio-demographic data and data on menstrual symptoms was collected using pre-tested self-administrated proforma. For assessing quality of life WHO-BREF-QOL has been used. Results: 61.1% of the women had painful menses with varying intensity. Among socio-demographic factors age, SES, family type and marital status were found to be significantly associated with dysmenorrhea. Similar results were found with menstrual characteristics and adiposity indices. Women with dysmenorrhea scored lower for QoL as compared to their counterparts without dysmenorrhea. By multivariate analysis younger, unmarried, women with early age at menarche, women with smaller menstrual cycle, women with irregular menstrual flow and obese women had higher risk of dysmenorrhea. In Conclusion: Dysmenorrhea is one of the most common problem associated with menstruation affected by many socio-demographic factors. It has detrimental effect on QoL of Muslim women in North India.

Key words: Dysmenorrhea • Quality of Life • Menstruation • Muslim Women

INTRODUCTION

Dysmenorrhea is one of the most prevalent menstrual dysfunction affecting women of reproductive age and is a major cause of morbidity [1, 2]. Dysmenorrhea is characterized by the beginning of a crampy pelvic pain shortly before or on the onset of menstrual cycle and last for 1-3 days [3]. The cause of dysmenorrhea has its origin in excessive contractions of uterine muscle. 2-4 days prior to menstruation, prostaglandins proceed into uterine muscle to build up quickly at the onset of menstrual cycle and act as smooth muscle contractors which aid in expulsion of endometrium [3, 5]. Links between high level of prostaglandin, especially prostaglandin 2ALFA and menstrual discomfort have been found. The levels of prostaglandins were found more among women with primary dysmenorrhea than women who do not have dysmenorrhea (3) Pain in dysmenorrhea may vary from mild to severe and is associated with vomiting and nausea and change in bowel habits either diarrhea or constipation [4].

The prevalence of dysmenorrhea was found to vary between 28% to 71.7% across the countries [5- 7]. A range of risk factors associated with dysmenorrhea have been identified in literature. Although diverse results have been observed for many factors. These factors include age [8], BMI [9], smoking [10], age at menarche [9,11], menstrual flow [11], family history of dysmenorrhea [12], pelvic infection, previous sterilization and history of sexual assault [13,14]. Other common socio-demographic factors like education [15], marital status [8] and employment [16] also influences the prevalence of dysmenorrhea.

Emotional and behavioral problems associated with menstruation may aggravate menstrual problems and dysmenorrhea. For instance, anxiety and/or depression symptoms are reported to effect dysmenorrhea and other menstrual related problems. As a debilitating condition, dysmenorrhea has a major impact on a woman's quality-of-life, social and occupational roles which results in significant school and work absences [1, 17]. Also, considerable economic losses were estimated in the form of decreased productivity, medical care and costs of medications due to dysmenorrhea [18].

The aim of the present study was to evaluate the prevalence of dysmenorrhea and the factors affecting dysmenorrhea and also to identify how dysmenorrhea influence the quality of life of Muslim women in North India.

MATERIALS AND METHODS

A cross-sectional community based study was conducted in National Capital of India from September 2015 to June 2016. A total of 834 Muslim adult females (18-49 years) were selected conveniently and using snowball technique from all over Delhi. For data collection Muslim females were interviewed through a door-to-door survey, using a pre-coded, pretested and close-ended proforma including standardized questionnaire. For this study Muslim population was chosen because Muslim women are less studied and believed to be conservative about such topics. Ethical approval was taken from Ethical committee of department for conducting present research. Informed written consent was obtained from all the subjects after properly explaining the purpose of the study before commencing the research. Participants who were not ready to give the consent and females suffering from disease other than related to reproductive health were excluded from the study.

Questionnaires: Information was collected on socio-demographic variables, menstrual cycle pattern, age at menarche, dysmenorrhea and associated symptoms and Quality of life (QOL). A scale by O.P Agarwal *et al.* [19] has been used for calculating socio-economic status (SES). This scale consists 22 questions. External validity and replicability of the scale has been tested prior to its acceptance. Age at menarche was obtained through recall method. Females were asked to recall the nearest whole year and how old were they when they experienced first menses. Must *et al.* [20] has shown the accuracy of recall method and states that even after 29 years to menarche, there was a high correlation between the recall age at menarche and actual age of menarche among females. Presence of dysmenorrhea in the present study was based on the question: 'In last 12 months have you ever had severe period pain?' Women were considered to be symptom-free if their response was 'never' or 'rarely' and to have had a recent history of dysmenorrhea if they respond by saying 'sometimes' or 'often'. Dysmenorrhea is considered

1. Mild, if pain is present during menstruation but normal daily activities are not affected.
2. Moderate, if pain is present and normal daily activities are affected and taking medication provide sufficient relief.
3. Severe, if pain is present affecting normal daily activities with symptoms like fatigue, vomiting and diarrhea. Taking medication provide poor or no relief.

WHO-BREF was used to calculate quality of life which is the short version of the World Health Organization's QOL measure (WHOQOL-BREF; The WHOQOL Group, 1996) This questionnaire is a self-report measure consisting two general questions (on quality of life and satisfaction with health) and twenty-four specific questions measuring four QOL domains namely Physical (Seven items), Psychological (six items), Social Relationships (three items) and Environmental (eight items). Subjects were asked to rate their experiences for two previous weeks from five possible responses (viz., "very dis-satisfied", "dis-satisfied", "neither satisfied nor dis-satisfied", "satisfied", "very satisfied") [21].

Assessment and classification of adiposity markers

Body mass index (BMI) in the present study was calculated as the ratio of weight in kilograms by the square of height in meters (kg/m^2) [22]. BMI is categorized according to the proposed criteria of WHO, i.e. <18.5 = underweight, normal = 18.5 - 24.5 , overweight = 25.9 - 29.9 and obese = 30.0 [23]. Waist to hip ratio (WHR) was calculated as the ratio of waist circumference (cm) to hip circumference (cm). Risk category for WHR was defined as ≥ 0.85 [24]. Similarly, Waist to height ratio (WHtR) was calculated by dividing waist circumference (in cm) by height (in cm). Risk category for WHtR was defined as ≥ 0.50 [25]. Waist circumference (WC) was measured with a steel tape measure to the nearest 0.1 cm [26]. For WC the cut off was ≥ 80 cm for risk category.

Data was analyzed in SPSS software version 17. The data was cross-checked numerous times to ensure its accuracy and validity. Besides descriptive statistics, chi-square was performed to find the association and ANOVA to calculate the differences between various variables. Multinomial logistic regression was run to predict the risk factor for dysmenorrhea. A value of $p < 0.05$ was considered to be statistically significant.

RESULTS

The average age of the subjects was 28.75+ 9.6 years (range 18-49). Majority of the women (50.2%) were in the age group of 18-25 years. Most of the women belonged to middle class either upper (40.9%) or lower (47.7%). The proportion of women whose family was of nucleus type was 62.2% (n=553). A total of 49.3% (n=411) women were never married as compared to 50.7% (n=4230) ever-married women. Detailed information regarding demographic characteristics of women with and without dysmenorrhea are given in Table 1.

The mean age at menarche in the studied population was 13.3±1.6 years ranging from 10-18 years. Majority of the women (86.2%) reported to experience regular menses. The average menstrual cycle duration among Muslim women was 29.06±6.2 days with minimum 18 and maximum 60 days and 75.6% of the women had menstrual flow duration between 21 and 35 days. Maximum of the women (63.9%) had duration of menstrual discharge between 3-7 days with average duration of menstrual discharge of 6.0±2.1 days ranging between 2-12 days. Out of all 32.4% (n=270) women reported to have family history of dysmenorrhea. Significant difference (p<0.001) was found between women with dysmenorrhea and women without dysmenorrhea with respect to menstrual characteristics as shown in Table 2.

Significant association was found between adiposity markers and dysmenorrhea status among studied population. Maximum of the women (44.7%) were in

normal weight category followed by overweight (29.9%), obese (12.8%) and underweight (12.6%). 61.5% of the total women were in risk category for WHR as compared to 45.3% for WHtR and 41.1% for WC respectively as displayed in Table 3.

As shown in table 4, significant association was found between the domains of quality of life and status of dysmenorrhea among women. Mean value for all the domains of quality of life i.e. physical health (19.6 ± 5.9), psychology (33.5 ± 10.2), Social relation (62.8 ± 18.5) and environment (18.2 ± 8.3) was higher among women who did not experience dysmenorrhea. Also mean score for overall quality of life was found higher among women without dysmenorrhea.

The distribution of subjects according to the severity of dysmenorrhea was mild (43.1%), moderate (41.6%) and severe (15.3%). The mean score for the domain of quality of life by severity of dysmenorrhea are displayed in Table 6. Social relation domain and environment domain are significantly different for women with different intensity of dysmenorrhea (Table 5).

According to multinomial regression results, significant difference were found between the status of dysmenorrhea and age, marital status, age at menarche, length of menstrual cycle, family history of dysmenorrhea, menstrual regularity and BMI (Table 6). According to this analysis, age intervals of 18-25 and 25-35 years, never-married, early age at menarche, <21 days and 21-35 days of menstrual cycle length, family history of dysmenorrhea, menstrual irregularity and being overweight and obese were significantly salient risk factors for dysmenorrhea.

Table 1: Socio-demographic characteristics of women by status of dysmenorrhea.

Socio-demographic characteristics		Dysmenorrhea		Total (%)	Chi-square
		Yes (%)	No (%)		
Age (year)	18-25	298 (71.1)	121(28.9)	419 (50.2)	115.9***
	25-35	134 (76.1)	42 (23.9)	176 (21.1)	
	>35	78 (32.6)	161 (67.4)	239 (28.7)	
SES	High	50 (87.7)	7 (12.3)	57 (6.8)	68.4***
	Upper middle	247 (72.6)	93 (27.4)	340 (40.9)	
	Lower middle	200 (50.3)	198 (49.7)	398 (47.7)	
	Poor	13 (33.3)	26 (66.7)	39 (4.6)	
Family type	Nuclear	351 (67.6)	168 (32.4)	519 (62.2)	24.4***
	Joint	155 (50.3)	153 (49.7)	308 (36.9)	
	Other	4 (57.1)	3 (42.9)	7 (0.9)	
Marital status	Never-married	216 (52.6)	195 (47.4)	411 (49.3)	25.6***
	Ever-married	294 (69.5)	129 (30.5)	423 (50.7)	

Table 2: Menstrual characteristics of women by status of dysmenorrhea.

Menstrual characteristics		Dysmenorrhea		Total (%)	Chi-square
		Yes (%)	No (%)		
Age at menarche (year)	Early age at menarche	218 (88.6)	28 (11.4)	246 (29.5)	127.3***
	Average age at menarche	222 (55.2)	180 (44.8)	402 (48.2)	
	Late age at menarche	70 (37.6)	116 (62.4)	186 (22.3)	
Menstrual regularity	Regular	417 (58.0)	302 (42.0)	719 (86.2)	21.8***
	Irregular	93 (80.9)	22 (19.1)	115 (13.8)	
Duration of menstrual discharge (days)	<3	102 (47.4)	113 (52.6)	215 (25.8)	36.2***
	3-7	336 (63.0)	197 (37.0)	533 (63.9)	
	>7	72 (83.7)	14 (16.3)	86 (10.3)	
Menstrual Cycle duration (days)	<21	71 (77.2)	21 (22.8)	92 (12.8)	44.4***
	21-35	323 (59.3)	222 (40.7)	545 (75.8)	
	>35	23 (28.0)	59 (72.0)	82 (11.4)	
Family History	Yes	250 (92.6)	20 (7.4)	270 (32.4)	165.5***
	No	260 (46.2)	303 (53.8)	563 (67.6)	

Table 3: Adiposity markers of women by the status of dysmenorrhea.

Adiposity markers		Dysmenorrhea		Total (%)	Chi-square
		Yes (%)	No (%)		
BMI	Underweight	53 (50.5)	52 (49.5)	105 (12.6)	36.7***
	Normal	200 (53.6)	173 (46.4)	373 (44.7)	
	Overweight	171 (68.7)	78 (31.3)	249 (29.9)	
	Obese	86 (80.4)	21 (19.6)	107 (12.8)	
WHR	Normal	177 (55.1)	144 (44.9)	321 (38.5)	7.3**
	At risk	332 (64.7)	181 (35.3)	513 (61.5)	
WhtR	Normal	244 (53.5)	212 (46.5)	456 (54.7)	23.5***
	At risk	265 (70.1)	113 (29.9)	378 (45.3)	
WC	Normal	269 (54.7)	223 (45.3)	492 (58.9)	20.0***
	At risk	240 (70.2)	102 (29.8)	342 (41.1)	

Table 4: Average scores women received from BREF-QOL domains by status of dysmenorrhea.

QoL domain	Dysmenorrhea		t-test
	Yes (n=510) (mean ± SD)	No (n=324) (mean ± SD)	
Physical health	17.7 ± 6.6	19.6 ± 5.9	18.5***
Psychology	28.5 ± 11.6	33.5 ± 10.2	41.9***
Social relation	55.9 ± 17.3	62.8 ± 18.5	28.4***
Environment	11.6 ± 4.8	18.2 ± 8.3	83.0***
Overall QoL	28.4 ± 9.2	33.5 ± 9.0	61.4***

Table 5: Association between the severity of dysmenorrhea and mean scores of BREF-QOL domains.

QoL domain	Severity of dysmenorrhea			t-test
	Mild (n=220) (mean ± SD)	Moderate(n=212) (mean ± SD)	Severe (n=78) (mean ± SD)	
Physical health	19.7 ± 5.6	19.7 ± 6.0	19.5 ± 5.8	0.03ns
Psychology	35.5 ± 8.7	33.7 ± 10.7	32.7 ± 10.1	2.3ns
Social relation	68.9 ± 17.4	63.0 ± 19.2	60.3 ± 17.7	6.3**
Environment	22.6 ± 10.7	18.6 ± 8.6	16.2 ± 7.2	11.7***
Overall QoL	36.7 ± 8.2	33.7 ± 9.4	32.2 ± 8.5	7.4***

Table 6: Co-founders of dysmenorrhea according to logistic regression analysis.

Variables	β	SE	P	95% CI
Age (reference: >35 years)				
18-25	15.1	0.53	0.001	5.3-42.7
25-35	6.0	0.30	0.001	3.3-10.9
Marital status (reference: ever-married)				
Never-married	4.5	0.4	0.002	1.7-11.9
Age at menarche (reference: Late age at menarche)				
Early age at menarche	7.4	0.4	0.000	3.1-17.2
Average age at menarche	1.6	0.2	0.075	0.9-2.7
Length of menstrual cycle (reference: >35 days)				
<21 days	2.8	0.4	0.05	1.1-7.2
21-35 days	2.5	0.3	0.05	1.2-5.0
Family history (reference: no)				
Yes	9.2	0.2	0.001	5.3-16.1
Menstrual regularity (reference: no)				
Yes	0.4	0.2	0.001	0.2-0.6
BMI (reference: Normal)				
Underweight	0.8	0.2	0.4	0.5-1.3
Overweight	1.9	0.2	0.01	1.1-3.2
Obese	3.4	0.3	0.001	1.7-6.9

DISCUSSIONS

Prevalence of dysmenorrhea in the present study was found to be 61.1% which is in consistent with the study done in Southern part of India by Bhatia *et al.* [27] stating that more than half of the women reported to have dysmenorrhea and is slightly lesser than the prevalence reported by Singh *et al.* (73.8%) [28] and Agarwal and Agarwal (71.9%) [29] in other parts of India. Possible reason for the variability in prevalence may be due to different study groups, different methods of collecting data and most importantly lack of universally accepted definition of dysmenorrhea.

Dysmenorrhea is more prevalent among adolescents with around 18-88% [31, 32] similar to the present study. Around 3-20% of the women reported to experience severe pain during menstrual cycle which lead them to absenteeism in schools or from work [31, 33] which is similar with the present study which reported 15.3% prevalence of severe dysmenorrhea.

A range of risk factors have been identified for dysmenorrhea in literature, though mixed outcomes have been observed for some of these factors. In present study women with early age at menarche were found to be more likely to experience painful period as compared to women with average and late age at menarche [34]. This may be because of the similarity of hormonal configuration and ovulatory efficiency of girls with early menarche that led to a longer exposure of uterine prostaglandins which is

responsible for pain during menstruation [35, 36]. Along with age at menarche, age [8, 37], higher BMI [8], longer and heavier menstrual flow [11], education [15], SES [38], family size, birth order and family history of dysmenorrhea [12] are found to be positively associated with dysmenorrhea in our study.

In contrast to present study, many researchers [6, 39 - 41] did not find any association between dysmenorrhea and many socio-demographic factors. Also Pawlowski [42] did not support the results showing association between age at menarche and dysmenorrhea.

In the present study women experiencing dysmenorrhea had higher central and overall obesity as compared to their counterparts who do not experience dysmenorrhea. Mixed results have been obtained on the relationship of dysmenorrhea and obesity by many researchers [14, 43]. In a study by Ju and colleagues, a U-shaped association was reported between dysmenorrhea and BMI (overall obesity), divulge that women have higher risk of dysmenorrhea for both extremes of weight i.e underweight and obese [18]. In contrast to present study no independent association was found between dysmenorrheal status and waist circumference and BMI in a study by Maruf *et al.* [44].

Family history of dysmenorrhea is found to be an important factor according to multivariate analysis in the present study. As an explanation to this, scholars have reported that wherever mothers complained for menstrual discomfort, their daughter also complained for menstrual

discomfort which could be related to the behavior that daughters learnt from their mothers [45,46]. The fact that familial history has been shown as a risk factor for dysmenorrhea could be related to other related conditions as endometriosis, which has already been proved to have familial pattern [2].

The scores received by the women with dysmenorrhea for different domains of QoL (Physical health, psychology, social relation and environment) in the present study were significantly lower when compared to women without dysmenorrhea. Since dysmenorrhea is illness which primarily effect the physical health of the women hence physical health domain is effected by the same [47]. On the other hand, due to dysmenorrhea women are psychologically disturbed, they tend to avoid social functions like marriage, going out and hence affecting the all aspect of their QoL. In addition to this, with an increase in the severity of dysmenorrhea, average scores for physical health, psychology, social relation and environment domains were decreased which in consistence with the study by Barnard and colleagues[1].

CONCLUSION

Women with dysmenorrhea has decreased quality of life particularly for social relation and environment domain. Younger unmarried women with early age at menarche and family history of dysmenorrhea and with higher BMI tend to be more affected with dysmenorrhea. Sequentially, evidence-based information may enable these women in better self-management of the symptoms for dysmenorrhea, to improve their quality-of-life and also to reduce the burden which can be attributed to them because of dysmenorrhea. Additionally, the evidence generated may help to facilitate the development of certain preventative health policies.

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