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Original Research Article

Study of the Prevalence and Severity of Dysmenorrhea among the University Students of Hail City

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ABSTRACT

Background: Dysmenorrhoea is a common problem among the adolescents and young adults but it is unclear the extent to which young adults girls in Hail are incapacitated each month due to the severity of dysmenorrhoea. Hence this arises a need to evaluate the menstrual characteristics, prevalence of dysmenorrhoea and its effect on daily routine activities and quality of life.
Objective: The objective of this study was to determine the prevalence and severity of dysmenorrhoea in young students, its relation to the age at menarche and other factors.
Setting: University of Hail, Female section
Methodology: Cross-sectional descriptive study using self-administered questionnaire. Quetelet Index (wt/ht^2) was used to measure BMI. Chi square and ANOVA test were done to estimate the correlation between the prevalence and severity of dysmenorrhea and relevant variables.
Results: The mean age at menarche was found to be = 12.36 ± 1.15 yrs. The prevalence of dysmenorrhoea in 100 participants in this study was 100%. The mean BMI of the participants in the present study was found to be 24.7kg/m ^{2} .38% of the participants were found to be overweight.

The percentage distribution for the various degrees of severity of dysmenorrhoea in 100 girls was 20%, 43%, and 37% for mild, moderate and severe dysmenorrhoea respectively.
Nervousness and depression was identified as the most common type of dysmenorrhea related symptoms (70%) followed by headache and dizziness (40% and 38% respectively).
Conclusions: This study shows that dysmenorrhoea is very common among girls of the University of Hail. The prevalence of self-medication in the form of NSAID's (43%), easily available over the counter was also found to be prevalent in our study. The correct approach to management of adolescent girls with dysmenorrhoea can reduce the adverse impact of severe dysmenorrhoea on academic activities in the form of class absenteeism.

***Key Words*:** Dysmenorrhea, Menarche, Adolescence, Correlation, Quetlet Index

INTRODUCTION

Dysmenorrhea is the most common gynecologic complaint and the leading cause of recurrent short-term school or work absenteeism among female adolescents and young adults. Normal menstrual cycles are often associated with difficult and painful menstruation known as dysmenorrhea. The term dysmenorrhea is derived from Greek words *dys* meaning difficult/painful/

abnormal; *meno* meaning month; and *rrhea* meaning flow.[1]

Dysmenorrhea may be accompanied by nausea, vomiting, diarrhea, headache, irritability or anorexia. The pain of primary dysmenorrhoea and the systemic symptoms that may be associated with it are due to high prostaglandin levels.[2,3]

Epidemiology: Dysmenorrhea generally does not occur until ovulatory menstrual cycles are established. Maturation of the hypothalamic-pituitary-gonadal axis leading to ovulation occurs at different rates; approximately 18 to 45 percent of teens have ovulatory cycles two years post menarche, 45 to 70 percent by two to four years, and 80 percent by four to five years.[2] Dysmenorrhea occasionally accompanies anovulatory cycles, especially if heavy bleeding and clots are present.

It is a common complaint in around 50% of post pubescent females. It may be primary or secondary depending on the cause.[4] When the patient acquires her symptoms at an early age, immediately after the onset of regular ovulation, dysmenorrhea is termed as *primary*. On the other hand *secondary* dysmenorrhea is associated with detectable organic defect. Karim A. Calis and Vaishali Popat (2009) in their study indicated that secondary dysmenorrhea is usually observed in women aged 30-45 years. According to E.S.E.Hafez (1998),[5] it is primary in 75% of cases (with no pelvic disorder). Whereas, in 25% of cases dysmenorrhea is secondary with pelvic disorders or some structural abnormalities in the ovaries. The asset of primary dysmenorrhea is usually 6-12 months after menarche, which coincides with the occurrence of regular ovulatory cycles.

According to Rostami Maryam (2007)[6] 15% of women suffered from dysmenorrhoea which disturbed their daily activities and was not improved by analgesics.

Some of the symptoms associated with severe forms of dysmenorrhoea are common symptoms of premenstrual syndrome (PMS) with both conditions having no organic basis. Premenstrual syndrome (PMS) is recurrent variable somatic, psychological and emotional symptoms that develop during the 7-14 days before the onset of menses and are ameliorated by the onset of menstruation in women who are mainly aged 20-40 years 6. Over 150 different symptoms have been linked to premenstrual syndrome (PMS) but the most common are bloating, breast pain, cyclical weight gain, fatigue, headaches, aggressiveness, depression, irritability and inability to concentrate.[7] The symptoms in premenstrual syndrome (PMS) are thought to be due to variations in ovarian sex steroids and low circulating serotonin levels6which differs from the high levels of prostaglandins seen in primary dys-menorrhoea.

The reduction in work hours as well as school days among young girls as a result of dysmenorrhoea has been repeatedly reported to be of national and economic concern. It could also lead to personal and family disruption.

Also, it is found that girls suffering from dysmenorrhea have lower achievements and more school adjustment problem than non-dysmenorreic girls do.

Several longitudinal studies have found a positive association of primary dysmenorrhea with duration of menstrual flow, younger age at menarche, and increased BMI. Childbirth, in contrast, appears to relieve dysmenorrhoea.[7,8]

Approach To The Patient*:* The evaluation of an adolescent female presenting with menstrual cramps begins with a complete medical and menstrual history to exclude secondary causes of dysmenorrhea.[3,6]

History: A complete history should include the following information:

- Age at menarche
- Duration of menstrual cycles
- Interval between menstrual periods (from first day of one period to the first day of the following period)
- Date of last two menstrual periods
- Onset and duration of cramps
- Presence or absence of nausea, vomiting, diarrhea, back pain, dizziness, or headache during menstruation
- Severity of symptoms (ie, the impact of symptoms on daily activities such as school attendance, sports participation, and other social activities)
- Medication use — Type, dose, timing in relation to the onset of cramps and perceived effectiveness in terms of pain relief and ability to engage in all daily activities
- Sexual history — Current sexual activity, type of contraception, history of sexually transmitted diseases, and history of pelvic inflammatory disease

Treatment: The severity of menstrual pain and limitation of daily activities will help guide treatment decisions. General measures for therapy include patient reassurance and education.

First line treatment: NSAIDs are considered the first line of therapy. In randomized trials of NSAIDs, approximately 70 to 90 percent of patients have effective pain relief, a value that is greater than that with placebo. NSAIDs are also generally more effective than acetaminophen for treatment of dysmenorrheal.[4,6,7]

Second line treatment: Combination oral contraceptive pills (OCPs) can be given to patients who fail to respond to or cannot tolerate NSAIDs. OCPs prevent menstrual pain by suppressing ovulation, thereby decreasing uterine prostaglandin levels. An additional mechanism may result from the reduction of menstrual flow after several months of use.[4,6,7]

Objectives

1. To study the prevalence of dysmenorrhea in young adult females of university of Hail and its correlation with age at menarche
2. To study the evidence of severity of the problem with associated symptoms and general health status.

METHODOLOGY

The present cross sectional study was conducted in Female campus of university of Hail, in the age group 18 – 24 years.

Data were collected using a pretested and modified questionnaire, and included questions about the presence, duration, severity, treatment, and impact of dysmenorrhea. A total of 100 girls were randomly selected from the regular classrooms to fill the questionnaire.

The questionnaire included questions regarding the subject's age, age at menarche, anthropometry, food habits, and dietary intake. Information regarding duration and severity of menstrual pain and use of analgesics and pain killer tablets were also inquired.

Standing height was measured using a stadiometer. Weight was measured by a standard personal weighing machine.

BMI was calculated using Quetelet Index (wt/ht^2).

Statistical Analysis

Means, standard deviation and percents were calculated for arriving at the mean age at menarche, and the various degrees of dysmenorrhea. Chi square correlation was used to assess the correlation between dysmenorrhea, age of the participant, and the age at menarche.

Analysis of variance ANOVA was used to assess the correlation between various degrees of dysmenorrhea and the duration and length of menstrual cycle.

RESULTS

100 students sampled had their questionnaires completed and returned. The ages of the girls ranged from 18 - 24 years with a mean of 21 ± 0.93 years and median age of 21 years. The mean age at menarche was determined to be 12.36 ±1.15 years. The prevalence of dysmenorrhoea was found to be 100% among the girls in this survey.

Table 1 shows the BMI distribution of the sample. 9% of the girls were overweight, 53% were found with normal BMI. On the other hand 25% and 13% girls were overweight and obese respectively.

Table 1-BMI Status of the sample.

BMI	Number	Percentage
Underweight	9	9 %
Normal	53	53%
Overweight	25	25%
Obese	13	13%
TOTAL	100	100%

According to Table 2, the correlation between age and various degrees of dysmenorrhea was found to be statistically significant ($\chi 2 = 5.32$ df 4 $P < 0.05$). The table shows that the highest percentage of the participants (32%) were in the age of 21 years followed by 20 years (29%) and than 22 years (16%).

Table 2 - Age distribution and severity of dysmenorrhoea.

AGE	Dysmenorrhoea					χ2	p-value
	Absent	Mild	Moderae	Severe	Total Present		
18	-	-	-	1	1%	χ 2 = 5.32 df 4	P < 0.05 (S)
19	-	1	2	2	5%		
20	-	5	14	10	29%		
21	-	6	16	10	32%		
22	-	3	5	8	16%		
23	-	4	5	6	15%		
24	-	1	1	-	2%		
TOTAL	-	20	43	37	100%		

The correlation between the severity of dysmenorrhea and age at menarche in the present study as according to Table 3 was found to be statistically insignificant ($P > 0.05$). Although the highest percentage of the girls experiencing any of the degrees of dysmenorrheal (57%) was found in the age group 11.6-13.5 years (i.e normally maturating girls) followed by late maturers (41%).

Table 3-Distribution of dysmenorrhea according to age at menarche.

Age at Menarche	DYSMENORRHEA				
	PRESENT	MILD	MODERATE	SEVERE	TOTAL %
9.6 – 11.5	2	-	-	2	2%
11.6 – 13.5	57	12	28	17	57%
13.6 – 15	41	8	15	18	41%
Total	100	20	43	37	100%
Mean age at menarche	= 12.36 ± 1.15 yrs				
χ^2 = 8.7 at df 6; P>0.05 (NS)					

Results from the Table number 4 concluded that the severity of dysmenorrhea was found to be significantly correlated with the duration of bleeding as well as the length of menstrual cycle (P< 0.05). It is very clear from the table that as the days of bleeding increase from 4.6 days to 7.5 days, the severity of dysmenorrhea also increased from mild to moderate. The same pattern was also followed for the length of menstrual cycle. The girls having a longer length of menstrual cycle (34.2 days) were having severe dysmenorrhea as compared to the mild dysmenorrheic girls having shorter length of menstrual cycle (28.8 days).

Table 4- Severity of dysmenorrhea according to duration and length of menstruation.

Dysmenorrhea		Duration of bleeding (days)	Length of menstrual cycle (days)
Degree	Number		
Absent	-	4	27
Mild	20	4.6	28.8
Moderate	43	6	30
Severe	37	7.5	34.2
ANOVA		P<0.01 (S)	P<0.01 (S)

Results of the study from Table 5 and 6 shows that the severity of dysmenorrhea was significantly correlated with daily meal pattern and the total daily protein intake (P< 0.05).

Table 5 – Correlation between dysmenorrhea and Daily meal pattern.

Daily Meal Pattern	DYSMENORRHEA			
	Mild	Moderate	Severe	Total
2 meals/day	10	23	18	51
3meals/day	4	13	12	29
4meals/day	6	7	7	20
Total	20	43	37	100
	Pearson's correlation χ^2 = 3.78 at df 2 ; P<0.05 (S)			

Table 6 – Correlation between dysmenorrhea and daily protein intake.

Dysmenorrhea	Total Protein intake gm/ day				
	<40	40-55	55-70	>70	Total
Mild	8	5	5	2	20
Moderate	16	15	7	5	43
Severe	18	9	7	3	37
Total	42	29	19	10	100
	Pearson's correlation χ^2 = 33. 8 at df 9 ; P<0.05 (S)				

On examining the symptoms associated with dysmenorrhea Table 7 shows that the most common dysmenorrhea associated symptoms were nervousness and

depression (70%), followed by sleeplessness (50%) and headache (42%). Nausea and vomiting was observed as the least commonly occurring symptom (15%).

Table 7 - Menstruation-associated symptoms among the participants.

Symptoms	Dysmenorrhea			
Nervousness and Depression	Mild	Moderate	Severe	Total
	13	52	5	70
Dizziness	8	13	17	38
Headache	12	20	10	42
Nausea / vomiting	3	7	5	15
Loss of appetite	9	11	10	30
Sleeplessness	8	14	28	50

The common methods used to alleviate the symptoms of dysmenorrheal are depicted in Table8. It was found that the use of pain killers or other medicines was only 34%. The other methods recognized in the present study were rest (64%) followed by taking hot drinks like Tea or Coffee (57%).

Table 8 - Treatment used by students to alleviate symptoms of dysmenorrhea

TREATMENT	NUMBER	PERCENTAGE
Medicines used	34	34%
Exercise	-	-
Rest	64	64%
Drinking hot tea or coffee	57	57%
Others (e.g using heating pads, etc)	-	-

DISCUSSION

The pain of dysmenorrhea is difficult to measure as it is usually accompanied by other unpleasant sensation. A number of studies have tried to determine the prevalence of dysmenorrhoea with estimates ranging from 20-90%, depending on the measurement method used.[1,9] The variation could be due to the differences in the method of collecting data, definition of variables, age distribution, ethnic proportions, cultural background and most importantly geographical location.

Present study showed the frequency of dysmenorrhea as 100%, and positive significant correlation between severity of dysmenorrhoea and duration as well as length of menstruation as according to other studies.[6,10]

There was significant association of dysmenorrhea with older age, irregular or long cycles and heavy bleeding as reported by many studies.[8, 11-13]

In the present study no significant correlation was found between age at menarche and severity of dysmenorrhea. These findings were in accordance with some other studies done in Ghana. [13]

In the present study the most common dysmenorrhea associated symptoms were found to be nervousness and depression (70%), followed by sleeplessness (50%) and headache (42%). While lower abdominal cramping is the most common dysmenorrhea symptom, many adolescents suffer from other menstruation–associated symptoms. The most commonly reported symptoms were nervousness, irritability, backache, headache, dizziness and fatigue. The commonest associated symptoms reported by El-Gilany et al.[14] were fatigue, headache, backache and dizziness. Symptoms typically accompany the start of menstrual flow or occur within a few hours before or after onset, and last for the first 24-48 hours.

Similar studies in Europe and North America reported that approximately 15% of adolescent girls had severe dysmenorrhoea [1,2,15,16] as compared to 37%% in the present study.

The prevalence of self-medication in the form of NSAID's (43%), easily available over the counter was also found to be prevalent in our study. Other studies of

dysmenorrhoea have also shown that the practice of self-medication and other remedies are common.[9,17,18]

Non-steroidal anti-inflammatory drugs, which inhibit the synthesis of prostaglandins, are highly effective in treating primary dysmenorrhoea, especially when they are started before the onset of menses and continued through day 2.[1,3,4,7] The fenamates have been found, from a review of 51 large clinical trials, to be the most effective therapy with over 72% of women suffering from dysmenorrhoea reporting significant pain relief with non-steroidal anti-inflammatory drugs, 18% reporting minimal or no pain relief and 15% showing a placebo response.[1,7] In a review analysing the adverse risk/benefit ratio, ibuprofen and mefenamic acid were the most successful treatments, whereas Paracetamol was no more effective than placebo.[7]

CONCLUSION

The present study showed a prevalence of dysmenorrhea as 100%, but only 34% girls took medicines or consulted to doctors. This could be due to the reason that many women accept dysmenorrhoea as a normal part of female constitution and they may not believe in treatment for it.

The treatment of dysmenorrhea should be designed to correct an organic cause, suppress ovulation via the use of contraceptive, or relieve pain. Non-steroidal anti-inflammatory drugs are highly effective in treating dysmenorrhoea, especially when they are started before the onset of menses and continued through day 2.[1-4,7,8] They are readily available, relatively inexpensive, and have a low side effect profile when used cautiously in those who have no contraindications or allergies to these drugs.

It could also be concluded from the results of the present study that taking a regular daily meal and good protein intake can also help to reduce the symptoms of dysmenorrhea.

Improved understanding of the physiology of dysmenorrhea may result in the discovery of more effective treatment regimens. It will lead to reduction in the medical and social consequences of dysmenorrhea.

Limitations

This study was done in only one university in an urban setting; the findings may not be same for girls from other segments of the populations, the study did not look at the effect of dysmenorrhoea on sports and other social activities in school, physical examination was also not done on the students to identify the few student who may have secondary dysmenorrhoea. Some of the limitations associated with this study and cross sectional studies in general could be well addressed by prospective longitudinal studies and by some more in depth cross sectional studies.

Advances in Knowledge

This study is the first of its kind in Hail to explore the prevalence of dysmenorrhoea in young adult girls in university with the following recommendations:

The present study had shown a high prevalence of dysmenorrhoea. However, young college students seem reluctant to seek medical help for this problem. It will improve awareness among health care providers and allow them to be more sensitive to issues related to the management of dysmenorrhoea.

It can encourage further research to identify and determine the associated risk factors of dysmenorrhoea. The results of this study could be used for better understanding of the epidemiology of dysmenorrhoea and its effect on public health.

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