Medical Journal of the
Islamic Republic of Iran

Volume 8
Number 3
Fall, 1373
November 1994

EPIDEMIOLOGY OF PRIMARY DYSMENORRHEA IN KERMAN, IRAN

MOHSEN JANGHORBANI, Ph.D.
AND SIMIN ZARKOOB, M.D.

From the Medical School, Kerman University of Medical Sciences, Kerman, Islamic Republic of Iran.

ABSTRACT

The prevalence and factors influencing the prevalence and severity of dysmenorrhea were studied in 768 female university students aged from 17.5 to 44.2 years enrolled at the Kerman University of Medical Sciences and two teachers' training colleges.

The overall prevalence of dysmenorrhea in this population was 72%; 10.2% reported severe dysmenorrhea. The overall prevalence as well as the prevalence of severe dysmenorrhea decreased with age. A statistically significant association ($P<0.05$) was found between an early age of menarche and an increase in the severity of dysmenorrhea. There was also a statistically significant association ($P<0.01$) between the prevalence and severity of dysmenorrhea and marriage, and married women had significantly less dysmenorrhea (either in severity or prevalence) compared to non-married subjects. The prevalence and severity of dysmenorrhea was not affected by factors such as height, weight, body mass index, region of residence, gynecological age, regularity of menstrual cycles, or duration or amount of menstrual bleeding.

MJIRI, Vol. 8, No. 3, 167-171, 1994.

Key Words: Dysmenorrhea; Prevalence; Epidemiology; Iran; Adolescence; Primary dysmenorrhea.

INTRODUCTION

Primary dysmenorrhea is an important personal, clinical, and social problem, with a range of prevalence from 3 to 90%,[1] depending on the population and study area. Factors associated with and influencing the prevalence and severity of dysmenorrhea have been carefully reported in various studies.[2-6] Time, parity, and the use of oral contraceptives were found to be associated with a reduction in pain and an improved physical and mental attitude. The prevalence rate begins to decline after age 30 and more so after 35. Interestingly, primary dysmenorrhea occurs more frequently in unmarried than in married women. Although primary dysmenorrhea tends to improve and to decrease with age more rapidly in married than in unmarried women, pregnancy and vaginal delivery do not necessarily cure it.[7]

Primary dysmenorrhea is a prevalent gynecological disorder which has been reported to be one of the most common causes of periodic absenteeism among young women.[8] Ten percent of women with primary dysmenorrhea suffer severely enough to render them

Correspondence: M. Janghorbani, Medical School, Kerman University of Medical Sciences, Kerman, Islamic Republic of Iran.

incapacitated for 1-3 days each month, a situation leading to significant absenteeism and consequent economic loss. This loss is estimated to be about 600 million work hours and 2 billion dollars annually in the United States.[9] Additionally, reduced productivity, a potential increase in accidents, and poorer work quality was observed among those who insisted on working while suffering from significant menstrual pain.[10]

There is virtually no published data on the extent or severity of dysmenorrhea in young women in Iran. The aims of the present study were to investigate the prevalence and severity of dysmenorrhea in a group of female university students from the city of Kerman, Iran and to study the factors possibly influencing the prevalence and severity of dysmenorrhea.

SUBJECTS AND METHODS

The data for this study are from 768 female adolescents who studied at different fields and years at the Kerman University of Medical Sciences and Bahonar and Allameh Tabatabai Teachers' Training Colleges in Kerman, Iran during 1992. The subjects were invited to cooperate in the study by completing and returning a questionnaire. Eligibility was limited to students aged 17 years and above. These subjects were from different parts of the country and were 22 (SD=3.9) years old on average, ranging from 17.5 to 44. 2 years. 637 (83.3%) of the respondents were single and 128 (16.7%) married.

The questionnaire included data regarding the duration and severity of menstrual pain, ability to work during menstruation, regularity of the menstrual cycle, and duration and amount of menstrual flow. Information was also obtained regarding contraceptives, age of menarche, analgesic requirements, absenteeism, region of residence, marital status, cigarette smoking, age, height and weight. Adiposity was expressed as body mass index (BMI) which was calculated as weight (kg) divided by square of height (m).

In this study the severity of dysmenorrhea was measured by a verbal multidimensional scoring system based on the one created by Andresch and Milson.[2] It ranks the severity of dysmenorrhea using information on how often the woman experiences menstrual pain, how painful she perceives it to be, and how often she cuts back on activities because of it. This scoring system grades pain as none, mild, moderate, or severe and also takes into account the effect on daily activity, somatic symptoms and analgesic requirements.

In order to take into account the differences in the phase of sexual maturation, the gynecological age was calculated (with an accuracy of one year) for every respondent by subtracting the age of the onset of menstruation from the chronological age at the time of the enquiry. When calculating the average age of the onset of menstruation, a continuation correction of 0.5 years was added.

The results are given in the text as mean figures (standard deviation (SD)). Significant tests for an association between the prevalence and severity of dysmenorrhea and subject background characteristics were calculated using the X^2 test. The prevalence and severity of dysmenorrhea were correlated to background variables by dividing the women into subgroups according to relevant background variables. Chi-square test was performed within each subgroup. All testing for statistical significance was performed at $\alpha < 0.05$. The statistical analyses were performed using the SPSS/PC statistical software version 3.0.

RESULTS

The marital status of three women was not known and 73 women did not respond to questions regarding

Table I. Prevalence and severity of dysmenorrhea by age in female university students in Kerman, 1992.

Age (Year)	No. Examined	Grade of Dysmenorrhea				
		None	Mild	Moderate	Severe	Total
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
<24	560	153 (27.3)	208 (37.1)	139 (24.8)	60 (10.7)	407 (72.7)
25-34	90	33 (36.7)	27 (30.0)	23 (25.5)	7 (7.8)	57 (63.3)
35-44	12	5 (41.7)	4 (33.3)	3 (25.0)	- -	7 (58.3)
Total	662*	191 (28.8)	239 (36.1)	165 (24.9)	67 (10.1)	471 (71.1)

*Age and/or grade of dysmenorrhea of 106 women was unknown and excluded.

grade of dysmenorrhea and 40 to date of birth and were thus excluded from relevant analyses. Due to religious and socio-cultural backgrounds in Iran, pregnancy is unusual in unmarried individuals; among married women, 81 (63.3%) had been pregnant and 75 (58.6%) had given birth.

The overall prevalence of dysmenorrhea in the study population was 72%; 36.8% (256) reported mild, 25% (174) moderate and 10.2% (71) severe dysmenorrhea. However, 194 women (27.9%) experienced no dysmenorrhea.

Table I shows the age-specific prevalence and severity of dysmenorrhea. The overall prevalence as well as the prevalence of severe dysmenorrhea decreased with age.

As oral contraceptives may affect the prevalence and severity of dysmenorrhea, the respondents were divided into three groups: oral contraceptive users, intrauterine contraceptive device (IUD) users, and those not using either method. The number of IUD users was restricted to 13 (13.1%) of married women. Six of these women (46.1%) had no dysmenorrhea, 2 (15.4%) had mild dysmenorrhea, and 5 (38.5%) moderate dysmenorrhea. 43(40.6%) of married women used oral contraceptives. Only 5 singles (1.1%) used oral contraceptives. 15 of these women (34. 9%) had no dysmenorrhea, 19(44.2%) had mild dysmenorrhea, 11(25.6%) moderate and I woman (2.3%) had severe dysmenorrhea. The prevalence and severity of dysmenorrhea were not significantly reduced in oral contraceptive and IUD users compared with non-users. However, the small number of contraceptive users made a reliable analysis impossible.

The average age at the onset of menstruation among the study population was 13.9 (SD= 1.3), ranging from 9 to 17 years.

The severity of dysmenorrhea relative to certain subject characteristics is shown in Table II. An analysis of variance showed a statistically significant difference (F= 5.85, P< 0.001) between mean menarcheal age and the severity of dysmenorrhea. Early menarche was related to an increase in severity of dysmenorrhea. Those who began menstruating before age 12 were more likely to have severe dysmenorrhea.

The severity and prevalence of dysmenorrhea was not related to the woman's height, weight, BMI, region of residence, regularity of the menstrual cycle, duration of menstrual flow, or gynecological age. The amount of menstrual bleeding was assessed by the respondents as slight, moderate, or heavy and was not significantly associated with the severity of dysmenorrhea.

Table III shows the relationship between marital status and the prevalence and severity of dysmenorrhea. Of the total study population, 574 (83%) were single and 118 (17%) were married. The prevalence and severity of dysmenorrhea was significantly higher in singles than in married women with a

Table II. The severity of dysmenorrhea related to certain subject characteristics in female university students in Kerman, 1992.

Biological factors	Grade of Dysmenorrhea								ANOVA	
	None		Mild		Moderate		Severe			
	No.	Mean (SD*)	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)	F	P
Age (year)	191	22.5 (4.3)	239	21.7 (3.6)	165	22.3 (4.2)	67	21.5 (2.6)	1.08	0.356
Height (cm)	171	160.5 (6.8)	222	161.2 (7.4)	150	161.1 (5.3)	61	159.3 (9.2)	2.31	0.076
Weight (kg)	187	54.2 (7.2)	239	53.2 (7.4)	167	53.4 (8.0)	65	51.9 (6.6)	1.21	0.304
BMI**	168	21.0 (2.8)	216	20.5 (2.7)	148	20.5 (3.0)	59	20.5 (3.5)	1.39	0.244
Age of menarche (yr)	190	14.1 (1.2)	252	13.9 (1.3)	172	13.5 (1.2)	70	13.8 (1.2)	5.85	0.001
Duration of menses (days)	193	6.1 (1.4)	249	6.0 (1.3)	173	6.1 (1.3)	71	6.3 (1.3)	0.76	0.519
Gynecological age (yr)	187	8.9 (4.6)	235	8.4 (3.9)	163	9.3 (4.3)	66	8.2 (3.0)	2.27	0.079

*SD= standard deviation **BMI= body mass index

relative prevalence of 74.6/60.2=1.24 (married=428/574=74.6%, single=71/118=60.2%, x^2=10.2, 3 df, P<0.05). The prevalence of dysmenorrhea was 24% higher in singles than in married women. Adjusting for age did not change the results.

Dysmenorrhea was experienced for the first time during the first year following menarche by 30.2% of the respondents. Dysmenorrhea was not experienced until several years after menarche by 43.1%. However, it should be noted that 265 (34.5%) of the respondents failed to answer the question regarding the interval from menarche to the start of dysmenorrhea. Therefore, the figures are based on 503 respondents.

As anticipated, the use of medication and absenteeism due to dysmenorrhea correlated with the severity of pain (P<0.001). All of the women with severe pain had used medications and 57.7% had stayed home during their dysmenorrhea, while among those reporting mild pain, non had used medications and only 15.2% had stayed home. Use of medications due to dysmenorrhea was more common than absenteeism in the group with severe dysmenorrhea.

DISCUSSION

This investigation has demonstrated that factors such as menarcheal age, marriage, and age influence the prevalence and severity of dysmenorrhea.

The questionnaire was completed by 768 (100%) of the women invited to participate in this study. Individuals with missing information concerning date of birth and/or grade of dysmenorrhea were excluded (n=106 (13.8%)).

The measurement of the severity of pain associated with dysmenorrhea is difficult, partly because it is usually accompanied by other unpleasant sensations and the reaction is a subjective matter which is affected by the individual's judgement of pain. Dysmenorrhea should, therefore, be regarded as a multidimensional phenomenon and thus be measured by a multidimensional scoring system. In the present study the severity of dysmenorrhea was measured by a verbal multidimensional scoring system based on the one created by Andresch and Milson[2] which grades the severity of pain and also takes into account the effect on daily activity, systemic symptoms, and analgesic requirements. It is possible that the definition of severe dysmenorrhea as severe pain unimproved by the use of analgesics and associated with systemic symptoms and limitation of daily activity, is the border between a physiologic and a pathologic condition.

In the present study, 72% of the women experienced dysmenorrhea. These figures are similar to those reported by Andresch and Milson[2] and J. C. Robinson et al.[3] The prevalence of dysmenorrhea in previous studies has ranged from 3% to 90%.[1] This great variation in the reported prevalence of dysmenorrhea is partly due to the selective nature of these studies.

The beneficial effect of oral contraceptives regarding dysmenorrhea has been reported before.[2,11,12] Lack of a correlation between oral contraceptive use and dysmenorrhea in this study, as opposed by earlier studies, was probably due to the small number of oral contraceptive users. However, not all women using contraceptives were relieved of dysmenorrhea. Many oral contraceptive users required analgesics in addition for relief of dysmenorrhea. Lundstrom[12] found that the majority of women who were not relieved of dysmenorrhea by oral contraceptive medications experienced complete relief or marked improvement of their symptoms when treated with a prostaglandin synthetase inhibitor.

Women with an early menarche suffered significantly more from dysmenorrhea than women with late menarches. 53.5% of the women experienced dysmenorrhea for the first time during the first year after the menarche. Anovulatory cycles are frequently recorded during the first year after menarche. Thus,

Table III. Prevalence and severity of dysmenorrhea by marital status in female university students in Kerman, 1992.

Marital Status*	Number examined	Grade of Dysmenorrhea					
		None	Mild	Moderate	Severe	Total	
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	
Single	574	146 (25.4)	219 (38.1)	148 (25.8)	61 (10.6)	428 (74.6)	
Married	118	47 (39.8)	36 (30.5)	26 (22.0)	9 (7.0)	71 (60.2)	
Total	692*	193 (27.9)	255 (36.8)	174 (25.1)	70 (10.2)	499 (72.1)	

*Marital status and/or grade of dysmenorrhea of 76 women was unknown and excluded.

our findings support Andresch and Milson[2] and Widholm and Kantero's[13] conclusions that dysmenorrhea is not always a symptom that occurs as a result of ovulation.

There was not a significant association between the severity of dysmenorrhea and the duration of menses. A marked covariation between the amount and duration of menses has been explored previously. However, this was not confirmed in the present study.

The prevalence and severity of dysmenorrhea in married women were found to be significantly reduced. This reduction could be due to parity rather than marriage. Sjoberg[14] reviewed the literature regarding the influence of pregnancy on uterine neurotransmitters and observed a reduction or disappearance of dysmenorrhea after childbirth. Near term there is an almost complete disappearance of uterine adrenergic nerves which innervate myometrial smooth muscle cells resulting in a decrease in uterine norepinephrine. After delivery there is only a partial regeneration of these nerve terminals, and the norepinephrine concentration never reaches the pre-pregnancy value. This altered neuromuscular activity in the uterus after term pregnancy may explain the disappearance or reduction of dysmenorrhea after childbirth.

The increased demands on women regarding their working capacity in today's society are clearly apparent. We considered an investigation on the effect of dysmenorrhea on working capacity to be warranted. Twelve percent of women suffering from dysmenorrhea had been absent from school as a result of dysmenorrhea. An extrapolation of these figures on a national scale illustrates the far-reaching economic consequences of this prevalent gynecologic disorder. Thus, dysmenorrhea is one of the most important perceived health problems in adolescence; in the large population of Iran, millions of women are markedly incapacitated by dysmenorrhea.

In this report the therapeutic requirements of women with dysmenorrhea were studied. 32% regularly used analgesics and/or antispasmodics during menstruation as treatment for dysmenorrhea.

Although this study had several findings relevant to understanding the epidemiology of dysmenorrhea in Iranian female adolescents, it does have some limitations which need to be considered. The major limitation is that the study population consisted of university students who do not represent all female adolescents with dysmenorrhea. Information regarding the prevalence and severity of dysmenorrhea in the whole population cannot be extracted from a selected group of women. Another limitation is that the subjects were all recruited in two universities and may not be representative of all adolescents who are studying at other universities.

The prevalence of dysmenorrhea is so high in this population that it is important for clinicians to inquire about dysmenorrhea and to provide information on how to alleviate it.

There have been no studies concerning the effect of dysmenorrhea on the health and behaviour of female adolescents in Iran. Further studies are needed to confirm some of the above findings and to further explore the association between dysmenorrhea, health, behaviour, and contraceptive use.

ACKNOWLEDGEMENTS

We would like to thank the students of Kerman University of Medical Sciences and Bahonar and Allameh Tabatabai Teachers' Training Colleges from which the respondents were recruited, and Dr.A. Sadeghi Hassanabadi for his helpful comments.

REFERENCES

1. Ylikorkala O, Dawood MY: New concepts in dysmenorrhea. Am J Obstet Gynecol 130: 833, 1978.
2. Andresch B, Milson I: An epidemiologic study of young women with dysmenorrhea. Am J Obstet Gynecol 144: 655, 1982.
3. Robinson JC, Plichta S, Weisman CS, Nathanson CA, Ensminger M: Dysmenorrhea and use of oral contraceptives in adolescent women attending a family planning clinic. Am J Obstet Gynecol 166(2): 578-582, 1992.
4. Tepri J, Rimpela M: Menstrual pain, health and behaviour in girls. Soc Sci Med 29: 163-9, 1989.
5. Sundell G, Milson I, Andresch B: Factors influencing the prevalence and severity of dysmenorrhea in young women. Br J Obstet Gynecol 97: 588-94, 1990.
6. Milson I, Sundell G, Andresch B: The influence of different combined oral contraceptives on the prevalence and severity of dysmenorrhea. Contraception 42: 497-506, 1990.
7. Robert DWTG: Dysmenorrhea. Br J Hosp Med 12: 717, 1978.
8. Carey HMG: Dysmenorrhea. Med J Aust 2: 349-352, 1975.
9. Dawood MY: Ibuprofen and dysmenorrhea. Am J Med 77: 87, 1984.
10. Dawood MY: Dysmenorrhea. Clin Obstet Gynecol 33(1): 168-178, 1990.
11. Lalos O, and Joelsson I: Effect of an oral contraceptive on uterine tonicity in women with primary dysmenorrhea. Acta Obstet Gynecol Scand 60: 229, 1981.
12. Lundstrom V: Treatment of primary dysmenorrhea with prostaglandin synthetase inhibitors-a promising therapeutic alternative. Acta Obstet Gynecol Scand 37: 421, 1978.
13. Widholm O, Kantero RL: Correlation of menstrual traits between adolescent girls and their mothers. Acta Obstet Gynecol Scand 50(Suppl 14): 30, 1971.
14. Sjoberg NO: Dysmenorrhea and uterine neurotransmitters. Acta Obstet Gynecol Scand 87(Suppl): 57, 1979.