

Original Article

Prevalence of dysmenorrhea and its contributing factors in fertile aged women

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Abstract

Background: In developing countries, reproductive health in particular maternal health and reproductive tract infections are recognized as a health priority but still dysmenorrhea is by far the least understood and addressed complaint despite its ubiquity. Consequently, it incredibly influences the efficiency of ladies. This study was nested to determine the prevalence of dysmenorrhea and to perform the multivariate analysis of patterns of menstrual cycles with the age of menarche, days of interval, days of cycles and marital status.

Methodology: A cross-sectional study was conducted over the sample of 500 menstruating women of age 15 and above. The structured questionnaire administered comprised of the verbal multidimensional scoring system (VMS) and Menstrual Symptom Questionnaire (MSQ) scales in addition to the questions about menstrual patterns. Chi-square test was used for the statistical analyses on SPSS version 21.0.

Results: The mean age of the sample was 25.4 ± 6.92 years. The prevalence of 92.4% of dysmenorrhea was found to be inversely related to the average age of females with dysmenorrhea (24.93 ± 6.78 years). The significant direct relation of dysmenorrhea was observed in women with higher age at menarche (13.22 ± 1.75 years) and longer intervals of 26.95 ± 4.78 days. Moreover, the women complaining of heavy menstrual volumes were significantly more prevalent to dysmenorrhea (56.2%). The association of VMS pain scores with marital status showed that higher pain scores were significantly associated with unmarried females (44%).

Conclusion: The occurrence of dysmenorrhea is highly common and associated with patterns of the menstrual cycle. Therefore, close observation of menstrual traits is important for the improvement of menstrual health.

Keywords

Dysmenorrhea, Prostaglandin, Menarche, Parturition, Menstrual Pattern.

Introduction

Menstrual cycle can serve as an essential contributing factor of a women's procreant wellbeing^{1, 2}. Clutters and abnormalities in menstruation may result in utmost health issues among females because the future fertility is not only the aspect being influenced but it may furthermore affect the mental state and the quality of life^{3, 4}. Dysmenorrhea is defined as agonizing cramps of uterine origin that occurs prior to and or in middle of the monthly cycles⁵⁻⁷. It is considered as a most common catamenial disorder experienced by young girls^{2, 4, 6-9}. The primary or functional dysmenorrhea is caused by an overabundance or lopsidedness of prostaglandin secretion from the endometrium during menstruum^{2, 4, 10, 11}. While the secondary or acquired dysmenorrhea is considered to be caused by an associated pelvic pathology¹¹⁻¹⁴. Maladies that are commonly associated with secondary dysmenorrhea include ovarian cysts⁷, fibroids¹³, genital infections^{7, 15, 16} and endometriosis^{7, 13, 15}.

Dysmenorrhea is the foremost reason of repetitive truancy among young girls^{2-4, 7, 12}. The results surmised from the epidemiologic studies conducted in past reported the pervasiveness of dysmenorrheal ranges in between 67 % to 90 % and it is seemed to be decrease with the age¹⁴.

However, in spite of the truth that dysmenorrhea has a noteworthy effect on various day to day activities of female, not all ladies seek consultation from doctors and it is incorrectly acknowledged as a normal routine and is tolerated^{4, 11-13, 16}. Menstrual idiosyncrasies including menstruation before twelve years of age, heavy and long menstrual flows has been associated with increased susceptibility of dysmenorrhea. Whereas parturiency involvement is known to decrease the menstrual pain complains. However miscarriage doesn't have an effect on dysmenorrheal symptoms. Epidemiological data on factors liable to dysmenorrhea are, however meager and contentious¹⁷.

The age of onset of menstrual cycle is certain through general wellbeing, hereditary, nutritional

and socio-economic status. Typically the mean age of menarche ranges between 12 and 13 years^{18, 19}. In the beginning, menstruation is often sporadic with a noteworthy interim between cycles. The initial cycles are anovulatory and the beginning of ovulation is being related to the age at menarche²⁰.

Most of the females have menstruum lasting for 2 to 7 days with the normal interim of 21 to 35 days in between the cycles^{21, 22}. The abnormalities may result in short cycles of fewer than 20 days and long cycles of more than 45 days^{21, 23}. Moreover, the observations have steered that parturition, however not abortions, might cut back the cases of dysmenorrhoea. The physiology behind this finding lies within the changes in the uterine nerve amid pregnancy. Hystological studies provide evidence that in the last trimester of pregnancy the adrenergic nerves in uterine are ceased to be visible that only partially revitalized after parturition. On the other hand, the uterine innervation is not seemed to be altered in pregnancies ending in first gestational trimester¹⁷.

The data on the menstrual patterns and characteristics can facilitate gynecological issues and can help in making womanhood trouble-free¹⁶. Therefore, this cross-sectional study was nested to determine the prevalence of dysmenorrhea and to perform the multivariate analysis of patterns of menstrual cycles with (i) the age of menarche, (ii) days of interval, (iii) days of cycles and (iv) marital status.

Methodology

A cross-sectional study was conducted between 13th March and 5th May 2018. A random sample of 500 fertile 15 years and older females were enrolled after taking their informed consent. The severity of dysmenorrhea was determined by VMS. The MSQ scale was used to categorize dysmenorrheic females into primary, secondary and non-differentiable. The last part of the survey investigated the features of menstruation (age at menarche, days of cycle, amount of flow and interval between the cycles). Chi-square test was used for statistical analyses of the correlation of menstrual characteristics, marital status and current

age with the occurrence of dysmenorrhea. The data was entered into a computerized database i.e. SPSS version 21.0 for descriptive and inferential statistical analyses.

Results

The collected data was normally distributed with the mean age 25.4 ± 6.92 years. The average age

at menarche was 13.17 ± 1.75 years. The average menstrual period length was 5.14 ± 1.11 days while the average duration of interval between the menstrual cycles was 26.80 ± 4.83 days. The most frequently reported amount of menstrual volume was heavy (59.6%) whereas the normal menstrual volume reported was (40.6%) (Table 1).

Table 1: Baseline characteristics of the subjects (n=500)

Characteristics	Mean \pm SD	
Age (years)	25.4 \pm 6.92	
Menarche age (years)	13.17 \pm 1.75	
Duration of Cycle (days)	5.14 \pm 1.11	
Duration of interval (days)	26.80 \pm 4.83	
Menstrual Flow (%)	Normal	40.6
	Heavy	59.6

Women with dysmenorrhea made up 92.4% (n=462). Out of which 59.2% (n=296) cases encountered pain due to primary dysmenorrhea, 30% (n=150) were secondary dysmenorrheic and 3.2% (n=16) of the females appeared to be non-differentiable as shown in figure 1.

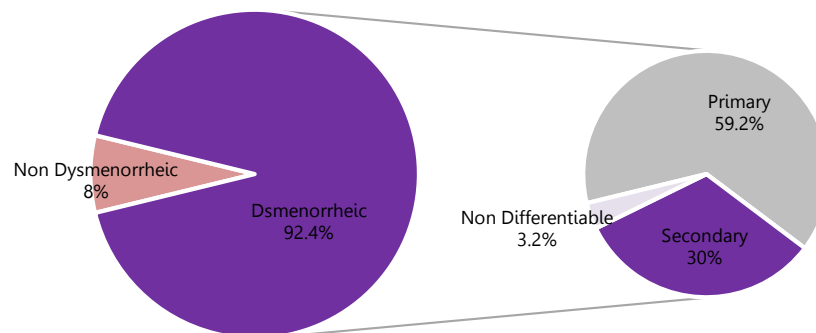


Figure 1: Prevalence of dysmenorrhea and its distribution in categories

The prevalence of dysmenorrhea was found to be significantly associated with the age, days of interval between the menstrual cycle, age of menarche and the menstrual volume at P value <0.05 . However the marital status and days of menstrual cycle did not differ significantly according to the presence or absence of the dysmenorrhea.

The average age of females with dysmenorrhea (24.93 ± 6.78 years) was significantly lower than the average age of females without dysmenorrhea (31.05 ± 6.05 years), and women with dysmenorrhea had a significantly higher age at menarche (13.22 ± 1.75 years) than the age at the time of the onset of menstruation in women without dysmenorrhea (12.57 ± 1.55 years). The days of menstrual cycle did not differ significantly with the presence or absence of dysmenorrhea. However the findings suggest that the duration of interval between the

cycles is significantly associated with dysmenorrhea. Female with dysmenorrhea had intervals of 26.95 ± 4.78 days, which was longer than those who were non-dysmenorrheic (24.97 ± 5.14 days) (Table 2).

Table 2: Factors related to the prevalence of dysmenorrhea

Characteristics	Dysmenorrheic	Non-Dysmenorrheic	p-value
Age	24.93 ± 6.78 years	31.05 ± 6.05 years	0.000*
Age of Menarche	13.22 ± 1.75 years	12.57 ± 1.55 years	0.029*
Duration of Interval	26.95 ± 4.78 days	24.97 ± 5.14 days	0.015*

*Significant at $p < 0.05$

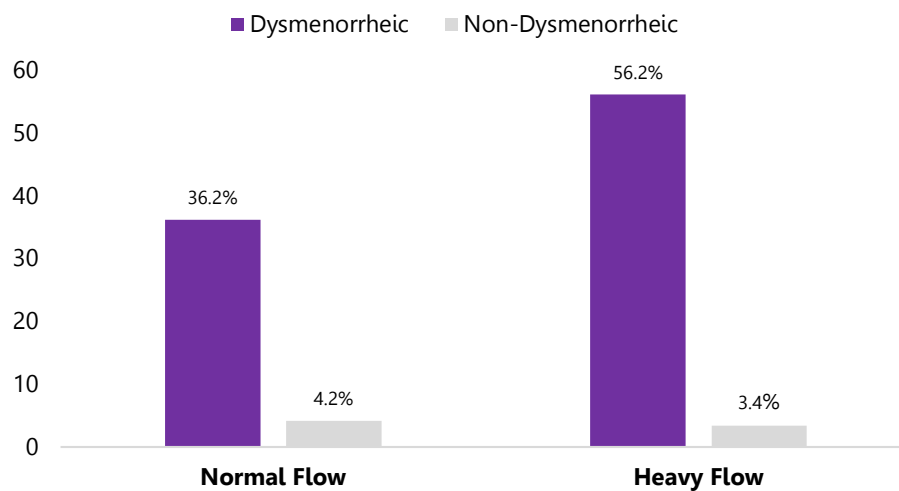


Figure 2: Association of menstrual volume with the prevalence of dysmenorrhea

Figure 2 shows that the women complaining of heavy menstrual volumes were significantly more prevalent to dysmenorrhea (56.2%) than women with normal menstrual flow (36.2%).

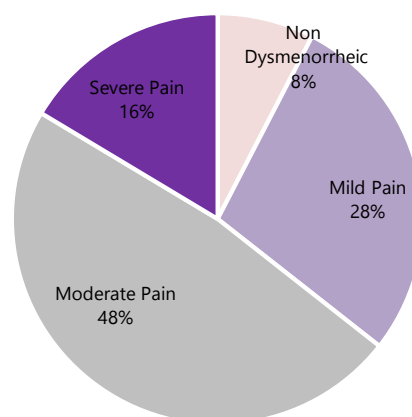


Figure 3: Severity of Dysmenorrhea reported on VMS

Figure 3 reports the prevalence of dysmenorrhea according to the reported severity of pain on verbal multidimensional scoring system. The majority of participants reported severity of dysmenorrheal pain as moderate (48%) and were found to use analgesics and been unable to complete their activities of daily living.

Additionally, the findings for the mild and severe category of dysmenorrheal pain were 28% and 16.4% respectively whereas, only 7.6% of the subjects were found to be non-dysmenorrheal. The association of VMS pain scores with the marital status was also found to be significant at $p < 0.05$. It was observed that the dysmenorrheic females with higher VMS scores were largely found to be unmarried (44%), than married (20.4%).

Discussion

Dysmenorrhea is preponderate amongst menstruating women^{2,4,6,13}. It is the painful experience during menstruation due to physiological and hormonal changes in the body^{2,4,11}. This moot point has underlying relations with specific characteristics of a person like chronological age^{3,14}, age at menarche^{3,8,11,14}, days of bleeding^{5,14,22}, duration of interim²², amount of flow^{2,14,24} and spousal relationships^{11,25,26}. In current study with a sample of 500, 462(92.4%) females were found to be dysmenorrheic. Globally the reporting figures are between 60-90%, such diversification may be due to the lack of standard measuring tools or difference in pain perceptions⁸. However a meta-analysis done by Armour et al. in 2019, in which 38 studies with a sample of 21,573 females were included surmised dysmenorrhea to be 71% prevalent²⁸. Despite of its vast pervasiveness, it is disdained by most of the females^{11,13,16}. Furthermore, in our study, 296 subjects were found to be primary dysmenorrheic, 150 were secondary dysmenorrheic, while 16 were un-differentiable.

Severity of dysmenorrhea co-relates negatively with chronological age with significant association^{14,29}. This may be explained by the changes in ovulatory cycles, changes in pain threshold and sexual experiences²⁹. The average mean age of dysmenorrheic females found in this study was 24.93 ± 6.28 years which was significantly lower than the non-dysmenorrheic females that were of 31.01 ± 6.06 years. Similar findings were seen in another study alluding risk of dysmenorrhea decreased 0.97 times with an increase in age¹⁴. However Kazamasurmised that higher chronological age is associated with higher

prevalence of dysmenorrhea i.e. 31.6% for 12-year-olds, 39.5% for 13-year-olds, 50.3% in 14-year-olds and 55% in 15-year-olds³.

The average age of menarche found in this study was 13.17 ± 1.75 years and it is concordant to the past studies conducted in Nigeria¹¹, Japan³ and Italy⁵ which reported the mean menarcheal age as 13 years, 12.1 ± 10 years and 12.5 ± 1.32 years respectively. Current study also supports the past results stating pervasiveness of dysmenorrhea steeply increase with menarchealage^{3,5,11}. Contrary to it, a study in Vietnam concludes younger age at menarche is associated with dysmenorrhea¹⁴.

In a study in 2012, Grandi summarized significant relation between menstrual pain and duration of menstrual flow ($p=0.06$)⁵. Another study conducted in Ethiopia in 2009 affirmed the findings with $p < 0.02$. Nevertheless current study does not show any strong association between dysmenorrhea and days of bleeding. The discordance may be due to the younger age group used in the reference studies. The days of interval between the cycles were found to be more in dysmenorrheics (26.95 ± 4.78) as compared to the non-dysmenorrheics (24.97 ± 5.14). This is in agreement with Zegeya who observed severe dysmenorrhea in adolescents with irregular cycles (60.8%) as compared to those with regular cycles (39.2%)²². Nahal et al, also inferred that length of interim has significantly contributed with intensity of menstrual pain²⁹.

Previous studies suggest reduced endometrial flow is associated with menstrual pain²⁴. But we found a positive association between heavy menstrual flow with dysmenorrhea which is congruent to the findings of Zhuo and Yang²⁵, Rabiou²⁶ and Ronald et al.²⁹. Increased severity could be as a result of increase in concentration of circulating prostaglandins in copious menstrual fluid²⁹. Furthermore, a high VMS score was reported by unmarried females in contrast to the married ones. One plausible explanation to this can be related to parity and sexual experiences that decreases dysmenorrheic contingency as reported by other studies³⁰.

Limitation of this study was that pain is a subjective experience and its intensity and perception is influenced by cultural, social and other factors. The ubiquity of dysmenorrhea urges for catamenial education and for introduction of safer treatment options to ensure women's health and well-being.

Conclusion

In conclusion, dysmenorrhea which adversely affects daily activities was found to be highly prevalent in fertile aged women and was significantly correlated with age and menstrual history. The risk of dysmenorrhea was higher in younger females, in women with higher age at menarche and in women with longer duration of intervals between menstrual cycles. Moreover heavy menstrual volume was also found to be significantly associated with dysmenorrhea. The statistically significant association emerged between marital status and the intensity of dysmenorrhea. Whereas no clear relationship between days of menstrual cycle and dysmenorrhea was seen. Further investigations may be done in this regard to find out the possible reasons for these trends as it is of utmost importance that the health institutions look into it to help make womanhood uncomplicated.

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References

- Nishikitani M, Nakao M, Tsurugano S, Inoue M, Yano E. Relationship between menstruation status and work conditions in Japan. *BioPsychoSocial medicine*. 2017;11(1):26.
- Begum J, Hossain AM, Nazneen SA. Menstrual pattern and common menstrual disorders among students in Dinajpur Medical College. *Dinajpur Med Col J*. 2009;2(2):37-43.
- Kazama M, Maruyama K, Nakamura K. Prevalence of dysmenorrhea and its correlating lifestyle factors in Japanese female junior high school students. *The Tohoku J Exp Med*. 2015;236(2):107-113
- Bernardi M, Lazzeri L, Perelli F, Reis FM, Petraglia F. Dysmenorrhea and related disorders. *F1000Research*. 2017;6.
- Grandi G, Ferrari S, Xholli A, Cannoletta M, Palma F, Romani C, Volpe A, Cagnacci A. Prevalence of menstrual pain in young women: what is dysmenorrhea?. *J.Pain Res*. 2012;5:169.
- Ju H, Jones M, Mishra G. The prevalence and risk factors of dysmenorrhea. *Epidemiologic reviews*. 2013 26;36(1):104-113.
- Sultan C, Gaspari L, Paris F. Adolescent dysmenorrhea. *Pediatric and Adolescent Gynecology*. Volume 22, Switzerland: Karger Publishers. 2012; 171-180.
- Al-Jefout M, Seham AF, Jameel H, Randa AQ, Luscombe G. Dysmenorrhea: prevalence and impact on quality of life among young adult Jordanian females. *J Pediatr Adolesc Gynecol*. 2015;28(3):173-185.
- Patel V, Tanksale V, Sahasrabhojane M, Gupte S, Nevrekar P. The burden and determinants of dysmenorrhoea: a population - based survey of 2262 women in Goa, India. *BJOG: Int. J. Gynecol*. 2006; 113(4):453-463.
- Harada T. Dysmenorrhea and endometriosis in young women. *Yonagoactamedica*. 2013; 56(4):81.
- Amaza DS, Sambo N, Zirahei JV, Dalori MB, Japhet H, Toyin H. Menstrual pattern among female medical students in University of Maiduguri, Nigeria. *J. adv. med*. 2012:327-337.
- Harel Z. Dysmenorrhea in adolescents. *Annals of the New York Academy of Sciences*. 2008;1135(1):185-195.
- GiuMarassi C, Pistone A, Parazzini F, Vannuccini S, Petraglia F. Women's attitude toward gynecological pain in fertile age: Results from a cross-sectional study among Italian community pharmacies. *J Endometr Pelvic Pain Disord*. 2018;10(2):88-94
- Jang I, Kim MY, Lee SR, Jeong KA, Chung HW. Factors related to dysmenorrhea among Vietnamese and Vietnamese marriage immigrant women in South Korea. *Obstet Gynecol Sci*. 2013;56(4):242-248.
- Graziottin A, Gambini D, Bertolasi L. Genital and sexual pain in women. *Handbook of clinical neurology*. Volume 130, Elsevier. 2015; 395-412.
- Harlow SD, Campbell OM. Epidemiology of menstrual disorders in developing countries: a systematic review. *BJOG: Int. J. Gynecol: Review*. 2004;111(1):6-16.
- DiCintio E, Parazzini F, Tozzi L, Luchini L, Messopane R, Marchini M, Fedele L. Dietary habits, reproductive and menstrual factors and risk of dysmenorrhoea. *Eur J Epidemiol*. 1997;13(8):925-930.

18. Herman-Giddens ME, Slora EJ, Wasserman RC, Bourdony CJ, Bhapkar MV, Koch GG, Hasemeier CM. Secondary sexual characteristics and menses in young girls seen in office practice: a study from the Pediatric Research in Office Settings network. *Pediatrics*. 1997;99(4):505-512.
19. World Health Organization. World Health Organization Task Force on Adolescent Reproductive Health. multicenter study on menstrual and ovulatory patterns in adolescent girls II. Longitudinal study of menstrual patterns in the early postmenarcheal period, duration of bleeding episodes and menstrual cycles. *J. Adolesc Health*. 1986;7:236-244.
20. Venturoli S, Porcu E, Fabbri R, Magrini O, Gammi L, Paradisi R, Flamigni C. Longitudinal evaluation of the different gonadotropin pulsatile patterns in anovulatory cycles of young girls. *J Clin Endocrinol Metab*. 1992;74(4):836-841.
21. Flug D, Largo RH, Prader A. Menstrual patterns in adolescent Swiss girls: a longitudinal study. *Ann. Hum. Biol.* 1984;11(6):495-508.
22. Zegeye DT, Megabiaw B, Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. *BMC women's health*. 2009;9(1):29.
23. Widholm O, Kantero RL. A statistical analysis of the menstrual patterns of 8,000 Finnish girls and their mothers. *Acta Obstet Gynecol Scand. Supplement*. 1971;14:Suppl-14.
24. Åkerlund M, Bengtsson LP, Carter AM. A technique for monitoring endometrial or decidual blood flow with an intra-uterine thermistor probe. *Acta Obstet Gynecol Scand*. 1975;54(5):469-477.
25. Zhou HG, Yang ZW. Prevalence of dysmenorrhea in female students in a Chinese university: a prospective study. *Health*. 2010;2(4):311-314.
26. Rabiou A, Abubakar IS, Garba I. Dysmenorrhea and menstrual patterns among adolescent school girls in Kano. *New Niger. J. Clin. Res*. 2019;8(13):30.
27. Iacovides S, Avidon I, Baker FC. What we know about primary dysmenorrhea today: a critical review. *Hum. Reprod. Update*. 2015;21(6):762-778.
28. Armour M, Parry K, Manohar N, Holmes K, Ferfolja T, Curry C, MacMillan F, Smith CA. The prevalence and academic impact of dysmenorrhea in 21,573 young women: a systematic review and meta-analysis. *J Women's Health*. 2019;28(8):1161-1171.
29. Okoro RN, Malgwi H, Okoro GO. Evaluation of factors that increase the severity of dysmenorrhoea among university female students in Maiduguri, north eastern Nigeria. *IJHSAP*. 2013;11(4):7.
30. Habibi N, Huang MS, Gan WY, Zulida R, Safavi SM. Prevalence of primary dysmenorrhea and factors associated with its intensity among undergraduate students: a cross-sectional study. *Pain Manag Nurs*. 2015;16(6):855-861.