DOI: https://doi.org/10.53350/pjmhs202317351

ORIGINAL ARTICLE

Effect of Lifestyle Modification Upon Dysmenorrhea and Pain Severity in University Students of Karachi- Prospective Cohort Study

SEHRISH RASOOL[1], SANA TARIQ[2], LUBNA RAZZAK[3], RABIYYA SHABBIR[4], NIDA SHOAIB[5], KHADIJA HAMID[6]
[1]*Obstetrics and Gyneacology Department, Pir Abdul Qadir Shah Jilani Institute of Medical Sciences, Gambat, Khiarpur*
[2]*Manager, Research & Developemnt, Tabba Kidney Institute, Karachi*
[3]*Urogyneacologist, Tabba Kidney Institute, Karachi*
[4]*Obstetrics aGgynecology Department, Kharadar General Hospital, Karachi*
[5]*Lecturer, Department of Public Health, Faculty of Life Sciences, SZABIST, Karachi, Pakistan*
[6]*Karachi Medical Dental College, Karachi*
Correspondence to Dr. Sana Tariq, Email: sanatariqrajput@gmail.com, Cell: 0333-1225034

ABSTRACT

Aim: To evaluate the effect of lifestyle modification upon dysmenorrhea and pain severity in university students of Karachi.
Methodology: This is a prospective cohort study, the sample size was 383 participants, and data was collected from the Karachi institute of health sciences. Participants were followed after lifestyle modifications, weight reduction, stress management, physical exercise, and nutrition. Menstruation pain severity was measured by pain visual analog scale score (VAS) score, after 4 weeks and 8 weeks of modification follow-up, participants were asked to fill a validated questionnaire including pain VAS score again to assess the difference in dysmenorrhea and its associated symptoms.
Results: Out of 383 study participants, the mean age was 22.2±1.9 years while the mean weight was 72.9±4.7 years, mean age of menarche was 13.4±0.7 years. Pain VAS score was categorized within mild and tolerable, moderate and Uncomfortable, and severe with an immediate need for medical intervention, indicating 82(21.4%), 195(50.9%) and 106(27.6%) frequencies respectively. The effect of lifestyle modification afterthe first menstruation cycle questionnaire was filled again, and results indicated mild, moderate, and severe results as 277(72.3%), 90(23.4%) and 16(4.1%) while on the second cycle 343(89.5%), 34(8.8%) and 6(1.5%) were identified respectively.
Conclusion: Lifestyle modification, maintaining a healthy weight, having proper nutrition, and managing stress can sufficiently reduce the chances of dysmenorrhea and decreases the severity of menstrual pain.
Keywords: Dysmenorrhea, Pain-vas score, lifestyle modification

INTRODUCTION

Menstruation is the physiological procedure of eliminating blood and mucosal tissue from the uterus through the vagina at the age of puberty[1]. Dysmenorrhea is a common gynecological problem associated with a painful menstruation cycle including abdominal and lumbar pain with other associated symptoms such as nausea, diarrhea, and headache. Females suffer differently with menstruationissues, ranging from mild pain to severe pain with adapted treatment options including home remedies such as heating massage, rest, herbal tea, warm milk to over-the-counter pain killer medicines including menfamic acid, ibrufen etc. while in extreme cases injectable pain killers are also administered to relieve the pain[2,3]. Prevalence rate has been reported as 16% to 91% in reproductive age females[4] classified in two categories, Primary dysmenorrhea is menstrual pain without any associated condition while secondary dysmenorrhea is menstrual pain associated with other conditions for example fibroids, endometriosis etc. The differentiation can be diagnosed only after proper diagnostic investigations including radiological tests[4,5].

Reasons of primary dysmenorrhea are ranging from nutritional deficiencies, menarche before 12 years of age, excessive menstruation flow, sedentary life style and menstruation irregularities, smoking, null parity, stress, absence of social care and other factors prevalent in the population of age 20-35 years, usually affecting students and professionally working females[6]. Pain lasts for 8–72 hours, most severe on first and second day of menstruation accompanied with dizziness, nausea, diarrhea, headache and fatigue[7]. Dysmenorrhea is amiscalculated, neglected health problem causing mental, physical and social issues on monthly basis, absenteeism has been recorded and evaluated as 1/3 females had to take leave from educational institute or workplace due to pain and associated symptoms severity, even daily activities are reported to get compromised in first 48hours of menstruation due to dysmenorrhea[8-11] quality of life has been stated as compromised in dysmenorrhea, along with fair amount of positive depression, stress and anxiety scale ratings[12,13].

Received on 11-09-2022
Accepted on 17-02-2023

Health seeking behavior has been compromised in developing countries indicating social norms against getting consultation for dysmenorrhea specifically in unmarried young females, lack of health care management results in self-medication to relieve the pain and associated symptoms, the over-the-counter pain relieving medicines are previously evaluated for efficacy in dysmenorrhea and indicated pain relief in mild to moderate dysmenorrhea, however, severe pain may need IV pain killers[14,15]. Socio-economic effect of dysmenorrhea has not been appreciated and not evaluated, life-style modification such as enhancing physical activities, reducing weight, initiating exercise, maintaining healthy diet and managing stress resulted in improving dysmenorrhea and its associated symptoms[16,17]. The dysmenorrhea needs to be evaluated as health problem in developing countries lika Pakistan, India and Bangaldesh where delayed identification of gyneacological problems leading to disturbance in marital life may cause hurdles in marriages, this study aims to estimate the effect of life-style modification on dysmenorrhea and usage of over-the-counter pain killer medications for pain relieve in university students of Karachi, Pakistan.

METHODOLOGY

A prospective cohort study was conducted on 383 participants. The sample size was calculated with the help of rasoft and WHO sample size calculator with a numerator of total reproductive age group females present in 2021 Pakistan. Data was collected from Karachi institute of health sciences for 8 months, from July 2021 till March 2022. Ethical approval was obtained from institutional review committee with ERC# Res/MC/126. The primary investigator explained the study and follow-up methods extensively to the participants. Upon successful completion of enrollment after signing informed consent, a pre-structured, validated questionnaire was filled by all participants to indicate dysmenorrhea. Demographic details with weight and height were documentedand study participants were observed for lifestyle modifications, weight reduction (if required), stress management, physical exercise, and

nutrition. Menstruation pain severity was measured by pain visual analog scale score (VAS) score, Follow-ups were designed after 4 weeks and 8 weeks (via messages or calls). After 4 weeks and 8 weeks of follow-up, participants were asked to fill a validated questionnaire including a pain VAS score to assess the difference in dysmenorrhea and its associated symptoms.

Participants with overweight and obese BMI were advised to reduce their weight by monitoring their physical activities and initiating a healthy diet, and participants were observedon the management of day to day stress triggers and meditation methods as a coping mechanism. Caffeine intake was also requested to minimize if required.The questionnaire contained three sections, section I had demographic questions such as age, marital status, family history of dysmenorrhea, family history of reproductive health issues, and diagnosis of any reproductive health problem. Section II contains questions about menstruation history, age of menarche, menstruation cycle details, duration, pain history, severity, associated symptoms, and treatment (if required) to manage pain, section III had pain VAS scale.The data was entered on SPSS version 23.0 for analysis. The Chi-square test was applied to assess the significance and a p-value less than 0.05 was considered significant for our results.

RESULTS

Out of 383 study participants, the mean age was 22.2±1.9 years with a minimum age of 19 years and a maximum of 24 years, while the mean weight was 72.9±4.7 years. Menarche age was measured and the mean value was 13.4±0.7 years and the mean basal metabolic index value was 26.4±4.4 (Table 1).

Table 1: Demographic details of study participants.

Demographic details	
Variables	**Mean±Standard deviation**
Age (Years)	22.2 ± 1.9
Weight (kgs)	72.9 ± 4.7
Menarche (years)	13.4 ± 0.7
BMI	26.4 ± 4.4

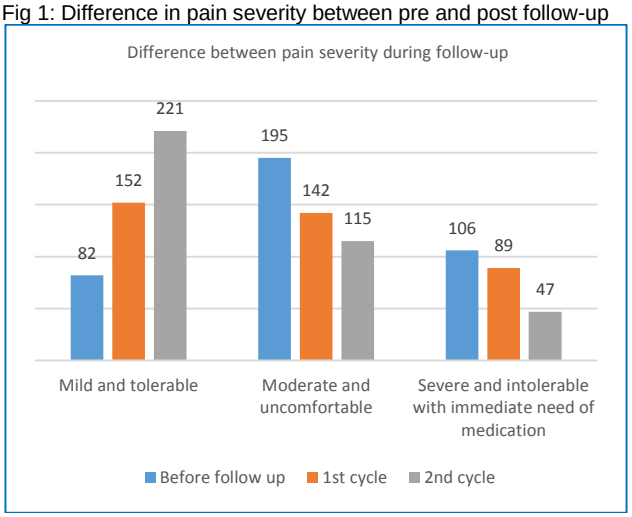
Table 2: Menstruation and diet pattern details of study participants (n=383)

Variables		**Frequency**	**P-Value**
Weight	Overweight	92 (24%)	0.02
	Obese	27 (7%)	
Diet Pattern	Veg	25 (6.5%)	0.56
	Mixed	358 (93.4%)	
Irregular periods	Yes	93 (24.2%)	0.31
	No	290 (75.7%)	
Missing periods <2 months	Yes	28 (7.3%)	0.4
	No	355 (92.6%)	
Heavy bleeding	Yes	172 (44.9%)	0.53
	No	211 (55%)	
Associated factors	None	29 (7.5%)	0.005
	Nausea	88 (22.9%)	
	Vomiting	12 (3.1%)	
	Diarrhea	91 (23.7%)	
	Dizziness	22 (5.7%)	
	Abdominal pain	113 (29.5%)	
	Two or more symptoms	28 (7.3%)	
Family history of PCOS	Yes	85 (22.1%)	0.04
	No	298 (77.8%)	
Caffeine (per day)	0 cups	58 (15.1%)	0.05
	1-2 cups	226 (59%)	
	3-4 cups	99 (25.8%)	

Other details including basal metabolic index categories were documented as Normal weight 264(68.9%), Overweight 92(24%), and obese 27(7%)along with other lifestyle details including diet pattern as vegetarian diet 25(6.5%) and mixed diet involving vegetables and meat in regular meals 358(93.4%) and menstruation history of irregular periods present in 93(24.2%) participants, heavy bleeding affirmed by 172(44.9%) with a p-value of 0.02, 0.56, 0.31 and 0.4 respectively. Dysmenorrhea is commonly associated with nausea, diarrhea, dizziness, abdominal pain, and vomiting, these associated issues were reported by study participants as 88(22.9%), 91(23.7%), 22(5.7%), 113(29.5%) and 12(3.1%) respectively with a significant p-value of <0.05. 85 (22.1%) participants had a positive family history of the polycystic ovarian syndrome and upon asking about per day caffeine consumption, maximum participants 226 (59%) indicated 1-2 cups per day while 99(25.8%) said they had 3-4 cups per day (Table 2). Upon asking about remedy or treatment required to ease the pain, 14(3.7%) stated that taking rest eases their pain while 66(17.2%) used to take paracetamol for pain management while 13(3.3%) needs IV pain killers to ease the pain in last three months. Quality of life was described as ease of self during menstruation, scared of menstruation, need to cease activities for the first 2-3 days of the menstruation cycle, or no difference in day-to-day life.

Pain VAS score was categorized within mild and tolerable, moderate and Uncomfortable, and severe with an immediate need for medication.The follow-up responses form same questionnaire was elaborate dto assess the difference between pain severity, a gradual decrease in pain severitrywasnoticed after follow-up, significant reduction of particiapnts needing medications to ease the menstrual crapms was noted. The p-value was significant (0.01) for this variable.

Fig 1: Difference in pain severity between pre and post follow-up



Management of dysmenorrhea was convenient after lifestyle modification and specifically weight reduction and increase in physical activities.

DISCUSSION

Prevalence of dysmenorrhea indicated 70-85% of women of reproductive age groups especially young girls[18], prevalence differ in developed and developing countries indicating the effect of timely diagnosis and appropriate management problems faced in developing countries or different reasons, [19] risk factors of dysmenorrhea has been evaluated in previous studies showing educational, society stress, sedentary lifestyle, excessive weight and deficiency of nutrition's can cause painful menstruation in young females. Many studies indicated absenteeism from educational institutes and working places due to the severity of pain during the first 3 days of menstruation, a study from Saudi Arabia showed approximately 35% of university students need 2 days off from their classes during menstruation[20].

Our study indicated similar results with 28.7% of participants were unable to continue their daily activities in first 3 days of menstruation. Associated symptoms of dysmenorrhea are diarrhea, physical fatigue, headache, nausea, and irritability, our study results showed 29.5% of abdominal disturbances including pain, and loose stool while 22.9% said they had nausea along with menstrual pain. A study from India showed that a very limited number of dysmenorrhea girls seek treatment of pain with a

pharmacological approach while many use herbal treatments for pain management[21] while our study results indicated that 17.2% of females needed medicines to treat pain, 16.2% needed IV pain killers once in 4 months due to excessive pain. Seeking herbal remedies is common in females suffering from dysmenorrhea, previously conducted studies did not define the usage of pharmacological agents as a popular treatment option in young females, while in the past 5 years many studies indicated increased use of medicines, over-the-counter pain killers, and IV infusions for pain management[22,23], our study indicated the similar result.

Lifestyle modification has an important role in managing several gynecological and reproductive health issues, including irregular periods, polycystic ovarian syndrome, premenstrual syndrome, and dysmenorrhea[24], weight loss and controlling basal metabolic index, especially central obesity can help in managing dysmenorrhea and may reduce the risk of using medications for pain management. Our study results indicated a difference in pain severity by 23.5% from severe pain requiring pharmacological management to mild and moderate pain category where home remedies can reduce the pain while 27.5% of participants reduced the severity of pain from moderate to mild and improved quality of life, perception of menstruation cycle has been upgraded too. The perception of pain severity is known to be different from person to person, dysmenorrhea severity is the same, different from one girl to another depending upon the pain endurance threshold, associated symptoms, immediate access to home remedies, and family/society support.

A qualitative study of women's perception of their dysmenorrhea showed diverse results, that study endorsed the variation of experiences between females regarding pain severity and management options, the experience can be "not too bad" to "horrible" within two biologically related females, the variation is not only within-person but time also plays an important role, severity and associated symptoms can differ in different months, winter season is known for severe dysmenorrhea. Females with irregular menstrual cycles also tend to get painful menstruation after a delayed cycle, and associated disorders and treatments may also enhance the chances of dysmenorrhea in most females, The impact of dysmenorrhea is reportedly negative on the quality of life and mental health of females. The main issue for females reporting painful menstruation is dysmenorrhea has never been considered a health issue but is a commonly associated problem of menstruation, resulting in scaring young females of their menstruation cycle and ceasing day to day activities for 2–3 days every month[25]. The risk factors of dysmenorrhea are usually unidentified as seeking expert opinion or consultation for dysmenorrhea is considered unnecessary. Myths behind resolving dysmenorrhea after childbirth also stop females to get a consultation. A limitation of the study is stress scale was not used on study participants and stress is known as one of the major risks for irregular cycles and dysmenorrhea.

CONCLUSION

Dysmenorrhea is a major health problem in young females disturbing their physical, emotional, social, and mental health. Lifestyle modification, maintaining a healthy weight, having proper nutrition, and managing stress can sufficiently reduce the chances of dysmenorrhea and decreases the severity of menstrual pain.

Author's contribution: SR: Contribution: Objective, literatiureserach, **ST:** Manuscript writing, data analysis, **LR:** Methodology design, **RS:** Data Acquisition, **NS:** Data Analysis, **KH:** Data collection

Conflict of interest: Nil

REFERENCES

1. Kural M, Noor NN, Pandit D, Joshi T, Patil A. Menstrual characteristics and prevalence of dysmenorrhea in college going girls. Journal of family medicine and primary care. 2015 Jul;4(3):426.
2. Fernández-Martínez E, Onieva-Zafra MD, Parra-Fernández ML. Lifestyle and prevalence of dysmenorrhea among Spanish female university students. PLoS One. 2018 Aug 10;13(8):e0201894.
3. Ju H, Jones M, Mishra G. The prevalence and risk factors of dysmenorrhea. Epidemiologic reviews. 2014 Jan 1;36(1):104-13.
4. Smith RP. The clinical classification and causes of dysmenorrhea. InDysmenorrhea and Menorrhagia 2018 (pp. 55-64). Springer, Cham.
5. Smith RP. Dysmenorrhea and menorrhagia. Switzerland: Springer cham. 2018.
6. Karout S, Soubra L, Rahme D, Karout L, Khojah HM, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. BMC women's health. 2021 Dec;21(1):1-4.
7. Al-Matouq S, Al-Mutairi H, Al-Mutairi O, Abdulaziz F, Al-Basri D, Al-Enzi M, Al-Taiar A. Dysmenorrhea among high-school students and its associated factors in Kuwait. BMC pediatrics. 2019 Dec;19(1):1-2.
8. Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HM. Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean Journal of Family Medicine. 2022 Mar 17;43(2):101-8.
9. Fernández-Martínez E, Onieva-Zafra MD, Parra-Fernández ML. Lifestyle and prevalence of dysmenorrhea among Spanish female university students. PLoS One. 2018 Aug 10;13(8):e0201894.
10. Azagew AW, Kassie DG, Walle TA. Prevalence of primary dysmenorrhea, its intensity, impact and associated factors among female students' at Gondar town preparatory school, Northwest Ethiopia. BMC women's health. 2020 Dec;20(1):1-7.
11. Ullah A, Fayyaz K, Javed U, Usman M, Malik R, Arif N, Kaleem A. Prevalence of Dysmenorrhea and Determinants of Pain Intensity Among University-Age Women. Pain Medicine. 2021 Dec;22(12):2851-62.
12. Adil R, Zaigham U. Prevalence of primary dysmenorrhoea and its effect on instrumental activities of daily living among females from Pakistan. Physiotherapy Quarterly. 2021 Oct 1;29(4):65.
13. Mou L, Lei W, Chen J, Zhang R, Liu K, Liang X. Mediating effect of interpersonal relations on negative emotions and dysmenorrhea in female adolescents. General psychiatry. 2019;32(1).
14. Kim HS. Factors Affecting Perceived Stress, Depression and Sleep Disturbance on the Dysmenorrhea among Female University Students. Journal of the Korean Applied Science and Technology. 2021;38(2):399-410.
15. Chaurasia L, Shah L, Paudel G, Sarraf DP, Shah P, Singh JK. Self-medication Practice in Primary Dysmenorrhea among Nursing Students: A Cross Sectional Study. MedS Alliance Journal of Medicine and Medical Sciences. 2021 Dec 31;1(1):67-75.
16. Mohamed NS, Elsayed AM. Healthcare-Seeking Behavior and Self-Medication Practice for Dysmenorrhea Pain among Literary and Scientific University Students: Comparative Study.
17. Tsonis O, Gkrozou F, Barmpalia Z, Makopoulou A, Siafaka V. Integrating Lifestyle Focused Approaches into the Management of Primary Dysmenorrhea: Impact on Quality of Life. International Journal of Women's Health. 2021;13:327.
18. Armour M, Smith CA, Steel KA, Macmillan F. The effectiveness of self-care and lifestyle interventions in primary dysmenorrhea: a systematic review and meta-analysis. BMC complementary and alternative medicine. 2019 Dec;19(1):1-6.
19. 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. Journal of women's health. 2019 Aug 1;28(8):1161-71.
20. Marques P, Madeira T, Gama A. Menstrual cycle among adolescents: girls' awareness and influence of age at menarche and overweight. RevistaPaulista de Pediatria. 2022 Jan 5;40.
21. Alsaleem MA. Dysmenorrhea, associated symptoms, and management among students at King Khalid University, Saudi Arabia: An exploratory study. Journal of family medicine and primary care. 2018 Jul;7(4):769.
22. Omidvar S, Bakouei F, Amiri FN, Begum K. Primary dysmenorrhea and menstrual symptoms in Indian female students: prevalence, impact and management. Global journal of health science. 2016 Aug;8(8):135.
23. Thakur P, Pathania AR. Relief of dysmenorrhea–A review of different types of pharmacological and non-pharmacological treatments. Materials Today: Proceedings. 2021 Sep 3.
24. Yunker AC. Primary dysmenorrhea: new dose of an old medicine offers more options. Fertility and Sterility. 2020 Jan 1;113(1):82.
25. Tsonis O, Gkrozou F, Barmpalia Z, Makopoulou A, Siafaka V. Integrating Lifestyle Focused Approaches into the Management of Primary Dysmenorrhea: Impact on Quality of Life. International Journal of Women's Health. 2021;13:327.
26. Chen CX, Draucker CB, Carpenter JS. What women say about their dysmenorrhea: A qualitative thematic analysis. BMC women's health. 2018 Dec;18(1):1-8.