DOI: https://doi.org/10.54393/pjhs.v3i07.466

PAKISTAN JOURNAL OF HEALTH SCIENCES

https://thejas.com.pk/index.php/pjhs

Volume 3, Issue 7 (December 2022)

Original Article

The Effect of Yoga on Pain and Quality of Life in Primary Dysmenorrhea: A Cross Sectional Survey

Muhammad Salman[1*], Muhammad Umar[2], Hamza Shahid[3], Kiran Haq[4], Somiya Asif[3] and Muhammad Talha[3]

[1]Department of Neurology, Center of Advanced Studies in Health & Technology, Rawalpindi, Pakistan
[2]Department of Physiotherapy, Holy Family Hospital, Rawalpindi, Pakistan
[3]Margalla Institute of Health Sciences, Islamabad, Pakistan
[4]Department of Physiotherapy, Rawal Institute of Rehabilitation Sciences Islamabad, Pakistan

ARTICLE INFO

Key Words:
Yoga Exercises, Analgesics, Primary Dysmenorrhea, EQ-5D-5L, NPRS

How to Cite:
Salman, M. ., Umar, M. ., Shahid, H. ., Haq, K. ., Asif, S. ., & Talha, M. . (2022). The Effect of Yoga on Pain and Quality of Life in Primary Dysmenorrhea: A Cross Sectional Survey : Effect of Yoga On Primary Dysmenorrhea. Pakistan Journal of Health Sciences, 3(07). https://doi.org/10.54393/pjhs.v3i07.466

***Corresponding Author:**
Muhammad Salman
Department of Neurology, Center of Advanced Studies in Health & Technology, Rawalpindi, Pakistan
physiosalmanpk@gmail.com

Received Date: 14th December, 2022
Acceptance Date: 28th December, 2022
Published Date: 31st December, 2022

ABSTRACT

Dysmenorrhea is a painful syndrome that accompanies the menstrual cycles. **Objectives:** The main objective of this research was to determine the effects of yoga exercises on pain and quality of life in female undergraduate students suffering from primary dysmenorrhea. **Methods:** After taking approval from Ethical review committee of Rawal Institute of Health Sciences, an observation type of cross-section survey was conducted in 470 young undergraduate female students of age between 17-26, suffering from primary dysmenorrhea. By non-probability sampling participants were divided into two groups. Group-1 was of those females who had active lifestyle and doing yoga exercises and group-2 were of those who had sedentary lifestyle and didn't do any kind of exercise. To measure the outcome variables, EQ-5D-5L questionnaire was used to measure QoL & NPRS to measure pain. Data were taken at baseline and after 12th week. Wilcoxon rank test was used for within group analysis and Mann Whitney U test was used to compare mean between groups. Data was analyzed in SPSS software version 21 along with Microsoft Excel 2019. **Results:** 21.16±2.66 &22.27±2.53 was the Mean±SD of age of group-1 & group-2 respectively. Between groups analysis revealed that p-value for NPRS was <0.05 but was >0.05 in quality of life. **Conclusion:** Yoga exercises are safer and easiest way to manage pain of primary dysmenorrhea in undergraduate females without any drug use.

INTRODUCTION

Primary dysmenorrhea also abbreviated as PD is a painful condition during menstruation cycle in women without any pathology of Pelvic Floor [1]. Symptoms of PD can be in the form of cramping pain in the region of abdomen which may or may not radiate to the lower lumbar area, which is accompanied by nausea, vomiting, headache, irritability, in short, a general form of not feeling well [2]. On the account of pain experienced by women, dysmenorrhea may be classified as mild, moderate or severe [3]. Apart from general Physical health, primary dysmenorrhea may affect women sleep, social interaction as well as ADLs (activities of daily livings) [4-6]. In young females' primary dysmenorrhea (PD) prevalence is very high [7]. Various authors reported different percentages such as in Italy 84.1% by Grandi *et al* [8], in Egypt 76.1% by Mohamed [9], in Nigeria 78% by Adegbite & his colleagues [1]); by Gulzar *et al* 78% in Pakistan [11]; in Iran 89.1% by Habibi *et al* [12]; in Australia 80% by Hillen [13]; in Japan 72.7% by Kazama & in Malesia 74.5% by Wong [14]. In some study it was reported between 72.7% to 85.75 in Turkey [15]. Numerous researches have reported that being absent of girls from school or college is the major factor due to this condition which in turn affects social as well as economic life of suffers [16] Basic cause of pain is the release of Prostaglandin during onset of menstrual cycle [17]. Traditional management options for primary

DOI: https://doi.org/10.54393/pjhs.v3i07.466

dysmenorrhea include NSAIDs (nonsteroidal anti-inflammatory drugs) and contraceptives [18, 19]. However, there is not sufficient evidence to support the use of different treatment option such as yoga, acupuncture, or massage. Various studies have reported that exercise and lifestyle modifications can reduce these symptoms of primary dysmenorrhea [20]. A research conducted by Mc Govern *et al*, advocate that yoga training is the safest and easiest way to lessen the pain of primary dysmenorrhea [21]. Among the yoga exercises Pilates training is supposed to be more effective. Sharghi and his colleagues proposed that different medicinal plants along with other conservative therapies such as acupuncture, massage & acupressure are also effective ways to lessen PD pain intensity [22]. In song *et al* systemic review, it is proposed that aromatherapy has also prolific effect on dysmenorrhic pain [23]. Nam-Young Yang *et al* demonstrated in single blinded RCT that yoga program is more effective to reduce pain as well as on menstrual cramps in young girls [24]. The purpose of this study was to observe the effects of yoga exercises on pain and quality of life of young medical undergraduates experiencing primary dysmenorrhea.

METHODS

This study was conducted after taking permission from ERC of RIHS (Rawal Institute of Health Sciences), Islamabad. This study was an observational type of cross-sectional survey. Simple convenient sampling technique was employed for data collection. WHO calculator was used for sample size calculation. 470 female medical students between age of 17 to 26 who were suffering from primary dysmenorrhea without any neurological or other comorbidities were included. And those who had any gynecological issue like PCOS (Polycystic ovary syndrome) or secondary dysmenorrhea were excluded in this study. Two groups were made via Chit method. Group-1 was of those who had active lifestyle and doing yoga exercises (cobra, cat, cow and fish poses) & medicine ball exercises while group-2 was of those females who didn't do any kind of exercise. The severity of dysmenorrhea was determined with a 10-point Numeric pain rating scale (NPRS) and the pain duration was calculated in terms of hours. The EQ-5D-5L was used to determine quality of life. Each group was evaluated for three menstrual cycles. At first menstrual cycle the participants only were asked to complete the questionnaire of menstrual characteristics during their menstruation. Then the participants of first group were asked at luteal phase (11-17th day) to complete the EQ-5D-5L and NPRS questionnaire during menstruation. The other group was also asked to complete EQ-5D-5L and NPRS questionnaire during this phase of menstruation. SPSS version 21 software was used to analyze the data of this study, along with Microsoft excel for data entry. Data normality was basically check by Levine test of homogeneity along with skewness & kurtosis and histogram. Data was found to be not normally distributed. A Wilcoxon rank test was employed to check pre-test & post-test variability within group-1 and 2. Then Mann Whitney U test was used to analyze difference between both groups. Mean and Standard deviation was used for descriptive statistics of demographic data. P-value <0.05 was considered significant.

RESULT

Young undergraduate students experiencing primary dysmenorrhea were included in this study. Total number of participants were 470 which were divided into two groups. Descriptive statistics was mentioned as mean±SD. Mean±SD of age of group-1 & group-2 was 21.16±2.66 &22.27±2.53 respectively (Table 1).

Variable	Groups	Mean+SD
Age	Group 1	21.16+2.66
	Group 2	22.27+2.53
Marital status	Group 1	1.20+0.41
	Group 2	1.17+0.37
Frequency of pain	Group 1	2.31+0.83
	Group 2	2.05+0.97
Duration of pain	Group 1	3.13+0.77
	Group 2	3.25+0.59
Nature of Pain	Group 1	1.95+0.21
	Group 2	1.92+0.27

Table 1: Demographic data

Wilcoxon Ran test was used for within group analysis. Pretest & Post-test mean±SD of Numeric pain rating scale (NPRS) of group-1 was 6.53±1.12 & 0.55±0.49 respectively. In group-2 NPRS Pre-test mean±SD was 6.77±0.44 & Post-test mean±SD was 1.10±0.58. P-value was <0.05 in both groups which showed significant difference within groups. In group-1 EQ-5D-5L QoL mean± SD of Pre-test overall Health Score was 22.75±10.32 & Post-test overall health Score was 78.0± 11.94. for grou-2 is mentioned in table no-2. p-value of QoL was also <0.05 in both group which also demonstrated statistically significant difference (Table 2).

Variable	Groups	Pre-Test Mean+ SD	P Mean+ SD ost-test	z-value	p-value
Numeric Pain Scale	Group 1	6.53+ 1.23	0.55+0.49	13.62	<0.000*
	Group 2	6.77+0.44	1.10+0.58	13.39	<0.000*
		EQ-5D-5L (QoL)			
Total Health Score	Group 1	22.75+10.32	78.0+11.94	13.29	<0.000*
	Group 2	21.71+10.41	79.29+12.91	13.30	<0.000*

Table 2: Within group analysis of NPRS & EQ-5D-5L (QoL)

Mann Whitney U test was conducted to analyze the difference between groups at the end of study. Pre-test & Post-test Md (IQR) was 6(2) & 1(1) respectively in NPRS. These results showed that there was significant difference

DOI: https://doi.org/10.54393/pjhs.v3i07.466

between groups from NPRS perspective as p-value <0.05. So, yoga exercises are effective for management of pain in primary dysmenorrhea. In EQ-5D-5L variable Median, interquartile range z-value & "r" (effect size) in pre-test & Post-test was (20(15), 2.82, 0.1 & 77(18),1.337, 0.06 respectively. As p-value of EQ-5D-5L was >0.05 it showed insignificant difference between group quality of life. As value of "r "is less than 0.1 which shows that there is small effect size of analgesics as compared to yoga exercises. Which proved that yoga exercises were more effective as compared to analgesics or home remedies(table 3).

Variable	Pre-Test Md (IQR)	Pre-Test Md (IQR)	z-value	r -value	Man-Whitney U test (p-value)
PNS	6(2)	1(1)	2.82	0.1	0.005
Eq-5D-5L (QoL)					
Over-all Health Today	20(15)	77(18)	1.337	0.06	0.18

Table 3: Between group analysis of NPRS & EQ-5D-5L (QoL)(Menn Whitney U test)

DISCUSSION

Disabling primary dysmenorrhea pain is the main factor that makes women life more stressful. This in turn affects the QoL of many women and makes then irritable in general life. There are some studies which were conducted to reduce the Pain & symptoms of primary dysmenorrhea pain and improve women's QoL by exercises without medicine use. Mc Govern *et al* conducted a systemic review to validate the effect of Yoga training among undergraduate Spanish students. In his study he observed that among yoga exercises Pilates are the safest and easy to perform and had promising results in pain reduction & enhancing QoL [25]. This study supports our results. Many studies had been done to evaluate the effectiveness of Yoga exercises to improve QoL. Nurcan Kirca *et al* conducted a randomized contrail trail to observe the effects of Yoga exercises on dysmenorrhea pain. They gave 12 sessions of Yoga exercises to experimental group females; one session per week for 12 weeks & control group was not given any intervention. They showed that experimental group female's pain was improved significantly as p<0.05 and was no improvement in control group. This study also supports our result that yoga exercises are effective for the management of pain in primary dysmenorrhea (26]. A single blinder study conducted by veena K *et al* demonstrated that effect of yoga exercises and hamstrings curls on Swiss ball or gym training had beneficial effects on the primary dysmenorrhea. In this study they randomized participants into two groups, as this was an RCT, they gave yoga exercise training to group A and gym training along with Swiss ball exercises for hams curls to group B. they observed that both group participants had reduction in pain intensity in PD. But when they compared both groups, they came to know that group B had much better results as compared to group A [27]. So, this study supports our results that yoga exercises are useful and effective in the physical management of pain and improving Quality of life in women suffering from primary dysmenorrhea. Padmanabhan K along with his colleagues conducted a single blind RCT. They divided participants into 2 groups. Group a was experimental and was given yoga exercises for 60 seconds intervals for 12 repetitions for 3 days per week & group B or control group were exercised by medicine ball. They revealed that medicine ball is much effective for the dysmenorrhea pain as compared yoga. This also supports our results of medicine ball exercises are effective for pain of primary dysmenorrhea [27]. A systemic review along with metanalysis was conducted by Ukachukwu Okoroafor Abaraogu to campare the effect of exercise to reduce pain and improve quality of life of patients suffering from primary dysmenorrhea [28]. In his study, he reviewed different RCTs and compare their results. Total number of participants in systemic review were 750. Some of these RCTs were on yoga interventions for PD, which results showed that non-pharmacological especially yoga had better efficacy in reducing Pain symptoms and improving quality of life. Results of this systemic review support our study that yoga is best intervention for improving QoL & diminishing pain. If women are educated about physical training and its impact on primary dysmenorrhea pain, by this way quality of life of many women can be improved. As these analgesics & NSAIDs can cause serious adverse effects such as gastric or duodenal ulcers as well as gastroparesis. By the adoption of yoga exercises many women can enhance their work efficiency and feeling of psychological being well. They can get rid of medicine addiction and of their sedentary lifestyle, which will reduce their level of anxiety, depression, discomfort & usual activities limitations.

CONCLUSIONS

As yoga exercises are found to be very beneficial for management of pain along with improving quality of life of females; such practice should be encouraged. In conclusion, this study was actually an observational type of cross-section study. This type of double blinded randomized control trail should be conducted to see the effectiveness of yoga exercises in comparison with placebo group or sham therapy.

Conflicts of Interest

The authors declare no conflict of interest

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

DOI: https://doi.org/10.54393/pjhs.v3i07.466

REFERENCES

[1] Romero-Morales C, de la Cueva-Reguera M, Miñambres-Vallejo B, Ruiz-Ruiz B, Calvo-Lobo C, Casado-Hernández I, *et al*. Ultrasound Assessment of the Abdominal Wall Muscles in Women with and without Primary Dysmenorrhea: A Cross-Sectional Study. Diagnostics. 2020 Mar; 10(3). doi: 10.3390/diagnostics10030166

[2] Spears LG. A narrative review of medical, chiropractic, and alternative health practices in the treatment of primary dysmenorrhea. Journal of chiropractic medicine. 2005 Mar; 4(2): 76-88. doi: 10.1016/S0899-3467(07)60117-7

[3] Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. Archives of pediatrics & adolescent medicine. 2000 Dec; 154(12): 1226-9. doi: 10.1001/archpedi.154.12.1226

[4] Jones G, Jenkinson C, Kennedy S. The impact of endometriosis upon quality of life: a qualitative analysis. Journal of Psychosomatic Obstetrics & Gynecology. 2004 Jan; 25(2): 123-33. doi: 10.1080/01674820400002279

[5] Aziato L, Dedey F, Clegg-Lamptey JN. Dysmenorrhea management and coping among students in Ghana: A qualitative exploration. Journal of pediatric and adolescent gynecology. 2015 Jun; 28(3): 163-9. doi: 10.1016/j.jpag.2014.07.002

[6] Razak AM, Ibrahim NS, Marie P, Teng YS, Marican ND. Quality of Life of Women with Dysmenorrhea in Kota Bharu, Kelantan. Nurturing hospitality, tourism and wellness world. 2020: 83-98.

[7] Polat A, Celik H, Gurates B, Kaya D, Nalbant M, Kavak E, *et al*. Prevalence of primary dysmenorrhea in young adult female university students. Archives of gynecology and obstetrics. 2009 Apr; 279(4): 527-32. doi: 10.1007/s00404-008-0750-0

[8] Grandi G, Ferrari S, Xholli A, Cannoletta M, Palma F, Romani C, *et al*. Prevalence of menstrual pain in young women: what is dysmenorrhea?. Journal of pain research. 2012; 5: 169-74. doi: 10.2147/JPR.S30602

[9] Mohamed EM. Epidemiology of dysmenorrhea among adolescent students in Assiut City, Egypt. Life Science Journal. 2012; 9(1): 348-53.

[10] Adegbite OA, Omolaso B, Seriki SA, Akpabio N. Prevalence of dysmenorrhea and menstrual bleeding in relation to packed cell volume among female students of Bingham University. International Invention Journal of Medicine and Medical Sciences. 2016; 3(2): 21-31.

[11] Gulzar S, Khan S, Abbas K, Arif S, Husain SS, Imran H, *et al*. Prevalence, perceptions and effects of dysmenorrhea in school going female adolescents of Karachi, Pakistan. International Journal of Innovative Research and Development. 2015 Feb; 4(2): 235-40.

[12] 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 Management Nursing. 2015 Dec; 16(6): 855-61. doi: 10.1016/j.pmn.2015.07.001

[13] Hillen TI, Grbavac SL, Johnston PJ, Straton JA, Keogh JM. Primary dysmenorrhea in young Western Australian women: prevalence, impact, and knowledge of treatment. Journal of adolescent health. 1999 Jul; 25(1): 40-5. doi: 10.1016/S1054-139X(98)00147-5

[14] Wong LP. Attitudes towards dysmenorrhoea, impact and treatment seeking among adolescent girls: A rural school-based survey. Australian Journal of Rural Health. 2011 Aug; 19(4): 218-23. doi: 10.1111/j.1440-1584.2011.01213.x

[15] Ozerdogan N, Sayiner D, Ayranci U, Unsal A, Giray S. Prevalence and predictors of dysmenorrhea among students at a university in Turkey. International Journal of Gynecology & Obstetrics. 2009 Oct; 107(1): 39-43. doi: 10.1016/j.ijgo.2009.05.010

[16] Fernández-Martínez E, Onieva-Zafra MD, Parra-Fernández ML. The impact of dysmenorrhea on quality of life among Spanish female university students. International journal of environmental research and public health. 2019 Jan; 16(5): 713. doi: 10.3390/ijerph16050713

[17] Dawood MY. Primary dysmenorrhea: advances in pathogenesis and management. Obstetrics & Gynecology. 2006 Aug; 108(2): 428-41. doi: 10.1097/01.AOG.0000230214.26638.0c

[18] Zahradnik HP, Hanjalic-Beck A, Groth K. Nonsteroidal anti-inflammatory drugs and hormonal contraceptives for pain relief from dysmenorrhea: a review. Contraception. 2010 Mar; 81(3): 185-96. doi: 10.1016/j.contraception.2009.09.014

[19] Uysal G, Akkaya H, Cagli F, Tutus S, Tayyar AT. A comparison of two different oral contraceptives in patients with severe primary dysmenorrhoea. Journal of Obstetrics and Gynaecology. 2018 Aug; 38(6): 828-32. doi: 10.1080/01443615.2017.1410533

[20] Chen CH, Lin YH, Heitkemper MM, Wu KM. The self-care strategies of girls with primary dysmenorrhea: a focus group study in Taiwan. Health Care for Women International. 2006 Jun; 27(5): 418-27. doi: 10.1080/07399330600629583

[21] McGovern CE, Cheung C. Yoga and quality of life in

DOI: https://doi.org/10.54393/pjhs.v3i07.466

women with primary dysmenorrhea: a systematic review. Journal of midwifery & women's health. 2018 Jul; 63(4): 470-82. doi: 10.1111/jmwh.12729

[22] Sharghi M, Mansurkhani SM, Larky DA, Kooti W, Niksefat M, Firoozbakht M, *et al*. An update and systematic review on the treatment of primary dysmenorrhea. JBRA assisted reproduction. 2019 Jan; 23(1): 51-57. doi: 10.5935/1518-0557.20180083

[23] Song JA, Lee MK, Min E, Kim ME, Fike G, Hur MH. Effects of aromatherapy on dysmenorrhea: A systematic review and meta-analysis. International journal of nursing studies. 2018 Aug; 84: 1-1. doi: 10.1016/j.ijnurstu.2018.01.016

[24] Yang NY and Kim SD. Effects of a yoga program on menstrual cramps and menstrual distress in undergraduate students with primary dysmenorrhea: a single-blind, randomized controlled trial. The Journal of Alternative and Complementary Medicine. 2016 Sep; 22(9): 732-8. doi: 10.1089/acm.2016.0058

[25] McGovern CE, Cheung C. Yoga and high quality of life in ladies with main dysmenorrhea: a scientific overview. Journal of Midwifery & Women's Health. 2018; 63(4): 470-82. doi: 10.1111/jmwh.12729

[26] Kirca N and Celik A. The effect of yoga on pain level in primary dysmenorrhea. Health Care for Women International. 2021 Jul: 1-20. doi: 10.1080/07399332.2021.1958818

[27] Veena K, Sudhakar S, Aravind S, Kumar CP, Monika S. Efficacy of Yoga Asana and Gym Ball Exercises in the management of primary dysmenorrhea: A single-blind, two group, pretest-posttest, randomized controlled trial. CHRISMED Journal of Health and Research. 2018 Apr; 5(2): 118-122. doi: 10.4103/cjhr.cjhr_93_17

[28] Abaraogu UO, Tabansi-Ochiogu CS, Igwe ES. Effectiveness of exercise therapy on pain and quality of life of patients with primary dysmenorrhea: a systematic review with meta-analysis. Turkish Journal of Physical Medicine & Rehabilitation/Turkiye Fiziksel Tip ve Rehabilitasyon Dergisi. 2016 Oct; 62(4): 346-54. doi: 10.5606/tftrd.2016.95580.