

Effect of physical activity in young females with primary dysmenorrhea: A REVIEW

Kaur Navroop

Asst. Professor, Rayat Bahra University, Kharar, Punjab, India

ABSTRACT

Introduction: Primary dysmenorrhea (PD) is the pain occurring with menses in the absence of underlying pathology, commonly referred to as period pains or menstrual cramps by the lay press and public. The term PD comes from the Greek word for deficient monthly flow and describes painful menstruation. It is the common gynecological disorder, approximately 20-90% of women suffer from this problem during the reproductive age. Although PD is not a life-threatening condition and does not cause organ failure, but it affects the QOL of females and in severe cases, leads to disability and inability to function in the school or workplace.

Aim of the study: The study aims to discuss the prevalence of PD in young females, its pathophysiology, risk factors, and to gather robust evidence for the effectiveness of physical activity in the management of pain and improving QOL in females with PD.

Methodology: Electronic searches were performed using databases Medline, Embase, and the Physiotherapy Evidence Database (PEDro), and Cochrane library. Randomized controlled trials and cross-sectional studies were searched. Google search and a hand search of reference lists of existing articles were also conducted to find papers that did not appear in the main databases. The search covered literature from February 2006 to March 2019.

Results: The results of the review have revealed that performing the physical activity have reduced the symptoms of PD including pain intensity and duration of PD. So, this can be safely used as an alternative therapy for pain relief of dysmenorrhea. Therefore, because of high potential benefits of physical activity and exercise in reducing the detrimental effects of PD symptoms, young girls and females are recommended to take part in the exercise programs in order to help them to decrease the negative impact of these symptoms on their academic, social and even personal life.

Conclusion: Primary Dysmenorrhea quite commonly affects the QOL of the young females. The review identified that physical activity or exercise can significantly reduce the pain associated with PD and the use of medications. It is our recommendation that females suffering from PD should have an appropriate exercise programme or physical activity in order to reduce the severity of pain and other symptoms. Clinicians should inform young females that physical activity like knee to chest

Article Information

Conference Proceedings: Online Conference on Physiotherapy, Physical Rehabilitation and Sports Medicine

Conference date: October 28-29, 2020

Inovineconferences.com

***Corresponding author:** Asst. Professor, Rayat Bahra University, Kharar, Punjab, India Email: navroop86sggswu@gmail.com

Citation: Navroop K (2020) Effect of physical activity in young females with primary dysmenorrhea: A REVIEW. J Health Sci Dev

Copyright: © 2021 Navroop K. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

exercise, strengthening of the core muscles, isometrics may be effective treatment for primary dysmenorrhea but there is need for high – quality trials before this can be informed.

Keywords: Primary dysmenorrhea, prevalence, knowledge, physical activity, exercises, quality of life, effectiveness, physical intervention.

Background

Menstruation is a normal physiological process that occurs approximately once a month in women of reproductive age as a result of the breakdown of the endometrial tissue (Maybin et al, 2011; Berbic et al, 2014; Hillard et al, 2006; Calis et al, 2006; Proctor et al, 2007). On the other hand, Primary Dysmenorrhea (PD) is pain occurring with menses in the absence of underlying pathology, commonly referred to as period pains or menstrual cramps by the lay press and public (Uzoma et al, 2017; Wilkinson et al, 2017; Thirza et al, 1999; Sundell et al, 1990). The term primary dysmenorrhea comes from the Greek word for deficient monthly flow and describes painful menstruation. is the common gynecological disorder, approximately 20-90% of women suffer from this problem during the reproductive age (Latthe et al, 2011). Studies from India reported the prevalence range between 50-87.8% (Shah et al, 2013; Kazama et al, 2015; Mohamed et al, 2013; Kumbhar et al, 2011). The pain is spasmodic and it mainly located in the lower abdomen, sometimes radiate to back and medial aspect of thighs. Systemic discomforts like diarrhea, giddiness, fatigue, nausea, vomiting, and headache may be present and it may be associated with vasomotor changes like pallor, cold sweats, or occasional fainting. Rarely syncope and collapse in severe cases may be associated (Wansaicheong et al., 1992).

The prevalence of physical symptoms during menstruation is abdominal cramps (90.7%), backache (82.7%), tiredness (80.4%), and bloating (65.2%) (Parveen N et al., 2009). The greater prevalence of these symptoms was generally observed in young women, with estimates ranging from 67% to 90% for those aged 17-24 years (Juang et al., 2006).

Prevalence of primary dysmenorrhea in India:

5 studies have reported prevalence of primary dysmenorrhea among females ranging from 45% to 79.67% shown in the table below:

Author	Type of study	Study population	Prevalence
Agarwal et al., (2010)	Cross- sectional study	Gwalior	79.67%
Shah et al., (2013)	Cross- sectional study	Mumbai	45%
Kural et al., (2015)	Cross- sectional study	Indore, Madhya Pradesh	84.2%
Konjengbam et al., (2016)	Cross- sectional study	Imphal, Manipur	76.0%
Karanth et al., (2018)	Cross- sectional study	Karnataka	62.5%

Table 1: Study of prevalence of primary dysmenorrhea in India

Effects of PD on the quality of life (QoL) of females:

Although PD is not a life- threatening condition and does not cause organ failure, but it affects the QoL of females and in severe cases, leads to disability and inability to function in the school or workplace (Gordley et al., 2000). Previous studies have found that PD has an adverse effect on school performance, such as low concentration, school absenteeism (30-50%) as well as limited participation in sports and social activities (Chen et al., 2000). One study stated that PD has both an academic and social effect, with only 3% of the participants with PD consulting a medical doctor (Wansaicheong et al., 1992).

On the other hand, PD can cause psychological problems in some of the females resulting in their loneliness and inactive participation in different social activities (Chen et al., 2000). In one study, severe symptoms are reported by 13-33% (Chen et al., 2000; Nooh et al., 2016; Esen et al., 2016) of women with PD and absenteeism by 24-43%.

In order to ameliorate or eliminate the symptoms, a variety of treatment method including medical, surgical, and alternative medical treatments are recommended (Daley et al., 2008; Rumball et al., 2004). But taking medications such as NSAIDs have some kind of side effects. In recent years, various non- pharmacological methods have been used in the treatment of primary dysmenorrhea. Non- pharmacological treatments include herbal products, dietary supplements, nutritional changes, and physical exercise or training.

Physical exercise is an important assistant behavioral factor, people who identify themselves as active had lower levels of inflammatory biomarkers than their sedentary peers (Daley et al., 2008). It can be defined as an activity that requires physical exertion, especially when carried out to develop or maintain fitness (Kermanshahi et al., 2004). It has been suggested that exercises are the non- medical method for the management of symptoms.

A Cochrane systematic review in 2010 (Agarwal et al., 2010) concluded that there is a lack of available evidence to support the use of exercise as an intervention in the alleviation of symptoms associated with PD and called for further evidence from well- controlled, randomized trials before any definitive conclusions can be made.

Therefore, the quality of the evidence needs to be re-examined to establish if physical activity or exercise interventions can be advocated as a supplementary therapy for females with PD.

Methodology

Research design: Literature Review

Search strategy: Electronic searches were performed using databases Medline, Embase, and the Physiotherapy Evidence Database (PEDro) and Cochrane library with key words primary dysmenorrhea, prevalence, knowledge, physical activity, exercises, quality of life, effectiveness, either individually, or in various combinations.

Only Randomized controlled trials were included using

the Google search and reference list of existing articles, were also reviewed to find papers that that did not appear in the main databases. A search covered literature from February 2011 to March 2019

50 articles were identified from the electronic search, 34 articles were selected for a full- text reading based on the inclusion and exclusion criteria.

Inclusion criteria:

- Studies comprising the young female subjects having PD within the reproductive age.
- Only full texted published articles
- Studies published in English language were included in the study.

Exclusion criteria:

- Studies comprising the females having identifiable pelvic disease or any other gynecological disorder.
- Unpublished articles and only abstracts were excluded from the study.

RESULTS

Prevalence of primary dysmenorrhea in India

Author	Type of study	Study population	Prevalence
Agarwal et al, (2010) ⁴⁷	Cross -sectional study	Gwalior	79.67%
Shah et al, (2013) ⁴⁸	Cross- sectional study	Mumbai	45%
Kural et al, (2015) ⁴⁹	Cross- sectional study	Indore, Madhya Pradesh	84.2%
Konjengbam et al (2016) ⁵⁰	Cross-sectional study	Imphal, Manipur	76.0%

Table 2: Result of Prevalence of primary dysmenorrhea in India

DISCUSSION

Primary dysmenorrhea is not a real threat of life, but it can affect the QoL of female life. In many countries, primary dysmenorrhea is the main reason for recurrent short- term school and work absenteeism in young girls and women. Therefore, different methods of treatment for primary dysmenorrhea have become prevalent. The recommended treatment methods to reduce the severity of pain in primary dysmenorrhea include the use of NSAIDs, and other medications like analgesics. But the side effects from such medications are well known (i.e., nausea, breast tenderness, inter-menstrual bleeding, dizziness, drowsiness hearing and visual disturbances (Karampour et al, 2012). During the past 30 years, exercise and physical activity have also considered as an effective treatment for the prevention and treatment of primary dysmenorrhea (Nasri et al, 2016). Through this review study, we identified several physical activity interventions like isometrics, core strengthening, stretching and aerobic exercises, knee to chest position, pilates that caused a statistically significant reduction in pain severity and some other menstrual symptoms. Physical activity and exercise are known to release the endorphin hormones in the brain that raise the pain threshold and are shown to improve mood of the exercising subjects.

The results of the review have revealed that performing the physical activity have reduced the symptoms of PD including pain intensity and duration of PD. So, this can be safely used as an alternative therapy for pain relief of dysmenorrhea and improving the QoL of females with primary dysmenorrhea.

Therefore, because of high potential benefits of physical activity and exercise in reducing the detrimental effects of primary dysmenorrhea symptoms, young girls and females are recommended to take part in the exercise programs in order to help them to decrease the negative impact of these symptoms on their academic, social and even personal life.

CONCLUSION

The review identified that physical activity or exercise can significantly reduce the pain associated with PD and the use of medications. It is our recommendation that females suffering from PD should have an appropriate exercise programme or physical activity in order to reduce the severity of pain and other symptoms. Clinicians should inform young females that physical activity may be effective treatment for primary dysmenorrhea but there is need for high – quality trials before this can be informed.

FURTHER FUTURE RECOMMENDATION

Additional research should be done to know the effectiveness of physical activity and exercise for the treatment of PD. Research efforts are needed to better understand how physical activity can help to reduce the symptoms of PD, which in turn will improve the QoL of young females.

References

1. Maybin JA, Critchley HO (2011) Progesterone: A pivotal hormone at menstruation. *Ann N Y Acad Sci* 1221: 88-97.
2. Berbic M, Ng CH, Fraser IS (2014) Inflammation and endometrial bleeding. *Climacteric* 17: 47-53.
3. Hillard PJA (2006) Dysmenorrhea: consultation with the specialist. *Pediatric Rev* 2764-71.
4. Calis KA, Popat V, Dang DK, Kalantaridou SN (2016) Dysmenorrhea. *eMed Gynecol Obstet* p: 253812.
5. Proctor ML, Murphy PA, Pattison HM, Suckling J, Farquhar CM (2007) Behavioral interventions for primary and secondary dysmenorrhea. *Cochrane database Syst Rev* 3: CD002248.
6. Uzoma K. Can exercising stop menstrual cramps? Available at: <http://www.livstrong.com/article/384938-can-exercising-stopmen-menstrual-cramps/> Accessed April 10, 2017.
7. Wilkinson E, exercises “no aid” for period pain. Available at: <http://www.nhs.uk/news/2009/12December/Pages/exercise-no-relief-for-period-pain.aspx>. Accessed April 10, 2017.
8. Fitness Magazine Editors, 5-Minute workout: relief from cramps. Available at: <http://www.fitnessmagazine.com/workout/express/5minute/moves-to-relieve-cramps/>, Accessed April 10, 2017.
9. NHS Choices, Period pain. Available at: <http://www.nhs.uk/conditions/periods-painful/pages/Introduction.aspx# Treating>, Accessed April 10, 2017.
10. Latthe PM, Champaneria R, Khan KS (2011) Dysmenorrhea, *BMJ Clin Evid* 2011
11. Shah M, Monga A, Patel S, Shah M, Bakshi H (2013) A study of prevalence of primary dysmenorrhea in young students- A cross- sectional study. *Health line* 4: 30-34

12. Kazama M, Maruyama K, Nakamura K (2015) Prevalence of dysmenorrhea and its correlating lifestyle factors in Japanese female junior high school students. *Tohoku J Exp Med* 236: 107- 113.
13. Mohamed HE, Mansour SE (2013), The effect of dysmenorrhea on quality of life of technical secondary school girls. *Med J Cairo Univ* 81: 83- 90.
14. Kum, Reddy R, Bhargavi K, et al. (2011), Prevalence of dysmenorrhea among adolescent girls (14-19yrs) of Kadapa district and its impact on quality of life: A cross- sectional study *Natl J community Med* 2: 265-268.
15. Daley A (2009), The role of exercise in the treatment of menstrual disorders: The evidence. *Br J Gen Pract* 59: 241-242.
16. Chantler, I., D. Mitchell and A. Fuller, 2008, the effect of three cyclo-oxygenase inhibitors on intensity of primary dysmenorrhic pain. *Clinical Journal of Pain*, 24: 39-44.
17. Yusoff, D.M., 2006. Primary dysmenorrhea Advances in pathogenesis and management. *Journal of obstetrics and gynecology*, 108; 428-441.
18. EL- Gilany, AH. K. Badawi and S. EL-Fedawy, 2005. Epidemiology of dysmenorrhea among adolescent students in Mansoura, Egypt. *East Mediterranean Health Journal*, 11: 155-163.
19. Wong LP, Attributes towards dysmenorrhea, impact and treatment seeking among adolescent girls: a rural school- based survey. *Aust J Rural Health* 2010; 19:218-23.
20. Pullon S, Reinken J, Sparrow M. Prevalence of dysmenorrhea in Wellington women, *N Z Med J*, 1988, vol. 101 839(pg. 52-54)
21. Messing K, Saurel-Cubizolles MJ, Bourguine M, et al. Factors associated with dysmenorrhea among workers in French poultry slaughterhouses and canneries, *J Occup Med*, 1993, vol. 355 (pg. 493-500)
22. Sundell G, Milsom I, Andersch B. Factors influencing the prevalence and severity of dysmenorrhoea in young women, *Br J Obstet Gynaecol*, 1990, vol. 977 (pg. 588-594)
23. Mishra GD, Dobson AJ, Schofield MJ. Cigarette smoking, menstrual symptoms and miscarriage among young women, *Aust N Z J Public Health*, 2000, vol. 24 4(pg. 413-420)
24. Parazzini F, Tozzi L, Mezzopane R, et al. Cigarette smoking, alcohol consumption, and risk of primary dysmenorrhea, *Epidemiology*, 1994, vol. 5 4(pg. 469-472)
25. Harlow SD, Park M. A longitudinal study of risk factors for the occurrence, duration and severity of menstrual cramps in a cohort of college women, *Br J Obstet Gynaecol*, 1996, vol. 103 11(pg. 1134-1142)
26. Ng TP, Tan NC, Wansaicheong GK. A prevalence study of dysmenorrhoea in female residents aged 15-54 years in Clementi Town, Singapore, *Ann Acad Med Singapore*, 1992, vol. 21 3(pg. 323-327)
27. Parveen N, Majeed R, Rajar UDM. Familial predisposition of dysmenorrhea among the medical students, *Pak J Med Sci*, 2009, vol. 25 5(pg. 857-860)
28. Juang CM, Yen MS, Horng HC, et al. Natural progression of menstrual pain in nulliparous women at reproductive age: an observational study, *J Chin Med Assoc*, 2006, vol. 69 10(pg. 484-488)
29. Willman EA, Collins WP, Clayton SG. Studies in the involvement of prostaglandins in uterine symptomatology and pathology *Br J Obstet Gynaecol* 1976 83 337- 41.
30. Lumsden MA, Baird DT. Intra-uterine pressure in dysmenorrhoea *Acta Obstet Gynecol Scand* 1985 64 183-6 doi: 10.3109/00016348509154715
31. Eden JA, NF Hacker, JG Moore. *Dysmenorrhea and premenstrual syndrome Essentials of Obstetrics and Gynecology* 1998 3rd edition. Philadelphia: WB Saunders.
32. Demers LM, Hahn DW, McGuire JL, MY Dawood, JL McGuire, LM Demers. *Newer concepts in dysmenorrhea research: leukotrienes and calcium channel blockers Premenstrual Syndrome and Dysmenorrhea* 1985 Baltimore: Urban & Schwarzenberg 205.
33. Akerlund M, Stromberg P, Forsling ML. Primary dysmenorrhoea and vasopressin *Br J Obstet* 1979 86 484- 7.
34. Wiqvist N, Lindblom B, Wilhelmsson L. The pathophysiology of primary dysmenorrhea *Res Clin Forums* 1979 1 47- 54.
35. Naves LA, McCleskey EW. An acid-sensing ion channel that detects ischemic pain *Braz J Med Biol Res* 2005 38 1561- 9 doi:10.1590/S0100-879X2005001100001
36. Hedenberg-Magnusson B, Ernberg M, Alstergren P, Kopp S. Pain mediation by prostaglandin E2 and leukotriene B4 in the human masseter muscle *Acta Odontol Scand* 2001 59 348- 55 doi:10.1080/000163501317153185
37. Merskey H, Bogduk N. *Classification of Chronic Pain* 1994 2nd edition. Seattle: IASP Press
38. Latthe P, Mignini L, Gray R, Hills R, Khan K. Factors predisposing women to chronic pelvic pain: systematic review *BMJ* 2006 332 749- 55 doi:10.1136/bmj.38748.697465.55.
39. Moore J, Kennedy S. Causes of chronic pelvic pain *Ballière's Clin Obstet Gynaecol* 2000 14 389- 402 doi:10.1053/beog.1999.0082.
40. Gordley LB, Lemasters G, Simpson SR, et al. Menstrual disorders and occupational, stress, and racial factors among military personnel, *J Occup Environ Med*, 2000, vol. 42 9(pg. 871-881)
41. Chen C, Cho SI, Damokosh AI, et al. Prospective study of exposure to environmental tobacco smoke and dysmenorrhea, *Environ Health Perspect*, 2000, vol. 108 11(pg. 1019-1022).
42. Nooh AM, Abdu- Hady A, El- Attar N. Nature and prevalence of menstrual disorders among teenage female students at Zagazig University, Zagazig, Egypt. *J Pediatr Adolesc Gynecol* 2016; 29: 137-42.
43. Esen I, Oguz B, Serin HM. Menstrual characteristics of pubertal girls: a questionnaire based study in Turkey, *J Clin Res Pediatr Endocrinol* 2016; 8: 192-6.
44. Greer A. *Text book of obstetrics and gynecology*. 1st ed. Mosby, Edinburg. M. Sby; 2001: pp.94-106.
45. Grano M, Yarnitsky D, Itskovitz-Eldor J, Granovsky Y, Peer e, Zimmer EZ. Pain perception in women with dysmenorrhea. *Obstet Gynecol* 2001; 98: 407-411.
46. Golomb LM, Solidum AA, Warren MP. Primary dysmenorrhea and physical activity. *Med Sci Sports Exerc* 1998:906-9.
47. Agarwal AK, Agarwal A. A study of dysmenorrhea during menstruation in adolescent girls. *Indian J Community Med* 2010; 35:159-64.
48. Maitri Shah, Anuradha Monga, Sangita Patel, Malay Shah. *Health line* pISSN 2320-1525 Volume 4 Issue 2 July- December 2013.
49. Sandeep, Shanmugam S; To compare the effect of stretching and core strengthening exercises on primary dysmenorrhea in young females. *Journal of Dental Medical sciences (IOSR-JDMS)*, Volume 13, Issue 6, V (Jun, 2014), pp.22-32.
50. MoolRaj Kural, Naziya Nagori Noor. Department of Obstetrics and Gynecology, Index Medical College and Research Centre, Indore, Madhya Pradesh, India.
51. K Sathish Kumar, Konjengbam S, Sanayaima Devi H. Department of Community Medicine, Regional Institute of Medical Sciences , Imphal, Manipur, India.
52. Karanth S et al. *Int J Reprod Contracept Obstet Gynecol*, 2018 Jul; 7(7): 2661-2667.
53. Abbaspour Z, Rostami M, Najjar S, The Effect of Exercise on Primary Dysmenorrhea. *J Res Health Sci*, Vol6, No.1, pp. 26-31, 2006
54. Noorbakhsh M, Alijani E, Kohandel M., College of Physical Education and Sport Sciences. *World Applied Sciences Journal* 17 (10): 1246-1252, 2012.
55. Shehnaz S Jerdy, Hosseini S. Effects of stretching exercises on primary dysmenorrhea in adolescent girls; *Biomedical Human Kinetics*, 4, 127-132, 2012.