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Prevalence of dysmenorrhea in active versus non-active females in UMT and effect of exercise on menstruation

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Abstract

The purpose of this study is to determine the prevalence of dysmenorrhea in physically active versus non-active female participants in UMT and to see the effect of exercise on menstruation. Methods: This was an observational cross-sectional study. We used simple random sampling to collect data. The total number of female participants was 200, of which 175 were included and 25 were excluded. We analyzed the data qualitatively as well as quantitatively using SPSS 21. It was evident that those who performed exercise for 35 minutes daily five times a week, being stated as active females, had less premenstrual negative effect, 38.1%, as compared to non-active females, in which the value was 59.3%. Similarly, those who were active showed fewer menstrual negative effects (65.5%) compared to non-active females, whose percentage was 73.6%. In a correlation between exercise and dysmenorrhea, the p-value was less than 0.05, which indicated that the relationship was highly significant. Detrimental effects of menstruation (menstrual pain

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and cramps) reduced in active females who performed 35 minutes exercise daily for five times a week as compared to non-active females who had performed exercise for 35 minutes daily seems to be an easy, non-pharmacological method for managing detrimental effects of menstruation.

Keywords: Dysmenorrhea, menstrual symptoms questionnaire, premenstrual symptoms, menarche

1 Introduction

Dysmenorrhea is defined as pain during periods/menstruation. Greek Meanings are "Difficulty in monthly flow and painful cramps". Pain occurred around the time when menstruation begin. Symptoms last more than three or four days. Pain mostly in lower abdomen and sometime in pelvis. Other name of dysmenorrhea is "painful menstruation" Dysmenorrhea is one of the most common problems in women that divided into two types (Acheampong et al., 2019). Type one is primary dysmenorrhea and type two is secondary dysmenorrhea (Dogru et al., 2023). Primary dysmenorrhea is just before or during menstruation painful cramps in lower abdomen, in the absence of pelvic pathological condition. Prostaglandins main cause for primary dysmenorrhea.it last 2-4 days. Primary dysmenorrhea is more common (Cunningham et al., 2021). Secondary dysmenorrhea is pathologies in female reproductive organ such as endometriosis, uterine fibroids and infection. Dysmenorrhea not only adversely affects female's quality of life but also afflicts her behavior and performance (Kazama et al., 2015).And to avoid such adverse effects one should know things that can be done to decrease the side effects of this phase. By this research we will be helping females in UMT to understand that how exercise affects the menstruation in a positive way by merely observing the two groups of females, one who exercise regularly and other who don't exercise at all (Godoy-Izquierdo et al., 2023). There are typically two types of dysmenorrhea one is Primary Dysmenorrhea and the second one is secondary dysmenorrhea. Dysmenorrhea (painful menstruation) is one of the most common problems in women that divided into two, primary (without pelvic pathologic condition) and secondary dysmenorrheal (occurred related to pathologic states (Saleh et al., 2016).

Primary dysmenorrhea is one which is recurrent and goes away after menstruation. They are not linked with any type of disease. Such painful cramps lasts from 3 to 4 days during menstruation and typically begins before 1 to 2 days of periodic cycle, Primary dysmenorrhea can also include Vomiting, fatigue and nausea and even accompany diarrhea sometimes (Pourbagher-Shahri & Forouzanfar, 2023). Whereas Secondary Dysmenorrhea is considered to be linked with any health disorder of the women reproductive organ. It may include Endometriosis, uterine fibroids, uterine polyps, and even PCOS. However it is said that secondary dysmenorrhea does not accompany nausea, vomiting or fatigue during its phase (Ameade et al., 2018). David said that the Primary dysmenorrhea is due to contraction of the female's uterus where a baby grows by increased production of endometrial prostaglandins (Sabzevari Rad, 2023). This results in abnormal uterine contraction. Although uterus contracts throughout the menstrual cycle but it strongly contract during menstruation and if its contraction is too much it can cut off the blood supply for a while of the muscles of uterus by pressing the blood vessels which causes sharp pain (Yesuf et al., 2018).

In our study we have categorized two groups" namely active females and non-active females. Active females are those who are doing physical activity actively in their daily life (Aghababai & Mohammadi, 2023). These are kept under tag line of " those who do aerobic exercise of 35 minutes in 5 times a week" while non-active females are those who are either living a sedentary lifestyle or not doing much physical activity specially not doing the standard criteria of aerobic exercise (Gosset et al., 2022) . There are many factors that affect the physical Lifestyle of a woman apart from her mental and emotional wellbeing. These factors not only include stress but also include her lack of social support, self-efficacy and gender differences. There are many Women who are

at the risk of getting serious health problems just because of their lifestyle (Hu et al., 2020).

Moderate intensity aerobic exercises are usually effective in the lighter menstrual days like walking and jogging of moderate intensity. Such type of physical activity can reduce cramping pain and relieve from bloating (extra water weight). Aerobic exercises improve blood circulation and release of „feel-good hormones' called endorphins. Hormonal changes increase fatigue sensation that can be relieved by exercise because physical activities boost energy level. Exercises also reduce depression because activities lift mood when a person feels sadness, irritability, or anger during their period (Ibrahim et al., 2015).

It had seen that dysmenorrhea is quite prevalent in young females and has detrimental effects on their daily life. Most often females prefer pharmaceutical drugs to reduce this pain but these drugs have numerous side effects along with pain relieving effect (Rodrigues et al., 2023). Considering all these factors physical activity and exercise are emerging as harmless and beneficial alternative of drugs. It has been proved in previous studies that regular physical activity has significant role in the reduction of dysmenorrhea (Yonglitthipagon et al., 2017).

Peterson DM concluded in a study in 2017 on “Overview of Benefits and risks of Exercise” that exercise not only lessens the blood flow but also decreases the period pain. It helps in dealing with cramps with the hormonal changes that occur during the physical activity that one does while actively using its muscles during different exercises. Aerobic exercises are said to be prove a breakthrough during menstrual pain. It not only lessens the dysmenorrhea but also reduces fatigue and improves stamina. It also activates the Immune system of the body (Mahvash et al., 2012a).

2 Methods

This observational cross-sectional study was conducted in UMT on 200 female participants. Samples were selected through random sampling within UMT. All participants experienced symptoms of dysmenorrhea. The study was conducted after the approval from ethical review board of the concerned institute. An inform consent from University of management and technology was assigned to confirm to proceed the study. Sample selection based on inclusion and exclusion criteria, inclusion criteria included 18 to 35 years females with regular menstrual cycles and with no medical history. Exclusion criteria included female who had visited doctor for gynecological issue, gynecological surgery and history of major abdominal or pelvic surgery in the last 3 months. All Participants were given adapted MSQ (menstrual symptoms questionnaire) questionnaire according to our criteria along with demographic data and asked them to answer it, from which 175 participants were included and 25 were excluded. The data collection tool was a validated questionnaire that regulated around the dysmenorrhea in females, its symptoms and how exercise of daily routine helps in getting less painful periods. Data entry and analysis was done by using SPSS 18. Descriptive statistics for example mean, standard deviation, frequency, mean difference, histograms table and graphs were used for data analysis.

3 Results

After doing the research in prevalence of dysmenorrhea in active vs non-active females we found that the effect is much less in active females who did exercise of 35 minutes 5 times a week. Out of 200 total participants 25 were excluded 6.29% due to gynecological surgery while 18.71% due to any gynecological issue. From remaining 175 participants 84 were active who did exercise 35 minutes daily for 5 times a week while 91 females were those who were not doing it labelled as non-active group. Regarding detrimental effects of menstruation out of 84 active participants (15.5%) experienced dysmenorrhea, (19%) experienced premenstrual abdominal pain one day before, (26.2%) experienced menstrual cramps and (22.6%) go through dull continuous pain throughout menstruation. While among 90 non-active participants these values were comparatively high and (27.5%) females experienced dysmenorrhea, (31.9%) experienced

premenstrual abdominal pain, (41.8%) experienced menstrual cramps and (27.5%) go through dull continuous pain throughout. Table 1 showed the results of the conducted study. According to the calculated results mean height, weight, and BMI were 24.9 years (SD, 2.838), 6.18 m (SD, 6.467), 58.43 kg (SD, 9.323), and 23.67 kg/m2 (SD, 9.329) respectively. In the table 3, it can be clearly seen that exercise had a significant relationship with dysmenorrhea and cramps. An increase in exercise decreased dysmenorrhea and menstrual cramps. In our study, the correlation was significant at the 0.01 level where p=0.282 in between dysmenorrhea and exercise which showed that both these factors are correlated in an order that the increase in one can decrease the other. As p value is 0.282 this also showed that excessive exercise can also lead to detrimental effects on menstruation. Similarly, the p-value between menstrual cramps and exercise in 0.603 which is less than 0.05 so we concluded that this relationship is also significant at the level of 0.01. In table 4 it is evident that those who did exercise for 35 minutes 5 times a week being stated as active females have less premenstrual negative effect 38.1% as compared to no active females in which value in 59.3%. Similarly, those who are active show a low number in menstrual negative effects which is 65.5% as compared to non-active females in which the percentage was 73.6%. This clearly indicate that by doing moderate exercise females can have or decrease the amount of negative effects of this natural phenomenon in their lifestyles. In above table 5, there is a crosstab of menstrual effects in active vs non active females. From the above findings it was shown that those who did exercise and were active have experienced less detrimental effects and compared to those who lived a sedentary lifestyle. 45.1% of active females have experienced these effects whereas in non-active females these effects were experienced by 54.9% females. Whereas 54.7% of active females did not feel these effects as compared to non-active females where this value was 45.3%.

4 Discussion

Dysmenorrhea had severe detrimental effects on female's quality of life. Many women remained absent from work while others take help of pain reliving drugs or other conventional remedies. Many studies has been conducted to bring exercise as an alternative of drugs (Alsaleem, 2018).The present study was conducted to see the prevalence of dysmenorrhea in active versus nonactive females and the effect of exercise on menstruation.

In this study 45.71% non-active females reported having dysmenorrhea, on the other hand among active females' prevalence was 30.29%. (Figure 1).

In a research conducted to see the prevalence of dysmenorrhea among Chinese female university students, the average age of the participants was 19.0 + 1.2 years, and approximately 30% of the patients were at least 20 years of age (Mahvash et al., 2012b). The study conducted in King Abdul-Aziz University to see prevalence of dysmenorrhea enrolled 435 female medical students with a mean of 21.40±1.4 years (Heidarimoghadam et al., 2019). According to the calculated results of this study, the mean age of the target population is 24.9 years. The main findings of this study indicated that physical activity had a positive impact on the most of dysmenorrhea symptoms in such a way that Negative Effects of Menstruation were experienced by 65.5% of active females, while 73.6% of non-active females go through these effects. Moreover 59.3% non-active females experienced premenstrual negative effects, while among active ones only 38.1% were prone to them. (Table 4). In a study "Effect of yoga on the menstrual pain, physical fitness, and quality of life of young women with primary dysmenorrhea" it was reported that practicing yoga for at least 30 minutes a day can decrease the detrimental effects of menstruation which includes premenstrual tension and menstrual pain. Thus it improves female's quality of life and physical fitness (Bougault et al., 2023).

Saleh et al. observed the effect of 8 weeks of active stretching or core strengthening exercises on primary dysmenorrhea and proved that the duration and intensity of painful menstruation had been decreased in the experimental group as compared to the control group who did not receive any

exercise. Thus, these exercises seem to be a good alternative of pain reliving drugs. According to Noor bakhsh and his team regular physical activity has positive effects in the reduction of duration and intensity of menstrual pain and intake of painkillers during menstruation (Fujiwara et al., 2023).

However, the exact mechanism behind this effect of exercise is unknown. In some publications it has been written that hormonal changes produced by exercise and physical activity are the reason of decreased menstrual pain. Exercise causes hormonal changes on the epithelial lining of uterus. It also increases the level of endorphin in our body. Endorphin is a stress and pain-relieving hormone which has similar effects as those of opioids and induces a state of wellbeing and happiness in human body (Barati et al., 2021).

5 Conclusion

It is concluded that dysmenorrhea is more prevalent in non-active females as compared to active. Those females who perform exercise thirty-five minutes daily for five times a week experienced less premenstrual and menstrual negative effects. So regular exercise can be considered as an effective therapy for pain relief in dysmenorrhea.

This study was based on a local geographic area with a small population so, we cannot generalize it, this is limitation of current study. This was a comparative study so we could not standardize any particular exercise for pain relief in dysmenorrhea.

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7 Appendix

Table 1: Showing mean values of height, weight, and BMI of the selected participants

	N	Mean	Std. Error	Std. Deviation
	175	58.34	.708	9.369
Weight	175	5.23	.036	.475
Height	175	22.58	.265	3.501
BMI	175			
Valid N				

Table 2: Percentage of detrimental effects of menstruation in active and non-active participants.

		Exercise 35 min daily 5 times a week:	**Exercise 35 min daily 5 times a week:**
		Non-Active	Active
		Layer Column Valid N %	Layer Column Valid N %
Premenstrual Abdominal Pain (1day before)	Yes	31.9%	19.0%
	Often	26.4%	21.4%
	Sometimes	20.9%	27.4%
	Rarely	12.1%	13.1%

	Never	8.8%	19.0%
Painful Menstruation (Dysme0rrhea	Yes	27.5%	15.5%
	Often sometimes	23.1%	14.3%
	Rarely	26.4%	22.6%
	never	11.0%	10.7%
		12.1%	36.9%
Menstrual cramps	Yes	41.8%	26.2%
	Often sometimes	33.0%	13.1%
	Rarely	16.5%	23.8%
	never	6.6%	17.9%
		2.2%	19.0%
Dull continuous Pain throughout Menstruation	Yes	27.5%	22.6%
	Often sometimes	20.9%	14.3%
	Rarely	23.1%	9.5%
	never	17.6%	13.1%
		11.0%	40.5%

Table 3: Correlation of exercise with Dysmenorrhea and Menstrual cramps

		Exercise 35 min daily 5 times a week:	**Painful Menstruation (Dysme0rrhea)**	**Menstrual cramps**
Exercise 35 min daily 5 times a week:	Pearson Correlation	1	.282**	.359**
	Sig. (2-tailed)		.000	.000
	N	175	175	175
Painful menstruation (dysmenorrhea)	Pearson Correlation	.282**	1	.603**
Oak Institute	Sig. (2-tailed)	.000		.000
	N	175	175	175
Menstrual cramps	Pearson Correlation	.359**	.603**	1
	Sig. (2-tailed)	.000	.000	
	N	175	175	175

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4: Premenstrual and menstrual negative effect in active v/s non-active females.

	Exercise 35 min daily 5 times a week: **Non-Active**						Exercise 35 min daily 5 times a week: **Active**					
Menstruation Negative effects	No Count	%	Yes Count	%	Total Count	%	No Count	%	Yes Count	%	Total Count	%
Premenstrual Negative effects	24	26.4%	67	73.6%	91	100%	29	34.5%	55	65.5%	84	100%

	Exercise 35 min daily 5 times a week: **Non-Active**						Exercise 35 min daily 5 times a week: **Active**					
Menstruation Negative effects	No		Yes		Total		No		Yes		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Premenstrual Negative effects	24	26.4%	67	73.6%	91	100%	29	34.5%	55	65.5%	84	100%
	37	40.7%	54	59.3%	91	100%	52	61.9%	32	38.1%	84	100%

Table 5: Menstrual negative effects in active v/s non-active females.

			Exercise 35 min daily 5 times a week:		Total
			Non-Active	Active	
Menstrual effects	Detrimental No	Count	24	29	53
		%	45.3%	54.7%	100.0%
	Yes	Count	67	55	122
		%	54.9%	45.1%	100.0%
Total		Count Menstruation	91	84	175
			52.0%	48.0%	100.0%