



A STUDY TO ANALYSE THE RELATION BETWEEN PAIN LEVELS , KINESIOPHOBIA AND PHYSICAL ACTIVITY IN YOUNG WOMEN WITH PRIMARY DYSMENORRHOEA

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Abstract: Primary Dysmenorrhoea is a common condition in young women causing pain in the lower abdomen , back and lower legs. This study aimed to examine how pain levels, fear of movement, and physical activity are related in young women who suffer from primary dysmenorrhoea. The study involved 63 college students aged 18-25 years, who were divided into two groups based on their pain levels: Group-1 (N=30) had pain less than 5 and Group-2 (N=33) had pain more than 5. The Tampa scale of kinesiophobia was used to measure their fear of movement and the International physical activity questionnaire (IPAQ) was used to measure their physical activity levels. The results showed that there was a significant difference in fear of movement between the two groups, with Group-2 having higher fear of movement than Group-1 ($t = -2.05$, $P = 0.04$). However, there was no significant difference in physical activity levels between the two groups. The results also showed that pain and fear of movement were positively correlated ($P = 0.05$), meaning that higher pain was associated with higher fear of movement. However, there was no significant correlation between fear of movement and physical activity ($P = 0.254$) or between pain and physical activity ($P = 0.730$).

KEYWORDS : Primary Dysmenorrhoea, Kinesiophobia, Physical activity, Tampa scale, IPAQ

INTRODUCTION:

Primary dysmenorrhoea is a prevalent and debilitating condition that affects the quality of life of many young women worldwide. It is estimated that 40% to 50% of women experience primary dysmenorrhoea during their reproductive years. (2) Primary dysmenorrhoea is characterized by painful uterine contractions that occur in the absence of any pelvic pathology. The pain typically starts before or during the onset of menstruation and lasts for 1-2 days. The pain is usually felt in the lower abdomen, lower back, and lower limbs and may be accompanied by other symptoms such as nausea, vomiting, fatigue, and headache. (6) The exact cause of primary dysmenorrhoea is not fully understood, but it is believed to be related to the increased production of prostaglandins, which are inflammatory substances that cause uterine contractions and vasoconstriction. (7)

Primary dysmenorrhoea not only affects the physical health but also the psychological and social well-being of young women. One of the consequences of primary dysmenorrhoea is kinesiophobia, which is defined as the fear of performing physical movement and activity due to pain. (5) Kinesiophobia may lead to reduced physical activity levels and work performance among young women with primary dysmenorrhoea. Physical activity is an important factor for maintaining health and preventing chronic diseases. The World Health Organization (WHO) recommends at least 150-300 minutes of moderate-intensity physical activity per week for adults aged 18-64 years. (8) However, studies have shown that lower levels of physical activity are associated with menstrual disorders such as dysmenorrhoea, amenorrhoea, oligomenorrhoea, etc. (9) Moreover, young women with primary dysmenorrhoea tend to participate less in social activities, take more rest periods, and have higher rates of absenteeism at work or school. (3) These factors may negatively affect their academic performance, career development, and interpersonal relationships.

Despite the high prevalence and impact of primary dysmenorrhoea on young women's lives, there is a lack of research on the relationship between pain levels, kinesiophobia, and physical activity in this population. Previous studies have mainly focused on the pharmacological or non-pharmacological interventions for primary dysmenorrhoea or the effects of exercise on menstrual symptoms. (10) However, there is a need to understand how pain levels influence kinesiophobia and physical activity among young women with primary dysmenorrhoea and how these factors affect their quality of life. Therefore, the aim of this study is to analyse the relation between pain levels, kinesiophobia and physical activity in young women with primary dysmenorrhoea. The results of this study will be helpful to understand the relation between these three factors and for creating strategies to overcome pain and kinesiophobia, improving physical activity, reducing absenteeism and making life more productive.

AIM & OBJECTIVES:

1.To assess relation between level of pain and Kinesiophobia during the menstrual phase in young women with primary dysmenorrhoea.2. To analyse the relation between level of pain and the of physical activity during the menstrual phase in young women with primary dysmenorrhoea.3. To study the correlation between level of pain, Kinesiophobia and the of physical activity during the menstrual phase in young women with primary dysmenorrhoea.

METHODOLOGY:

An observational study was conducted at SVIMS University to examine the relationship between pain, kinesiophobia, and physical activity in young adult medical students with primary dysmenorrhea. Primary dysmenorrhea is a condition characterized by pain during menstruation. The study included 63 female students aged 18-25 years who had regular menstrual cycles, primary dysmenorrhea, and pain during menstruation. The study excluded students who had secondary dysmenorrhea, musculoskeletal disorders, irregular menstrual cycles, gastrointestinal disorders, or who were not willing to participate. An informed consent was obtained from the participants and their anthropometric characteristics and pain history was assessed. A Visual Analogue Scale (VAS) was used to assess the pain intensity of the participants. The VAS is a 10 cm line on which the participants mark the point that corresponds to their pain level(9). The researchers divided the participants into two groups based on their pain level: group with pain <5 and group with pain >5.

Kinesiophobia and physical activity of the participants was measured using two questionnaires: the Tampa Kinesiophobia Scale (TKS) and the International Physical Activity Questionnaire (IPAQ). The TKS is a 17-item scale that evaluates the fear of movement in individuals. The responses are recorded on a 1-4 scale, where 1 means strongly disagree and 4 means strongly agree. The total score ranges from 17 to 68, with higher scores indicating higher kinesiophobia(11). The IPAQ is a self-administered questionnaire that records the physical activity of individuals for 7 days. It consists of questions that classify the activities as mild, moderate, or vigorous intensity. The scoring of IPAQ is calculated by multiplying the daily minutes of each activity by the days per week with that activity and by a metabolic equivalent (MET) value. The MET values are 3.3 for walking, 4.0 for moderate-intensity activity, and 8.0 for vigorous activity. The total score is expressed in MET minutes/week(33). As these two questionnaires require a detailed self introspection the individuals were contacted during their free hours to enable them to give a precise and relevant answers.

STATISTICAL ANALYSIS

Microsoft office excel sheet was used to enter the data collected from the study participants. SPSS (Statistical Package for the Social Sciences) version 21.0 was used to perform statistical analysis on the data. The continuous data were checked for normal distribution and described using mean (SE). The Pearson's correlation analysis was used to investigate the relationship between two continuous variables. The correlation coefficient ranges from -1 to 1, where -1 indicates a perfect negative correlation, 0 indicates no correlation, and 1 indicates a perfect positive correlation. A P value of <0.05 is the criterion for statistical significance.

Table 1- Descriptives

			Mean	SE
AGE	PAIN<5	N= 30	20.33	0.23
	PAIN>5	N= 33	20.67	0.57
BODY MASS INDEX	PAIN<5	N= 30	19.8	0.44
	PAIN>5	N= 33	20.6	0.23
PAIN	PAIN<5	N= 30	4.0	0.12
	PAIN>5	N= 33	7.0	0.18

Table 1 shows the statistical analysis of the baseline values for the two groups with different pain intensities. The group with pain intensity less than 5 had a lower mean age (20.33 ± 0.23) and a lower mean BMI (19.8 ± 0.44) than the group

with pain intensity greater than 5 (20.67 ± 0.57 and 20.60 ± 0.23 , respectively). The group with pain intensity less than 5 also had a lower mean pain level (4.00 ± 0.12) than the group with pain intensity greater than 5 (7.00 ± 0.18).

Table 2- Descriptives of Kinesiophobia and Physical activity

		Mean	SE
KINESIOPHOBIA	PAIN<5	37.4	1.22
	PAIN>5	41.0	1.27
PHYSICAL ACTIVITY NORMAL DAYS	PAIN<5	617.3	85.84
	PAIN>5	511.8	60.32
PHYSICAL ACTIVITY PAINFULL DAYS	PAIN<5	263.97	22.92
	PAIN>5	258.45	25.51

The statistical analysis of the baseline values is shown in Table 2. The groups with pain intensity less than 5 and greater than 5 had different mean scores for kinesiophobia and physical activity. The group with pain intensity less than 5 had a lower mean kinesiophobia score (37.4 ± 1.22) and a higher mean physical activity score on normal days ($617.3 \text{ METS} \pm 85.84$) than the group with pain intensity greater than 5 (41.00 ± 1.27 and 511.8 ± 60.32 , respectively). The group with pain intensity less than 5 had a slightly higher mean physical activity score on painful days (263.97 ± 22.92) than the group with pain intensity greater than 5 (258.45 ± 25.51). The comparison of the mean scores for kinesiophobia and physical activity is illustrated in Figure 1.

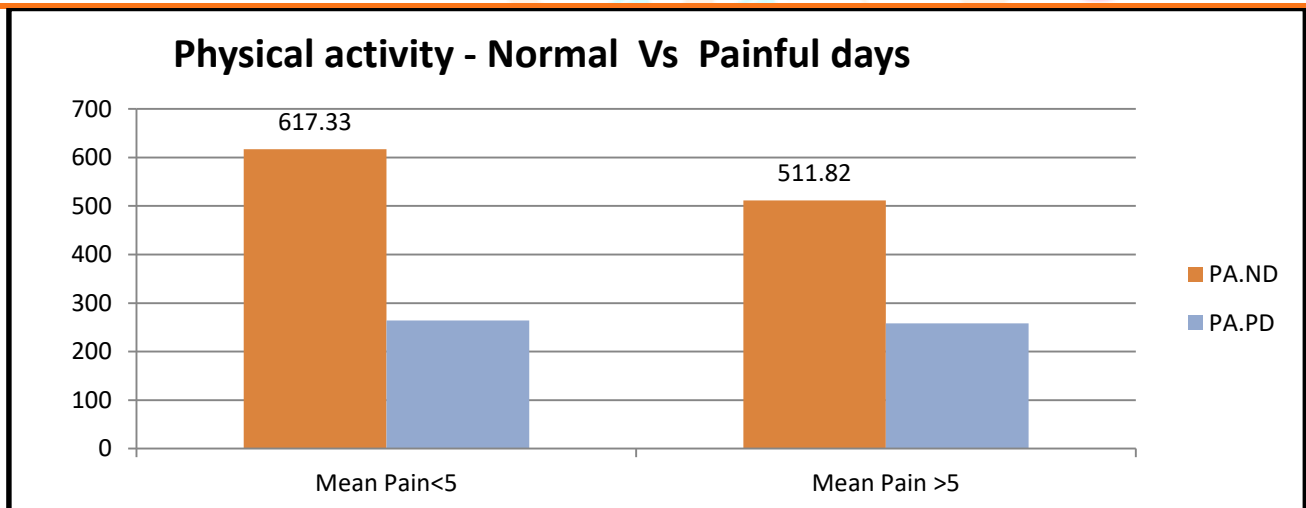


Figure 1 -Means of Physical activity on normal days & painful days for pain levels <5 & >5

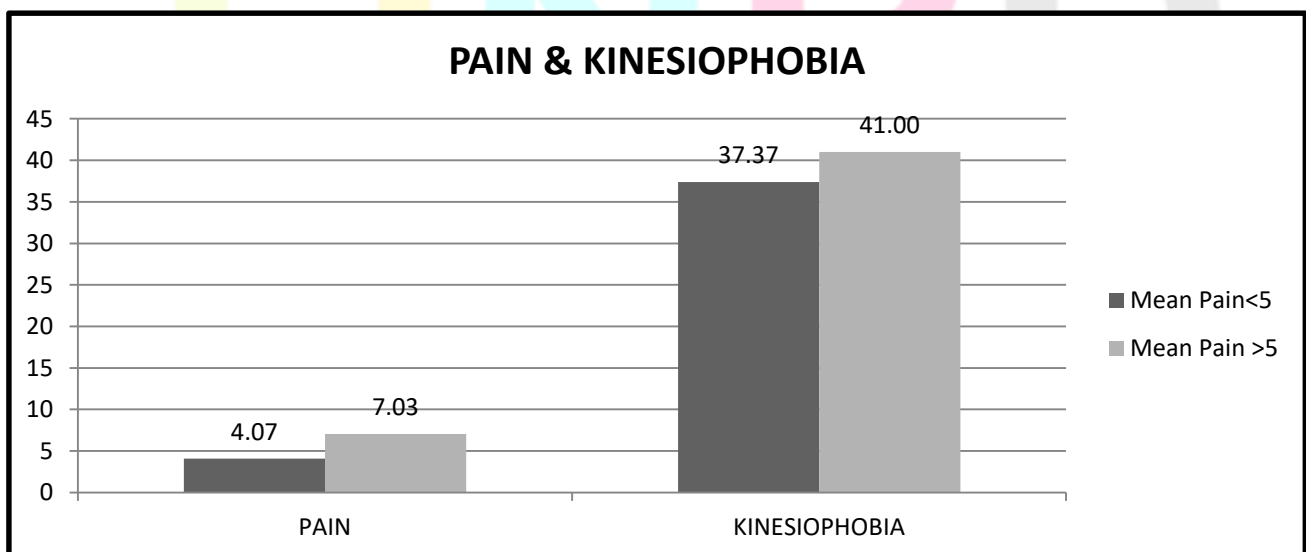


Figure 2 -Means of kinesiophobia score on normal days & painful days for pain levels <5 & >5

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
AGE	3.10	1.00	61.00	0.08
BMI	0.76	1.00	61.00	0.39

Table 3- Test of Homogeneity

The homogeneity of age and BMI (Table 3) was tested using the Levene statistic and the significance of age = 0.08 and BMI = 0.39, which shows that the homogeneity was not violated .

Table 4: Comparison of motivation and exercise adherence in males and females

	Mean Pain<5	Mean Pain >5	Mean Difference	95% Confidence Interval of the Difference		t value	df	P value
				Lower	Upper			
PAIN	5.07	7.03	-1.96	-2.39	-1.54	-9.27	54.57	.00
KINESIOPHOBIA	37.37	41.00	-3.63	-7.17	-.10	-2.05	61.00	.04
PHYSICAL ACTIVITY NORMAL DAYS	617.33	511.82	105.51	-104.92	315.95	1.01	53.00	.32
PHYSICAL ACTIVITY PAINFUL DAYS	263.97	258.45	-48.26	-117.35	20.83	-1.40	61.00	.17

The pain level of the two groups was compared using an independent t-test, which showed a significant difference ($P = 0.00$) (Table 4). The group with pain intensity greater than 5 had a higher pain level than the group with pain intensity less than 5. The kinesiophobia score of the two groups was also compared using an independent t-test, which showed a significant difference ($P = 0.04$) and a negative t-value (-2.05) (Table 4). This means that the group with pain intensity greater than 5 had a higher kinesiophobia score than the group with pain intensity less than 5. The physical activity level of the two groups on normal days and on painful days was not significantly different ($P = 0.32$ and $P = 0.17$, respectively) (Table 4). This means that the pain intensity did not affect the physical activity level of the participants.

Table 3 - Pearson correlation coefficient for pain, kinesiophobia & physical activity

Correlations

		1	TAMPA	PA.PD	PA.ND
PAIN	Pearson Correlation	1	.254*	.044	-.130
	Sig. (2-tailed)		.044	.730	.312
TAMPA	Pearson Correlation	.254*	1	.146	.047
	Sig. (2-tailed)	.044		.254	.713
PA.PD	Pearson Correlation	.044	.146	1	.683**
	Sig. (2-tailed)	.730	.254		.000
PA.ND	Pearson Correlation	-.130	.047	.683**	1
	Sig. (2-tailed)	.312	.713	.000	

*. Correlation is significant at the 0.05 level (2-tailed).

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

The relationship between pain, kinesiophobia, and physical activity on painful days was examined using a Pearson correlation test. The results showed that pain and kinesiophobia had a significant positive correlation ($P = 0.044$), meaning that higher pain levels were associated with higher kinesiophobia scores. However, pain and physical activity on painful days had no significant correlation ($P = 0.730$), meaning that pain levels did not affect the physical activity levels of the participants on painful days. Similarly, kinesiophobia and physical activity on painful days had no significant correlation ($P = 0.254$), meaning that kinesiophobia scores did not affect the physical activity levels of the participants on painful days. These results suggest that pain and kinesiophobia are related, but they do not influence the physical activity behaviour of the participants on painful days.

DISCUSSION

This study was designed to compare the relation between pain level (< 5 and > 5) and kinesiophobia and pain level (< 5 and > 5) and physical activity during normal days and painful days. Furthermore the correlation between pain, kinesiophobia and physical activity was also analyzed. Kinesiophobia, or the fear of movement, is a common phenomenon among women who experience pain, especially during menstruation. This fear can have negative consequences on their physical, mental, and social well-being. In our study there is significant difference ($P= 0.04$) in kinesiophobia as the pain level increases which is in accordance to several studies that have shown that kinesiophobia is associated with higher pain intensity, lower functional disability, lower quality of life, and higher anxiety levels in women with chronic low back pain or primary dysmenorrhoea [16, 17]. In a study conducted on Approaches of Dealing with Primary Dysmenorrhoea and Relationship Between Kinesiophobia and Pain Severity in 2020 revealed that there is a positive correlation $P<0.05$ between pain and kinesiophobia (14), similar to our study where we obtained a positive correlation $P < 0.04$. In a study conducted on female athletes showed kinesiophobia can impair the performance of athletes who need to move fast and agilely and confirms the positive correlation between kinesiophobia and fear avoidance behaviour [15]. Women who suffer from pain may develop kinesiophobia, or the fear of movement, which can worsen their condition and limit their activities. This fear can be either confronted or avoided, with different outcomes. Confronting the fear can reduce it over time, while avoiding it can lead to a vicious cycle of disability [18]. Kinesiophobia has been linked to higher pain intensity, disability, and poor quality of life in various studies [19]. Reducing kinesiophobia can also speed up the recovery of patients with acute low back pain [20, 21], which is a common complaint among women, especially during menstruation [22, 23]. Menstrual low back pain (MLBP) may be influenced by hormonal factors [29], and as the pain increases, so do kinesiophobia and fear avoidance behaviour. This can impair the daily functioning and athletic performance of women.

Various mechanisms have been proposed to explain how physical activity or exercise can reduce the severity of dysmenorrhoea (6,7). Different types of exercise interventions have been studied in the literature to address the symptoms of dysmenorrhea. For example, an 8-week physical activity program was found to be effective in lowering the symptoms of primary dysmenorrhea by Mahvash et al. (7). Ortiz et al. (24) also reported that a physiotherapy program consisting of stretching, Kegel, jogging and relaxation exercises was beneficial for reducing dysmenorrhea symptoms when done regularly. Similarly, Vaziri et al. (25) observed that both aerobic and stretching exercises led to a significant decrease in the intensity of primary dysmenorrhea. However, some studies did not find any association between dysmenorrhea and physical activity level. Blakey et al. (26) and Maruf et al. (27) showed that physical activity participation and adiposity were not related to primary dysmenorrhea in their respective studies. Matthewman G et al (32) conducted a systematic review and meta-analysis of randomized controlled trials to determine the effectiveness of physical activity for the treatment of primary dysmenorrhea. The study included 15 trials with a total of 1,653 participants. The results showed that physical activity had a small but significant effect on reducing pain intensity (standardized mean difference = -0.29 ; 95% confidence interval = -0.45 to -0.13) and pain duration (mean difference = -0.55 hours; 95% confidence interval = -0.88 to -0.22) compared to control groups. Our study also did not find any difference in physical activity levels according to menstrual pain intensity $P = 0.730$.

For future research, some suggestions are to use a bigger sample size, to conduct more detailed studies on the intensity of physical activity, and to include a more diverse population in terms of profession. These suggestions may help to improve the validity and generalizability of the findings.

CONCLUSION:

Primary dysmenorrhoea is a condition that causes severe pain during menstruation. When people experience pain, they may develop a fear of movement, which is called kinesiophobia. Our study found that the level of kinesiophobia was related to the intensity of pain, but not to the amount of physical activity. However, we also observed that people with primary dysmenorrhea tended to reduce their physical activity on menstrual days, regardless of how much pain they felt. This suggests that kinesiophobia may have a negative impact on the quality of life of people with primary dysmenorrhea. Future research should explore ways to overcome kinesiophobia and promote physical activity in this population.

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