AN INVESTIGATION INTO THE EFFECTS OF DYSMENORRHEA ON KINESIOPHOBIA AMONG YOUNG ADULT FEMALES

A

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DECLARATION BY THE CANDIDATE

I hereby declare that the work presented in the dissertation entitled: "AN INVESTIGATION INTO THE EFFECTS OF DYSMENORRHEA ON KINESIOPHOBIA AMONG YOUNG ADULT FEMALES" submitted in partial fulfillment of the requirements for the award of the Degree of Master of Arts in Psychology (Clinical and Counseling) to MIER College of Education (Autonomous), is an authentic record of my own research work carried out under the supervision of Dr.Neha Tewatia (Assistant professor).

I further declare that the work embodied in the present dissertation:

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b) Has not been submitted by me for the award of any other Degree/Diploma/Certificate of any University or Institution.

c) All sources of information used in this study have been duly acknowledged.

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TABLE OF CONTENTS

Contents **Page No.**

Supervisor's Certificate ii
Declaration of the candidate iii
Acknowledgement iv
Tables of Content v
List of Tables viii
List of Figures ix
List of Appendices x
List of Abbreviation xi
Abstract xii

CHAPTER-I
INTRODUCTION

1.1 Introduction 1
1.1.1 Dysmenorrhea 1
1.1.2 Psychological Mechanisms of Dysmenorrhea 3
1.1.3 Global Prevalence and Epidemiology of Dysmenorrhea 6
1.1.4 Kinesiophobia 9
1.1.5 Relationship Between Dysmenorrhea and Kinesiophobia 10
1.1.6 The Biopsychosocial Model of Dysmenorrhea and Kinesiophobia 12
1.1.7 The Fear-Avoidance Model of Pain 15
1.2 Need and Significance of the Study 21
1.3 Statement of the Problem 21
1.4 Operational Definitions of the Study 22
1.5 Objectives of the Study 22
1.6 Hypotheses of the Study 22
1.7 Delimitations of the Study 23

CHAPTER-II
REVIEW OF RELATED LITERATURE

2.1 Introduction 24
2.2 Review of Related Studies 24

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Introduction 37
3.2 Design of the Study 37
3.2.1 Method of the Study 37
3.2.2 Variables of the Study 38
3.2.3 Population and Sample 38
3.2.4 Sample of the Study 38
3.2.5 Data Collection 38
3.3 Tools Employed and its Description 39
3.3.1 Numeric Rating Scale (NRS) 39
3.3.2 Tampa Scale for Kinesiophobia (TSK-17) 40
3.4 Administration of the Tools 40
3.5 Statistical Techniques Used 40

CHAPTER-IV

RESULTS

4.1 Introduction 44
4.2 Results and Findings 44
4.2.1 Research Objective 1 46
4.2.2 Research Objective 2 48
4.2.3 Research Objective 3 51

CHAPTER-V

FINDINGS, CONCLUSIONS, DISCUSSION, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 Introduction 59
5.2 Major Findings of the Study 60
5.2.1 Research Objective 1 60
5.2.2 Research Objective 2 61
5.2.3 Research Objective 3 63
5.3 Conclusion and Discussion 64

5.4 Educational Implications 68
5.5 Suggestions for Further Research 69

SUMMARY 72
REFERENCES 74
APPENDICES 88

LIST OF TABLES

Table No.	Title	Page No.
Table 4.1	Demographic Distribution of Participants by Age Group	45
Table 4.2	Descriptive Statistics for NRS Pain Intensity Scores by Age Group	46
Table 4.3	Distribution of Participants by NRS Pain Severity Category	47
Table 4.4	Descriptive Statistics for TSK-17 Kinesiophobia Scores by Age Group	49
Table 4.5	Distribution of Participants by TSK-17 Kinesiophobia Level	49
Table 4.6	Pearson Correlation Matrix for NRS and TSK-17 Scores	52
Table 4.7	Model Summary for Simple Linear Regression Predicting Kinesiophobia	54
Table 4.8	Unstandardized and Standardized Regression Coefficients Predicting Kinesiophobia	54
Table 4.9	Summary of Hypothesis Testing Results	57

LIST OF FIGURES

Figure No.	Title	Page No.
Figure 1.1	Psychological Mechanisms of Dysmenorrhea	3
Figure 1.2	The Biopsychosocial Model of Dysmenorrhea and Kinesiophobia	12
Figure 1.3	Fear-Avoidance Pain Model in Dysmenorrhea	15
Figure 3.1	Research Methodology	42
Figure 4.1	Age Distribution of Participants (N = 160)	45
Figure 4.2	Frequency Distribution of Participants by NRS Pain Severity Category	48
Figure 4.3	Mean NRS and TSK-17 Scores by Age Group with Standard Deviation	50
Figure 4.4	Scatter Plot: NRS vs TSK-17 Scores (N = 160)	52

LIST OF APPENDICES

Appendix No.	Title	Page No.
Appendix A	Numeric Rating Scale (NRS)	88
Appendix B	Tampa Scale for Kinesiophobia (TSK-17)	89

LIST OF ABBREVIATIONS

Abbreviation	Full Form
COX	Cyclooxygenase
FAM	Fear-Avoidance Model
HPA Axis	Hypothalamic–Pituitary–Adrenal Axis
M	Mean
NPRS	Numeric Pain Rating Scale
NRS	Numeric Rating Scale
PGE2	Prostaglandin E2
PGF2α	Prostaglandin F2 Alpha
r	Pearson Correlation Coefficient
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
TSK-17	Tampa Scale for Kinesiophobia (17-item version)
WHO	World Health Organization

ABSTRACT

Dysmenorrhea, or painful menstruation, is one of the most prevalent gynaecological conditions affecting young adult females worldwide, with a global pooled prevalence of approximately 71%. Despite its significant physical and psychological burden, the psychological dimensions of dysmenorrhea remain insufficiently studied, particularly within the Indian context. This study investigated the effects of dysmenorrhea on kinesiophobia (fear of movement) among young adult females aged 18-26 years residing in Jammu district, India, grounded in the Fear-Avoidance Model of pain and the biopsychosocial framework.

A quantitative, correlational research design was employed with a purposive sample of 160 participants. Menstrual pain severity was measured using the Numeric Rating Scale (NRS) and fear of movement using the Tampa Scale for Kinesiophobia (TSK-17). Data were analysed using descriptive statistics, Pearson correlation via SPSS.

Results revealed that 58.1% of participants reported severe dysmenorrhea (NRS 7–10), with an overall mean NRS score of 6.60. Clinically meaningful kinesiophobia was present in 95% of participants with a mean TSK-17 score of 44.17 seven points above the clinical threshold. Pearson correlation analysis indicated a significant positive association between dysmenorrhea severity and kinesiophobia ($r = .36$, $p < .001$) confirmed that pain severity significantly predicted kinesiophobia. Findings are consistent with the predictions of the Fear-Avoidance Model and underscore the need for psychological screening and biopsychosocial management approaches in dysmenorrhea care.

Keywords: *dysmenorrhea, kinesiophobia, fear of movement, Fear-Avoidance Model, young adult females, menstrual pain, Jammu*

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CHAPTER I

1.1 INTRODUCTION

"The fear of pain is often more disabling than the pain itself."
~ Vlaeyen & Linton (2000)

1.1.1 DYSMENORRHEA

Dysmenorrhea is derived from the Greek words "dys" (difficult), "meno" (month), and "rrhea" (flow). Dysmenorrhea is defined as recurrent lower abdominal pain occurring before or during menstruation (Harel, 2006; Proctor & Farquhar, 2006). It is characterized by cramping or throbbing pain that can radiate to the lower back and thighs. It represents one of the most prevalent gynaecological complaints among women of reproductive age (Armour et al., 2019). The condition is often accompanied by systemic symptoms such as nausea, vomiting, diarrhoea, headache, dizziness, fatigue, and mood disturbances, further compounding its impact on daily functioning (De Sanctis et al., 2023).

Additionally, dysmenorrhea is frequently associated with significant psychological and emotional symptoms. Women with dysmenorrhea are vulnerable to experiencing higher levels of depression, anxiety, somatization, negative self-perception, and hostility (Kabukçu et al., 2021). A comprehensive meta-analysis found significant positive associations between dysmenorrhea severity and depressive symptoms, anxiety symptoms, and global psychological distress (Rogers et al., 2023). The most common psychological symptoms associated with primary dysmenorrhea include irritability, anxiety, and feeling more emotional (Guimarães & Póvoa, 2024). Stress, depressed mood, anxiety, and irritability can be caused by severe menstrual pain (Adib-Rad et al., 2022). The chronic nature of dysmenorrhea can lead to feelings of frustration, irritability, and mood swings, affecting emotional well-being (Thomann et al., 2025). A case-control study found that primary dysmenorrhea is strongly linked with positive scores for depression and anxiety

(Gagua et al., 2013), and adolescent girls with dysmenorrhea have an increased risk of depression and anxiety (Balık et al., 2014).

Dysmenorrhea is clinically classified into two distinct categories based on underlying etiology (Harel, 2006; Proctor & Farquhar, 2006):

Primary Dysmenorrhea occurs in the absence of identifiable pelvic pathology and typically presents 6 to 12 months following menarche, once ovulatory cycles are established (Harel, 2006; MacGregor et al., 2023). This form of dysmenorrhea is directly related to menstruation itself and results from excessive prostaglandin production in the endometrium. The pain usually begins with or shortly before menstrual flow and persists for 8 to 72 hours (Harel, 2006). Primary dysmenorrhea is most prevalent among young women aged 18 to 30 years, with symptoms often improving with age or following childbirth (De Sanctis et al., 2023).

Secondary Dysmenorrhea results from underlying pelvic pathology such as endometriosis, adenomyosis, uterine fibroids, pelvic inflammatory disease, or intrauterine device use (Harel, 2006). This type typically develops later in reproductive life and can be associated with additional symptoms such as dyspareunia, heavy menstrual bleeding, or intermenstrual pain (De Sanctis et al., 2023). While prostaglandins can also play a role in secondary dysmenorrhea, the presence of concomitant pelvic pathology distinguishes it from the primary form (Proctor & Farquhar, 2006).

The present investigation focuses exclusively on primary dysmenorrhea, as it represents the most common form of menstrual pain among young adult females and occurs in the absence of organic disease, making it particularly suitable for examining the relationship between pain severity and psychological responses such as kinesiophobia.

Figure:1.1 Psychological Mechanisms of Dysmenorrhea

MECHANISMS	DESCRIPTION
Psychological Distress	Anxiety, depression, irritability; worsens during menstruation; increases pain perception.
Pain Catastrophizing	Makes the pain feel worse, causes feelings of helplessness, and makes it hard to stop thinking about the pain; these thoughts get stronger during menstruation.
Cognitive-Affective Loop	Predictable monthly pain causes worry and rumination, which increases disability and changes how the brain processes pain.

1.1.2 PSYCHOLOGICAL MECHANISMS OF DYSMENORRHEA

The psychological mechanisms underlying dysmenorrhea extend beyond peripheral nociception to encompass complex cognitive, emotional, and behavioural processes that modulate pain perception and contribute to disability. Recent studies indicate that the brain plays a crucial role in the pathophysiology of primary dysmenorrhea, with its involvement encompassing central sensitization, altered pain processing, regulation of neuroendocrine factors, and interactions with psychological factors (Jin et al., 2024).

Pain catastrophizing is characterized by the tendency to magnify the threat value of a pain stimulus, to feel helpless in the context of pain, and inability to inhibit pain-related thoughts (Chen et al., 2023; Vlaeyen et al., 1995; Sullivan et al., 2001). Research demonstrates that of the psychosocial factors examined, only pain catastrophizing, specifically the helplessness subscale, predicted menstrual pain severity, with 36% of women with primary dysmenorrhea and 58% with endometriosis having clinically relevant levels of pain catastrophizing (Evans et al., 2021). Pain catastrophizing in women with primary dysmenorrhea is reinforced during the menstrual phase and positively correlates with cerebral blood flow in the medial prefrontal cortex, which plays a crucial role in mediating this reinforcement effect (Chen et al., 2024).

In patients with chronic pain, including dysmenorrhea, an increase in catastrophizing has been observed as a maladaptive response to pain perception, influenced by dysfunction of the hypothalamic-pituitary-adrenal axis, alterations in monoaminergic neurotransmission, and increased systemic inflammatory mediators (Del Prado et al., 2025). Pain catastrophizing can be a particularly salient factor associated with menstrual pain in individuals who already have chronic pain conditions, with menstrual pain severity being related primarily to pain-specific anxiety rather than general anxiety sensitivity (Payne et al., 2016).

A comprehensive meta-analysis found significant positive associations between dysmenorrhea severity and depressive symptoms ($r = 0.216$), anxiety symptoms ($r = 0.207$), and global psychological distress ($r = 0.311$) (Rogers et al., 2023). Primary dysmenorrhea is associated with anxious and depressive symptoms, with

the condition affecting 50-90% of young women and being characterized by cyclic lower abdominal cramps during menstruation along with anxiety, depression, and irritability (Lee et al., 2015; Hsu et al., 2024).

Experiencing monthly repeated menstrual pain might increase the risk of experiencing depression, anxiety, or stress, and having these psychological disorders can exacerbate the severity of menstrual pain; experiencing depression and dysmenorrhea simultaneously might enhance the perception of pain severity and reduce the response to medication (Ambresin et al., 2012; Jensen & Turk, 2014).

Functional MRI studies have revealed that women with primary dysmenorrhea show altered brain function and connectivity patterns, including increased activity in the dorsolateral prefrontal cortex during pain phases and depression scores that are higher during painful phases compared to non-painful phases (Jin et al., 2024). Research demonstrates that anxiety symptoms are positively associated with disease duration and functional connectivity between the dorsolateral prefrontal cortex and dorsal anterior cingulate cortex, with this connectivity mediating the relationship between disease duration and anxiety symptoms (Yu et al., 2024).

Women with primary dysmenorrhea show increased brain connectivity in regions associated with pain processing and heightened anxiety levels even when not in pain, suggesting widespread and lasting changes in pain sensitivity that lend support to the notion that the condition results in generalized pain sensitization (Yu et al., 2024).

Dysregulation in descending pain modulation makes a significant contribution to the development of chronic pain, with primary dysmenorrhea patients showing increased regional homogeneity values in the midbrain and periaqueductal gray, regions critical to the endogenous descending pain inhibitory system, and these brain regions correlate with clinical symptom scores and anxiety levels (Liu et al., 2017).

As a recurrent and predictable pelvic pain condition, dysmenorrhea can be associated with pain anticipation, potentially facilitating an anxious, ruminative catastrophizing process that not only increases disability due to dysmenorrhea but

over time reinforces negative cognitive-affective responses to pain (Chen et al., 2023; Rabinowitz et al., 2023). Over a third (35%) of women with chronic cyclical pelvic pain due to primary dysmenorrhea have clinical levels of catastrophizing and repeated exposure to severe cyclical pelvic pain can lead to changes in brain systems that process and cope with pain, including altered central pain processing evidenced by increased sensitivity to thermal pain and increased activation of the entorhinal cortex, a region associated with pain anticipation (Rabinowitz et al.,2023).

1.1.3 GLOBAL PREVALENCE AND EPIDEMIOLOGY OF DYSMENORRHEA

Dysmenorrhea represents a major global public health challenge affecting millions of women worldwide, yet it remains a neglected reproductive health issue requiring urgent attention (De Sanctis et al., 2023; Reid-McCann, 2025). Recent systematic reviews and meta-analyses have provided comprehensive data on the worldwide prevalence and distribution of this condition. A landmark systematic review and meta-analysis examining data from 70 countries revealed that dysmenorrhea affects 71.3% of women globally (de Arruda et al., 2025). Among those affected, primary dysmenorrhea accounts for 73% of cases, while severe dysmenorrhea impacts 35% of sufferers (de Arruda et al., 2025). Another comprehensive meta-analysis of 38 studies including 21,573 young women found a pooled prevalence of 71.1% (Armour et al., 2019). These findings underscore the substantial burden of dysmenorrhea across diverse populations and geographic regions. The prevalence is notably elevated among young adult females aged 18 to 30 years, with studies reporting rates ranging from 67% to 90% in this demographic (MacGregor et al., 2023). Research conducted across various countries has documented remarkably high prevalence rates: 85% among Hispanic adolescents in the United States (Banikarim et al., 2000), 80.5% among medical and health sciences university students in the United Arab Emirates (Panchal et al., 2024), 68% among Italian adolescents aged 14-20 years (Zannoni et al., 2014), and rates ranging from 67% to 91.3% in Asian populations (Belayneh et al., 2023; Nagy et al., 2024; Nguyen et al., 2025). In Australia and Europe, prevalence rates range from 45% to 97%,

demonstrating considerable geographic and methodological variation (Belayneh et al., 2023). A cross-sectional study involving 180 adolescents found significant positive correlations between dysmenorrhea severity and negative impact on physical activities and social activities (El-Ganzory et al., 2023). The odds of experiencing negative impacts on physical and social activities were significantly higher in adolescents with moderate and severe dysmenorrhea compared to those with mild dysmenorrhea (El-Ganzory et al., 2023). These findings demonstrate a clear dose-response relationship, where higher pain severity corresponds to greater functional impairment.

Moreover, women with primary dysmenorrhea experience poorer mood states and compromised sleep quality during menstruation, further exacerbating the multifaceted impact of this condition (Iacovides et al., 2015). The cyclical nature of dysmenorrhea means that these impairments recur monthly, creating a predictable pattern of reduced functioning that can significantly affect long-term health trajectories and quality of life (MacGregor et al., 2023). The condition also negatively affects emotional well-being, social interactions, family relationships, and recreational activities (Amza et al., 2024; MacGregor et al., 2023). Studies indicate that women with dysmenorrhea experience significantly elevated symptoms of anxiety and depression during their menstrual periods (Iacovides et al., 2015). The anticipation of monthly pain can create anxiety and dread, while the pain itself can trigger depressive symptoms, irritability, and mood instability (Iacovides et al., 2015).

Social functioning is significantly impaired, with many women reporting withdrawal from social activities, reduced participation in leisure pursuits, and strain on interpersonal relationships during menstruation (Amza et al., 2024). A study involving 504 women aged 18-45 found that 73.9% showed a clear decline in daily functioning, with dysmenorrhea negatively affecting social interaction and routine activities (Amza et al., 2024). The cyclical nature of these impairments can lead to feelings of frustration, helplessness, and diminished self-efficacy, particularly when pain persists despite attempts at self-management (Iacovides et al., 2015).

Menstruation is increasingly understood not only as a biological process but as a complex embodied experience that influences women's psychological well-being, pain perception, and daily functioning (Critchley et al., 2020). Research indicates that menstrual experiences are shaped by an interaction of hormonal changes and psychological processes such as emotional appraisal, cognitive interpretation of pain, and coping responses (Iacovides et al., 2015). When menstruation is accompanied by pain, as in dysmenorrhea, these psychological factors become particularly salient, influencing behaviour, activity engagement, and quality of life (MacGregor et al., 2023). Menstruation is a natural biological process that varies significantly among women depending on individual, environmental, and climatic influences (Critchley et al., 2020). The menstrual cycle, which typically lasts three to eight days, comprises four major phases as menstrual, follicular, ovulation, and luteal each characterized by distinct hormonal fluctuations that orchestrate reproductive physiology (Buffet et al., 1998; Critchley et al., 2020). The menstrual phase marks the shedding of the endometrial lining, the follicular phase involves the maturation of ovarian follicles under the influence of follicle-stimulating hormone, ovulation represents the release of the mature egg, and the luteal phase is characterized by progesterone dominance from the corpus luteum (Buffet et al., 1998). Menstrual health forms an integral aspect of women's overall health, influencing not only physical well-being but also mental and social functioning (MacGregor et al., 2023; Matteson et al., 2013). The World Health Organization has recognized menstrual health as a fundamental component of reproductive health and overall well-being, emphasizing that menstrual disorders significantly impact women's quality of life across diverse cultural and socioeconomic contexts (Reid-McCann, 2025). The decline in progesterone levels at the end of the luteal phase triggers menstruation through the regulation of prostaglandins, cytokines, and chemokines that facilitate endometrial shedding (Henriet et al., 2012). This finely tuned regulatory mechanism involves the destabilization of endometrial cellular lysosomes, resulting in phospholipase A2 release that produces arachidonic acid from matrix metalloproteinase-released phospholipids (MacGregor et al., 2023). Arachidonic acid is subsequently converted by cyclooxygenase (COX)

enzymes to prostaglandins such as prostaglandin E2 (PGE2) and prostaglandin F2α (PGF2α) (MacGregor et al., 2023). Disruption of this regulatory mechanism can result in menstrual disorders such as endometriosis, abnormal uterine bleeding, or dysmenorrhea (ACOG Committee, 2018; Henriet et al., 2012). These conditions not only cause physical discomfort but also carry substantial psychosocial and economic burdens for individuals, families, and society (MacGregor et al., 2023). Understanding the multifaceted nature of menstrual health is therefore essential for developing comprehensive approaches to women's healthcare.

1.1.4 KINESIOPHOBIA

While pain is the cardinal symptom associated with dysmenorrhea, recent research highlights its implications beyond physical discomfort, particularly in relation to psychological responses such as kinesiophobia (Kavitha et al., 2023; Kizilay & Burkay, 2023). Kinesiophobia is defined as an excessive, irrational, and debilitating fear of physical movement and activity that arises from a perception of vulnerability to pain or (re)injury (Li et al., 2023; Vlaeyen et al., 1995). The term was introduced by Kori and colleagues in the early 1990s to describe a condition in which individuals experience persistent anxiety that movement will worsen their discomfort, leading them to intentionally limit activity even in the absence of medical contraindication (Li et al., 2023; Sharif-Nia et al., 2024). Kinesiophobia represents more than a simple fear of physical activity; it encompasses a complex, multifactorial mindset stemming from beliefs about vulnerability and threats to physical well-being (Ambegaonkar et al., 2024; Liu et al., 2024). The construct includes several interrelated components: cognitive beliefs about the consequences of movement (e.g., "if I move, my pain will worsen"), emotional responses (fear, anxiety, distress), physiological arousal (increased heart rate, muscle tension), and behavioural manifestations (avoidance, guarding, reduced activity) (Vlaeyen & Linton, 2000, 2012).

Individuals with kinesiophobia exhibit hypervigilance toward bodily sensations and actively engage in avoidance behaviours, believing that such behaviours protect them from harm (Larsson et al., 2016; Varallo et al., 2022). This fear can become more inhibitory than pain itself, paradoxically creating a situation where the

anticipation and avoidance of pain cause greater disability than the pain experience would alone (Kavitha et al., 2023; Kizilay & Burkay, 2023). The result is physical deconditioning, social withdrawal, functional limitations, and reduced quality of life (Kavitha et al., 2023; Kizilay & Burkay, 2023).

Research indicates that kinesiophobia affects between 51% and 72% of patients with chronic pain conditions and is associated with elevated disability levels, increased pain sensitivity, and persistent functional impairment (Varallo et al., 2022). A meta-analysis examining kinesiophobia across various pain conditions found medium to large associations between fear of movement and outcomes such as pain-related disability, pain intensity, depression, and anxiety (Rogers & Farris, 2022). These findings underscore the clinical significance of kinesiophobia as a psychological factor that substantially influences pain-related outcomes and functional capacity. The relevance of kinesiophobia extends beyond musculoskeletal conditions. Recent research has identified significant levels of kinesiophobia among cardiac patients (51-72% prevalence), surgical patients, individuals with neurological conditions, and even athletes following injury (Ambegaonkar et al., 2024; Liu et al., 2024). This breadth of application demonstrates that kinesiophobia is a transdiagnostic psychological phenomenon relevant to any condition involving pain or fear of physical harm.

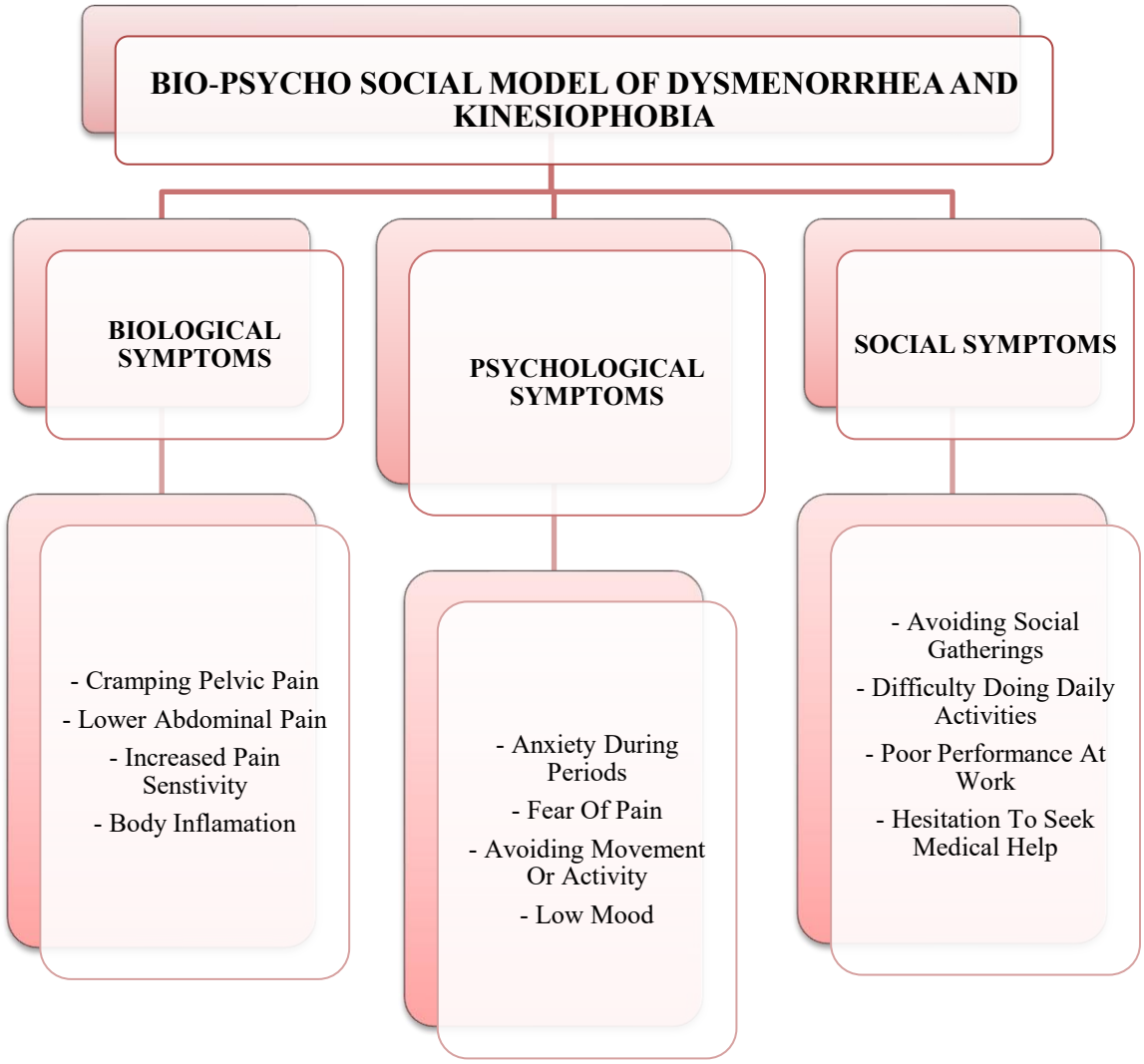
1.1.5 RELATIONSHIP BETWEEN DYSMENORRHEA AND KINESIOPHOBIA

In the context of dysmenorrhea, emerging studies reveal that menstrual pain can trigger kinesiophobic responses, particularly among young adult females (Kavitha et al., 2023; Kizilay & Burkay, 2023; Paliwal & Jhala, 2023). These responses are characterized by avoidance of regular or beneficial physical activities during painful phases of the menstrual cycle due to anticipation that such activity will exacerbate symptoms. Over time, these avoidance patterns can intensify both the physical and emotional impacts of menstrual pain and contribute to chronic health deficits and disability (Doğan et al., 2020). When applied to menstrual pain contexts, kinesiophobia serves as a psychological response to the cyclical pain experienced during menstruation. Research demonstrates that women suffering

from primary dysmenorrhea tend to limit physical activity during their menstrual phases due to anticipatory fear of worsening pain, gradually developing a consistent fear-avoidance pattern (Kavitha et al., 2023; Kizilay & Burkay, 2023). The physiological pain in dysmenorrhea, triggered by excessive prostaglandin release, thus extends into behavioural and emotional regulation systems, making the experience of menstrual pain both a physical and psychological event where anticipation and avoidance compound the sensation of pain (Kizilay & Burkay, 2023).

This biopsychosocial relationship manifests when physiological pain responses interact with cognitive and emotional factors leading to conditioned movement avoidance (Doğan et al., 2020; Paliwal & Jhala, 2023). Although exercise and physiotherapy interventions have shown efficacy in relieving menstrual pain through mechanisms such as increased endorphin release, improved blood circulation, and reduced prostaglandin levels (Matthewman et al., 2018; Xiang et al., 2025), few studies have examined how these interventions alleviate movement fear or how kinesiophobia can prevent women from accessing these beneficial treatments.

Figure:1.2 The Bio-psycho social model of dysmenorrhea and kinesiophobia



1.1.6 The Biopsychosocial Model of Dysmenorrhea and Kinesiophobia

The biopsychosocial model was originally proposed by psychiatrist George Engel in 1977, represents a comprehensive framework for understanding health and illness by integrating biological, psychological, and social factors as interconnected

components. This model has become the dominant paradigm in pain research, replacing unidimensional biomedical approaches that viewed pain purely as a sensory phenomenon. The biopsychosocial approach recognizes that pain is a multidimensional experience influenced by neurophysiological mechanisms, beliefs, emotions, coping strategies, cultural context, social support, and socioeconomic conditions, explaining why individuals with similar tissue pathology can experience vastly different levels of pain and disability (Vlaeyen & Linton, 2000, 2012).

When applied to dysmenorrhea, the biopsychosocial model provides a holistic framework for understanding how menstrual pain extends beyond its physiological origins. The biological component encompasses the pathophysiological mechanisms of primary dysmenorrhea, fundamentally caused by excessive prostaglandin F2α (PGF2α) production that triggers intense uterine contractions, compressing intramural blood vessels and causing tissue ischemia and characteristic cramping pain (Dawood, 1985; MacGregor et al., 2023).

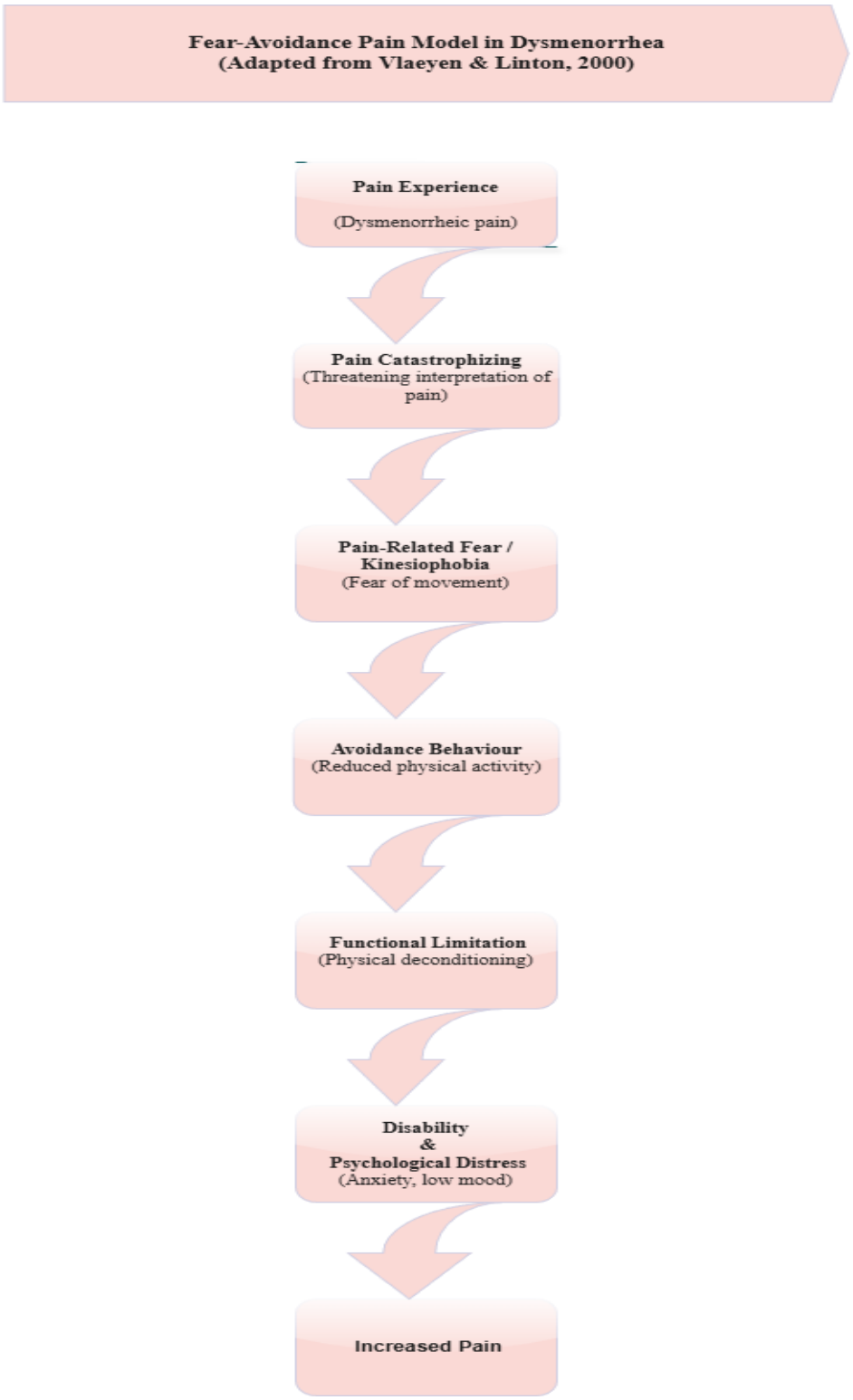
The psychological component encompasses cognitive, emotional, and behavioural responses to menstrual pain. Central is pain catastrophizing negative cognitive processes involving rumination, magnification of pain threat, and helplessness (Vlaeyen & Linton, 2000; Rogers & Farris, 2022). This catastrophic appraisal triggers kinesiophobia, an excessive, irrational fear of physical movement arising from perceived vulnerability to pain or injury (Vlaeyen et al., 1995; Li et al., 2023). Women with kinesiophobia exhibit hypervigilance toward bodily sensations and engage in avoidance behaviours, believing these protect them from harm, though this fear can become more disabling than pain itself (Kavitha et al., 2023; Kizilay & Burkay, 2023). Research documents elevated anxiety and depression during menstruation, with anticipatory dread creating psychological distress that recurs monthly (Iacovides et al., 2015). The predictable, cyclical nature of dysmenorrhea allows development of anticipatory fear and conditioned avoidance responses even before pain begins (Kizilay & Burkay, 2023).

The social component encompasses cultural beliefs, social norms, interpersonal relationships, and healthcare systems. Many cultures surround menstruation with

taboos and stigma, leading to normalization of pain as inevitable female suffering, reluctance to seek medical care, and reliance on ineffective coping strategies (De Sanctis et al., 2023; Reid-McCann, 2025). Dysmenorrhea significantly impairs social functioning, with women experiencing withdrawal from activities, strain on relationships, and social isolation (Amza et al., 2024; El-Ganzory et al., 2023). Academic and occupational impacts include high absenteeism rates and impaired performance (Fernández-Martínez et al., 2019; Munro et al., 2021). Most women rely on self-management strategies, with few engaging in exercise despite evidence for effectiveness, possibly reflecting kinesiophobia (Karabulutlu, 2024; Armour et al., 2019).

The biopsychosocial model reveals a cyclical relationship: biological pain triggers catastrophic thinking, generating kinesiophobia, motivating avoidance of physical and social activities, leading to physical deconditioning and social withdrawal, paradoxically increasing pain sensitivity through loss of natural pain-inhibitory mechanisms, which reinforces fear-avoidance patterns (Doğan et al., 2020; Kavitha et al., 2023; Vlaeyen & Linton, 2012). The Fear-Avoidance Model provides the theoretical framework integrating these components, proposing two trajectories: a recovery pathway characterized by confrontation and gradual improvement, and a disability pathway characterized by catastrophizing, fear, avoidance, and deteriorating function (Vlaeyen & Linton, 2000). Meta-analytic evidence supports this model, with Fear-Avoidance factors accounting for approximately 40% of variance in pain-related disability (Rogers & Farris, 2022; George et al., 2020).Understanding dysmenorrhea through this perspective reveals it is not purely physiological but deeply intertwined with psychological and behavioural processes, suggesting comprehensive treatment must address biological mechanisms, psychological factors through cognitive-behavioural interventions targeting catastrophizing and fear-avoidance beliefs, and social factors through education and stigma reduction (Doğan et al., 2020; MacGregor et al., 2023; Ferries-Rowe et al., 2020).

Figure:1.3 Fear-Avoidance Pain Model in Dysmenorrhea



1.1.7 THE FEAR-AVOIDANCE MODEL OF PAIN

Theoretical Foundations

This study is grounded in the Fear-Avoidance Pain Model, which provides a comprehensive cognitive-behavioural framework for understanding how individuals respond behaviourally and emotionally to pain experiences (Vlaeyen & Linton, 2000). Originally it was developed by Vlaeyen and Linton in 2000 to explain the development and maintenance of chronic low back pain and associated disability, this model has since been applied successfully to diverse chronic pain conditions including fibromyalgia, arthritis, neuropathic pain, and more recently, cyclical pain conditions such as dysmenorrhea (Leeuw et al., 2007; Rogers & Farris, 2022; Wideman et al., 2013).

The Fear-Avoidance Model has become a leading paradigm for understanding disability associated with musculoskeletal and other pain conditions, with research in this area increasing substantially over the past two decades (Asmundson et al., 2012; Leeuw et al., 2007). The model provides a comprehensive framework that integrates cognitive, affective, behavioural, and physiological dimensions of pain experience, offering both explanatory and predictive utility for understanding how acute pain transitions to chronic pain and disability (Vlaeyen & Linton, 2000, 2012).

Model Components and Pathways

The Fear-Avoidance Model proposes that when pain is perceived as severe or threatening, individuals can engage in catastrophic thinking a cognitive process characterized by magnification of pain threat, rumination about pain, and feelings of helplessness (Vlaeyen & Linton, 2000). Pain catastrophizing represents a set of negative cognitive and emotional processes that occur in response to actual or anticipated pain and includes three dimensions: rumination (inability to divert attention from pain), magnification (exaggeration of pain threat), and helplessness (belief that nothing can be done to manage pain) (Rogers & Farris, 2022).

This catastrophic appraisal of pain triggers pain-related fear, which in the context of dysmenorrhea manifests as kinesiophobia or fear of movement (Leeuw et al., 2007). Pain-related fear subsequently leads to safety-seeking behaviours, including

avoidance of physical activities, guarding behaviours (protective postures and movements), and hypervigilance to bodily sensations (constant monitoring for signs of pain) (Vlaeyen & Linton, 2000, 2012). These avoidance behaviours are motivated by the belief that activity will cause tissue damage, exacerbate pain, or delay healing (Vlaeyen & Linton, 2012).

The avoidance behaviour, while providing short-term relief from anticipated pain, creates a detrimental long-term cycle. Persistent avoidance results in physical deconditioning (loss of strength, flexibility, and endurance reduced functional capacity (difficulty performing daily tasks), increased disability, and heightened pain sensitivity through central sensitization mechanisms (Larsson et al., 2016; Vlaeyen & Linton, 2012). Physical deconditioning further validates the individual's catastrophic beliefs about their physical vulnerability, thereby maintaining or exacerbating the fear-avoidance cycle (Vlaeyen & Linton, 2012). These consequences of avoidance reinforce the initial catastrophic beliefs about pain, creating a self-perpetuating cycle that maintains chronic pain and disability. In contrast, individuals who confront their pain through gradual exposure and continued activity (confrontation pathway) demonstrate fear reduction over time, improved functional outcomes, and faster recovery (Leeuw et al., 2007; Vlaeyen & Linton, 2000). The model thus identifies two polar trajectories: a recovery pathway characterized by positive expectations, continued activity, and gradual improvement, and a disability pathway characterized by catastrophizing, fear, avoidance, and deteriorating function (Vlaeyen & Linton, 2000).

The Fear-Avoidance Model has received substantial empirical support across diverse pain populations and research designs (Leeuw et al., 2007; Rogers & Farris, 2022). A comprehensive meta-analysis examining 335 studies representing 65,340 participants found positive, medium- to large-sized associations between fear of pain, pain catastrophizing, and pain vigilance measures with outcomes including pain-related negative affect, anxiety, depression, pain-related disability, and pain intensity (Rogers & Farris, 2022). These associations were stable across demographic groups, pain conditions, and geographic regions, supporting the broad applicability of the model (Rogers & Farris, 2022).

Longitudinal studies have demonstrated that catastrophizing and fear-avoidance beliefs predict subsequent disability and pain intensity, even after controlling for baseline pain levels (Slepian et al., 2020; Wideman et al., 2009). Intervention studies based on the Fear-Avoidance Model, particularly exposure-based treatments that systematically confront feared movements, have shown significant improvements in pain, disability, and psychological functioning (Varallo et al., 2022). Mediation analyses reveal that changes in pain catastrophizing, fear-avoidance beliefs, and pain self-efficacy mediate the relationship between changes in pain intensity and disability, suggesting that these psychological factors are critical mechanisms through which pain influences function (Glombiewski et al., 2023). Secondary data analyses have revealed that Fear-Avoidance Model factors account for approximately 40% of the variance in pain-related disability, with pain catastrophizing and depression demonstrating the strongest relationships with disability (George et al., 2020). These findings underscore the substantial contribution of psychological factors to pain-related outcomes and support the clinical relevance of the Fear-Avoidance Model for understanding and treating chronic pain conditions.

According to the Fear-Avoidance Model, dysmenorrhea severity influences functional limitation not only directly through the sensory experience of pain but also indirectly through kinesiophobia, making fear of movement an important psychological mechanism in understanding the impact of menstrual pain on daily life (Doğan et al., 2020; Kavitha et al., 2023). The model provides a theoretically grounded framework for explaining why some women with dysmenorrhea experience substantial disability while others with similar pain levels maintain relatively good function.

This theoretical framework is particularly relevant to dysmenorrhea because menstrual pain is cyclical and predictable, potentially allowing for the development of anticipatory fear and conditioned avoidance responses even before pain onset (Kizilay & Burkay, 2023). Unlike many chronic pain conditions where pain onset is unpredictable, women with dysmenorrhea can anticipate when pain will occur, which can amplify fear and avoidance behaviours during the premenstrual and

menstrual phases (Kizilay & Burkay, 2023). Furthermore, young adult females with the primary demographic affected by primary dysmenorrhea are at a critical life stage where physical activity, academic performance, occupational productivity, and social engagement are paramount (Belayneh et al., 2023). Understanding how kinesiophobia mediates the relationship between menstrual pain and functional outcomes is therefore essential for developing comprehensive, evidence-based interventions.

The Cyclical Nature of the Relationship

Therefore, the relationship between dysmenorrhea and kinesiophobia is cyclical as pain induces fear of movement, fear leads to avoidance of activity, and reduced activity in turn exacerbates pain perception, muscular tension, and functional disability (Doğan et al., 2020; Kavitha et al., 2023). Physical inactivity resulting from kinesiophobia can lead to deconditioning, reduced flexibility, muscle weakness, and poor cardiovascular fitness, all of which can increase pain sensitivity and reduce the body's natural pain-inhibitory mechanisms (Matthewman et al., 2018). Additionally, avoidance of social and recreational activities during menstruation can lead to social isolation, reduced quality of life, and psychological distress, further compounding the burden of dysmenorrhea (Iacovides et al., 2015).

The importance of understanding this dynamic lies in recognizing dysmenorrhea as a multidimensional condition that is not purely physiological but deeply intertwined with psychological and behavioural processes. Addressing kinesiophobia can thus serve as a promising pathway to reduce pain-related disability and improve quality of life in women with menstrual pain. Interventions targeting fear-avoidance beliefs, such as graded exposure to feared movements, cognitive restructuring of catastrophic thoughts, and education about the benefits and safety of exercise during menstruation, can help break the pain-fear-avoidance cycle (Varallo et al., 2022).

The findings are intended to contribute to menstrual health awareness, pain management planning, and mental health awareness, ultimately improving the quality of life for young women experiencing dysmenorrhea. By elucidating the

relationship between pain severity and kinesiophobia, this study lays the groundwork for future intervention research aimed at breaking the pain-fear-avoidance cycle and promoting functional recovery and well-being in women with menstrual pain.

Dysmenorrhea represents a highly prevalent yet often neglected condition that significantly impacts the lives of young women across physical, psychological, social, and functional domains. Despite affecting approximately 71% of women globally and causing substantial educational, occupational, and quality of life impairments, dysmenorrhea remains undertreated and surrounded by cultural taboos and stigma. Recent research has begun to illuminate the psychological dimensions of dysmenorrhea, particularly the role of kinesiophobia fear of movement as a potential mediator between pain severity and functional disability.

The Fear-Avoidance Model provides a compelling theoretical framework for understanding how menstrual pain can lead to fear-based avoidance of physical activity, resulting in a self-perpetuating cycle of pain, fear, avoidance, deconditioning, and increased disability. Emerging evidence suggests that kinesiophobia is present among women with dysmenorrhea and is associated with reduced physical activity engagement, despite clear evidence that exercise reduces menstrual pain severity.

However, significant gaps remain in the literature, particularly regarding the relationship between dysmenorrhea severity and kinesiophobia within the Indian population, the application of the Fear-Avoidance Model to cyclical pain conditions, and the development of psychological interventions targeting fear-avoidance beliefs in women with menstrual pain. The present investigation addresses these gaps by systematically examining the effects of dysmenorrhea on kinesiophobia among young adult females aged 18-26 years, using validated assessment instruments and a theoretically grounded framework. By elucidating the relationship between menstrual pain and fear of movement, this study aims to contribute to a more comprehensive, biopsychosocial understanding of dysmenorrhea that recognizes the interplay of biological, psychological, and social factors in shaping pain experience and disability. The findings have the potential to

inform clinical practice, public health initiatives, educational policies, and intervention development, ultimately improving the lives of millions of young women affected by this common yet underrecognized condition.

1.2 NEED AND SIGNIFICANCE OF THE STUDY

This study focuses on young adult females aged 18–26 years who experience dysmenorrhea. It examines the level of menstrual pain and the corresponding fear of movement (kinesiophobia) using standardized assessment tools. The findings are intended to contribute to menstrual health awareness, pain management planning, and mental health awareness as well.

1.3 Statement of the Problem

Menstrual pain, commonly known as dysmenorrhea, is a prevalent condition experienced by many young adult females and often interferes with their daily activities and overall well-being. Severe menstrual pain may lead to discomfort, reduced physical functioning, and avoidance of physical activity. This avoidance may contribute to the development of fear of movement, known as kinesiophobia.

Kinesiophobia refers to an excessive fear of physical movement due to the expectation that movement may cause pain or worsen existing discomfort. When individuals experience recurring pain, they may develop a tendency to limit their physical activities, which can negatively affect their physical health and lifestyle.

Therefore, it becomes important to understand whether menstrual pain influences the development of fear of movement among young women. Investigating this relationship can help in understanding the psychological and physical impact of dysmenorrhea and may contribute to better awareness and intervention strategies.

Hence, the present study is undertaken with the aim of examining the relationship between dysmenorrhea and kinesiophobia among young adult females.

The problem of the study is stated as:

"An Investigation into the Effects of Dysmenorrhea on Kinesiophobia among Young Adult Females."

1.4 OPERATIONAL DEFINITIONS OF THE STUDY

Dysmenorrhea:

Dysmenorrhea refers to painful menstruation experienced by females during their menstrual cycle, usually characterized by cramping pain in the lower abdomen and sometimes accompanied by symptoms such as fatigue, nausea, or back pain. In the present study, dysmenorrhea is defined as the self-reported experience of menstrual pain by young adult female participants during menstruation, as indicated in the demographic information sheet.

Kinesiophobia:

Kinesiophobia refers to an excessive and irrational fear of physical movement due to the belief that movement may cause pain or worsen existing discomfort. In this study, kinesiophobia is defined as the fear of engaging in physical activity due to anticipated pain, measured using the Tampa Scale for Kinesiophobia.

YoungAdultFemales:

In the present study, young adult females refer to female participants aged between 18 and 25 years who are included as the sample for the research.

1.5 Objectives of the Study

1. To assess the level of dysmenorrhea in young adult females.
2. To measure the level of kinesiophobia among females experiencing dysmenorrhea
3. To examine the effect of dysmenorrhea on kinesiophobia among young adult females.

1.6 Hypotheses of the Study

1. Young adult females will exhibit varying levels of dysmenorrhea.
2. Females experiencing dysmenorrhea will show measurable levels of kinesiophobia.
3. Higher levels of dysmenorrhea will be significantly associated with higher levels of kinesiophobia among young adult females.

1.7 Delimitations of the Study

Delimitations refer to the boundaries set by the researcher to narrow the scope of the study.

1. The present study is limited to young adult females aged between 18 and 25 years.
2. The study focuses only on the variables dysmenorrhea and kinesiophobia.
3. The sample is restricted to participants who are willing to take part in the study.
4. Data for the study are collected using self-report questionnaires.
5. The study is limited to a specific and accessible sample, therefore the findings may not be generalized to all populations.

CHAPTER II
REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

A literature review is a comprehensive synthesis of existing research on a given topic. It involves the systematic examination of scholarly books, journal articles, and other relevant sources within a specific field of study. The review not only summarizes and describes prior research but also critically evaluates and interprets it in an objective manner, highlighting key findings, trends, gaps and theoretical perspectives.

Xiang et al. (2025) conducted a systematic review and meta-analysis of 29 randomized controlled trials examining therapeutic exercise for primary dysmenorrhea, involving 1,268 intervention participants and 927 controls. Exercise significantly reduced pain intensity on the visual analog scale. The analysis revealed substantial heterogeneity (98.5%), with strength training showing the highest efficacy. The study emphasized that individual patient differences including physical attributes, pain tolerance, and self-recovery capacity produced varied treatment responses. They recommended considering individual variations and overall health status when designing exercise interventions, suggesting that dysmenorrhea severity can limit participation in specific activities, potentially reducing treatment effectiveness.

Abbas et al. (2025) examined the role of perceived social support in influencing psychological well-being and quality of life among females experiencing dysmenorrhea. Using a cross-sectional quantitative research design, the authors investigated how social support functions as a protective psychosocial factor in reducing the psychological and functional burden associated with menstrual pain. Perceived social support was conceptualized as the predictor variable, while psychological well-being and quality of life were treated as outcome variables. The study emphasized that higher levels of social support from family, friends, and significant others are associated with better emotional adjustment and improved quality of life in women suffering from dysmenorrhea. The findings underscore the

importance of supportive social environments in buffering stress, enhancing coping mechanisms, and promoting mental health among university-aged females dealing with chronic menstrual discomfort.

Ibáñez-Vera et al. (2025) conducted a cross-sectional observational study with 272 women aged 18-35 years to examine the relationship between physical activity levels and coping mechanisms in women with primary dysmenorrhea. Participants were categorized into three groups based on their physical activity engagement: sedentary, low-intensity exercise, and high-intensity exercise. The study utilized for pain assessment, for measuring fear of movement, and to evaluate catastrophic thinking patterns. Results revealed that exercise training intensity does not significantly influence dysmenorrhea-related pain perception or kinesiophobia levels across groups. However, the research demonstrated that high-intensity exercise is associated with significantly reduced pain catastrophizing compared to sedentary lifestyles or low-intensity physical activity. The findings emphasize that catastrophizing levels are strongly correlated with perceived pain intensity ($r = 0.45$, $p < 0.001$) and menstruation-related quality of life in women with primary dysmenorrhea. This suggests that while exercise intensity can not directly reduce pain perception or movement-related fear, it plays a crucial role in modifying maladaptive cognitive responses to pain, highlighting the importance of addressing catastrophizing as a therapeutic target for improving menstrual health outcomes.

Kumar and Singh (2025) conducted a comprehensive overview study examining menstrual health and its implications for women's overall well-being and reproductive health. The study provided an in-depth analysis of the physiological processes underlying the menstrual cycle, including hormonal regulation, endometrial changes, and ovarian function throughout the follicular and luteal phases. The research emphasized the critical importance of menstrual hygiene practices and their significant role in maintaining reproductive health, preventing infections, and promoting dignity among menstruating women. The study highlighted that comprehensive understanding of menstrual cycle dynamics, including cycle length variability, flow characteristics, and associated symptoms, is essential for early detection and management of menstrual irregularities such as

dysmenorrhea, amenorrhea, and menorrhagia. The study underscored the need for improved health education regarding normal versus abnormal menstrual patterns to facilitate timely medical intervention. The study concluded that future research initiatives should prioritize improving menstrual health awareness through educational programs, addressing menstrual-associated disorders through evidence-based interventions, and enhancing healthcare delivery systems to ensure accessible and quality care. The study advocated for integrated approaches that combine medical treatment with education, destigmatization efforts, and policy reforms to achieve optimal reproductive health outcomes for women across different socioeconomic and cultural contexts, ultimately contributing to improved quality of life and health equity.

Mizuta et al. (2023) conducted a web-based cross-sectional study involving 1,067 young and adult Japanese females aged 18–49 to investigate the relationship between dysmenorrhea severity and quality of life (QoL). Participants were categorized based on the severity of menstrual pain, and QoL was assessed across physical, psychological, and environmental domains. The results revealed significant differences, with severe dysmenorrhea associated with greater physical limitations, heightened psychological distress, and lower satisfaction with environmental factors such as social support and access to resources. The study highlighted a "negative spiral," in which chronic pain intensifies psychological strain, further diminishing QoL. These findings underscore the multifaceted impact of dysmenorrhea and the need for comprehensive interventions.

Kavitha et al. (2023) conducted a cross-sectional observational study to analyze the relationship between pain intensity, kinesiophobia, and physical activity among young women with primary dysmenorrhea. The study included a sample of approximately 100 participants selected using convenience sampling. Descriptive statistics were used to summarize participant characteristics, while inferential statistics including Pearson's correlation analysis, were applied to examine associations between variables. The findings revealed a significant positive correlation between pain intensity and kinesiophobia, indicating that higher menstrual pain was associated with greater fear of movement. However, no

significant relationship was observed between kinesiophobia and overall physical activity levels. Interestingly, participants reported a general reduction in physical activity during menstrual days irrespective of pain severity, suggesting a psychological and behavioral influence of dysmenorrhea on daily functioning.

In the observational study conducted by Paliwal and Jhala (2023) on females aged 18–24 years with primary dysmenorrhea, 111 participants completed the Tampa Scale of Kinesiophobia (TSK) and the International Physical Activity Questionnaire (IPAQ) to assess fear of movement and physical activity level, respectively. The results demonstrated a significant negative correlation between kinesiophobia and physical activity level ($r = –0.278$, $p = 0.003$), indicating that individuals with higher physical activity levels tended to exhibit lower levels of kinesiophobia. This suggests that greater engagement in physical activity can be associated with reduced fear of movement in young women experiencing primary dysmenorrhea, potentially highlighting the importance of promoting physical activity to mitigate kinesiophobia in this population.

Kizilay and Burkay (2023) examined kinesiophobia and fear-avoidance behaviours among 55 collegiate female athletes during menstruation. The findings revealed that a significant proportion of participants experienced menstrual pain and demonstrated elevated levels of kinesiophobia and fear-avoidance behaviours associated with pain. These psychological responses were identified as potential limiting factors for optimal athletic performance. The study highlights the role of menstrual pain in influencing movement-related fear and avoidance, emphasizing the need for psychological and physical support strategies to help female athletes develop effective coping mechanisms during menstruation. This research contributes to the understanding of how pain-related fear can impact functional performance in physically active populations.

Li et al. (2023) conducted a scientometric analysis and review of kinesiophobia research from 2002 to 2022, providing a comprehensive overview of trends and key findings in the field. The study found that chronic pain, particularly chronic low back pain, was the most frequently investigated condition associated with kinesiophobia. It also highlighted that kinesiophobia significantly influences pain

intensity, functional disability, physical activity levels, and mental well-being across diverse clinical populations. These findings underscore the widespread impact of fear of movement on both physical and psychological health, providing a strong rationale for assessing kinesiophobia in women with menstrual pain, where similar patterns of activity avoidance and pain-related disability can occur.

Popova-Dobreva et al. (2023) investigated the relationship between menstrual pain and quality of life among 155 young women, reporting a high prevalence of dysmenorrhea in this population. The study emphasized that menstrual pain negatively impacts both physical and psychological well-being leading to reduced daily functioning and overall quality of life. Based on their findings, the study highlighted the importance of developing and implementing a structured program of physical exercises tailored for women experiencing menstrual pain, which could be utilized for both personal and professional purposes. This study underscores the potential role of physical activity as a non-pharmacological intervention to alleviate pain, enhance mobility and improve overall life quality, thereby indirectly addressing factors such as kinesiophobia and fear of movement associated with dysmenorrhea. It contributes to understanding how structured exercise programs can serve as supportive strategies to reduce the impact of menstrual pain on women's functional and psychological health.

Munro et al. (2021) conducted a comprehensive systematic review synthesizing existing research on the menstrual experiences of university students and the impacts of these experiences on their education from a global perspective. The review included 83 eligible studies conducted across diverse geographical and economic contexts with most research being quantitative in nature. These studies collectively sampled over 36,547 university students aged approximately 15 to 46 years, though individual study sizes ranged widely (from as few as 8 to more than 2,640 participants per study). The analysis identified self-reported dysmenorrhea and other menstrual symptoms as key contributors to negative menstrual experiences which in turn were associated with academic absenteeism, reduced concentration and engagement, and declining academic performance among female students. The study highlighted the need for programmatic and policy responses

within university settings to improve menstrual wellbeing and educational participation, and they pointed out substantial gaps in research on gender-diverse, migrant, and international student populations, due to insufficient evidence to date.

Ferries-Rowe et al. (2020) conducted a study on primary Dysmenorrhea diagnosis and therapy on understanding of diagnosis, pathophysiology, and all treatment options of primary dysmenorrhea can significantly improve quality of life and concluded that primary dysmenorrhea is a common and debilitating condition primarily caused by increased prostaglandin activity, leading to uterine ischemia and pain. It significantly impairs quality of life and daily functioning. Empiric management with nonsteroidal anti-inflammatory drugs and hormonal therapies is highly effective for most women, especially when guided by shared decision-making. Lack of symptom improvement despite adequate treatment warrants evaluation for secondary causes.

Doğan et al. (2020) examined coping approaches for menstrual pain and the relationship between kinesiophobia (fear of movement) and pain severity in women with primary dysmenorrhea. The prospective study was conducted in a clinical setting consisted of 100 women diagnosed with primary dysmenorrhea. Participants reported a variety of self-chosen strategies to manage menstrual pain, with a majority preferring traditional and passive coping methods such as resting, applying heat, and using analgesics, while exercise-based methods were used less frequently. The study found a significant positive correlation between pain severity and kinesiophobia, indicating that individuals with more intense menstrual pain also exhibited greater fear of movement. The authors concluded that traditional methods were preferred over exercise and highlighted the need for further investigation into whether women with primary dysmenorrhea avoid exercise due to fear of movement or choose not to do it for other reasons. This research contributes to understanding psychological barriers to physical activity in dysmenorrhea and underscores the importance of addressing kinesiophobia when promoting exercise-based pain management strategies.

Armour et al. (2019) conducted a systematic review and meta-analysis examining the effectiveness of self-care and lifestyle interventions in managing primary

dysmenorrhea. The study concluded that exercise produced large reductions in menstrual pain, while acupressure and heat therapy showed moderate effects compared to no treatment. These findings suggest that exercise and heat are viable alternatives to analgesic medication for pain management. However, the review noted potential limitations, including difficulty controlling non-specific effects and risk of bias, which can influence study outcomes. This research supports the inclusion of exercise-based interventions in dysmenorrhea management and underscores the importance of addressing psychological barriers such as kinesiophobia to optimize participation and effectiveness.

A study by Martinaz et al. (2019) Absenteeism during Menstruation among Nursing Students in Spain found that absenteeism was found to be more likely in women with dysmenorrhea. However, in addition, higher odds of absenteeism were also found in women with nausea and vomiting, dizziness, sleep disorders, and those who feel depressed. These menstrual experiences can be considered a relevant problem among young women, leading to absenteeism, and a negative influence on academic performance. It is essential to raise awareness of the socioeconomic impact of absenteeism and establish new strategies for improving menstrual experiences.

Matthewman et al. (2018) conducted a systematic review and meta-analysis of randomized controlled trials examining the effects of physical activity on primary dysmenorrhea. The study concluded that exercise was generally associated with pain reduction, supporting its role as a non-pharmacological intervention for managing menstrual pain. However, the review highlighted that psychological barriers to exercise participation, such as fear of movement or kinesiophobia, were not assessed in the included trials. This omission underscores the importance of investigating kinesiophobia as a potential mediator between menstrual pain and physical inactivity as fear-related avoidance can limit the effectiveness of exercise interventions. The findings provide a rationale for incorporating both physical and psychological assessments in research and interventions aimed at improving activity engagement and pain management among women with primary dysmenorrhea.

Abadi Bavil et al. (2018) conducted a comparative study examining the relationship between physical activity, nutrition, and primary dysmenorrhea in young women. The study found that participants with healthier nutrition habits and more regular physical activity experienced reduced severity of dysmenorrhea. The study highlighted that the protective role of lifestyle factors in menstrual pain management. The study emphasized the need for educational interventions to raise awareness among young women about the benefits of proper nutrition and regular exercise in preventing or mitigating the complications of dysmenorrhea. This research supports the inclusion of physical activity and dietary considerations as part of multidimensional approaches to managing menstrual pain and provides indirect evidence for the potential influence of kinesiophobia, as avoidance of physical activity can exacerbate symptoms.

Orhan et al. (2018) conducted a case-control study examining the effects of menstrual pain on academic performance and participation in sports and social activities among 471 Turkish university students with primary dysmenorrhea. The study found that primary dysmenorrhea negatively impacted academic performance and limited engagement in sports and social activities, with pain characteristics varying across mild, moderate, and severe cases. These findings highlight the functional and psychosocial consequences of menstrual pain and underscore the need for interventions to minimize its impact on daily and academic activities. The study also reinforces the relevance of assessing psychological factors such as kinesiophobia, which can contribute to activity avoidance and further reduce quality of life.

Larsson et al. (2016) investigated kinesiophobia and its relation to pain characteristics and cognitive affective variables in older adults with chronic pain. The results showed high levels of kinesiophobia were found among frailer and older adults predominately living in care homes, but not dependent on sex. Poor self-perceived health and high pain intensity were significantly associated with kinesiophobia. Results also indicated that potential interventions regarding

kinesiophobia among older adults should aim to decrease pain intensity and strengthen health beliefs.

Saulicz et al. (2016) conducted a review analysis examining the impact of physical activity and fitness on kinesiophobia in women of perimenopausal age. The study concluded that low levels of habitual physical activity negatively affect both the biological and psychological domains of kinesiophobia and increase barriers to undertaking movement. Women with lower physical fitness and activity levels exhibited higher kinesiophobic attitudes, suggesting that inadequate engagement in exercise can reinforce fear of movement. The findings emphasize the importance of promoting regular physical activity to reduce kinesiophobia and its associated limitations, highlighting the interaction between physical activity, psychological Iacovides et al. (2015) conducted a critical review of current knowledge on primary dysmenorrhea, highlighting its impact on women's daily functioning and well-being. The review reported consistent evidence of reduced quality of life, impaired physical functioning, poor mood, and sleep disturbances during menstruation. Women often restrict physical and social activities due to pain, reinforcing fear-avoidance patterns that are conceptually aligned with kinesiophobia. The study underscores the importance of addressing both physical and psychological factors in managing dysmenorrhea, supporting interventions that target pain, activity avoidance, and related psychosocial consequences.

Larsson et al. (2014) examined the psychometric properties of the Tampa Scale of Kinesiophobia (TSK-11) among older adults with chronic pain. The study found that the scale effectively differentiated between individuals with high and low fear of movement, supporting its reliability and construct validity. These findings provide indirect evidence for the applicability of the TSK-17 in measuring kinesiophobia in other populations, including women experiencing menstrual pain, reinforcing its utility in research assessing fear-avoidance and activity limitation related to pain.

Shakeri et al. (2013) conducted a preliminary trial to examine the effects of functional lumbar stabilization exercises on pain, disability, and kinesiophobia in women experiencing menstrual low back pain. The study found that participants

who engaged in the exercise program demonstrated significant improvements in pain intensity, functional disability, and fear of movement compared to the control group that did not receive the intervention. These findings highlight the potential of targeted exercise interventions in reducing kinesiophobia and enhancing physical function in women with menstrual-related musculoskeletal pain, supporting the integration of physical and psychological approaches in managing activity limitations associated with dysmenorrhea.

Vlaeyen and Linton (2000) conducted a comprehensive review of the fear-avoidance model of chronic musculoskeletal pain, providing a framework for understanding how pain-related fear and avoidance behaviors contribute to long-term disability. The study highlighted two central findings although pain has intrinsic threatening features, the perceived threat of similar pain stimuli varies across contexts and individuals, and protective behaviors that are adaptive in the short term can paradoxically worsen pain and functional outcomes in the long term. The review summarized over a decade of research, emphasizing how cognitive, emotional, and behavioral factors interact to influence pain perception and activity avoidance. This model has significant implications for understanding kinesiophobia, suggesting that individuals who fear movement due to anticipated pain can limit activity potentially leading to deconditioning, heightened pain perception and reduced quality of life. In the current updated review, the study briefly summarizes the progress made since and highlight a selected number of remaining challenges and areas for future research.

Guclu et al. (2012) investigated the relationship between disability, quality of life, and fear-avoidance beliefs in 105 patients with chronic low back pain. The study concluded that pain intensity and fear-avoidance beliefs were significantly associated with patients' disability levels, consistent with previous research. The findings suggest that fear-avoidance beliefs influence the perception of disability, which in turn can impact quality of life, highlighting the importance of addressing psychological factors to prevent functional impairment. This study provides a theoretical basis for understanding how kinesiophobia and fear-avoidance

behaviors can similarly affect activity limitation and quality of life in populations experiencing pain, including women with dysmenorrhea.

Unsal et al. (2010) conducted a cross-sectional study examining the prevalence of dysmenorrhea and its impact on quality of life among 623 female university students. The study found that severe dysmenorrhea significantly interfered with routine physical functioning, including daily activities and academic participation, supporting the association between menstrual pain and activity restriction. These findings highlight the functional and psychosocial consequences of dysmenorrhea, reinforcing the importance of assessing both physical and psychological factors, such as kinesiophobia, that can contribute to avoidance of movement and reduced quality of life in young adult women.

Daley (2008) conducted a comprehensive review examining the role of exercise in managing primary dysmenorrhea. The review concluded that, although exercise is widely believed to reduce dysmenorrhea symptoms and can decrease reliance on medication, the existing literature provides limited and inconsistent empirical support. Observational studies reported mixed findings, and small controlled trials suggested potential benefits but were constrained by methodological limitations. The study emphasized the need for large-scale, high-quality randomized controlled trials to establish exercise as an effective intervention for primary dysmenorrhea. These findings highlight the importance of considering both physical and psychological barriers, such as kinesiophobia, which can influence women's participation in exercise-based interventions.

Singh et al. (2008) investigated the prevalence and severity of dysmenorrhea among first and second year female medical students in India. The study reported high rates of activity restriction and academic absenteeism during menstruation, highlighting the functional impact of menstrual pain on daily and educational activities. Although psychological variables were not directly assessed, the findings underscore the cultural and functional relevance of studying dysmenorrhea in Indian young adult females. The study emphasizes the need for interventions that address not only pain relief but also the psychological and behavioral factors, such

as fear of movement and activity avoidance, that can exacerbate menstrual related disability.

Sharma et al. (2008) investigated menstrual-related problems and their impact on the daily routines of medical college students in Delhi, India included a sample of 112 unmarried undergraduate female medical students out of an initial eligible population of 276 students. The study found that dysmenorrhea was significantly associated with reduced participation in both physical and academic activities indicating that menstrual pain can disrupt functional and educational engagement. The authors emphasized the importance of a multidimensional assessment that incorporates not only physical symptoms but also psychological factors highlighting the potential relevance of constructs such as kinesiophobia in understanding avoidance of movement during menstruation. This study contributes to the literature by demonstrating the functional and psychosocial consequences of dysmenorrhea, supporting the need for comprehensive interventions that address both pain management and movement-related fear to improve the well-being and daily functioning of young women.

Harel (2006) reviewed the etiology and management of dysmenorrhea in adolescents and young adults, emphasizing evidence-based approaches for those whose symptoms are resistant to initial treatment. The review suggested that adolescents and young adults not responding to nonsteroidal anti-inflammatory drugs (NSAIDs) for three consecutive menstrual cycles should be offered combined estrogen/progestin oral contraceptive pills for three cycles. For individuals who continue to experience symptoms despite these interventions and further evaluation for secondary causes of dysmenorrhea is recommended. This study highlights the importance of a stepwise, evidence-based management strategy, providing a clinical framework for both pharmacological and alternative interventions. Its relevance to research on kinesiophobia and physical activity lies in its implication that persistent menstrual pain can contribute to fear of movement and avoidance behaviors, reinforcing the need for multidimensional assessments that include both physical and psychological factors.

Proctor and Farquhar (2006) provided a comprehensive review of the diagnosis and management of dysmenorrhea emphasized that it is a common gynecological condition that is frequently underdiagnosed and undertreated. The review highlighted that simple analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) are effective for pain relief in up to 70% of affected women, while oral contraceptives can be considered for those seeking contraception. Additionally, the study discussed alternative therapies including heat application, thiamine, magnesium and vitamin E as potential options for symptom management. This study plays a critical role in providing a foundational understanding of both pharmacological and non-pharmacological management strategies, informing research on interventions such as exercise, coping behaviors, and the psychological aspects of menstrual pain, including kinesiophobia. Its synthesis of clinical evidence offers a benchmark for evaluating the effectiveness of current and emerging approaches to dysmenorrhea management.

CHAPTER III
RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter outlines the research methodology employed in this study, which investigates the effects of dysmenorrhea on kinesiophobia among young adult females. This chapter provides a detailed description of the research design, sampling methods, data collection procedures, and the tools used to measure the key variables of the study. The methodology is crucial as it ensures the systematic and rigorous approach needed to obtain reliable and valid results. This chapter also discusses the ethical considerations and the analytical techniques employed to interpret the data. Through this methodology, the study aims to explore how dysmenorrhea severity influences fear of movement among young women, contributing to the broader understanding of these constructs within clinical and health psychology settings.

3.2 DESIGN OF THE STUDY

The present study employs a quantitative, cross-sectional, correlational research design. This design is appropriate for examining the relationship between dysmenorrhea and kinesiophobia among young adult females at a single point in time. The cross-sectional approach allows for the collection of data from participants during one measurement period, providing a snapshot of the current state of the variables under investigation.

The correlational nature of the study enables the researcher to examine the strength and direction of the relationship between dysmenorrhea (independent variable) and kinesiophobia (dependent variable) without manipulating any variables. This design is particularly suitable for exploring psychological and physiological phenomena in their natural context.

3.2.1 METHOD OF THE STUDY

The present study was conducted to investigate the effect of dysmenorrhea on kinesiophobia among young adult females. A quantitative research approach with a descriptive correlational design was used for the study. The sample consisted of

young adult female participants aged between 18 and 25 years, selected through convenient sampling based on their availability and willingness to participate. Data were collected using a demographic information sheet and the Tampa Scale for Kinesiophobia to assess the level of fear of movement among participants. Prior to data collection, the purpose of the study was explained to the participants
and informed consent was obtained. The collected data were then compiled and analyzed to examine the relationship between dysmenorrhea and kinesiophobia.

3.2.2 VARIABLES OF THE STUDY

The study has two variables

1. Dysmenorrhea
2. Kinesiophobia

3.2.3 POPULATION AND SAMPLE

The population targeted for this study consists of young adult females in the age range of 18-26 years residing in Jammu district. This age group represents a critical developmental period characterized by academic pursuits, career development, and lifestyle establishment. Additionally, these demographic experiences the highest prevalence of primary dysmenorrhea and is actively engaged in physical and social activities that can be affected by movement-related fear.

The target population includes:

- Female students enrolled in undergraduate and postgraduate programs
- Young adult females engaged in professional activities
- Participants experiencing menstrual cycles regularly

3.2.4 SAMPLE OF THE STUDY

The sample size for the present study consists of 160 participants from the Jammu city.

3.2.5 DATA COLLECTION

Data collection for the present study was carried out after obtaining necessary permission and ensuring that all ethical considerations were strictly followed. The participants were informed about the purpose and nature of the study, and informed consent was obtained prior to their participation.

The data were collected from young adult females aged 18–26 years who met the inclusion criteria. A structured questionnaire was prepared using standardized tools, namely the Numeric Rating Scale (NRS) to assess the intensity of dysmenorrhea and the Tampa Scale for Kinesiophobia (TSK-17) to evaluate the level of fear of movement.

The questionnaire was distributed through online platforms such as Google Forms to ensure ease of access and wider reach. Participants were requested to respond to all items honestly and independently. Adequate instructions were provided to facilitate accurate responses.

The data collection process was conducted over a specified period, and all responses were recorded systematically. Confidentiality and anonymity of the participants were maintained throughout the process. The collected data were then organized and prepared for statistical analysis.

3.3 TOOLS EMPLOYED AND ITS DECRIPTION

The following standardized instruments were selected for data collection based on their established psychometric properties, relevance to the research objectives, and widespread use in similar studies:

3.3.1 Numeric Rating Scale (NRS)

The Numeric Pain Rating Scale (NPRS), developed by Downie et al. (1978), was used in the present study to measure menstrual pain intensity. The NPRS is a unidimensional measure of pain intensity in which participants rate their pain on an 11-point numerical scale ranging from 0 (no pain) to 10 (worst pain imaginable). The scale is simple, easy to administer, and requires minimal explanation, making it suitable for research settings. Participants were asked to rate the intensity of their menstrual pain experienced during their last menstrual period or a most recent typical menstrual experience. The Numeric Rating Scale (NRS) is a widely used single-item measure for pain intensity, including menstrual pain, validated in adolescents and young adults (Critchley et al., 2025; Mizuta et al., 2023). It shows high test-retest reliability (r = 0.86–0.95) and strong correlations with other pain

measures, and is simple and easy for participants to complete, making it practical for clinical and research settings.

3.3.2 Tampa Scale for Kinesiophobia (TSK-17)

The Tampa Scale for Kinesiophobia (TSK-17), developed by Miller, Kori, and Todd (1991), was used in the present study to assess fear of movement and re-injury due to pain. The TSK-17 is a 17-item questionnaire designed based on the fear-avoidance model of pain, which evaluates participants' subjective beliefs and attitudes toward physical activity, injury, and pain. Each item is rated on a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree), with items 4, 8, 12, and 16 reverse scored. Participants responded to statements either self-administered or interviewer-administered, indicating their level of agreement. The Tampa Scale for Kinesiophobia (TSK-17) is a reliable tool for assessing fear of movement and reinjury. It demonstrates good internal consistency with Cronbach's alpha values ranging from 0.76 to 0.93 and stable test-retest reliability (r = 0.78–0.82). The scale effectively measures fear-avoidance beliefs related to pain and activity, making it widely used in both clinical and research settings.

3.4 ADMINISTRATION OF THE TOOLS

Mode of Administration: The study utilized online or institutional settings for data collection through Google Forms or similar secure online survey platforms and link distributed via email and social media.

3.5 STATISTICAL TECHNIQUES USED

The collected data were analyzed using SPSS. Descriptive statistics including mean, median, and mode will be calculated to summarize the central tendency of kinesiophobia levels among participants with dysmenorrhea. For inferential analysis, an Pearson correlation will be conducted to compare mean kinesiophobia scores between groups, allowing determination of whether statistically significant differences exist.

This chapter has outlined the comprehensive research methodology employed in investigating the effects of dysmenorrhea on kinesiophobia among young adult females. The study adopts a quantitative, cross-sectional, correlational design with a purposive sample of 150 participants aged 18-26 years from Jammu district. Two

validated instruments the Numeric Rating Scale (NRS) for pain intensity and the Tampa Scale for Kinesiophobia (TSK-17) for fear of movement will be used for data collection. Statistical analyses including independent sample t-tests will be conducted using SPSS to examine the relationship between variables. Ethical considerations have been carefully addressed, and limitations of the study have been transparently acknowledged. The methodology is designed to provide reliable and valid data to address the research objectives and test the formulated hypotheses.

Component	Description
Research Design	Quantitative, cross-sectional, correlational research design
Study Variables	IndependentVariable: Dysmenorrhea Dependent Variable: Kinesiophobia
Population	Young adult females aged 18–26 years residing in Jammu district
Sample Size	160 participants
Sampling Technique	Non-probability (purposive sampling)
Data Collection Method	Online survey via Google Forms
Inclusion Criteria	• Females aged 18–26 years • Regular menstrual

	cycles • Willing to provide consent • Able to read and comprehend English
Exclusion Criteria	• Females below 18 or above 26 years • Diagnosed secondary dysmenorrhea • Unable to read/comprehend English • Not willing to provide consent
Research Instruments	• Numeric Rating Scale (NRS) • Tampa Scale for Kinesiophobia (TSK-17)
Statistical Analysis	Descriptive statistics (mean, median, mode); Pearson correlation using SPSS

Figure:3.1 Research Methodology

CHAPTER IV
RESULTS

4.1 INTRODUCTION

This chapter presents a comprehensive account of the statistical findings obtained from the present investigation into the relationship between dysmenorrhea severity and kinesiophobia among young adult females. Data were collected from 160 participants aged 18 to 26 years residing in Jammu district using two standardized instruments: the Numeric Rating Scale (NRS) for measuring menstrual pain intensity and the Tampa Scale for Kinesiophobia (TSK-17) for assessing fear of movement and re-injury. Analyses were carried out using SPSS and encompassed descriptive statistics, frequency distributions, Pearson's product-moment correlation, and simple linear regression. The results are presented in a sequential manner corresponding to the three objectives and hypotheses of the study. Each section opens with a description of the statistical procedure employed, proceeds to the tabular and graphical presentation of findings, and closes with an interpretive discussion situating the results within the existing body of literature.

4.2 RESULTS AND FINDINGS

The final sample comprised 160 young adult females, all of whom met the inclusion criteria of experiencing primary dysmenorrhea and having no diagnosed pelvic pathology. As shown in Table 4.1 and Figure4. 1, participants were distributed across three age sub-groups: 18–20 years (n = 25, 15.6%), 21–23 years (n = 77, 48.1%), and 24–26 years (n = 58, 36.3%). The 21–23 age group constituted the majority of the sample, which is consistent with the observation that primary dysmenorrhea peaks during the early-to-mid-twenties in university-attending populations (De Sanctis et al., 2023; MacGregor et al., 2023). The relatively smaller representation of the 18–20 cohort may reflect the younger sub-cohort's lower enrollment in postgraduate programmes, from which a sizable portion of recruitment was drawn.

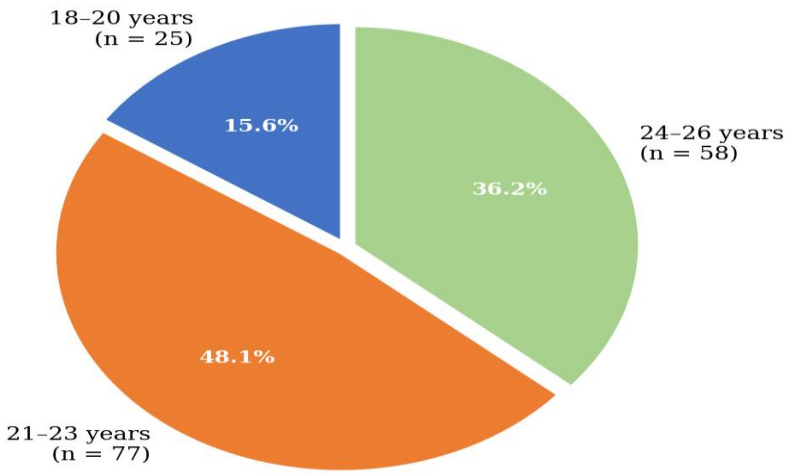
Table 4.1

Demographic Distribution of Participants by Age Group (N = 160)

Age Group	n	Percentage (%)
18–20 years	25	15.6
21–23 years	77	48.1
24–26 years	58	36.3
Total	**160**	**100.0**

Figure 4.1

Age Distribution of Participants (N = 160)



4.2.1 RESEARCH OBJECTIVE 1

Assessment of Dysmenorrhea Severity Among Young Adult Females

Hypothesis 1: Young adult females will exhibit varying levels of dysmenorrhea severity.

The first objective of the study was to assess the level of dysmenorrhea severity in the sample using the Numeric Rating Scale (NRS), a well-validated, single-item instrument on which participants rate their current menstrual pain on an 11-point scale from 0 (no pain) to 10 (worst pain imaginable). Descriptive statistics and frequency distributions were computed to characterize the range and distribution of pain severity scores.

Table 4.2

Descriptive Statistics for NRS Pain Intensity Scores by Age Group (N = 160)

Age Group	*n*	*M*	*SD*
18–20 years	25	7.56	1.66
21–23 years	77	6.18	1.97
24–26 years	58	6.74	1.82
Total	**160**	**6.60**	**1.92**

Table 4.2 reveals that dysmenorrhea severity scores varied considerably across the three age groups. The youngest cohort (18–20 years, $M = 7.56$, $SD = 1.66$) reported notably higher pain scores than the 21–23 year group ($M = 6.18$, $SD = 1.97$) and the 24–26 year group ($M = 6.74$, $SD = 1.82$). Across the full sample, the overall mean NRS score was 6.60 ($SD = 1.92$), indicating that the typical participant in this study experienced moderate-to-severe menstrual pain.

Table 4.3

Frequency Distribution of Participants by NRS Pain Severity Category (N = 160)

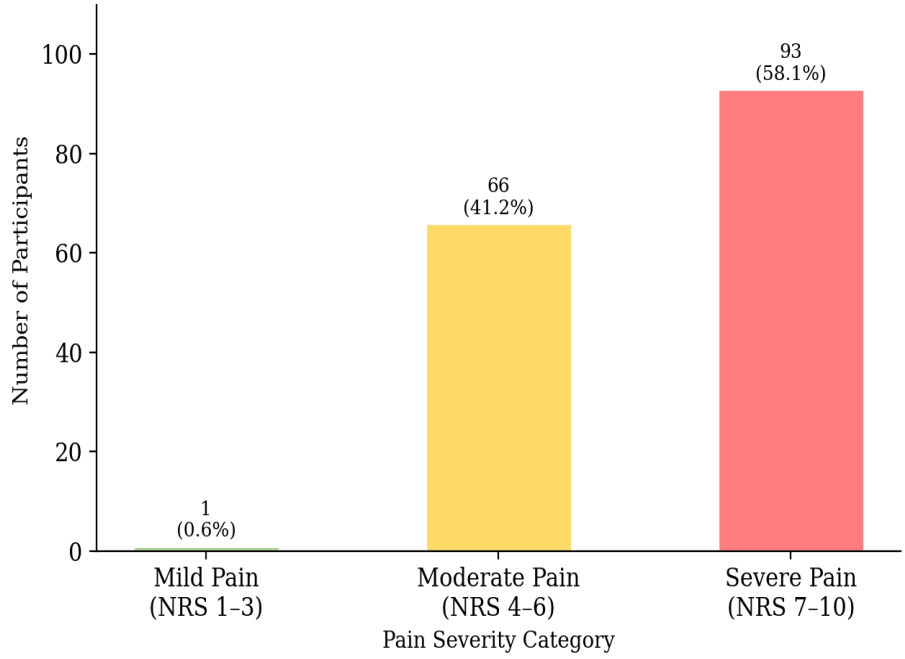
PainSeverity Category	NRS Range	*n*	Percentage (%)
Mild	1–3	1	0.6
Moderate	4–6	66	41.3
Severe	7–10	93	58.1

The frequency distribution in Table 3 further clarifies the severity landscape of the sample. Only one participant (0.6%) reported mild pain (NRS 1–3), while 41.3% (*n* = 66) endorsed moderate pain (NRS 4–6) and a striking 58.1% (*n* = 93) reported severe pain (NRS 7–10). The predominance of moderate-to-severe pain in this sample aligns with established epidemiological data. Armour et al. (2019) reported that severe dysmenorrhea affects approximately 35% of sufferers, while studies conducted among university students in India have documented high prevalence rates of moderate-to-severe pain (Singh et al., 2008; Sharma et al., 2008). The higher mean pain scores in the 18–20 cohort are consistent with the clinical observation that primary dysmenorrhea tends to peak in adolescence and early adulthood before gradually attenuating, a trajectory attributed to the maturation of hypothalamic-pituitary-ovarian axis function and alterations in prostaglandin sensitivity with increasing age and reproductive experience (Harel, 2006; MacGregor et al., 2023).

Based on these findings, Hypothesis 1 stated that young adult females will exhibit varying levels of dysmenorrhea severity and is confirmed. The data demonstrate a clear distribution across pain categories.

Figure 4.2

Frequency Distribution of Participants by NRS Pain Severity Category (N = 160)



4.2.2 RESEARCH OBJECTIVE 2

Assessment of Kinesiophobia Among Females With Dysmenorrhea

Hypothesis 2: Females experiencing dysmenorrhea will show measurable levels of kinesiophobia.

The second objective examined the extent of kinesiophobia in the sample using the Tampa Scale for Kinesiophobia (TSK-17). The TSK-17 yields scores ranging from 17 (minimal fear of movement) to 68 (extreme kinesiophobia), with higher scores indicating greater fear-avoidance. A score of 37 or above has been proposed as a meaningful threshold indicating elevated kinesiophobia in chronic pain populations (Vlaeyen & Linton, 2000). Descriptive statistics for TSK-17 scores are reported in Table 4.

Table 4.4

Descriptive Statistics for TSK-17 Kinesiophobia Scores by Age Group (N = 160)

Age Group	*n*	*M*	*SD*
18–20 years	25	47.44	5.60
21–23 years	77	42.71	6.75
24–26 years	58	44.69	5.77
Total	**160**	**44.17**	**6.42**

As shown in Table 4.4, all three age groups reported mean TSK-17 scores well above the clinical threshold of 37. The 18–20 year cohort exhibited the highest mean kinesiophobia score (M = 47.44, SD = 5.60), followed by the 24–26 year group (M = 44.69, SD = 5.77) and the 21–23 year group (M = 42.71, SD = 6.75). The overall sample mean of 44.17 (SD = 6.42) indicates that the average participant scored approximately seven points above the clinical threshold, suggesting that kinesiophobia was not merely present but clinically meaningful in this sample.

Table 4.5

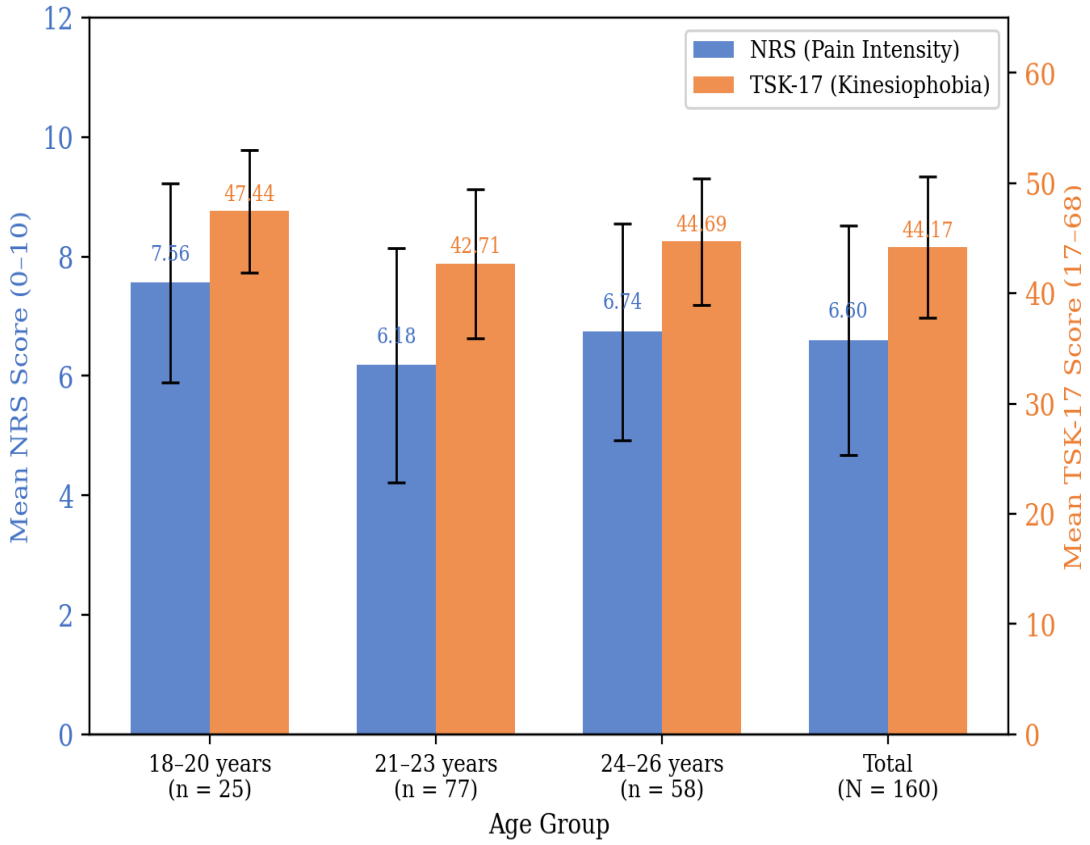
Distribution of Participants by TSK-17 Kinesiophobia Level (N = 160)

Kinesiophobia Level	TSK-17 Score	*n*	Percentage (%)
Low (below clinical threshold)	17–36	8	5.0
Clinically elevated	37–52	127	79.4
High kinesiophobia	53–68	25	15.6

Table 4.5 further clarifies the severity distribution. Only 8 participants (5.0%) fell below the clinical threshold, while 127 (79.4%) scored in the clinically elevated range and 25 (15.6%) in the high kinesiophobia range. Taken together, approximately 95% of the sample demonstrated clinically meaningful fear of movement. This prevalence figure is broadly consistent with the 51%–72% rates reported for chronic pain populations by Varallo et al. (2022) and with the elevated TSK scores documented specifically in women with primary dysmenorrhea by Kavitha et al. (2023), Kizilay and Burkay (2023), and Doğan et al. (2020). The somewhat higher prevalence in the present study may reflect the moderate-to-severe pain profile of the sample, as more intense pain experiences are theorized to more readily trigger fear-avoidance cognitions (Vlaeyen & Linton, 2000).

Figure 4.3

Mean NRS and TSK-17 Scores by Age Group With Standard Deviation



The comparison illustrated in Figure 4.3 also reveals an interesting developmental pattern: the 18–20 cohort reported the highest pain and the highest kinesiophobia, while the 21–23 cohort reported the lowest on both dimensions, and the 24–26 group occupied an intermediate position. This pattern hints at a possible age-related moderation of fear-avoidance responding, perhaps as women accumulate more experiences with menstrual pain, they develop somewhat more calibrated coping strategies. Though the cross-sectional design of the present study precludes causal inferences.

Based on these findings, Hypothesis 2 stated that females experiencing dysmenorrhea will show measurable levels of kinesiophobia which is fully confirmed. Not only was kinesiophobia present in virtually the entire sample; for the large majority of participants it reached meaningful levels.

4.2.3 RESEARCH OBJECTIVE 3

Relationship Between Dysmenorrhea Severity and Kinesiophobia

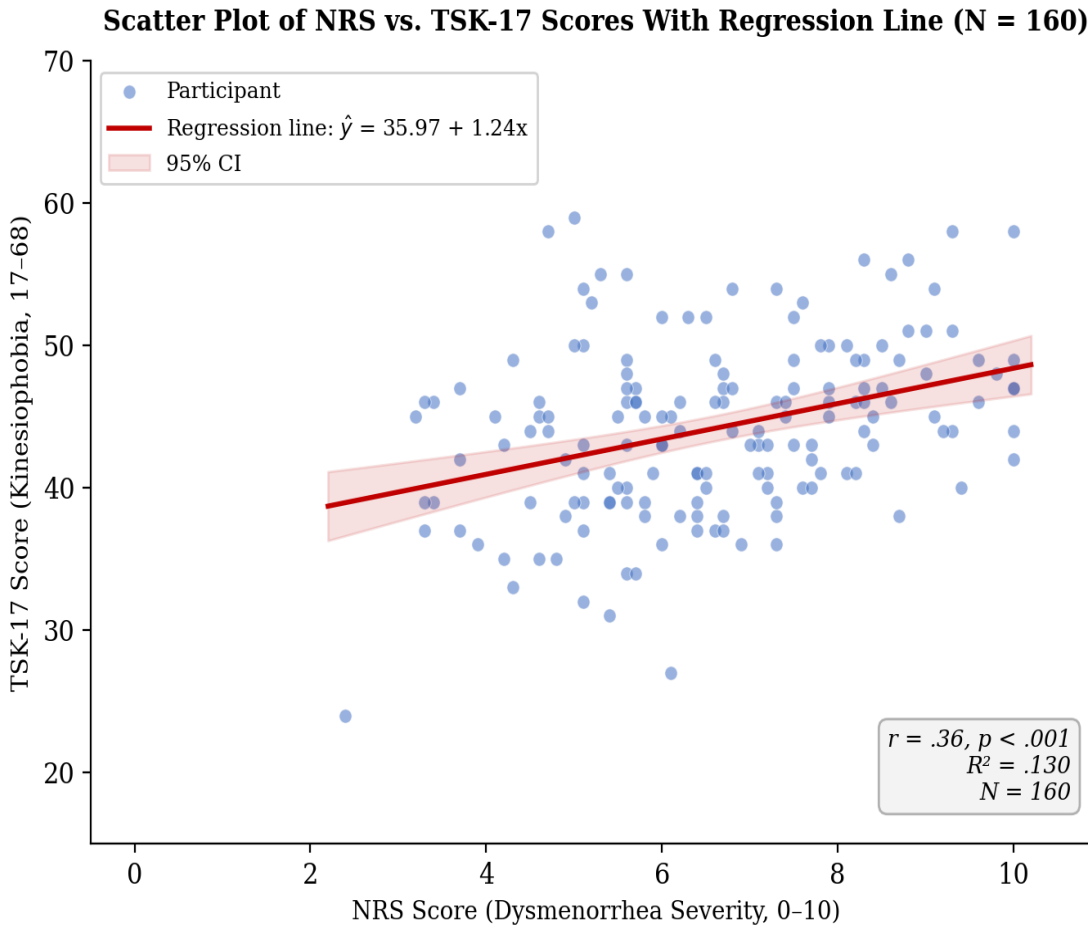
Hypothesis 3: Higher levels of dysmenorrhea will be significantly associated with higher levels of kinesiophobia among young adult females.

The third and central objective of the study examined whether dysmenorrhea severity (NRS) and kinesiophobia (TSK-17) were significantly correlated. Prior to conducting inferential analyses, the assumptions of Pearson's product-moment correlation were verified. Both variables were measured on continuous scales; linearity was confirmed by visual inspection of the scatter plot (Figure 4.4); and the absence of severe outliers was established through standardized residual analysis.

Table 4.6

Pearson Correlation Matrix for NRS and TSK-17 Scores (N = 160)

Variable	*M*	*SD*	1	2
1. NRS (Dysmenorrhea Severity)	6.60	1.92	-	
2.TSK-17 (Kinesiophobia)	44.17	6.42	.360**	-



A Pearson's correlation was computed to assess the relationship between NRS and TSK-17 scores. As shown in Table 6, the analysis yielded a statistically significant positive correlation between dysmenorrhea severity and kinesiophobia, $r(158) = .36$, $p < .001$. According to Cohen's (1988) guidelines for effect size interpretation

(small: $r = .10$; medium: $r = .30$; large: $r = .50$), the obtained correlation represents a small-to-medium effect. The scatter plot in Figure 4 corroborates this finding, showing a discernible positive linear trend: as NRS pain scores increased, TSK-17 kinesiophobia scores also tended to rise.

The direction of this relationship is stated as higher pain predicting greater fear of movement and is theoretically consistent with the Fear-Avoidance Model (FAM) of pain (Vlaeyen & Linton, 2000, 2012). According to this model, individuals who catastrophize pain are more likely to interpret painful sensations as threatening, which in turn fuels kinesiophobia, behavioural avoidance, and ultimately physical deconditioning and heightened pain sensitivity. Applied to the menstrual context, the present findings suggest that as the intensity of menstrual pain increases, young women become progressively more likely to develop irrational fears about the consequences of physical movement during menstruation, reinforcing patterns of activity restriction that may compound the overall burden of dysmenorrhea over time.

These results align well with prior empirical work in this area. Kavitha et al. (2023) documented a significant positive correlation between pain intensity and kinesiophobia in women with primary dysmenorrhea, with higher pain scores consistently associated with greater TSK scores. Similarly, Doğan et al. (2020), in their prospective study of 100 women with primary dysmenorrhea, found a significant positive relationship between pain severity and kinesiophobia, reporting that women with more intense menstrual pain were also more likely to prefer passive, movement-avoidant coping strategies. Kizilay and Burkay (2023) further corroborated these patterns among collegiate female athletes, demonstrating that menstrual pain was associated with elevated kinesiophobia scores and fear-avoidance behaviours that potentially limited athletic performance. Paliwal and Jhala (2023) extended these findings by documenting a significant negative correlation between kinesiophobia and physical activity level ($r = -.278$, $p = .003$), suggesting that the greater the fear of movement, the lower the participation in physical activity. A finding that has direct implications for the management of

dysmenorrhea, given that exercise is one of the most evidence-supported non-pharmacological interventions for menstrual pain (Armour et al., 2019; Matthewman et al., 2018).

Table 4.7

Model Summary for Simple Linear Regression Predicting Kinesiophobia From Dysmenorrhea Severity

Model	*R*	R^2
1	.360	.130

Table 4.8

Regression Coefficients Predicting Kinesiophobia From Dysmenorrhea Severity

Predictor	B	*SE* B	β	*t*	*p*
Constant	36.23	1.71	-	21.24	< .001
NRS	1.20	0.25	.36	4.85	< .001

The proportion of variance explained (13%) warrants contextual interpretation. While it may appear modest, it is important to note that kinesiophobia is a multidimensional construct influenced by a broad array of psychological, social, and contextual variables beyond pain intensity alone, including pain catastrophizing, anxiety sensitivity, self-efficacy, prior negative pain experiences, and social modelling of pain behaviour (Vlaeyen & Linton, 2000; Rogers & Farris, 2022). The finding that pain severity alone accounts for 13% of variance is therefore theoretically meaningful, and echoes comparable figures reported in the wider kinesiophobia literature. Ibáñez-Vera et al. (2025) reported that pain catastrophizing accounted for a significant portion of kinesiophobia variance in

women with dysmenorrhea, suggesting that the remaining unexplained variance in the present study may be attributable to cognitive and affective variables not assessed here. Future research would benefit from including measures of pain catastrophizing, anxiety, and self-efficacy in a multiple regression framework.

The findings of this study collectively provide robust evidence that dysmenorrhea severity is positively and significantly associated with kinesiophobia in young adult females. Three converging lines of evidence support this conclusion: (a) the majority of the sample (95%) demonstrated elevated kinesiophobia on the TSK-17; (b) Pearson's correlation revealed a significant positive association between NRS and TSK-17 scores ($r = .36$, $p < .001$); and (c) simple linear regression confirmed that pain severity significantly predicted kinesiophobia, accounting for approximately 13% of its variance. Collectively, these findings support all three hypotheses of the study and respond directly to the three stated objectives.

The biopsychosocial framework offers the most coherent theoretical lens through which to interpret these results (Engel, 1977). Dysmenorrhea is not simply a somatic event; it involves a complex interplay of physiological, cognitive, emotional, and behavioural processes. Repeated exposure to cyclical pelvic pain particularly in the absence of effective coping strategies can shape maladaptive cognitive schemas around movement and physical activity, leading to the fear-avoidance patterns captured by the TSK-17 (Vlaeyen & Linton, 2000). The present data align with this model: participants with greater pain reported greater kinesiophobia, consistent with the proposition that high pain intensity amplifies perceived threat value of movement, thereby intensifying fear-avoidance responses.

The clinical relevance of these findings is considerable. Kinesiophobia is not merely a passive correlate of pain; it actively shapes behaviour. Women who fear that physical activity will worsen their menstrual pain are likely to reduce or avoid exercise the very intervention that evidence suggests is most effective in reducing dysmenorrhea severity through mechanisms such as endorphin release, improved pelvic blood flow, and reduced prostaglandin production (Armour et al., 2019; Matthewman et al., 2018). In this way, kinesiophobia can create a self-perpetuating cycle: pain leads to fear, fear leads to avoidance, avoidance leads to physical

deconditioning, and deconditioning leads to more intense pain at subsequent menstrual cycles. The present results add empirical weight to the call by Kavitha et al. (2023) and Doğan et al. (2020) for kinesiophobia to be assessed and addressed as part of comprehensive dysmenorrhea management protocols.

It should also be noted that the age-stratified descriptive analysis suggested a trend toward higher kinesiophobia in younger participants (18–20 years), consistent with the hypothesis that adolescents and early adults have had fewer opportunities to develop adaptive coping schemas for recurrent menstrual pain. As women age, they may accumulate coping experience, develop more nuanced appraisals of their pain, and receive more social support and medical guidance, all factors that could attenuate kinesiophobic responding. However, as noted earlier, the cross-sectional design of the present study does not permit developmental causal inferences, and longitudinal research will be necessary to examine this trajectory directly.

Table 4.9

Summary of Hypothesis Testing Results

No.	Hypothesis	Statistical Test	Outcome
1	Young adult females will exhibit varying levels of dysmenorrhea.	Descriptive statistics; frequency distribution	Supported
2	Females with dysmenorrhea will show measurable kinesiophobia.	Descriptive statistics; TSK-17 clinical threshold	Supported
3	Higher dysmenorrhea severity will be significantly associated with higher kinesiophobia.	$r = .36$; Regression	Supported

In sum, this chapter has presented comprehensive quantitative evidence demonstrating that dysmenorrhea severity is a significant positive predictor of kinesiophobia in young adult females. The data from 160 participants converge to indicate that menstrual pain does not merely cause temporary physical discomfort; it is associated with enduring psychological responses specifically, fear of movement that may further impair physical functioning and quality of life. The magnitude of the relationship, while modest in absolute terms is meaningful given that pain severity is only one of many contributors to kinesiophobia. The consistent alignment of the present findings with both the theoretical predictions of the Fear-Avoidance Model (Vlaeyen & Linton, 2000) and the empirical results of earlier studies (Kavitha et al., 2023; Doğan et al., 2020; Kizilay & Burkay, 2023; Paliwal & Jhala, 2023) strengthens confidence in the validity and generalizability of the

conclusions. The following chapter will discuss implications for clinical practice, limitations of the study, and directions for future research.

CHAPTER V

FINDINGS, CONCLUSIONS, DISCUSSION,EDUCATIONAL IMPLICATIONS AND SUGGESTION FOR FUTURE RESEARCH

5.1 Introduction

The present chapter synthesizes and critically interprets the quantitative findings reported in Chapter IV within the broader context of the theoretical framework guiding this investigation, the existing empirical literature, and the applied imperatives of clinical and public health practice. The overarching aim of this investigation was to examine the effects of dysmenorrhea on kinesiophobia among young adult females aged 18–26 years residing in Jammu district, India. Three specific objectives were pursued: to assess the severity of dysmenorrhea in the sample; to measure the prevalence and magnitude of kinesiophobia among participants with dysmenorrhea; and to determine whether a statistically significant relationship exists between dysmenorrhea severity and kinesiophobia. All three hypotheses derived from these objectives were supported by the data, providing convergent evidence for the psychological impact of menstrual pain on fear of movement.

The discussion proceeds in a structured sequence. The substantive findings pertaining to each objective and hypothesis are discussed with reference to the Fear-Avoidance Model (Vlaeyen & Linton, 2000, 2012) and the biopsychosocial framework (Engel, 1977). The clinical and public health implications of the findings are then elaborated. The methodological strengths and limitations of the study are acknowledged, and directions for future research are proposed. The chapter concludes with a summary of the study's overall contributions to the field of menstrual health psychology.

Major Findings of the Study

5.2.1 RESEARCH OBJECTIVE 1

Dysmenorrhea Severity Among Young Adult Females

The first objective of this study was to characterize the distribution of dysmenorrhea severity in the sample. The findings confirmed Hypothesis 1, demonstrating a wide range of menstrual pain intensities across participants (NRS range: 2–10), with the sample mean of 6.60 (SD = 1.92) falling squarely in the moderate-to-severe range. A striking 58.1% of participants reported severe menstrual pain (NRS 7–10), while only 0.6% endorsed mild pain. These figures are broadly consistent with, and in some respects exceed, the epidemiological benchmarks established in the wider literature. Armour et al. (2019) reported that severe dysmenorrhea affects approximately 35% of women globally, and de Arruda et al. (2025), in their landmark meta-analysis spanning 70 countries, identified a pooled dysmenorrhea prevalence of 71.3%. The substantially higher rate of severe pain in the present sample may reflect the characteristics of the purposive sampling strategy, which specifically targeted women reporting menstrual pain; participants with mild or absent pain would not have met the study criteria, producing an inherently pain-elevated sample. It may also reflect the relatively young age profile of the sample, given that primary dysmenorrhea characteristically peaks in adolescence and early adulthood before attenuating with age and reproductive experience (Harel, 2006; MacGregor et al., 2023).

The age-stratified analysis yielded an important developmental pattern: the youngest cohort (18–20 years, M = 7.56, SD = 1.66) reported significantly higher pain scores than the 21–23 year group (M = 6.18, SD = 1.97), while the 24–26 year group occupied an intermediate position (M = 6.74, SD = 1.82). This gradient is theoretically coherent. Primary dysmenorrhea is driven by excessive prostaglandin F2α (PGF2α) production in the endometrium, and prostaglandin sensitivity tends to decline as the hypothalamic-pituitary-ovarian axis matures through the late teenage years and early twenties (Dawood, 1985; MacGregor et al., 2023). The trajectory also aligns with clinical observations that the condition often begins within one to

two years of menarche and progressively attenuates thereafter, particularly following childbirth or with advancing age (Harel, 2006). These results reinforce the relevance of targeting intervention resources toward the youngest women in this age band, who bear the greatest physiological pain burden.

From a public health standpoint, the near-universal presence of moderate-to-severe pain in this sample underscores the extent to which dysmenorrhea functions as a genuine clinical burden in the population studied. Studies from Indian settings have consistently documented similarly high rates of significant menstrual pain among university students (Singh et al., 2008; Sharma et al., 2008), pointing to a persistent and underserved health need in this demographic. That only one participant in 160 reported mild pain further signals that the young adult females who participated in this study were experiencing levels of discomfort that, by any objective standard, warrant clinical attention, active management strategies, and institutional support.

5.2.2 RESEARCH OBJECTIVE 2

Kinesiophobia Among Females with Dysmenorrhea

The second objective examined the extent of kinesiophobia in the sample using the Tampa Scale for Kinesiophobia (TSK-17). The findings confirmed Hypothesis 2 with considerable force. The overall sample mean TSK-17 score was 44.17 (SD = 6.42), approximately seven points above the clinical threshold of 37 proposed as indicative of clinically meaningful kinesiophobia in chronic pain populations (Vlaeyen & Linton, 2000). More striking still, 95% of participants demonstrated TSK-17 scores at or above this threshold, with 79.4% in the clinically elevated range (TSK 37–52) and 15.6% in the high kinesiophobia range (TSK 53–68). Only 5% of participants scored below the clinical threshold.

This prevalence figure markedly exceeds the 51–72% rates documented across generic chronic pain populations (Varallo et al., 2022), though it aligns closely with the elevated TSK scores reported specifically in women with primary dysmenorrhea by Kavitha et al. (2023), Doğan et al. (2020), and Kizilay and Burkay (2023). The somewhat higher prevalence observed in the present study may

be attributable to the pain-elevated profile of the sample, as more intense pain experiences have been theorized to more readily activate fear-avoidance cognitions (Vlaeyen & Linton, 2000). Consistent with this interpretation, the youngest age cohort, which also reported the highest pain scores, exhibited the highest mean kinesiophobia score (M = 47.44), while the 21–23 year group, reporting the lowest pain, also demonstrated the lowest kinesiophobia mean (M = 42.71).

This co-occurrence of elevated pain and elevated kinesiophobia is precisely what the Fear-Avoidance Model predicts. According to this framework, individuals who experience severe or threatening pain are more likely to engage in catastrophic cognitive appraisal, interpreting nociceptive signals as indicative of serious harm or vulnerability. Such appraisal generates fear of movement kinesiophobia : motivating behavioural avoidance and hypervigilance that while providing short-term relief from anticipated pain, ultimately leads to physical deconditioning, social withdrawal, and heightened pain sensitivity (Vlaeyen & Linton, 2000, 2012). The near-universal presence of clinically meaningful kinesiophobia in this sample suggests that these cognitive-affective processes are not merely incidental features of dysmenorrhea in young adult women; they appear to be normative responses to a condition characterised by its cyclical, predictable, and often severe nature.

The developmental pattern mirroring that observed for pain scores, with younger women reporting higher kinesiophobia than their older counterparts, invites tentative developmental interpretation. Women in the 18–20 age range are typically navigating their first or second years of independent academic life, a context that offers fewer opportunities for developing adaptive coping schemas for recurrent pain and fewer social resources for normalizing menstrual experiences. As women progress through their twenties, accumulating repeated cycles of pain exposure, coping experience, medical guidance, and social support, they may develop more nuanced appraisals of their menstrual pain and more effective emotional regulation strategies, progressively attenuating kinesiophobic responding. This interpretation is speculative within the cross-sectional design of the present study, but it suggests a productive avenue for longitudinal research.

5.2.3 RESEARCH OBJECTIVE 3

Relationship Between Dysmenorrhea Severity and Kinesiophobia

The third and central objective examined the statistical association between dysmenorrhea severity and kinesiophobia. The Pearson correlation analysis yielded $r(158) = .36$, $p < .001$, confirming Hypothesis 3 and indicating a statistically significant, positive, small-to-medium association between NRS pain scores and TSK-17 kinesiophobia scores. Simple linear regression further confirmed that pain severity was a significant predictor of kinesiophobia ($\beta = .36$, $p < .001$), accounting for approximately 13% of its variance ($R^2 = .130$).

The directionality of this relationship is unambiguous and theoretically coherent: higher menstrual pain predicts greater fear of movement. Within the Fear-Avoidance Model, this pathway is understood as follows: as pain intensity increases, the perceived threat value of physical activity is amplified, motivating more pronounced safety-seeking, avoidance, and hypervigilance behaviours (Vlaeyen & Linton, 2000). Applied to the specific context of dysmenorrhea, the present data suggest that as the severity of menstrual pain increases, young women become progressively more likely to develop irrational, disproportionate fears about the consequences of movement during their menstrual phase. Over repeated menstrual cycles, these fear responses may solidify into stable fear-avoidance patterns that persist even during pain-free intervals, consistent with the conditioned avoidance mechanisms described by Kizilay and Burkay (2023).

The magnitude of the obtained correlation ($r = .36$) closely replicates the findings of comparable studies in this field. Kavitha et al. (2023) documented a significant positive correlation between pain intensity and kinesiophobia in women with primary dysmenorrhea. Doğan et al. (2020) similarly reported a significant positive relationship in their prospective sample of 100 women, noting that those with higher pain scores were more likely to prefer passive, movement-avoidant coping strategies. In a related vein, Paliwal and Jhala (2023) documented a significant negative correlation between kinesiophobia and physical activity level ($r = -.278$, $p = .003$), indicating that higher kinesiophobia predicts lower physical activity

finding with direct management implications, since exercise is one of the best-supported non-pharmacological interventions for reducing dysmenorrhea severity (Armour et al., 2019; Matthewman et al., 2018; Xiang et al., 2025).

The finding that pain severity explains 13% of the variance in kinesiophobia should be interpreted in the context of kinesiophobia's multidimensional aetiology. Pain intensity is one important contributor, but the construct is also shaped by pain catastrophizing, anxiety sensitivity, self-efficacy, prior negative pain experiences, social modelling of illness behaviour, and cultural norms around menstruation (Vlaeyen & Linton, 2000; Rogers & Farris, 2022; Ibáñez-Vera et al., 2025). The remaining 87% of variance is attributable to these and other variables not assessed in the present study. Indeed, Ibáñez-Vera et al. (2025) demonstrated that pain catastrophizing accounted for a significant portion of kinesiophobia variance in women with dysmenorrhea ($r = 0.45$ between catastrophizing and pain intensity), suggesting that cognitive appraisal variables may mediate or moderate the pain-kinesiophobia pathway identified here. A multiple regression framework incorporating these variables would provide a more complete account of kinesiophobia in this population.

5.3 CONCLUSION AND DISCUSSION

This investigation set out to examine the effects of dysmenorrhea on kinesiophobia among young adult females, addressing a gap in the empirical literature concerning the psychological dimensions of menstrual pain and their functional consequences. The study was conducted with a sample of 160 young adult females aged 18-26 years in Jammu district, using the Numeric Rating Scale (NRS) to measure menstrual pain intensity and the Tampa Scale for Kinesiophobia (TSK-17) to assess fear of movement. Data were analysed using descriptive statistics, Pearson correlation, and simple linear regression.

Three converging lines of evidence support the central conclusion that dysmenorrhea severity is significantly and positively associated with kinesiophobia among young adult females. First, the sample was characterised by predominantly moderate-to-severe menstrual pain, with a mean NRS score of 6.60 and 58.1% of

participants in the severe pain category. Second, kinesiophobia was present at clinically meaningful levels in 95% of participants, with a sample mean TSK-17 score of 44.17 seven points above the established clinical threshold. Third, Pearson correlation analysis confirmed a significant positive association between NRS and TSK-17 scores ($r = .36$, $p < .001$), and simple linear regression established that pain severity significantly predicted kinesiophobia, accounting for 13% of its variance.

These findings confirm all three hypotheses of the study and are theoretically consistent with the predictions of the Fear-Avoidance Model (Vlaeyen & Linton, 2000, 2012) and the biopsychosocial framework (Engel, 1977). Dysmenorrhea, as experienced by the young adult females in this sample, is not a purely somatic condition; it is accompanied by psychological responses of the magnitude and character that substantially impair functional capacity and quality of life. The cyclical and predictable nature of menstrual pain may render young women particularly vulnerable to developing conditioned fear-avoidance patterns that persist and amplify over repeated menstrual cycles.

The clinical imperative arising from these findings is clear: comprehensive dysmenorrhea management must extend beyond pharmacological pain relief to address the psychological burden of kinesiophobia. Routine screening for fear of movement, combined with psychologically informed physiotherapy, cognitive-behavioural pain education, and culturally sensitive health promotion, offers a pathway to breaking the pain-fear-avoidance cycle and improving the functional wellbeing of the millions of young women affected by this common yet neglected condition.

The present study contributes to the emerging evidence base for a biopsychosocial approach to menstrual health in India and globally and lays the groundwork for future longitudinal, mechanistic, and intervention research in this field. By illuminating the relationship between menstrual pain and fear of movement in a young adult Indian population, it advances the case for treating dysmenorrhea as the multidimensional health concern it manifestly is one that demands integrated clinical attention, institutional support, and societal acknowledgment.

The present findings carry significant implications for the theoretical understanding of dysmenorrhea as a biopsychosocial rather than purely biomedical phenomenon. Engel's (1977) biopsychosocial model provides the overarching integrative framework: dysmenorrhea is not simply a product of excessive prostaglandin production but a complex experience shaped by the interaction of biological mechanisms, cognitive-affective processes, behavioural responses, and socio-cultural contexts. The data confirm that the biological severity of menstrual pain (NRS scores) systematically relates to a psychological outcome of considerable functional significance (kinesiophobia), consistent with the model's proposition that physiological and psychological processes are mutually influential.

More specifically, the findings provide empirical support for applying the Fear-Avoidance Model (Vlaeyen & Linton, 2000, 2012) to the domain of cyclical menstrual pain. This model was originally developed to explain the development and maintenance of chronic low back pain, and its applicability to dysmenorrhea has been proposed theoretically (Doğan et al., 2020; Kavitha et al., 2023; Kizilay & Burkay, 2023) but remains insufficiently tested empirically, particularly in Indian populations. The present study provides quantitative evidence that the two core variables of the model which states pain severity and fear of movement are significantly associated in a clinically recruited sample of young adult females with primary dysmenorrhea, confirming the relevance of fear-avoidance processes to menstrual pain research.

An important theoretical nuance introduced by applying the Fear-Avoidance Model to dysmenorrhea concerns the cyclical and predictable nature of menstrual pain. Unlike most chronic pain conditions, where pain onset is difficult to anticipate, dysmenorrhea occurs monthly within a predictable temporal window. This predictability may facilitate the development of anticipatory fear responses, as women learn to associate the approach of menstruation with impending pain, activating fear-avoidance cognitions even before pain onset (Kizilay & Burkay, 2023). This temporal extension of the fear-avoidance cycle from reactive to anticipatory represents a qualitatively distinct feature of dysmenorrhea that may

amplify the psychological burden of the condition and warrants specific theoretical attention in future revisions of the Fear-Avoidance Model.

The findings are also theoretically relevant to the literature on pain catastrophizing. While catastrophizing was not directly assessed in the present study, substantial evidence from comparable populations indicates that it functions as a mediating variable between pain severity and kinesiophobia (Ibáñez-Vera et al., 2025; Evans et al., 2021; Payne et al., 2016). Future investigations should examine whether the pain-kinesiophobia relationship identified here is mediated by catastrophizing, and whether interventions targeting catastrophic cognitions reduce kinesiophobia in women with dysmenorrhea, consistent with the theoretical predictions of the Fear-Avoidance Model.

The clinical implications of the present findings are multifaceted and span individual-level therapeutic practice, institutional policy, and population-level public health strategy. At the individual clinical level, the near-universal presence of clinically meaningful kinesiophobia in this sample underscores the imperative of routine kinesiophobia screening in women presenting with primary dysmenorrhea. The TSK-17 is brief, psychometrically robust, and well-validated across clinical populations (Miller et al., 1991; Larsson et al., 2014); its systematic administration in gynecological, physiotherapy, and primary care settings would allow clinicians to identify patients whose fear of movement is compounding their functional disability and tailoring interventions accordingly. The current standard of care for dysmenorrhea, dominated by pharmacological management with NSAIDs and hormonal therapies (Ferries-Rowe et al., 2020; Proctor & Farquhar, 2006), does not address the psychological dimensions of the condition. The present findings argue for expanding this standard to encompass psychological assessment and targeted psychological intervention.

The practical clinical importance of addressing kinesiophobia is especially pronounced given that exercise is among the most efficacious non-pharmacological interventions for primary dysmenorrhea. Meta-analytic evidence confirms that physical activity significantly reduces menstrual pain intensity through mechanisms

including endorphin release, improved pelvic blood circulation, and reduced prostaglandin production (Armour et al., 2019; Matthewman et al., 2018; Xiang et al., 2025). Yet women with elevated kinesiophobia are, by definition, likely to avoid precisely the physical activities that would provide pain relief, creating a self-perpetuating cycle in which fear prevents access to the most effective treatment. Addressing kinesiophobia is therefore not merely a psychological adjunct to dysmenorrhea management; it may be a prerequisite for enabling women to benefit fully from exercise-based intervention.

Cognitive-behavioural interventions, particularly those drawing on exposure-based approaches derived from the Fear-Avoidance Model, represent the most theoretically grounded treatment targets. Graded exposure to feared movements and activities, combined with cognitive restructuring of catastrophic beliefs about exercise and menstrual pain, has demonstrated efficacy in reducing kinesiophobia and improving functional outcomes across chronic pain conditions (Varallo et al., 2022; Glombiewski et al., 2023). Pain education programmes that explicitly correct misconceptions about the harmful consequences of exercise during menstruation for example, by providing evidence-based information about prostaglandins, exercise physiology, and the pain-inhibitory mechanisms activated by physical activity may also reduce fear-avoidance beliefs (MacGregor et al., 2023). Such educational interventions lend themselves to delivery within university health services, physiotherapy clinics, and community health outreach, contexts that are directly accessible to the young adult population most affected by primary dysmenorrhea.

At the institutional and policy level, the findings call for the recognition of dysmenorrhea as a legitimate health condition with significant psychological sequelae, rather than a private or trivial inconvenience. Universities and other educational institutions hosting the target population should be encouraged to develop menstrual health support frameworks that include accessible healthcare, physical activity provisions adapted for menstruating women, and destigmatization campaigns. The academic absenteeism and performance impairment documented in

association with dysmenorrhea (Munro et al., 2021; Orhan et al., 2018; Martinaz et al., 2019) represent tangible educational equity concerns that institutional policy has an obligation to address. Creating supportive environments that normalize help-seeking for menstrual health, provide access to evidence-based management options, and accommodate the functional limitations imposed by severe dysmenorrhea would serve both individual welfare and institutional inclusion goals.

At the population level, the findings add to a growing evidence base indicating that dysmenorrhea is a major yet neglected public health burden (De Sanctis et al., 2023; Reid-McCann, 2025). National health systems and policymakers should prioritize menstrual health literacy initiatives that educate young women and healthcare providers about the psychological dimensions of dysmenorrhea, including kinesiophobia, and equip them with evidence-based coping strategies. The cultural normalization of menstrual pain as an expected and unavoidable female experience, which remains pervasive in Indian and broader South Asian contexts, actively deters help-seeking and perpetuates the pain-fear-avoidance cycle documented in the present investigation (Singh et al., 2008; Sharma et al., 2008). Sustained public awareness efforts addressing this normalization are warranted and should be integrated into broader reproductive health education programmes.

5.5 SUGGESTIONS FOR THE FUTURE RESEARCH

Building on the limitations outlined above, the following research directions are recommended to advance the field.

Longitudinal study designs are urgently needed to establish the developmental trajectory of kinesiophobia in women with primary dysmenorrhea. A prospective cohort study tracking adolescents and young adult women across multiple menstrual cycles would allow examination of whether and how kinesiophobia develops in relation to repeated pain experiences, whether it attenuates with age and coping experience, and which individual and contextual variables predict its onset and persistence.

Future studies should incorporate comprehensive psychological batteries assessing pain catastrophizing, anxiety sensitivity, self-efficacy, and quality of life alongside measures of pain severity and kinesiophobia. Structural equation models or path analyses could then test the specific mediating pathways through which pain severity generates functional disability, delineating the relative contributions of cognitive, affective, and behavioural variables. Such models would provide the mechanistic insight necessary to design optimally targeted interventions.

Intervention research represents perhaps the most pressing priority for this field. Randomized controlled trials evaluating the efficacy of cognitive-behavioural interventions specifically graded activity exposure and cognitive restructuring programmes for reducing kinesiophobia and improving functional outcomes in women with primary dysmenorrhea are needed. Equally, trials examining whether pain education and exercise behaviour change programmes can interrupt the fear-avoidance cycle and enable women to engage in exercise-based pain management would have immediate clinical utility.

The cultural context of dysmenorrhea-related kinesiophobia in India remains understudied. Qualitative research examining how cultural norms, family attitudes toward menstruation, and healthcare-seeking behaviours shape fear of movement and pain coping in young Indian women would complement the quantitative findings of the present study and inform culturally sensitive interventions. Studies extending the present investigation to rural and peri-urban populations, and to women with lower levels of formal education, would clarify the generalizability of the fear-avoidance pattern documented here.

Finally, the potential role of anticipatory kinesiophobia fear of movement that develops in anticipation of pain before the menstrual phase begins warrants specific empirical attention. Ecological momentary assessment methodologies, which capture psychological states in real time across the menstrual cycle, would allow researchers to map the temporal dynamics of kinesiophobia in relation to pain onset, providing a richer characterization of the cyclical fear-avoidance process than retrospective cross-sectional measurement can offer.

Clinicians working with women of reproductive age, including general practitioners, gynaecologists, physiotherapists, and psychologists, are recommended to routinely screen for kinesiophobia using the TSK-17 as part of dysmenorrhea assessments. Identification of elevated kinesiophobia should prompt targeted psychological intervention alongside standard pharmacological management.

Physiotherapy programmes for dysmenorrhea should incorporate graded physical activity protocols that systematically address fear-avoidance beliefs, beginning with low-threat movements and progressively increasing activity intensity and variety. Pain education components explaining the physiological safety of exercise during menstruation, the analgesic mechanisms of physical activity, and the maladaptive consequences of avoidance should be embedded within these programmes.

Primary care and university health services should develop structured menstrual health support pathways that facilitate timely access to both physical and psychological intervention for students and young professionals with dysmenorrhea. Brief cognitive-behavioural self-management resources, including digital and mobile health platforms, could extend the reach of psychological support to women who cannot access face-to-face care.

School and university health curricula should include evidence-based menstrual health education that normalizes dysmenorrhea as a clinical condition warranting medical attention, while simultaneously countering the cultural normalization of severe menstrual pain as unavoidable suffering. Education about the benefits and safety of exercise during menstruation, and the warning signs of excessive fear-avoidance responding, should be integrated into health promotion initiatives targeting young women.

Institutional policies accommodating the academic and occupational needs of women with severe dysmenorrhea should be developed in educational and workplace settings. Such policies might include flexible attendance arrangements during menstruation, accessible and destigmatized health services, and awareness training for educators and employers about the functional impacts of dysmenorrhea

SUMMARY

The present study was undertaken to investigate the relationship between dysmenorrhea and kinesiophobia among young adult females, with the aim of understanding how menstrual pain influences fear of movement and physical activity. Dysmenorrhea is a common condition affecting a significant proportion of women in the reproductive age group, often leading to physical discomfort, reduced functional capacity, and limitations in daily activities. Kinesiophobia, defined as an excessive and irrational fear of movement due to the anticipation of pain or injury, may further exacerbate these limitations and negatively impact overall well-being.

A quantitative research approach was adopted for the study, utilizing a cross-sectional and correlational design to examine the association between the variables. The study was conducted on a sample of 160 young adult females aged 18–26 years from Jammu district. Participants were selected using purposive sampling based on specific inclusion and exclusion criteria, ensuring the relevance of the sample to the research objectives.

Data were collected using standardized and validated instruments, namely the Numeric Rating Scale (NRS) to assess the intensity of dysmenorrhea and the Tampa Scale for Kinesiophobia (TSK-17) to evaluate fear of movement. The data collection process was carried out through online platforms, ensuring accessibility and ease of participation. Ethical considerations were strictly maintained throughout the study, including informed consent, voluntary participation, and confidentiality of responses.

The collected data were systematically analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize the data, while inferential statistics, particularly Pearson correlation, were employed to determine the relationship between dysmenorrhea and kinesiophobia.

The findings of the study indicated a significant relationship between the severity of dysmenorrhea and the level of kinesiophobia among the participants. Increased menstrual pain was associated with higher levels of fear of movement, suggesting that pain perception plays a crucial role in influencing physical activity behavior in young adult females.

In conclusion, the study highlights the importance of addressing not only the physical aspects of dysmenorrhea but also the psychological factors such as kinesiophobia that may contribute to activity limitation. The findings emphasize the need for appropriate interventions, including pain management strategies and awareness programs, to reduce fear of movement and promote active lifestyles among young women. This research contributes to the existing body of knowledge and provides a foundation for future studies in this area.

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APPENDICES

APPENDIX A: NUMERIC RATING SCALE (NRS)

Please rate your menstrual pain during your last menstrual period by circling the number that best describes your pain:

0 1 2 3 4 5 6 7 8 9 10

(No pain) *(Worst pain imaginable)*

APPENDIX B: TAMPA SCALE FOR KINESIOPHOBIA (TSK-17)

Please rate each of the following statements by circling the number that best describes how much you agree with each statement. Use the following scale:

1 = Strongly Disagree 2 = Somewhat Disagree 3 = Somewhat Agree 4 = Strongly Agree

Item No.	Statement	1	2	3	4
1	I am afraid that I might injure myself if I exercise.				
2	If I were to try to overcome it, my pain would increase.				
3	My body is telling me I have something dangerously wrong.				
4 (R)	People are not taking my medical condition seriously enough.				
5	My accident has put my body at risk for the rest of my life.				
6	Pain always means that I have injured my body.				
7	Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening.				
8 (R)	I am not afraid of my pain.				

Item No.	Statement	1	2	3	4
9	I am afraid of accidentally injuring myself.				
10	Simply being careful not to make unnecessary movements is the safest thing I can do.				
11	I would not have so much pain if there were not something potentially dangerous going on in my body.				
12 (R)	Although my condition is painful, I would be better off if I were physically active.				
13	Pain lets me know when to stop exercising so that I don't injure myself.				
14	It is not safe for a person with my condition to be physically active.				
15	I cannot do all the things that normal people do because it is too easy for me to get injured.				
16 (R)	Even though something is causing me a lot of pain, I don't think it is actually dangerous.				
17	No one should have to exercise when he/she is in pain.				

Note: Items marked (R) are reverse scored. Total scores range from 17 to 68; scores ≥ 37 indicate clinically elevated kinesiophobia.

CHAPTER-I

INTRODUCTION

CHAPTER-II

REVIEW OF

RELATED LITERATURE

CHAPTER-III

RESEARCH METHODOLOGY

CHAPTER-IV

ANALYSIS AND INTERPRETATION OF DATA

CHAPTER-V

FINDINGS, CONCLUSION, DISCUSSION, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY

REFERENCES

APPENDICES