Original Article
DOI: https://doi.org/10.70749/ijbr.v3i8.1870

INDUS JOURNAL OF BIOSCIENCE RESEARCH
https://ijbr.com.pk
ISSN: 2960-2793/ 2960-2807

Association of Low Back Pain and Mood Disorders with Primary Dysmenorrhea in University-Going Young Females

Abdul Malik[1], Sheeba Orakzai[1], Syeda Saniya Shah[1], Wishal Khalid[1], Oqab Aziz[1], Muskan Ilyas[1]

[1]Department of Health Sciences, City University of Science and Information Technology (CUSIT), Peshawar, KP, Pakistan.

ARTICLE INFO

Keywords: Menstrual Pain, Back Pain, Mood Swings, University Females, Physiotherapy.

Correspondence to: Sheeba Orakzai, Department of Health Sciences, City University of Science and Information Technology (CUSIT), Peshawar, KP, Pakistan.
Email: drsheebaphysio94@gmail.com

Declaration
Authors' Contribution
All authors equally contributed to the study and approved the final manuscript

Conflict of Interest: No conflict of interest.

Funding: No funding received by the authors.

Article History
Received: 29-04-2025 Revised: 02-07-2025
Accepted: 25-07-2025 Published: 01-08-2025

ABSTRACT

Background: Primary dysmenorrhea (PD), or painful periods, is a common problem in young women. It often comes with both physical discomforts, like low back pain, and emotional issues such as anxiety or depression. However, not much research has been done on how these problems are connected, especially among university students in Pakistan. **Objective:** To find out whether there is a link between low back pain and mood disorders with primary dysmenorrhea in university going young female students. **Methods:** In this cross-sectional study, 377 female university students in Peshawar, ages 18 to 30, was participated. Standard questionnaires were used to assess menstrual pain (WaLIDD), back pain (Oswestry Disability Index), and mood disorders (Mood Disorder Questionnaire). Data were analyzed by using SPSS, and chi-square tests were used to find out the association of low back pain and mood disorders with primary dysmenorrhea. **Results:** Most participants (69.8%) had moderate to severe menstrual pain. Mood disorders were found in 64.7% of students, and 63.4% reported moderate to severe low back pain. There was a strong significant link between menstrual pain, low back pain and mood disorders ($p = 0.000$). Chi-square analysis revealed that there no significant association between age and low back ($p = 0.713$). **Conclusion:** There is a clear connection between primary dysmenorrhea, low back pain, and mood disorders in university-going young females. These results show the need for better support and treatment—both physical and emotional—especially using physiotherapy and awareness programs to improve student's health and daily life.

INTRODUCTION

Dysmenorrhea is a gynecological condition in which there is painful cramps of uterine origin occurs during menstrual cycle of a female. A common cause of pain felt in pelvic region among young and adult women. Dysmenorrhea is classified into two types: Primary dysmenorrhea is defined as a painful menstruation cramp in the absence of any disease. It is most common cause of pelvic pain in female; the increase of prostaglandins (PGS) causes the uterine contraction and result in the synthesis of anaerobic metabolites that the pain receptors is activate. Prostaglandin is the basic cause of dysmenorrhea. Where endometrial shedding is noted. Prostaglandin causes uterine muscle contraction due to which intensity of pain increases severely. Uterine contractions cause ischemia and tissue hypoxia, which consequently result in discomfort and occasionally accompanying diarrhea and nausea (López-Liria et al., 2021).

Secondary dysmenorrhea is a type of dysmenorrhea which having menstrual pain with presence of pelvic diseases, structural abnormality, disorder, within or outside the uterus. Women may experience it at any point following menarche. For women in their 30s or 40s, it may be an unusual symptom. Different levels of pain and occasionally other symptoms, like menorrhagia (defined as heavy or prolonged menstrual bleeding that may seriously impact a woman's quality of life) and dyspareunia (the medical term for painful intercourse that can occur prior to, during, or following sexual activity), can be linked to secondary dysmenorrhea. Bleeding for longer than seven days is one of the symptoms. intermenstrual bleeding (Vaginal bleeding that happens irregularly is referred to as intermenstrual bleeding (IMB) between expected menstrual periods), and postcoital bleeding (Postcoital bleeding, also known as bleeding after sex, can be caused by various factors).

There are many common causes of secondary dysmenorrhea Adenomyosis (a condition where the tissue that normally defines the uterus (endometrial tissue) grows into the muscle layer of the uterus (myometrium), fibroids (uterine fibroids are common, non-cancerous tumors that develop in or on the uterus), endometriosis (a condition where tissue similar to the inner lining of the uterus grows outside the uterus, often affecting the

fallopian tubes, ovaries, and the tissue lining the pelvis), and large cesarean scar particular are some of the most prevalent causes of secondary dysmenorrhea, pelvic inflammatory disease (Pelvic Inflammatory Disease (PID) is a bacterial infection of the female reproductive organs, including the fallopian tubes, uterus, and ovaries), endometrial polyps (also called uterine polyps, endometrial polyps are small growths attached to the inner wall of the uterus that may expand into the uterine cavity), and interstitial cystitis (IC), also known as bladder pain syndrome, is a chronic condition marked by bladder pain and pressure. and utilizing an intrauterine contraceptive method, probably. Endometriosis may be present in up to 29% of women who experience dysmenorrhea.

Up to 35% of patients with NSAID-resistant dysmenorrhea may also have endometriosis. Another prevalent underlying condition linked to secondary dysmenorrhea is adenomyosis. Reproductive tract abnormalities affect up to 3.8% of young women, and secondary dysmenorrhea may be linked to both obstructive and non-obstructive abnormalities. Since several females view discomfort as a natural portion of the menstruation and choose not to find medicinal care even with the significant pain they endure, the prevalence of Primary dysmenorrhea (PD), which is most prevalent in the 16–25 age range, is significantly underreported. According to a prior scientific review on the effects of primary dysmenorrhea in teenagers, this condition is highly prevalent also has a major detrimental influence on academic achievement, daily activities restriction, social, sports and sexual relationships. PD affects people of all nationalities and its incidence declines with age (Hashim et al., 2020).

According to earlier epidemiological studies conducted worldwide, the prevalence of dysmenorrhea varies between 41.7% and 94%.4, 5 the prevalence of primary dysmenorrhea varies from 51.1% to 88.1% in sub-Saharan Africa as well.6, 7 Primary dysmenorrhea affects between 62.3% and 85.4% of women in Ethiopia (Mammo et al., 2022).

Within increased secretion of prostaglandin F2α (PGF2α) and prostaglandin E2 (PGE2) in the uterus area of a female during endometrial sloughing. Due to which an increasing vasoconstriction, and myometrium contractions, leading to production of anaerobic metabolites and uterine ischemia. As a result, pain fibers become hypersensitive, which eventually leads to pelvic pain (Saida, Hajri, & Sukmadi, 2024).

Physical and psychological are associated with each other. Lower abdominal pain or cramping is one of the symptoms, which can occasionally be accompanied by diarrhea, lightheadedness, bloating, nausea, headaches, leg pains vomiting, and backaches (Alsaleem, 2018).

Risk factors of PD are generally being below 20 years of age, history of menorrhagia and nulliparity, early menarche, low or high body mass index tobacco, alcohol and low omega 3 intake use. Physical therapy techniques were massage therapy, isometric exercises, yoga, electrotherapy, kinesiotaping, stretching, relaxation exercises, connective tissue manipulation (Itani et al., 2022).

There are different approaches to the treatment of PD. The drug approach is achieved through PG inhibitors, which are non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal drugs such as contraceptives. Many NSAIDs which non-specifically inhibit both COX-1 and COX-2 enzymes (e.g., ibuprofen) are the most common initial therapy for dysmenorrhea, but their use is limited by side-effects, such as stomach irritation or ulcer (despite being administered together with gastric protectors) experienced by some women. On the other hand, these physiotherapeutic treatments, being supported by clinical trial data, could be a very useful treatment alternative for women with PD, particularly those who are not eligible for pharmacological therapy, since physiotherapy has no side effects according to the analyzed studies. Many reviews have evaluated the efficacy of exercise or individual physiotherapy interventions for PD. Results in association to pain intensity level. We have simplified the systematic study to date as new trials have been published for the previous six years. Most effective physical therapy techniques used in primary dysmenorrhea were massage therapy, isometric exercises, electrotherapy, yoga, stretching, manipulation, Kinesiotaping, aerobic dance and relaxation exercises. Research demonstrates the advantages of physical therapy for pain management when compared to no intervention or a placebo (López-Liria et al., 2021) (Ali et al., 2025).

Primary dysmenorrhea (painful periods) is a well-known issue worldwide, but its impact on young females in Pakistan, especially in Peshawar, has not been studied much. Research shows that primary dysmenorrhea is linked with back pain and mood problems like anxiety and depression. Research have been done on mood disorders and low back pain individually but no such research has been done for association of low back pain, mood disorders and primary dysmenorrhea. While physical therapy helps with dysmenorrhea, little is known about how it affects mood swings and back pain. This demonstrates the necessity of targeted research to comprehend and treat these health issues in Peshawar's female university students.

Young girls frequently suffer from primary dysmenorrhea, which can be emotionally and physically taxing. Mood disorders like depression and anxiety and low back pain are common in girls with primary dysmenorrhea, which can exacerbate their physical and mental health.

Research on this topic has been conducted in other nations, but not much of it has been done in Pakistan, particularly in Peshawar. According to research, social and cultural variables, lack of health awareness are some of the additional difficulties faced by female university students in Peshawar. This study will explore the link between primary dysmenorrhea, low back pain, and mood disorders in this group, helping to create solutions that improve their health and academic success.

The Objective of the study is to determine association of low back pain and mood disorders with primary dysmenorrhea in university-going young females

Primary dysmenorrhea (painful periods), a most common condition that affects young females, especially when mood problems like anxiety or depression combined

with low back pain. These issues can make it hard for them to focus on studies, participate in activities, or daily life. Understanding the study can find better ways to manage both the pain and emotional challenges of females, improving their health, well-being, education and daily life.

METHODOLOGY

The study adopted a cross-sectional design aimed at exploring the association of low back pain and mood disorders with primary dysmenorrhea in female patients. A sample size of 377 participants was calculated using Raosoft, and the participants were selected through a non-probability convenience sampling technique to ensure adequate representation. Data were collected using several standardized tools: the Oswestry Questionnaire to assess functional disability related to low back pain (Koivunen, Widbom-Kolhanen et al., 2024); the WaLIDD Questionnaire to diagnose and evaluate working ability, location, intensity, and duration of pain related to dysmenorrhea (Erlita, Handayani et al., 2023); and the Mood Disorder Questionnaire to screen for mood disturbances commonly associated with primary dysmenorrhea (Ouali, Jouini et al., 2020)(Khan et al., 2024). The primary data collection involved the administration of these comprehensive questionnaires, which included sections addressing the intensity of primary dysmenorrhea, mood disorders, and low back pain. The study was conducted in private universities in Peshawar. Data were analyzed using SPSS version 29. Descriptive statistics, including frequencies and percentages, were calculated for WaLIDD scores, age distribution, low back pain categories, and mood disorders. Inferential statistics, particularly Chi-square tests, were used to assess associations between variables. The analysis revealed a significant association between primary dysmenorrhea and both low back pain ($p = 0.000$) and mood disorders ($p = 0.000$). In contrast, no significant relationship was found between age and low back pain ($p = 0.713$).

The inclusion criteria comprised females aged between 18 and 30 years, experiencing symptoms of primary dysmenorrhea, with regular menstruation, and who were unmarried. Exclusion criteria included those previously diagnosed with conditions such as endometriosis, chronic pelvic inflammatory disease, adenomyosis, polycystic ovarian syndrome, endometrial fibroids or polyps, those with a history of pelvic or abdominal surgery, individuals taking antidepressants or anxiolytics, and those with irregular menstruation. Prior to data collection, ethical approval was obtained from the Ethical Review Committee of the City University of Science and Information Technology in Peshawar. All ethical guidelines were strictly followed, ensuring voluntary participation, confidentiality, and informed consent throughout the research process.

RESULTS

Age of Participants

The total number of participants in this research were 377 participants most of the participants lie in the category of 21-23(50.1%) followed by category 24-26(23.1%), then category 18-20(21.0%) and the category 27-29(5.8%).

Table 1

Frequencies and percent of gender distribution of participant

Age of Participants	Frequency	Percent
18–20	79	21%
21–23	189	50.1%
24–26	87	23.1%
27–29	22	5.8%
Total	377	100%

Frequency of Primary Dysmennorhea in participants

Out of the 377 participants, 100 participants shows 26.5% mild primary dysmennorrhea, followed by 167 participants shows 44.3% moderate primary dysmennorrhea and 96 participants shows 25.5% severe primary dysmenorrhea.

Table 2

Frequencies and percent of WaLLID Scoring of participants

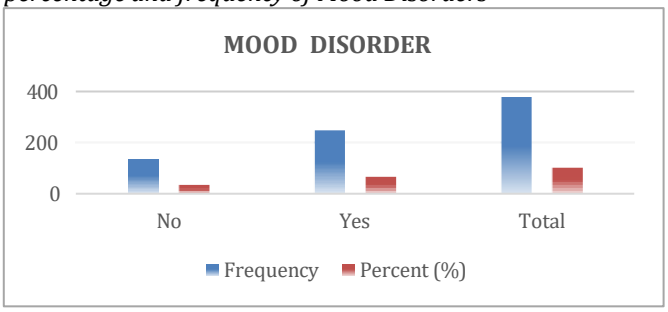
WaLLID_SCORING	Frequency	Percent
None	14	3.7%
Mild dysmenorrhea	100	26.5%
Moderate dysmenorrhea	167	44.3%
Severe dysmenorrhea	96	25.5%

Mood Disorders in Participants

In this study the participants who have mood disorder i-e 244(64.7%), while 133(35.3%) participants have not any mood disorder out of 377(100%) participants.

Figure 2

percentage and frequency of Mood Disorders



Frequency of low back pain in participants

The study shows that the participants have moderate disability 160(42.4%) followed by minimal disability 85(22.5%) and severe disability 79(21.0%).

Table 3

percentage and frequency of Oswestry LBP Scoring

OSWESTRY_LBP_SCORING	Frequency	Percent
None	3	0.8%
Minimal disability	85	22.5%
Moderate disability	160	42.4%
Severe disability	79	21%
Crippled	50	13.3%
Total	377	100%

Cross tabulation and Chi square test between age and low back pain

Among 377 participants 79 participants were in category 18-20 out of which 22 were having minimal disability and 31 were having moderate disability whereas 18 were having severe disability while 189 participants lie in the category of 21-23, Out of which 88 were having moderate disability and 39 were having minimal and severe

disability whereas 21 were crippled. Furthermore 87 participants lie in the category of 24-26, Out of which 34 were having moderate disability and 19 were having minimal disability whereas 17 were crippled and having severe disability. Moreover 22 participants lie in the category of 27-29, Out of which 7 were having moderate disability and 5 were having minimal and severe disability. Chi square test was used to find the association between age and low back pain. P-value for the association was 0.713 which means there is no association between age and low back pain.

Table 4

Cross tabulation between age and low back pain

AGE CATEGORY	None	Minimal Disability	Moderate Disability	Severe Disability	Crippled	Total
18–20	0	22	31	18	8	79
21–23	2	39	88	39	21	189
24–26	1	19	34	17	16	87
27–29	0	5	7	5	5	22
Total	3	85	160	79	50	377

Table 5

Chi-square test between age and low back pain

Test	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.886	12	0.713
Likelihood Ratio	9.279	12	0.679
Linear-by-Linear Association	2.44	1	0.118
N of Valid Cases	377	—	—

Cross tabulation and Chi square test between Primary dysmenorrhea and low back pain

Among 377 participants 167 participants were in category moderate dysmenorrhea out of which 134 were having moderate disability and 18 were crippled while 8 were having minimal disability whereas 7 were having severe disability while 100 participants lie in the category of mild dysmenorrhea, out of which 65 were having minimal disability and 17 were having severe disability whereas 13 were having moderate disability. Furthermore 96 participants lie in the category of severe dysmenorrhea, out of which 55 were having severe disability and 1 were having minimal disability whereas 27 were crippled and 13 having moderate disability.

Chi square test was used to find the association between primary dysmenorrhea and low back pain. P-value for the association was 0.000 which means there is association between primary dysmenorrhea and low back pain.

Table 6

Cross tabulation between Primary dysmenorrhea and low back pain

WALLID_SCORING	None	Minimal Disability	Moderate Disability	Severe Disability	Crippled	Total
None	3	11	0	0	0	14
Mild dysmenorrhea	0	65	13	17	5	100
Moderate dysmenorrhea	0	8	134	7	18	167
Severe dysmenorrhea	0	1	13	55	27	96
Total	3	85	160	79	50	377

Table 7

Chi square test between Primary dysmenorrhea and low back pain

Test	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	432.067	12	0.000
Likelihood Ratio	368.534	12	0.000
Linear-by-Linear Association	149.13	1	0.000
N of Valid Cases	377	—	—

Cross tabulation and Chi square test between Primary dysmenorrhea and mood disorder

Among 377 participants 167 participants were lie in moderate dysmenorrhea out of which 101 were having mood disorder and 66 were having no mood disorder while 100 participants lie in the category of mild dysmenorrhea, out of which 64 were having mood disorder and 36 were having no mood disorder whereas 14 were having no dysmenorrhea but 3 have mood disorder while 11 have not any mood disorder. Furthermore 96 participants lie in the category of severe dysmenorrhea, out of which 76 were having were having mood disorder and 20 were having no mood disorder.

Chi square test was used to find the association between primary dysmenorrhea and mood disorder. P-value for the association was 0.000 which means there is association between primary dysmenorrhea and mood disorder.

Table 8

Cross tabulation between Primary dysmenorrhea and mood disorder

WALLID_SCORING	No	Yes	Total
None	11	3	14
Mild dysmenorrhea	36	64	100
Moderate dysmenorrhea	66	101	167
Severe dysmenorrhea	20	76	96

Table 9

Chi square test between Primary dysmenorrhea and mood disorder

Test	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.605	3	0.000
Likelihood Ratio	21.855	3	0.000
Linear-by-Linear Association	12.502	1	0.000
N of Valid Cases	377	—	—

DISCUSSION

The study explored the association between primary dysmenorrhea and both low back pain and mood disorders among university-going young females, with a sample of 377 participants predominantly aged 21–23 years (50.1%) followed by category 24-26(23.1%), then category 18-20(21.0%) and the category 27-29(5.8%). Participants with PD shows 26.5% mild primary dysmennorrhea, followed by 167 participants show 44.3% moderate primary dysmennorrhea and 96 participants shows 25.5% severe primary dysmenorrhea. Mood disorders were prevalent in 64.7% of participants,

indicating a considerable psychological burden in this population. Regarding physical symptoms, 42.4% of participants experienced moderate low back pain-related disability, while 21% reported severe disability. Chi-square analysis revealed no significant association between age and low back pain (p = 0.713). However, a strong and statistically significant association was found between primary dysmenorrhea and low back pain (p = 0.000), suggesting that the severity of menstrual pain may be linked to increased levels of back pain. Similarly, a significant association was also observed between primary dysmenorrhea and mood disorders (p = 0.000), indicating that higher dysmenorrhea severity corresponds with increased psychological distress. These findings emphasize the multidimensional impact of primary dysmenorrhea on both physical and mental health among young females.

One of the studies conducted on 119 female participants with a mean age of 25.10 ± 2.19 years found that 59.3% experienced low back pain (LBP) during menstruation. The analysis revealed a significant positive association between menstrual LBP and chronic LBP as well as between menstrual LBP and neck pain over the past 12 months. Additionally, active myofascial trigger points were more prevalent in the quadratus lumborum, rectus abdominis, and Para spinal muscles among those reporting menstrual LBP. These findings suggest that primary dysmenorrhea may contribute to musculoskeletal discomfort, including LBP, and highlight the importance of evaluating myofascial involvement in women with menstrual pain. This study show a relation with our research that about 59.3% females experienced acute and chronic low back pain with primary dysmenorrhea (Serrano-Imedio, Calvo-Lobo, Casañas-Martin, Garrido-Marin, & Pecos-Martin, 2022).

One another cross-sectional study, involving 892 third-level students in Ireland (aged 18–45), investigated the prevalence and impact of primary dysmenorrhea (PD). It found that 91.5% of participants experienced PD, highlighting its widespread occurrence. While the abstract does not explicitly quantify low back pain (LBP) as a separate outcome, PD is typically characterized by radiating pain to the thighs, and lower back, and LBP is commonly reported in similar studies examining PD's physical symptoms. Importantly, the study showed that pain intensity and interference with daily activities were significantly correlated with pain catastrophizing—a psychological factor that likely exacerbates physical symptoms such as LBP. Although direct LBP-specific prevalence data isn't included in this abstract, the high overall prevalence of PD and its interference with functional and academic performance suggest that associated symptoms like LBP are significant and impactful. This study show a great association of primary dysmenorrhea with low back about 91.5% (Durand, Monahan, & McGuire, 2021).

A study conducted among 495 high school students in Wolaita Zone, Southern Ethiopia, revealed a 70% prevalence of primary dysmenorrhea (PD), with 20.8% reporting low back pain as a common symptom. The study highlighted that PD significantly impacts students' academic activities, including class concentration, study time, sleep, and personal relationships. Factors such as age, menstrual regularity and menstrual flow duration, breakfast habits and family history of dysmenorrhea were identified as associated with PD. This study indicated strongly that about 70% of primary dysmenorrhea patients feel 20.8% of low back pain (Mammo et al., 2022).

A study at Hawassa University in Ethiopia reported that 80% of female students suffered from PD, with 67% experiencing low back pain. Additionally, 72% screened positive for anxiety, and 73% for depression. Notably, 74% of those with anxiety and 76% with depression also reported PD, indicating a significant association between PD and mood disorders. This study supports our study with a great association of primary dysmenorrhea with low back pain and mood disorders (Belayneh et al., 2023).

In April and May of 2013, a study evaluated the connection between mood disorders and primary dysmenorrhea. Among 159 adolescent girls aged 13–19 years with regular menstrual cycles. The prevalence of dysmenorrhea was 67.9%. Participants completed the Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), and a Premenstrual Syndrome (PMS) questionnaire. The mean scores for the BAI and BDI were 13.64 ± 12.81 and 11.88 ± 10.83, respectively. Significant differences in BAI and BDI scores between individuals with and without dysmenorrhea were found by statistical analyses (P <.05), suggesting a strong correlation between dysmenorrhea and elevated depression and anxiety levels. Furthermore, 18.2% of participants had a diagnosis of premenstrual dysphoric disorder (PMDD), and all participants displayed at least one PMS symptom. The mean BDI and BAI scores for PMS patients were 8.39 ± 8.62 and 9.65 ± 9.28 , respectively, whereas the mean scores for PMDD patients were 21.31 ± 15.75 and 19.1 ± 11.85, respectively.These results demonstrate how dysmenorrhea significantly affects teenage girls' mental health, emphasizing the value of managing the condition on a psychological as well as physical basis.(Balık, Üstüner, Kağıtcı, & Şahin, 2014)

CONCLUSION

The results of the study indicate that among young female university students, primary dysmenorrhea is strongly associated with mood disorders and low back pain. Among the 377 participants, with the majority falling into the 21–23 category (50.1%), 24-26 category (23.1%), 18–20 category (21.0%), and 27–29 category (5.8%). A large proportion (44.3%) reported moderate dysmenorrhea, while 25.5% experienced severe symptoms. Additionally, 64.7% of participants (n=244) reported mood disorders, and 42.4% (n=160) experienced moderate disability due to low back pain. Statistical analysis using the Chi-square test revealed no significant association between age and low back pain (p = 0.713). However, there was a highly significant association between primary dysmenorrhea and low back pain (p = 0.000), as well as between primary dysmenorrhea and mood disorders (p = 0.000). For instance, among those with moderate dysmenorrhea (n=167), 134 had moderate disability, and among those with severe dysmenorrhea (n=96), 55 experienced severe disability while 27 were crippled. Similarly, 76 out of 96 participants with severe dysmenorrhea also had mood disorders. These findings underscore the

multidimensional impact of primary dysmenorrhea, linking it not only to pelvic pain but also to musculoskeletal and psychological health burdens in young female students.

Recommendations

Based on these findings, it is recommended that university health services and student support programs prioritize comprehensive interventions for young females experiencing primary dysmenorrhea, integrating screening and management strategies for both low back pain and mood disorders. Educational initiatives should be implemented to raise awareness among students about the co-occurrence of these conditions, encouraging early identification and help-seeking behaviors. The mandatory involvement of physical therapy is crucial, given its proven efficacy in managing dysmenorrhea-related pain through various modalities such as therapeutic exercises (e.g., stretching, aerobic exercise, and yoga, Kegel exercises, heat therapy, massage and Transcutaneous Electrical Nerve Stimulation (TENS). Furthermore, healthcare providers should adopt a holistic approach when treating primary dysmenorrhea, considering not only pain management but also assessing for and addressing associated low back pain and psychological well-being, with physical therapists playing a key role in developing individualized exercise prescriptions and non-pharmacological pain relief strategies. Future research could explore the specific mechanisms linking these conditions and evaluate the effectiveness of multi-faceted interventions, including integrated physical therapy programs.

Limitations

- **Temporal Ambiguity:** Cross-sectional studies receive data at one specific time. You can identify associations, but cannot find out the causality.
- **Limited Generalizability:** The study population is university going females, which may not represent al females with primary dysmenorrhea.
- **Confounding Variables:** Factors such as sleep quality, diet, and physical activity, family history of females or use of pain medications.
- **Cultural and Social Bias:** Cultural attitudes toward menstruation, pain expression, and metal health may affect how students report symptoms, especially in more conservative settings.

REFERENCES

Ali, I., Haroon Khan, Bilal Rahman, Ayesha Nadir, Hafiz Yaseen Khan, & Mudassir Ahmad. (2025). Prevalence of lower cross syndrome and its association with bmi among nurses: A cross-sectional study. *Insights-Journal of Health and Rehabilitation*, *3*(3 (Health & Rehabilitation)), 346-352.
https://doi.org/10.71000/x0bhk362

Alsaleem, M. (2018). Dysmenorrhea, associated symptoms, and management among students at King Khalid University, Saudi Arabia: An exploratory study. *Journal of Family Medicine and Primary Care*, *7*(4), 769.
https://doi.org/10.4103/jfmpc.jfmpc_113_18

Balık, G., Üstüner, I., Kağıtcı, M., & Şahin, F. K. (2014). Is there a relationship between mood disorders and dysmenorrhea? *Journal of Pediatric and Adolescent Gynecology*, *27*(6), 371-374.
https://doi.org/10.1016/j.jpag.2014.01.108

Durand, H., Monahan, K., & McGuire, B. E. (2021). Prevalence and impact of dysmenorrhea among university students in Ireland. *Pain Medicine*, *22*(12), 2835-2845.
https://doi.org/10.1093/pm/pnab122

Hashim, R. T., Alkhalifah, S. S., Alsalman, A. A., Alfaris, D. M., Alhussaini, M. A., Qasim, R. S., & Shaik, S. A. (2020). Prevalence of primary dysmenorrhea and its effect on the quality of life amongst female medical students at King Saud University, Riyadh, Saudi Arabia. *Saudi Medical Journal*, *41*(3), 283-289.
https://doi.org/10.15537/smj.2020.3.24988

Itani, R., Soubra, L., Karout, S., Rahme, D., Karout, L., & Khojah, H. M. (2022). Primary dysmenorrhea: Pathophysiology, diagnosis, and treatment updates. *Korean Journal of Family Medicine*, *43*(2), 101-108.
https://doi.org/10.4082/kjfm.21.0103

Khan, H. Y., Haider Khan, S., Gillani, A., Gillani, A., Yousaf, M., Sarah Qandeel, H., & Daud, M. (2024). Knowledge, attitudes and beliefs of clinical physiotherapists towards chronic back pain. *National Journal of Life and Health Sciences*, *3*(1), 20-24.
https://doi.org/10.62746/njlhs.v3n1.21

López-Liria, R., Torres-Álamo, L., Vega-Ramírez, F. A., García-Luengo, A. V., Aguilar-Parra, J. M., Trigueros-Ramos, R., & Rocamora-Pérez, P. (2021). Efficacy of physiotherapy treatment in primary dysmenorrhea: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, *18*(15), 7832.
https://doi.org/10.3390/ijerph18157832

Saida, S. (2024). Frequency and factors associated with primary dysmenorrhea among adolescents living in Kendari city, Indonesia: A cross-sectional study. *Journal of the Dow University of Health Sciences*, *18*(1).
https://doi.org/10.36570/jduhs.2024.1.2009

Serrano-Imedio, A., Calvo-Lobo, C., Casañas-Martin, C., Garrido-Marin, A., & Pecos-Martin, D. (2022). Myofascial pain syndrome in women with primary dysmenorrhea: A case-control study. *Diagnostics*, *12*(11), 2723.
https://doi.org/10.3390/diagnostics12112723