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RESEARCH ARTICLE

BRIDGING MENSTRUAL HEALTH AND EDUCATION: A REVIEW ON JACOBSON'S MUSCLE RELAXATION FOR PRIMARY DYSMENORRHEA

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Abstract: Primary dysmenorrhea, a prevalent menstrual disorder among adolescent girls, significantly affects academic performance and psychological well-being. Despite its widespread impact, it remains under-addressed in school health programs, especially in low- and middle-income countries where menstrual health is often stigmatized. This review explores the effectiveness of Jacobson's Progressive Muscle Relaxation (JPMR) as a non-pharmacological intervention for managing primary dysmenorrhea and enhancing academic outcomes. JPMR involves systematic tensing and relaxing of muscle groups, promoting physical relaxation and psychological calm. Evidence from multiple randomized and quasi-experimental studies demonstrates that JPMR effectively reduces menstrual pain, anxiety, and absenteeism while improving concentration, mood, and school attendance. The review synthesizes findings from Indian and international research, highlighting JPMR's advantages over other methods such as yoga, heat therapy, and TENS, particularly in terms of accessibility and cost-effectiveness. Integration of JPMR into school wellness programs can empower adolescent girls with a self-care tool for menstrual pain management and emotional regulation. However, cultural taboos, lack of awareness, and institutional barriers limit its widespread implementation. The article advocates for comprehensive menstrual health education, training of school staff in relaxation techniques, and inclusion of mind-body interventions like JPMR in national adolescent health policies. Addressing these gaps through policy, education, and community engagement can bridge the divide between menstrual health and academic success, positioning JPMR as a holistic and sustainable approach to adolescent care. Further research is recommended to explore long-term outcomes and strategies for large-scale implementation in diverse educational settings.

Keywords: Menstrual Health, Jacobson's Muscle Relaxation, Primary Dysmenorrhea

INTRODUCTION

Menstrual health is a critical but often overlooked aspect of adolescent and women's well-being, particularly in low- and middle-income countries where menstruation remains enveloped in cultural taboos and misinformation. Among various menstrual disorders, primary dysmenorrhea characterized by painful menstrual cramps without underlying pelvic pathology is the most prevalent, affecting up to 90% of adolescent girls and young women globally (Iacovides et al., 2015). It significantly impairs daily functioning, contributing to absenteeism from school, reduced academic performance, and psychological distress such as irritability, anxiety, and depression (Barcikowska et al., 2020). In India, studies report that over 70% of adolescent girls experience dysmenorrhea, with about one-third of them facing moderate to severe pain that interferes with normal activities (Patil & Wasnik, 2022).

Management of primary dysmenorrhea often involves pharmacological interventions, especially non-steroidal anti-inflammatory drugs (NSAIDs). While effective, long-term use of these medications may result in undesirable side effects. Therefore, there has been a growing interest in non-pharmacological and mind-body interventions to manage menstrual pain. One such intervention gaining attention is Jacobson's Progressive Muscle Relaxation (JPMR) technique. Originally developed to relieve anxiety through systematic tensing and relaxing of muscle groups, JPMR has been found to reduce both physical and psychological symptoms of dysmenorrhea by decreasing muscle tension, promoting endorphin release, and improving overall relaxation (Dhar et al., 2023).

Several evidences support the use of JPMR in alleviating menstrual pain and associated psychological symptoms. For instance, a randomized controlled trial conducted by Bansal and Kaur (2021) demonstrated a statistically significant reduction in pain intensity and anxiety levels among adolescent girls practicing JPMR for four weeks. Similarly, an Iranian study by Mazloomy et al. (2022) found that regular practice of JPMR not only decreased dysmenorrhea severity but also improved students' quality of life and school attendance. These findings suggest that JPMR can serve as a cost-effective, accessible, and sustainable

intervention that bridges the gap between menstrual health and education.

PRIMARY DYSMENORRHEA:

i. Definition and Classification

Primary dysmenorrhea refers to recurrent menstrual pain that occurs in the absence of identifiable pelvic pathology. It is typically characterized by cramping pain in the lower abdomen, often accompanied by systemic symptoms such as nausea, headache, diarrhoea, and fatigue. The onset of primary dysmenorrhea usually begins within 6–12 months after menarche, coinciding with the establishment of ovulatory cycles (ACOG, 2021). It is classified into:

- **Primary dysmenorrhea** – without pelvic pathology
- **Secondary dysmenorrhea** – associated with underlying reproductive system disorders such as endometriosis, fibroids, or pelvic inflammatory disease (Harel, 2008).

ii. Pathophysiology of Primary Dysmenorrhea

The predominant mechanism underlying primary dysmenorrhea involves increased synthesis of uterine prostaglandins, particularly prostaglandin F2α and E2, during the late luteal and early menstrual phases. These prostaglandins cause intense uterine contractions, vasoconstriction, and ischemia, leading to the characteristic menstrual pain (Iacovides et al., 2015). In addition, the heightened pain sensitivity and central sensitization mechanisms are also believed to contribute to the severity of symptoms in some individuals (Aldabe et al., 2020).

iii. Prevalence of Primary Dysmenorrhea among school and college girls

Primary dysmenorrhea is highly prevalent among adolescent and young adult females. Evidences indicate that between 50% to 90% of menstruating girls experience dysmenorrhea, with a higher burden reported in low- and middle-income countries due to inadequate menstrual education and poor access to healthcare (Patil & Wasnik, 2022). In India, prevalence rates among school and college-going girls range from 67% to 84%, with a significant proportion experiencing moderate to severe pain (Chongtham et al., 2021). These high prevalence rates suggest an urgent need for non-pharmacological strategies, including school-based education and relaxation therapies.

iv. Impact on Educational Outcomes and Daily Functioning

The clinical manifestations of primary dysmenorrhea have a substantial negative impact on the academic performance and quality of life of affected individuals. Menstrual pain is a leading cause of school absenteeism, reduced classroom concentration, poor examination performance, and withdrawal from extracurricular activities (Barcikowska et al., 2020). A study by Zegeye et al. (2009) reported that over 40% of adolescent girls missed at least one school day per month due to dysmenorrhea. In addition, psychological effects such as stress, low self-esteem, and emotional dysregulation are commonly reported, further compounding the educational disadvantages associated with unmanaged menstrual health (Dhar et al., 2023).

JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) THERAPY:

i. Conceptual Framework and History

Jacobson's Progressive Muscle Relaxation (JPMR) is a systematic therapeutic technique developed by American physician Edmund Jacobson in the 1920s. Based on the premise that mental calmness is a natural result of physical relaxation, JPMR involves the deliberate tensing and relaxing of specific muscle groups throughout the body to promote a state of deep relaxation (Jacobson, 1938). This method was initially designed for patients with anxiety disorders but has since been adapted for managing a range of physical and psychological health conditions, including hypertension, insomnia, chronic pain, and more recently, menstrual disorders such as primary dysmenorrhea (Dhar et al., 2023). The technique is grounded in the psychophysiological model, which links muscle tension with emotional and cognitive stress, suggesting that controlling one can positively influence the other.

ii. Techniques and Mechanisms of Action

The practice of JPMR typically involves a step-by-step approach where individuals are guided to contract and then relax major muscle groups sequentially, starting from the toes and progressing upwards to the face and head. Each contraction is held for about 5–10 seconds, followed by 15–20 seconds of relaxation. This cycle is repeated while focusing on the contrast between tension and relaxation. JPMR works through multiple mechanisms:

- **Neurophysiological regulation**: It decreases sympathetic nervous system activity, leading to reduced heart rate, blood pressure, and muscle spasms.
- **Hormonal balance**: It helps lower cortisol (stress hormone) levels and promotes endorphin release.
- **Pain modulation**: It reduces pain perception through gate control and descending inhibitory pathways (Park & Song, 2020).
- **Cognitive shift**: Encourages mindfulness and body awareness, shifting attention away from pain and anxiety.

iii. Physical and Psychological Benefits of JPMR

JPMR offers a range of health benefits supported by empirical research. Physically, it helps reduce muscle spasms, regulate breathing patterns, and lower blood pressure and heart rate. For women with primary dysmenorrhea, JPMR has been shown to decrease the severity and frequency of menstrual cramps by reducing uterine muscle tension (Bansal & Kaur, 2021).

Psychologically, the technique contributes to reduced anxiety, improved sleep quality, and enhanced mood. It also aids in emotional regulation by promoting a sense of control and calmness, which is essential for adolescents dealing with the stressors of school and puberty (Mazloomy et al., 2022). These benefits are cumulative and improve with consistent practice over time.

iv. Suitability for Adolescent Girls

JPMR is particularly suitable for adolescent girls due to its simplicity, non-invasiveness, and minimal cost. It requires no equipment and can be practiced independently once properly taught. Adolescents often face academic pressure, emotional challenges, and body-image concerns, which can exacerbate menstrual pain and stress. JPMR not only helps alleviate physical discomfort but also empowers them with a self-care tool for managing emotional well-being. A study by Sharma et al. (2022) involving school-going girls showed that regular practice of JPMR significantly improved school attendance and reduced absenteeism due to dysmenorrhea. Moreover, integrating JPMR into school health education programs could serve as a sustainable strategy for promoting menstrual health and mental resilience among adolescents.

REVIEW OF LITERATURE ON JPMR AND PRIMARY DYSMENORRHEA

i. Effectiveness of JPMR in Reducing Menstrual Pain

Numerous studies have demonstrated the effectiveness of Jacobson's Progressive Muscle Relaxation (JPMR) in alleviating menstrual pain among adolescent girls and women. JPMR works by relaxing uterine and skeletal muscles, reducing sympathetic nervous system activity, and enhancing parasympathetic responses, which collectively contribute to pain relief (Park & Song, 2020). A randomized control trial by Bansal and Kaur (2021) found that adolescent girls who practiced JPMR for four weeks reported a significant reduction in pain severity scores ($p < 0.001$) compared to those in the control group. Similarly, Dhar et al. (2023) reported that JPMR not only lowered pain intensity but also reduced associated symptoms like fatigue, nausea, and backache. These findings affirm JPMR as a reliable and accessible intervention for dysmenorrhea.

ii. Evidence from Indian and Global Studies

In India, JPMR has been increasingly explored in school-based and community interventions. Sharma et al. (2022) conducted a quasi-experimental study among adolescent girls in Uttarakhand and found a significant decrease in both the frequency and severity of dysmenorrhea following JPMR practice over four weeks. Globally, studies mirror similar outcomes. A meta-analysis evaluated 15 trials from diverse populations and confirmed that relaxation therapy, including JPMR, led to statistically significant reductions in menstrual pain, anxiety, and sleep disturbances. In Iran, Mazloomy et al. (2022) demonstrated that college students practicing JPMR reported improvements in quality of life, pain scores, and academic concentration. The cultural adaptability and low cost of JPMR make it particularly beneficial in both developed and resource-limited settings.

iii. JPMR vs. Other Non-Pharmacological Methods

While JPMR has shown promising outcomes, its effectiveness has been compared with other non-pharmacological interventions such as yoga, acupressure, heat therapy, and breathing exercises. A comparative study by Singh and Kumari (2021) found that although yoga and breathing exercises provided relaxation, JPMR resulted in faster and more consistent pain relief during menstruation. Another study by Alizadeh et al. (2019) compared JPMR with transcutaneous electrical nerve stimulation (TENS) and found comparable pain-reducing effects, though JPMR had greater psychological benefits. JPMR is also favored for its simplicity and self-administrable nature, unlike methods requiring equipment or instructor supervision.

iv. Limitations and Gaps in Current Research

Despite encouraging results, existing literature on JPMR for dysmenorrhea has notable limitations. Most studies have small sample sizes, short follow-up durations, and lack blinding or control for placebo effects. In addition, there is limited data on the long-term benefits of JPMR and its integration into school or community health programs. Few studies have explored its impact on other menstrual-related issues such as irregular cycles, emotional distress, or its combined use with pharmacological treatment. Furthermore, cultural perceptions about menstrual practices and relaxation therapy have not been adequately addressed in most trials. These gaps highlight the need for large-scale, multicentre randomized controlled trials to establish standardized JPMR protocols and assess its holistic impact on menstrual and reproductive health.

ACADEMIC PERFORMANCE AND MENSTRUAL HEALTH

i. Defining Academic Performance in Dysmenorrhea Studies

Academic performance refers to a student's ability to achieve learning goals, retain information, perform well on evaluations, and maintain regular school attendance. In the dysmenorrhea studies, academic performance is often measured through variables such as attendance records, concentration levels, grades, and classroom engagement (Proctor & Farquhar, 2006). Researchers increasingly consider menstrual health as a determinant of educational outcomes, especially among adolescent and college-going girls, due to the high incidence of school absenteeism and reduced participation during menstruation.

ii. Influence of Menstrual Distress on Cognitive and Physical Performance

Primary dysmenorrhea, characterized by cramping and abdominal pain, often leads to impaired cognitive function, reduced memory retention, difficulty concentrating, and emotional instability. The physical symptoms fatigue, nausea, backache, and muscle cramps further limit classroom participation and the ability to sit through prolonged lectures or engage in academic tasks. Evidences have reported that students experiencing moderate to severe menstrual pain tend to miss an average of 1–2 days of school per month (Chia et al., 2013), thereby impacting academic continuity and performance.

iii. Evidences of Pain Management to Academic Improvement

There is a growing body of evidence suggesting that effective menstrual pain management correlates with improvements in academic functioning. Pain relief interventions both pharmacologic and non-pharmacologic are shown to reduce absenteeism and enhance attention span. A study by Ju et al. (2014) demonstrated that girls who received targeted interventions for dysmenorrhea had significantly fewer absences and reported better academic engagement compared to those without interventions. Relaxation-based techniques, when combined with awareness programs, have shown measurable improvements in student's perceived academic performance and psychological well-being.

iv. Role of JPMR in Enhancing Academic Outcomes

Jacobson's Progressive Muscle Relaxation (JPMR) is a cost-effective, easy-to-practice method that helps reduce menstrual pain and associated anxiety, both of which are barriers to academic focus. By promoting muscle relaxation and reducing sympathetic nervous activity, JPMR enhances the body's resilience to stress and pain perception. A quasi-experimental study by Gharloghi et al. (2012) found that adolescents who practiced JPMR during their menstrual cycle experienced less pain and improved classroom participation. As a non-invasive and holistic intervention, JPMR not only aids in physical symptom relief but also contributes to emotional regulation, which is crucial for maintaining academic performance during menstruation.

EDUCATIONAL IMPLICATIONS AND INTEGRATION INTO CURRICULUM

i. Need for Comprehensive Menstrual Health Education

Despite its critical role in adolescent health, menstrual education remains under-emphasized in most school curricula, particularly in low- and middle-income countries. Menstrual health is often stigmatized, leading to misinformation, fear, and unhealthy coping behaviours among girls. A comprehensive approach is needed, one that includes not only the biological aspects of menstruation but also psychological support, hygiene practices, and pain management strategies. Studies emphasize that girls who receive menstrual education show higher self-efficacy, reduced anxiety, and better school attendance.

ii. Integrating JPMR in School Wellness Programs

Jacobson's Progressive Muscle Relaxation (JPMR) is a feasible, low-cost intervention that can be incorporated into school wellness programs. As a structured technique requiring minimal resources, JPMR can be introduced during physical education sessions, life skills classes, or special adolescent health modules. Implementing JPMR as part of a preventive and promotive health framework empowers girls to manage menstrual discomfort and stress proactively. Evidence suggests that schools that integrate relaxation techniques report improved classroom engagement and lower absenteeism among menstruating students (Alimoradi et al., 2020).

iii. Training Nurses, Teachers, and Health Educators

To ensure successful implementation, teachers, school nurses, and health educators must be equipped with accurate knowledge and skills related to menstrual health and JPMR. Training modules should cover menstrual physiology, psychosocial support, and relaxation methods. Educators trained in JPMR can serve as facilitators, guiding students through exercises and fostering a safe space for discussion. According to a study by Nair & George (2021), schools with trained health staff demonstrated better student satisfaction and reduced stigma around menstruation.

CHALLENGES IN IMPLEMENTATION

i. Cultural Barriers and Menstrual Taboos

In many communities, menstruation is still surrounded by myths, taboos, and cultural restrictions that hinder open discussions and health-seeking behaviours. These cultural norms discourage girls from expressing menstrual discomfort, accessing interventions like JPMR, or participating in relaxation-based programs within school settings. Fear of embarrassment and social stigma often results in silence, absenteeism, or passive coping. According to Garg and Anand (2015), cultural beliefs significantly affect menstrual practices, with many girls perceiving pain and discomfort as inevitable and something to be endured silently.

ii. Limited Awareness of Relaxation Therapies

Despite the growing evidence supporting non-pharmacological methods like JPMR, awareness about such therapies remains low among students, parents, and educators. Schools often focus solely on biological education about menstruation, neglecting psychological and pain management components. Without adequate exposure or demonstrations, relaxation techniques are

often misunderstood or dismissed as ineffective. This lack of awareness reduces the likelihood of implementation, despite their proven benefits in reducing stress and menstrual pain (Ali et al., 2019).

iii. Logistical and Institutional Constraints

Implementing JPMR in school settings faces practical challenges, such as lack of trained personnel, insufficient time in the academic schedule, and absence of private or quiet spaces suitable for relaxation exercises. Additionally, schools may lack formal wellness policies or funding to introduce such programs. Institutional resistance and overburdened curricula often make it difficult to add new components, especially when administrators prioritize academic content over health and wellness activities.

iv. Acceptability and Adherence Among Adolescents

While JPMR is simple and cost-effective, its success depends on consistent practice and student engagement. Adolescents may initially find the exercises unfamiliar or uninteresting, especially without immediate symptom relief. Ensuring adherence requires motivational strategies, supportive facilitators, and inclusion of peer-led components. A study by Alimoradi et al. (2020) showed that when JPMR was introduced with reinforcement from trained facilitators and periodic follow-up, adherence rates improved significantly. Still, the novelty and perceived relevance of JPMR must be addressed to foster sustained use among adolescents.

FUTURE DIRECTIONS AND RECOMMENDATIONS

i. Research Gaps and Areas for Further Study

Although preliminary evidence supports the effectiveness of Jacobson's Progressive Muscle Relaxation (JPMR) in managing primary dysmenorrhea, more rigorous, large-scale randomized controlled trials are needed, especially among diverse adolescent populations. Longitudinal studies could explore the sustained benefits of JPMR on menstrual pain, academic performance, and psychosocial outcomes. Additionally, comparative studies examining JPMR alongside other non-pharmacological interventions (e.g., yoga, aromatherapy, acupressure) can help establish its relative efficacy and suitability.

ii. Advocacy for Adolescent Mental and Reproductive Health

Menstrual health must be recognized as a critical component of adolescent well-being. Advocates, educators, and healthcare professionals should work collaboratively to reduce stigma, promote accurate menstrual health education, and create youth-friendly spaces. Including adolescents in decision-making processes and tailoring interventions to their expressed needs can enhance the effectiveness and sustainability of programs addressing menstrual and mental health.

iii. Policy Inclusion of Mind-Body Interventions

overnment health and education policies should incorporate mind-body interventions like JPMR into national school health initiatives and adolescent reproductive health programs. The inclusion of structured relaxation therapy as part of school wellness curricula can ensure consistent access to non-invasive menstrual pain management options.

iv. Tailored Interventions for Different Educational Settings

JPMR implementation should be adapted to suit urban and rural educational institutes, accounting for cultural norms, infrastructure, and student needs. In low-resource settings, simplified versions of JPMR can be taught by trained community health workers or integrated into peer-led sessions. For boarding schools or colleges, digital tools and video demonstrations may enhance accessibility and adherence. Flexibility in design and delivery is key to reaching diverse adolescent groups effectively.

CONCLUSION

This review article highlights the growing evidence supporting JPMR as an effective non-pharmacological intervention for managing primary dysmenorrhea. Studies consistently demonstrate its positive impact on pain reduction, anxiety alleviation, and improved emotional well-being among adolescent girls. Its simplicity, cost-effectiveness, and ease of integration into school health programs make it a valuable option for menstrual pain relief. Menstrual pain has a direct impact on concentration, classroom participation, and academic performance. Bridging this gap requires targeted interventions that address both physical and psychological distress. JPMR, by enhancing relaxation and reducing pain, plays a pivotal role in improving the educational experience of menstruating adolescents, thereby supporting their overall academic success. Jacobson's Progressive Muscle Relaxation offers a holistic, youth-friendly approach to adolescent health that aligns with the principles of preventive and promotive care. By integrating JPMR into menstrual health education and wellness programs, educators and health professionals can support girls not only in managing menstrual symptoms but also in achieving greater psychological balance and academic engagement.

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