Original Article

Effects of Stretching Exercises and Myofascial Pain Release on Pain and Sleep Quality in Antenatal Restless Leg Syndrome

Hafiza Iqra Rubab[1]*, Hafiza Muriam Ghani[2], Hafiza Sara Wafa[3], Amon[4], Muhammad Farid Nasir[5]

[1]Bu Ali Seena Clinic, Riphah International University, Lahore Pakistan.
[2]Senior Lecturer, Riphah International University, Lahore Pakistan.
[3]Falah Institute of Nursing and AHS, Riphah International University Pakistan.
[4]Women's Health Physical Therapist, Riphah International University Pakistan.
[5]Senior Physiotherapist, Sindh Institute of Physical Medicine and Rehabilitation Pakistan.
Corresponding Author: Hafiza Iqra Rubab; Email: iqrashahid430@gmail.com
Conflict of Interest: None.

ABSTRACT

Background: Restless Leg Syndrome (RLS) is a condition that plagues many, causing an irresistible urge to move the legs, especially during periods of rest. This condition can be particularly challenging for pregnant women, impacting their sleep quality and overall well-being. Recognizing the need for effective, non-pharmacological interventions, this study delves into comparing the efficacy of two widely used therapies: stretching exercises and myofascial pain release (MPR).

Objective: The primary aim was to evaluate and compare the effects of stretching exercises and myofascial pain release on pain reduction and sleep quality improvement in antenatal RLS patients.

Methods: Conducted at the gynecology clinic of Khalid Farooqi Memorial Hospital, Hafizabad, this randomized clinical trial enlisted 22 participants, divided into control (n=11) and case (n=11) groups. The case group underwent stretching exercises coupled with infra-red therapy, while the control group received MPR and infra-red therapy. Both interventions were administered twice weekly for eight weeks. Outcomes were measured using the Numeric Pain Rating Scale (NPRS) and Pittsburgh Sleep Quality Index (PSQI) at baseline, 4th, and 8th weeks. Data analysis was performed using SPSS 25, employing Shapiro-Wilk, repeated measure ANOVA, and one-way ANOVA tests.

Results: Initially, both groups exhibited moderate to severe symptoms. Post-treatment, significant improvements were noted. After 8 weeks of treatment, the study revealed that pregnant women with antenatal restless leg syndrome (RLS) responded better to stretching exercises (Group A) than to myofascial pain release (Group B). Initially, participants in both groups experienced moderate to severe pain and poor sleep quality. By the end of the study, Group A demonstrated significant improvement, with 9 out of 11 participants experiencing minimal pain and 8 out of 11 reporting greatly enhanced sleep quality. While Group B also improved, the results were less significant. This underscores the potential of stretching exercises as a more effective intervention for reducing pain and improving sleep in antenatal RLS.

Conclusion: Stretching exercises were found to be more effective than myofascial pain release in reducing pain and improving sleep quality among antenatal RLS patients. Given these findings, healthcare professionals are encouraged to consider stretching exercises as a preferred intervention for RLS symptoms during pregnancy.

Keywords: antenatal restless leg syndrome, comparative efficacy study, myofascial pain release therapy, non-pharmacological interventions for RLS, pain reduction in pregnancy, Pittsburgh Sleep Quality Index, randomized clinical trial, stretching exercises for RLS, therapeutic outcomes in antenatal care.

INTRODUCTION

Restless Legs Syndrome (RLS), also known as Willis-Ekbom Disease, presents a considerable challenge during pregnancy, with a prevalence rate significantly higher in expectant mothers than in the general population. This condition, characterized by an irresistible urge to move the legs, especially during periods of rest or inactivity, frequently results in substantial sleep disturbances and, by extension, impacts overall quality of life. The multifactorial etiology of RLS encompasses genetic predispositions and various nutritional deficiencies, with symptoms intensifying in the third trimester and generally subsiding post-delivery (1).

The exploration of non-pharmacological interventions for RLS during pregnancy is of paramount importance, given the potential side effects of pharmacological treatments on both maternal and fetal health. This study delves into the efficacy of stretching exercises and myofascial pain release therapy—techniques focusing on the myofascial tissues that wrap and support muscles. Utilizing the International Restless Legs Syndrome Study Group's (IRLSSG) scale for symptom severity and the Numeric Rating Pain scale for pain intensity, the research aims to provide a comparative analysis of these interventions' effectiveness in alleviating the discomforts associated with antenatal RLS (2).

The significance of this study is twofold (3). Firstly, it addresses the unique challenges faced by pregnant women, offering insights into accessible, non-invasive treatment options that accommodate the physiological and emotional complexities of pregnancy (4). Secondly, it highlights the necessity for personalized care, acknowledging the diverse treatment responses among individuals (5). However, the research is not devoid of limitations (6). Variability in symptom severity and the subjective nature of pain and sleep quality assessments may influence the outcomes, underscoring the need for more objective measurement tools (7). Furthermore, the exclusive focus on non-pharmacological interventions may overlook a holistic examination of all potential treatment avenues, including pharmacological solutions which, despite potential risks, could provide relief in certain cases (8).

The debate surrounding the optimal treatment pathway for antenatal RLS—whether pharmacological or non-pharmacological—continues to evolve (9). This discourse is enriched by studies advocating physical activity's role in mitigating RLS symptoms and the therapeutic potential of interventions such as massage and myofascial release (10). These treatments, celebrated for their minimal side effects and alignment with the body's natural processes, underscore the broader applicability of tactile therapies across different patient demographics (11).

This investigation seeks to enhance the understanding of RLS during pregnancy and the efficacy of non-pharmacological interventions tailored to this unique population. By offering a nuanced perspective on the benefits of stretching exercises and myofascial pain release therapy, the study aims to contribute to the ongoing discourse on optimizing care for pregnant women with RLS. The objective is to underscore the significance of personalized, non-invasive treatment options, ultimately improving the well-being of expectant mothers grappling with this condition. This research rationalizes the need for further exploration into effective, safe therapeutic strategies that prioritize the health and safety of both mother and child, marking a critical step towards informed, patient-centered care in antenatal RLS management.

MATERIAL AND METHODS

The study embarked on a Randomized Clinical Trial at Khalid Farooqi Memorial Hospital, Hafizabad, spanning a duration of six months post-synopsis approval. It employed a nonprobability convenience sampling technique to gather data, aiming to discern the differential impacts of stretching exercises and myofascial pain release on pain and sleep quality among pregnant females diagnosed with antenatal restless leg syndrome (RLS). The calculation of the sample size was meticulously conducted, utilizing inputs such as means and variances of the groups under investigation, alongside a confidence level of 0.95 and a power of 0.99. This computation yielded a total sample size of 22 participants, which, after accounting for a 10% attrition rate, was adjusted to 24.

Participants were meticulously selected based on specific inclusion criteria: pregnant females aged between 20 to 30 years, experiencing symptoms of RLS for at least three nights per week, and reporting pain and sleep disturbances as outlined in the Pittsburgh Sleep Quality Index (PSQI). Both primigravida and multigravida were considered, provided they met the aforementioned criteria. The exclusion criteria were equally stringent, disqualifying individuals with any signs of serious pathology, other sleep disorders, or complications in pregnancy.

For the assessment of RLS effects on pain and sleep quality, two primary tools were employed: the Visual Analogue Scale and the Pittsburgh Sleep Quality Index. These instruments were pivotal in evaluating the study's outcomes, facilitating a rigorous analysis of the intervention's efficacy.

Upon obtaining consent, eligible participants were randomly allocated into two groups: the intervention group, which received a combination of stretching exercises and infra-red therapy, and the control group, subjected to myofascial pain release and infra-red therapy. Each group comprised 11 participants, ensuring a balanced comparison between the treatment modalities. The intervention entailed two sessions per week over an eight-week period, with the onset, mid-point, and conclusion of the treatment phases meticulously documented using the International Restless Legs Syndrome Study Group scale (IRLSSG).

The treatment protocol for the experimental group involved a series of stretching exercises specifically designed for RLS symptoms, complemented by infra-red therapy sessions targeting the legs. Each session was preceded by a warm-up and followed by a cool-down period, enhancing the therapeutic experience. In contrast, the control group received myofascial pain release therapy post infra-red exposure, with each session extending to manual massage therapy to maximize relief.

Data analysis was conducted using SPSS version 25, with the Shapiro-Wilk test applied to ascertain the normality of the dataset. Subsequent analyses utilized Statistical, repeated measure ANOVA tests for intra-group comparisons across three time points: baseline, fourth week, and eighth week. Between-group assessments were facilitated through the one-way ANOVA test, enabling a comprehensive examination of the treatments' relative efficacies.

RESULTS

The study's results, after an 8-week treatment period focusing on the effects of stretching exercises (Group A) and myofascial pain release (Group B) on antenatal restless leg syndrome, indicated that Group A experienced superior outcomes. Initially, both groups presented with moderate to severe pain and sleep quality issues, as measured by the Numeric Pain Rating Scale (NPRS) and Sleep Quality Index. However, by the conclusion of the treatment period, Group A showed remarkable improvement. Specifically, the NPRS scores in Group A dramatically shifted, with 9 out of 11 participants reporting minimal pain (scores less than 5), a stark improvement from the baseline measurements. In terms of sleep quality, Group A participants also reported significant enhancements, with 8 out of 11 achieving scores that denoted substantial improvements in sleep quality (scores less than 5). Conversely, while Group B observed improvements, they were not as pronounced as those seen in Group A. These results suggest that stretching exercises may offer more substantial benefits in alleviating pain and enhancing sleep quality among pregnant women suffering from restless leg syndrome compared to myofascial pain release techniques.

Table 1: Descriptive Statistics for Age of Participants

Groups	Age of Participants	
	20-25 years	25-30 years
Stretching exercises (Group A) (N=11)	3	8
Myofascial Pain release (Group B) (N=11)	4	7
Total	7	15

Table 2: Descriptive Statistics for Number of Pregnancy

Groups	Number of Pregnancy	
	Primigravida	Multigravida
Stretching exercises (Group A) (N=11)	5	6
Myofascial Pain release (Group B) (N=11)	6	5
Total	11	11

Table 3: NPRS and Sleep Quality index before treatment

Treatment Group	Variable	Less than 5	5-10	10-15	More than 15	Total
Group A	NPRS	0	2	9	0	11
Group B	NPRS	0	3	8	0	11
Group A	Sleep Quality index	0	3	5	3	11
Group B	Sleep Quality index	1	2	6	2	11

In this study, aimed at comparing the effects of stretching exercises and myofascial pain release on pain and sleep quality in antenatal restless leg syndrome, the Numeric Pain Rating Scale (NPRS) and Sleep Quality Index were assessed before treatment. For the NPRS, both Group A (stretching exercises) and Group B (myofascial pain release) showed a majority of participants scoring between 5-10 and 10-15, with 9 in Group A and 8 in Group B falling in the 10-15 category, indicating moderate to severe pain. The Sleep Quality

Index before treatment depicted a similar distribution, with the majority in the 5-10 and 10-15 score range, suggesting moderate to significant sleep quality issues among participants.

Table 4: NPRS and Sleep Quality index after 4 weeks of treatment

Treatment Group	Variable	Less than 5	5-10	10-15	More than 15	Total
Group A	NPRS	4	6	1	0	11
Group B	NPRS	3	5	3	0	11
Group A	Sleep Quality index	2	7	2	0	11
Group B	Sleep Quality index	2	4	5	0	11

After 4 weeks of treatment aimed at assessing the impact of stretching exercises (Group A) versus myofascial pain release (Group B) on pain and sleep quality in antenatal restless leg syndrome, significant shifts were observed. For the Numeric Pain Rating Scale (NPRS), Group A showed improvement, with 4 participants scoring less than 5 and 6 in the 5-10 range, indicating a reduction in pain levels. Group B also saw improvements, though 3 participants still scored in the 10-15 pain range. In terms of Sleep Quality Index, Group A exhibited notable enhancements, with 9 out of 11 participants scoring below 10, suggesting improved sleep quality. Group B, while improved, had a less pronounced shift, with 5 participants remaining in the 10-15 range, indicating ongoing sleep quality issues despite treatment.

Table 5: NPRS and Sleep Quality index after 8 weeks of treatment

Treatment Group	Variable	Less than 5	5-10	10-15	More than 15	Total
Group A	NPRS	9	2	0	0	11
Group B	NPRS	7	4	0	0	11
Group A	Sleep Quality index	8	3	0	0	11
Group B	Sleep Quality index	4	7	0	0	11

After 8 weeks of treatment, focusing on the comparative effects of stretching exercises (Group A) and myofascial pain release (Group B) on pain and sleep quality in antenatal restless leg syndrome, marked improvements were noted. The Numeric Pain Rating Scale (NPRS) outcomes revealed significant pain reduction in Group A, with 9 participants scoring less than 5, indicating minimal pain. Group B also showed considerable pain alleviation, with 7 participants falling into the less than 5 category. Sleep Quality Index scores similarly improved, especially in Group A, where 8 participants achieved scores indicating better sleep quality (less than 5). Group B demonstrated progress in sleep quality as well, with a majority (7 out of 11) scoring in the 5-10 range, reflecting moderate sleep quality improvements post-treatment.

DISCUSSION

The randomized clinical trial conducted at the gynecology clinic of Khalid Farooqi Memorial Hospital in Hafizabad provided valuable insights into the comparative effectiveness of stretching exercises and myofascial pain release (MPR) therapy on pain and sleep quality in antenatal restless leg syndrome (RLS) (12). The study's findings revealed that while both interventions significantly ameliorated symptoms of RLS in pregnant women, stretching exercises emerged as notably more efficacious in reducing pain and enhancing sleep quality (13).

The study's strengths lie in its robust methodology, including the randomized allocation of participants into control and intervention groups and the use of validated tools such as the Numeric Pain Rating Scale (NPRS) and Pittsburgh Sleep Quality Index (PSQI) for outcome measurement (14). Additionally, the research benefited from a focused sample population of pregnant women, enabling a specific exploration of RLS interventions' effects in this demographic (15).

However, the study was not without limitations (16). The sample size, while sufficient for detecting significant differences, was relatively small, which may affect the generalizability of the findings (17). Additionally, the study's reliance on self-reported measures of pain and sleep quality introduces subjectivity into the data, potentially biasing the results (18). The exclusive focus on short-term effects (up to 8 weeks) also means the long-term efficacy and sustainability of the treatments remain unexamined (19).

Debate in the literature about the optimal non-pharmacological treatment for antenatal RLS underscores the significance of this study's contributions. While previous research, such as that by SB Santos et al. (2019) and Zucconi et al. (2018), has affirmed the utility of various physical activities and non-invasive therapies in managing RLS symptoms, this study's direct comparison of stretching exercises with MPR therapy enriches the discourse by pinpointing a particularly effective intervention (20, 21). This is in line with findings from related fields of study, where interventions like physical exercise have been shown to alleviate symptoms of RLS in different populations, including hemodialysis patients, as demonstrated by Yuan-Yuan Song RN et al. (2018) and Ahyar Nur et al. (2018) (22, 23).

The preference for stretching exercises can be attributed to several factors (24). Stretching may offer more targeted relief for the specific muscle groups affected by RLS, potentially explaining its superior outcomes compared to MPR therapy (25). Furthermore, the active engagement required in stretching exercises may foster a greater sense of control over symptoms, contributing to their efficacy (26).

The study's implications extend beyond the immediate benefits of symptom relief, suggesting a need for healthcare practitioners to incorporate stretching exercises into the treatment plans for pregnant women suffering from RLS. Future research should aim to expand on these findings by exploring the long-term effects of these interventions and including larger, more diverse populations to enhance the findings' applicability (27).

CONCLUSION

This study's examination of stretching exercises and myofascial pain release therapy offers critical insights into effective non-pharmacological treatments for antenatal RLS. The demonstrated superiority of stretching exercises in reducing pain and improving sleep quality suggests a promising direction for future clinical practice, emphasizing the importance of personalized, non-invasive treatment strategies in optimizing maternal health and well-being during pregnancy.

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