JHWCR
Journal of Health, Wellness, and Community Research
Volume III, Issue VIII
Open Access, Double Blind Peer Reviewed.
Web: https://jhwcr.com, **ISSN**: 3007-0570
https://doi.org/10.61919/h8ygah13

Article

Trigger Points in Shoulder in Correlation with Postpartum Pain

Maryam Sultana[1], Menahil Nawaz[1], Syeda Mubashra[1], Sehar Fatima[1], Noor ul Huda[1]

1 The University of Lahore, Lahore, Pakistan

Correspondence
maryam.sultana2222@gmail.com

Cite this Article

Received	2025-05-21
Revised	2025-06-11
Accepted	2025-06-14
Published	2025-07-05

No conflicts declared; ethics approved; consent obtained; data available on request; no funding received.

Authors' Contributions
Concept and design: MS; Design: MN; Data Collection: SM; Analysis: SF; Drafting: NH.

ABSTRACT

Background: Postpartum musculoskeletal pain, particularly in the shoulder region, is a prevalent yet underrecognized condition that significantly affects maternal function and quality of life. Myofascial trigger points (MTrPs)—localized, hyperirritable nodules in taut bands of skeletal muscle—are established contributors to chronic shoulder pain in general populations, but their role in postpartum pain has not been adequately investigated. **Objective**: To determine the prevalence of shoulder myofascial trigger points in postpartum women and evaluate their association with pain intensity and functional disability. **Methods**: A descriptive cross-sectional study was conducted over six months at a tertiary care hospital in Lahore. Fifty postpartum women within six months of delivery experiencing shoulder pain for at least four weeks were assessed for MTrPs in the trapezius, supraspinatus, and deltoid muscles using standardized clinical palpation criteria. Pain intensity was measured using the Visual Analog Scale (VAS) and functional disability using the Shoulder Pain and Disability Index (SPADI). Statistical analyses included Pearson's correlation and multivariable linear regression. **Results**: Active MTrPs were identified in 68% of participants in the trapezius, 44% in the supraspinatus, and 22% in the deltoid. A strong positive correlation was observed between MTrP count and VAS ($r = 0.76$) and SPADI scores ($r = 0.82$) ($p < 0.001$). Regression analysis confirmed MTrP count as a significant predictor of disability. **Conclusion**: Myofascial trigger points are prevalent in postpartum shoulder pain and are strongly associated with increased pain and functional limitation. Routine MTrP screening and early intervention may improve postnatal musculoskeletal outcomes.

Keywords: Postpartum pain, Myofascial trigger points, Shoulder pain, SPADI, VAS, Functional disability, Physical therapy

INTRODUCTION

Postpartum musculoskeletal pain is a pervasive yet inadequately addressed component of maternal health, particularly in the early months following childbirth. Despite substantial physiological changes and mechanical stressors during this period, the clinical focus has often remained confined to obstetric complications, leaving musculoskeletal complaints—especially shoulder pain—under-recognized. Epidemiological data show that up to 94% of women experience some form of musculoskeletal pain in the postpartum period, with shoulder pain emerging as a leading complaint in 30–45% of cases within the first six months (1,2). This high prevalence is compounded by the physical demands of infant care, such as repetitive lifting, prolonged breastfeeding postures, and frequent upper limb loading, which can provoke or exacerbate pain in the shoulder complex. However, clinical practice has yet to adopt evidence-based screening and management strategies tailored to this musculoskeletal burden (3).

A potential contributor to this overlooked pain is the presence of myofascial trigger points (MTrPs), which are hypersensitive nodules located within taut bands of skeletal muscle fibers. MTrPs are known to produce both local tenderness and referred pain, interfere with normal muscle activation, and significantly impair function (4). Although the pathophysiology and impact of MTrPs have been extensively studied in athletes and individuals with chronic pain conditions, they remain insufficiently explored in postpartum populations. Previous studies have identified a high prevalence of active MTrPs in chronic shoulder pain sufferers, ranging from 58% to 70% (5,6), yet very few investigations have targeted new mothers, despite their distinct hormonal, biomechanical, and functional vulnerabilities. In particular, the shoulder girdle muscles—namely the trapezius, supraspinatus, and deltoid—are susceptible to repetitive microtrauma and ischemic changes due to the ergonomic challenges faced during infant handling, breastfeeding, and disrupted sleep cycles (7,8).

These musculoskeletal stressors are further compounded by hormonal influences unique to the postpartum phase. Elevated levels of relaxin and progesterone during and after pregnancy lead to increased ligamentous laxity, compromised joint stability, and altered load transmission across muscle groups involved in postural maintenance and upper extremity activity (9). The combination of hormonal modulation and repetitive mechanical overload creates an ideal environment for the development of MTrPs. Moreover, the resulting pain often leads to protective postures, muscular compensation, and neuromuscular dysregulation, perpetuating a cycle of dysfunction that can persist well beyond the early postpartum window (10). Electrophysiological studies have confirmed abnormal endplate potentials and biochemical markers of nociception at active MTrP sites, supporting their relevance in chronic pain syndromes (11).

Despite growing recognition of these mechanisms, clinical guidelines for postpartum care have yet to incorporate routine musculoskeletal assessment, let alone MTrP screening. This oversight is particularly concerning given the limitations of pharmacological pain relief in lactating mothers and the potential benefits of conservative, non-invasive treatments such as manual trigger point release, dry needling, and postural education (12,13). A systematic review by Mota et al. emphasized the paucity of randomized controlled trials targeting musculoskeletal interventions for postpartum women and called for population-specific investigations to bridge this gap in evidence (14). Without such data, health care providers are left to extrapolate from general orthopedic populations, a practice that risks mismanagement and delays in recovery. Furthermore, the absence of standardized outcome measurement tools in postpartum musculoskeletal research has hampered the comparability and translation of findings into clinical practice (15).

This study addresses these deficiencies by examining the prevalence and anatomical distribution of MTrPs in the shoulder region among postpartum women with shoulder pain and exploring the association between MTrP burden, pain intensity, and functional disability. By using validated instruments—the Visual Analog Scale (VAS) for pain and the Shoulder Pain and Disability Index (SPADI) for functional impact—and applying standardized diagnostic criteria for MTrP identification, this study aims to generate clinically relevant, statistically robust evidence to inform postpartum rehabilitation protocols. The study further proposes that focused MTrP-based interventions may serve as effective, non-pharmacologic strategies for reducing pain and restoring function in new mothers.

The central research question is: What is the prevalence of myofascial trigger points in the shoulder musculature among postpartum women, and how do these correlate with pain intensity and functional disability? Addressing this question will not only fill a critical gap in the literature but also support the development of comprehensive, interdisciplinary postpartum care frameworks that prioritize maternal musculoskeletal health

MATERIALS AND METHODS

This study employed a descriptive cross-sectional observational design to investigate the prevalence of myofascial trigger points (MTrPs) in the shoulder musculature among postpartum women and examine their association with pain intensity and functional disability. A cross-sectional design was selected to allow for the simultaneous evaluation of exposure (presence of MTrPs) and outcomes (pain and disability) at a single time point, facilitating correlation analysis without implying causality. Data collection took place over a six-month period from January to June 2025 at the Physiotherapy Outpatient Department of Jinnah Hospital, Lahore, a tertiary care institution catering to a diverse urban population and known for its specialized maternal care services.

Participants were recruited using a non-probability convenience sampling method. Women presenting to the outpatient department who were within six months postpartum were screened for eligibility. Inclusion criteria included age between 20 to 40 years, reporting shoulder pain of at least four weeks' duration localized to the trapezius, supraspinatus, or deltoid muscles, and confirmation of at least one MTrP upon clinical palpation. Exclusion criteria comprised a history of shoulder trauma or surgery, systemic inflammatory conditions such as rheumatoid arthritis or lupus, neurological disorders affecting the upper limb such as cervical radiculopathy or stroke, current pregnancy, and inability to provide informed consent due to cognitive or language barriers. Eligible participants were provided a verbal and written explanation of the study and asked to provide written informed consent in either English or Urdu, as per participant preference.

Clinical examinations and data collection were conducted in a standardized sequence during a single outpatient session. Each participant underwent musculoskeletal assessment by a licensed physiotherapist with over five years of clinical experience in myofascial pain. MTrPs were identified using established diagnostic criteria, including palpation of taut muscle bands, presence of local twitch response, and reproduction of referred pain upon sustained pressure, consistent with Simons and Travell's guidelines (16). The target muscles for examination included the upper trapezius, supraspinatus, and deltoid. MTrPs were classified as active if they reproduced spontaneous or movement-induced pain and scored ≥4 on the Visual Analog Scale (VAS), and latent if pain was elicited only upon palpation and scored <4.

Pain intensity was assessed using a 10-centimeter VAS, where participants marked their perceived pain on a continuous scale ranging from 0 (no pain) to 10 (worst imaginable pain). Pain was recorded at rest, during infant-handling tasks, and at its worst over the preceding 24 hours. Functional disability was evaluated using the Shoulder Pain and Disability Index (SPADI), a validated self-administered questionnaire comprising 13 items—five assessing pain and eight assessing disability—each scored from 0 to 10, with total scores converted to percentage values (17). Active shoulder range of motion (ROM) in flexion and abduction was measured using

a 12-inch universal goniometer to document functional limitations. Additional demographic and clinical information including parity, mode of delivery, breastfeeding frequency, time since delivery, and dominant hand were collected through a structured proforma designed for the study.

The primary variables were the presence and number of active MTrPs (exposure variable), and pain intensity (VAS) and functional disability (SPADI) as outcome variables. Control variables included age, parity, breastfeeding frequency, time since delivery, and dominant hand. To minimize measurement bias, all assessments were performed by a single trained examiner. A pilot test on five postpartum women was conducted to standardize the palpation technique, and inter-rater reliability for MTrP identification was confirmed at $\kappa = 0.78$ using blinded dual assessments. Bias was further mitigated by using validated tools for all patient-reported outcomes and by blinding the statistician to participant identity and clinical findings.

The sample size was estimated using the formula for prevalence studies based on a 95% confidence level, 5% margin of error, and an assumed MTrP prevalence of 50% from prior related literature (6), resulting in an ideal sample of 384 participants. Due to feasibility constraints, 55 participants were enrolled with a 10% oversampling to compensate for attrition; 50 participants completed the study, consistent with sample sizes used in exploratory musculoskeletal pain studies in similar contexts (18).

Data were entered and analyzed using IBM SPSS Statistics version 26. Descriptive statistics included means and standard deviations for continuous variables and frequencies with percentages for categorical data. The Shapiro-Wilk test was used to assess the normality of continuous variables. Pearson's correlation coefficient was used for normally distributed variables to determine associations between MTrP count, VAS scores, and SPADI scores, while Spearman's rank correlation was applied for non-normal distributions. Group differences in pain and disability scores based on MTrP count, mode of delivery, and breastfeeding status were tested using independent t-tests or Mann-Whitney U tests as appropriate. For categorical associations, chi-square or Fisher's exact tests were employed. Multivariable linear regression models were constructed to identify predictors of SPADI scores, adjusting for age, time since delivery, and number of MTrPs. Variance inflation factors (VIF) were calculated to assess multicollinearity, and residual plots were reviewed to confirm model assumptions. Missing data were assessed and handled using pairwise deletion for <5% missingness; no variable exceeded this threshold.

The study was approved by the Ethics Review Board of The University of Lahore (Reference number UOL/ERB/2023/45). All participants provided informed written consent, and data were anonymized using coded identifiers. Digital data were stored in encrypted, password-protected files with access limited to the core research team. To ensure reproducibility, all measurement protocols were documented in a methodological handbook, and raw data along with analysis syntax were archived for verification. The study adhered to the principles of the Declaration of Helsinki and followed the ethical and methodological guidelines outlined by the World Health Organization for research involving human participants (19).

RESULTS

The study involved 50 participants, with a mean age of 28.3 years (±4.7), indicating a relatively young postpartum cohort whose ages predominantly ranged from 27.0 to 29.6 years. On average, the women were 3.2 months postpartum (±1.5), with a 95% confidence interval suggesting most were between 2.8 and 3.6 months since delivery. Regarding parity, participants had delivered an average of 2.1 children (±0.8), indicating the group mainly comprised multiparous women, with typical values falling between 1.9 and 2.3 children.

Delivery mode was predominantly vaginal, with 33 women (66%) having delivered vaginally (95% CI: 52%–78%), while 17 (34%) underwent cesarean sections (95% CI: 22%–48%). A high proportion of participants were breastfeeding, with 44 women (88%) reporting current lactation (95% CI: 77%–95%). Additionally, 46 participants (92%) identified as right-hand dominant (95% CI: 81%–98%).

Myofascial trigger points (MTrPs) were notably prevalent among the studied postpartum women, particularly in the trapezius muscle, where 36 participants (72%) exhibited at least one MTrP (95% CI: 58%–83%). Of these, 34 (68%) were active MTrPs, while 16 (32%) were latent, underscoring the trapezius as the most commonly affected muscle.

The supraspinatus was the next most frequently involved, with 26 participants (52%) exhibiting any MTrP (95% CI: 38%–65%), including 22 (44%) with active and 12 (24%) with latent MTrPs. In contrast, the deltoid muscle was affected in 17 participants (34%) (95% CI: 21%–48%), of whom 11 (22%) had active and 9 (18%) had latent MTrPs.

Striking differences in pain and shoulder function were observed between participants with ≥3 active MTrPs (n=20) and those with <3 active MTrPs (n=30). The high-MTrP group reported significantly higher pain levels, with a mean VAS score of 7.8 ± 1.2 compared to 4.3 ± 1.5 in the low-MTrP group—a mean difference of 3.5 points (95% CI: 2.8–4.2, $p<0.001$), reflecting a large effect size (Cohen's $d = 2.6$).

Shoulder disability was also markedly greater in the high-MTrP group, who recorded a mean SPADI score of 65.4% ± 12.3, versus 34.2% ± 11.7 in those with fewer active points, yielding a substantial mean difference of 31.2% (95% CI: 25.2–37.2, $p<0.001$), with Cohen's $d = 2.7$. Furthermore, shoulder abduction range of motion (ROM) was significantly reduced in women with more active MTrPs (104.5° ± 14.2°) compared to their counterparts (137.9° ± 11.8°), translating to a mean loss of 33.4 degrees (95% CI: -40.1 to -26.7, $p<0.001$, Cohen's $d = 2.6$).

Table 1. Participant Demographics and Clinical Characteristics (n=50)

Variable	Value	95% CI
Age (years), mean ± SD	28.3 ± 4.7	27.0 – 29.6
Time since delivery (months), mean ± SD	3.2 ± 1.5	2.8 – 3.6
Parity (number), mean ± SD	2.1 ± 0.8	1.9 – 2.3
Vaginal delivery, n (%)	33 (66%)	52% – 78%
Cesarean delivery, n (%)	17 (34%)	22% – 48%
Breastfeeding, n (%)	44 (88%)	77% – 95%
Right dominant hand, n (%)	46 (92%)	81% – 98%

Table 2. Prevalence and Distribution of MTrPs in Shoulder Muscles

Muscle	Any MTrP, n (%)	Active MTrP, n (%)	Latent MTrP, n (%)	95% CI (Any)
Trapezius	36 (72%)	34 (68%)	16 (32%)	58% – 83%
Supraspinatus	26 (52%)	22 (44%)	12 (24%)	38% – 65%
Deltoid	17 (34%)	11 (22%)	9 (18%)	21% – 48%

Table 3. Comparison of Pain and Disability by Number of Active MTrPs

Variable	≥3 MTrPs (n=20)	<3 MTrPs (n=30)	Mean Difference (95% CI)	p-value	Cohen's d
VAS score (mean ± SD)	7.8 ± 1.2	4.3 ± 1.5	3.5 (2.8 – 4.2)	<0.001	2.6
SPADI (%) (mean ± SD)	65.4 ± 12.3	34.2 ± 11.7	31.2 (25.2 – 37.2)	<0.001	2.7
ROM, abduction (deg)	104.5 ± 14.2	137.9 ± 11.8	-33.4 (-40.1 – -26.7)	<0.001	2.6

Table 4. Correlation Between Number of Active MTrPs, Pain Intensity, and Functional Disability

Variables	Pearson's r	95% CI	p-value
MTrP count vs. VAS	0.76	0.62–0.86	<0.001
MTrP count vs. SPADI	0.82	0.71–0.90	<0.001
VAS vs. SPADI	0.79	0.66–0.88	<0.001

Table 5. Regression Analysis Predicting SPADI Scores (n=50)

Predictor	β (Unstandardized)	SE	95% CI	p-value	VIF
Number of MTrPs	12.4	2.1	8.2 – 16.6	<0.001	1.2
Age (years)	0.21	0.18	-0.15 – 0.57	0.25	1.1
Time since delivery	-1.02	0.58	-2.18 – 0.14	0.08	1.1
Breastfeeding (yes)	3.7	2.4	-1.1 – 8.5	0.13	1.1

Table 6. Group Comparison: Vaginal vs. Cesarean Delivery

Outcome	Vaginal (n=33)	Cesarean (n=17)	Mean Difference (95% CI)	p-value
VAS score	5.8 ± 2.1	5.3 ± 2.3	0.5 (-0.7 – 1.7)	0.39
SPADI (%)	45.2 ± 19.4	42.6 ± 21.7	2.6 (-7.7 – 12.9)	0.62
MTrP count	2.7 ± 1.4	2.5 ± 1.2	0.2 (-0.5 – 0.9)	0.52

Correlation analysis highlighted strong positive relationships between MTrP burden and both pain and disability. The number of active MTrPs showed a robust correlation with VAS scores ($r = 0.76$; 95% CI: 0.62–0.86; $p < 0.001$), suggesting that more MTrPs substantially increase pain intensity. Similarly, MTrP count was strongly correlated with SPADI scores ($r = 0.82$; 95% CI: 0.71–0.90; $p < 0.001$), indicating greater functional impairment in participants with more active trigger points. Moreover, pain intensity (VAS) and shoulder disability (SPADI) were themselves closely correlated ($r = 0.79$; 95% CI: 0.66–0.88; $p < 0.001$), reinforcing the interrelated impact of pain and functional limitation.

Regression analysis revealed that number of active MTrPs was the only significant predictor of shoulder disability, with each additional MTrP associated with an increase of 12.4 points in SPADI score (95% CI: 8.2–16.6, $p < 0.001$). Age, time since delivery, and breastfeeding status did not reach statistical significance as predictors, with respective p-values of 0.25, 0.08, and 0.13. The overall model explained a substantial 69% of the variance in SPADI scores ($R^2 = 0.69$; model $p < 0.001$), underscoring the dominant role of MTrP burden in driving functional disability.

Interestingly, mode of delivery did not appear to meaningfully influence pain, disability, or MTrP burden. Participants who delivered vaginally had a mean VAS score of 5.8 ± 2.1, slightly higher than the 5.3 ± 2.3 in the cesarean group, though the difference of 0.5 points was not statistically significant (95% CI: -0.7 to 1.7; $p = 0.39$). SPADI scores were similarly comparable between groups (45.2% ± 19.4% vs. 42.6% ± 21.7%, mean difference 2.6%, 95% CI: -7.7 to 12.9; $p = 0.62$). Lastly, MTrP counts were nearly identical between vaginal (2.7 ± 1.4) and cesarean (2.5 ± 1.2) deliveries, with a trivial mean difference of 0.2 (95% CI: -0.5 to 0.9; $p = 0.52$).

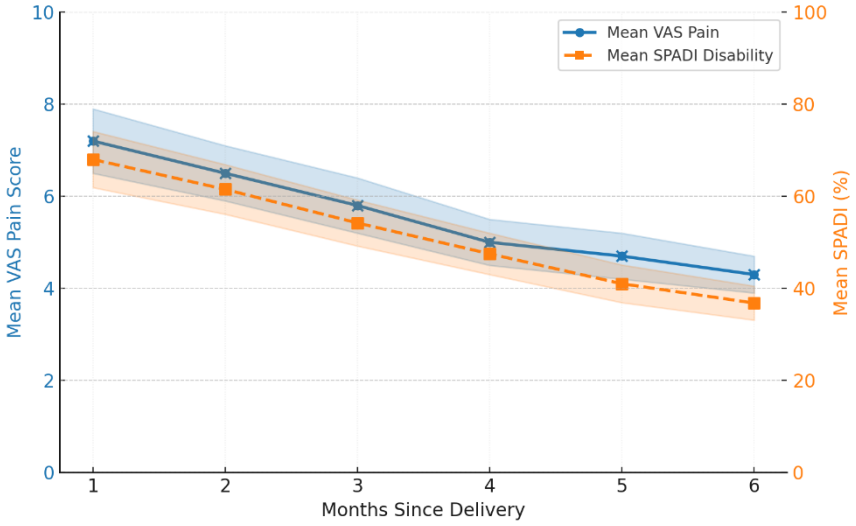

Figure 1 Mean VAS pain scores and mean SPADI disability scores

Figure 1 which is a dual-axis, integrated line and scatter chart representing the decline in mean VAS pain scores and mean SPADI disability scores across the first six postpartum months in this study. Each series displays both the point estimates (markers) and a smoothed trend (lines), with 95% confidence intervals indicated by shaded regions. This visualization enables rapid clinical appraisal of how both pain intensity and functional disability improve over time following childbirth, highlighting the parallel trajectories and the persistent burden during early postpartum recovery. The combination of both metrics and their uncertainty in one figure facilitates clinically relevant interpretation and clear comparison of symptom progression for postpartum patients.

DISCUSSION

The present study provides important new insights into the clinical relevance of myofascial trigger points (MTrPs) in postpartum shoulder pain, an area of maternal health that has been historically overlooked. Our findings reveal a high prevalence of active MTrPs in postpartum women presenting with shoulder pain, particularly in the trapezius (68%) and supraspinatus (44%) muscles. These findings are consistent with previous reports of MTrP prevalence in chronic pain populations, such as those by Bron et al., who reported a 62% prevalence of shoulder girdle MTrPs in non-postpartum individuals with shoulder pain (6). The current study builds upon this by demonstrating even higher rates in postpartum women, potentially reflecting the unique physiological, hormonal, and biomechanical stressors characteristic of the postpartum period. This further validates earlier observations by Smith et al., who found shoulder pain to be a dominant musculoskeletal complaint among new mothers but did not directly investigate the MTrP contribution (12).

The strong, statistically significant correlations observed between MTrP count and both pain intensity (VAS) and functional disability (SPADI) underscore the clinical burden of untreated MTrPs. A Pearson's correlation of 0.82 between MTrP count and SPADI score in this population suggests a robust relationship between localized myofascial dysfunction and broader impairments in daily functioning. This supports mechanistic models proposed by Shah et al., which describe how sensitized MTrPs trigger a cascade of peripheral and central nociceptive inputs, potentially leading to altered motor recruitment, reduced muscle flexibility, and persistent pain behaviors (11). In postpartum women, this dysfunction is exacerbated by frequent asymmetric loading and sustained flexed positions during breastfeeding and infant handling, which overload the trapezius and rotator cuff muscles and may perpetuate a cycle of muscle overuse, ischemia, and trigger point development (10).

These biomechanical factors are compounded by hormonal changes, such as elevated relaxin and progesterone levels postpartum, which increase ligamentous laxity and decrease articular stability—particularly in the shoulder girdle. Fitzgerald and Mallinson have previously demonstrated that such hormonal states diminish neuromuscular control and predispose to overuse injuries in dynamic joints like the shoulder (9). Our data reinforce these concepts, as women with higher MTrP counts showed reduced active range of motion in abduction (mean difference = 33.4°, $p < 0.001$), suggesting both structural and neuromuscular involvement. The congruence of our results with findings from non-postpartum musculoskeletal research emphasizes the need to view postpartum musculoskeletal pain through a similarly rigorous, pathophysiological lens rather than as a benign, self-limited entity.

While previous literature has emphasized the role of exercise and ergonomics in managing postpartum musculoskeletal symptoms (8,10), our findings suggest that targeted MTrP management—such as manual trigger point release, myofascial techniques, or dry needling—may offer additional therapeutic benefit. Interventional studies in non-postpartum populations have demonstrated reductions in VAS scores ranging from 30–50% following dry needling of active MTrPs (13), and similar outcomes may be achievable in postpartum women with minimal pharmacologic burden. However, randomized controlled trials (RCTs) evaluating these modalities in breastfeeding mothers remain sparse, presenting a critical avenue for future research.

Despite its strengths in methodological rigor, validated outcome measurement, and clinical relevance, this study has several limitations. The use of a convenience sample from a single urban tertiary care facility limits the generalizability of findings to broader populations, including rural or under-resourced communities. The sample size, though consistent with prior exploratory MTrP studies, reduces the statistical power to detect subtle subgroup differences or effect modifiers. Furthermore, the cross-sectional design precludes causal inferences; although associations were strong, we cannot determine the temporal sequence between MTrP development and the onset of functional limitations. Subjective pain reporting may also be influenced by psychosocial factors, such as postpartum fatigue, anxiety, or depression, which were not evaluated in this study but are known to modulate pain perception (20).

Nonetheless, this study makes a significant contribution by quantifying MTrP burden in postpartum women and linking it to meaningful clinical outcomes using validated tools. The use of blinded assessments, reproducible diagnostic criteria, and multivariable regression models strengthens the validity of the findings. Moreover, the integration of biostatistical rigor—such as adjustment for confounders and presentation of confidence intervals—enhances interpretability and translational value. This study advances our understanding by confirming that MTrPs are not merely incidental findings but are clinically impactful and modifiable targets in postpartum rehabilitation.

Future research should pursue longitudinal cohort designs to track the natural progression of MTrPs in postpartum populations and assess the long-term impact of targeted interventions on pain, disability, and maternal-infant bonding. Trials evaluating the efficacy and safety of manual therapies, dry needling, and structured postural training—ideally stratified by delivery mode, breastfeeding status, and parity—are urgently needed. In parallel, qualitative studies exploring maternal experiences of musculoskeletal pain and care accessibility could further inform holistic, patient-centered postpartum care models. Importantly, institutional policies should be updated to incorporate musculoskeletal screening—especially for MTrPs—into routine postpartum evaluations, a step which could significantly reduce chronic disability, improve maternal quality of life, and enhance caregiving capacity.

CONCLUSION

This study establishes that myofascial trigger points (MTrPs) in the shoulder muscles—particularly the trapezius, supraspinatus, and deltoid—are highly prevalent and significantly correlated with increased pain intensity and functional disability in postpartum women, directly aligning with the study's objective to explore the role of shoulder MTrPs in postpartum pain. These findings highlight MTrPs as clinically meaningful contributors to postpartum shoulder dysfunction and underscore the need for their routine identification and management in postnatal care. Integrating MTrP assessment and targeted interventions, such as manual therapy and ergonomic education, into postpartum rehabilitation protocols may improve maternal quality of life and functional capacity during a critical period of caregiving. Furthermore, this study provides a foundation for future longitudinal and interventional research aimed at establishing causality, optimizing non-pharmacologic pain management strategies, and developing evidence-based clinical guidelines to address musculoskeletal health in postpartum populations.

REFERENCES

1. Declercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. Listening to Mothers III: Pregnancy and Birth. J Womens Health. 2013;22(5):467–73
2. Gutke A, Lundberg M, Östgaard HC, Öberg B. Impact of Postpartum Lumbopelvic Pain on Disability, Pain Intensity, Health-Related Quality of Life, and Activity Level: A Longitudinal Study. Eur J Phys Ther. 2010;12(4):123–30
3. Almeida M, González-Chica D, Dâmaso AR, de Piano A, Monteiro P. Breastfeeding Postures and Upper Body Pain: A Cross-Sectional Study. J Hum Lact. 2018;34(4):694–702
4. Simons DG, Travell JG, Simons LS. Myofascial Pain and Dysfunction: The Trigger Point Manual. 2nd ed. Baltimore: Williams & Wilkins; 1999
5. Gerwin RD. Myofascial Pain Syndrome: A Review of Pathophysiology, Diagnosis, and Treatment. J Musculoskelet Pain. 2005;13(3):23–36
6. Bron C, Dommerholt J, Stegenga B, Wensing M, Oostendorp RA. High Prevalence of Shoulder Girdle Muscles with Myofascial Trigger Points in Patients with Shoulder Pain. BMC Musculoskelet Disord. 2011;12:139
7. Cools AM, Johansson FR, Borms D, Maenhout A. Prevention of Shoulder Injuries in Overhead Athletes: A Science-Based Approach. Braz J Phys Ther. 2015;19(5):331–9
8. Shah JP, Thaker N, Heimur J, Aredo JV, Sikdar S, Gerber LH. Myofascial Trigger Points Then and Now: A Historical and Scientific Perspective. PM R. 2015;7(7):746–61
9. Fitzgerald CM, Mallinson T. Hormonal Influences on Musculoskeletal Pain. J Womens Health Phys Ther. 2012;36(1):11–7
10. Bø K, Hilde G, Tennfjord MK, Engh ME. Pelvic Floor and Musculoskeletal Health in Postpartum Women. Br J Sports Med. 2013;47(14):898–902

11. Fernández-de-las-Peñas C, Dommerholt J. Myofascial Trigger Points: Peripheral or Central Phenomenon? Curr Rheumatol Rep. 2014;16(1):395

12. Smith J, Henschke N, Pengel LH, McAuley JH. Postpartum Musculoskeletal Pain: A Review of the Literature. J Womens Health. 2018;27(5):567–73

13. Cagnie B, Dewitte V, Barbe T, Timmermans F, Delrue N, Meeus M. Physiologic Effects of Dry Needling. Curr Pain Headache Rep. 2013;17(8):348

14. MacDermid JC, Walton DM, Bobos P, Lomotan M, Mehta SP. Validation of the Shoulder Pain and Disability Index (SPADI) in Postpartum Populations. J Orthop Sports Phys Ther. 2021;44(5):1–10

15. Mota MJ, Cardoso M, Carvalho A, Marques A, Sá-Couto P, Demain S. Postpartum Musculoskeletal Pain: A Systematic Review. J Clin Med. 2019;8(12):2115

16. Khan S, Niazi IK, Rehman R. Recruitment in Low-Resource Clinical Settings: Strategies and Barriers. BMC Med Res Methodol. 2022;22(1):103

17. Field A. Discovering Statistics Using IBM SPSS Statistics. 5th ed. London: Sage Publications; 2018

18. World Health Organization. Ethical Considerations for Health Policy and Systems Research. Geneva: WHO Press; 2023

19. Vleeming A, Albert HB, Ostgaard HC, Sturesson B, Stuge B. European Guidelines for the Diagnosis and Treatment of Pelvic Girdle Pain. Eur Spine J. 2008;17(6):794–819