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Assessment of Pain Symptoms in Primary Care Physiotherapy: Insights from Patient-Reported Data

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ABSTRACT

Objective: Musculoskeletal (MSK) pain is a leading cause of disability, significantly affecting quality of life and work productivity. Many individuals initially rely on self-medication and home remedies, leading to delayed physiotherapy intervention. Understanding patient-reported pain characteristics is essential for optimizing physiotherapy management strategies. This study aims to analyze pain distribution, intensity, symptom duration, and recurrence among patients seeking primary care physiotherapy.
Methods: A cross-sectional observational study was conducted across primary care physiotherapy clinics in the Middle East, using a systematic random sampling approach. Data from 1,600 patients were collected via validated self-reported questionnaires before their initial consultation. Pain characteristics, including primary symptom site, co-occurring pain sites, intensity (0–10 Numeric Rating Scale), symptom duration, and recurrence, were analyzed. Descriptive and inferential statistics, including multivariate logistic regression, were used to identify predictors of chronic pain.
Results: The lower back (38.5%) was the most common primary symptom site, followed by the knee (22.1%) and shoulder (14.3%). Co-occurring pain was reported in 47.8% of cases. The mean pain intensity was 6.7 (SD = 1.9), with 50.4% experiencing chronic pain (>12 weeks). Higher pain intensity (OR = 2.3, $p < 0.001$) and multiple pain sites (OR = 1.9, $p < 0.001$) were significant predictors of chronic pain.
Conclusion: MSK pain is highly prevalent, with many patients experiencing chronic and recurrent symptoms. Early physiotherapy intervention should be prioritized for individuals with high pain intensity and multisite pain to prevent long-term disability. Future research should explore multifactorial contributors and assess treatment efficacy in physiotherapy settings.
Keywords: chronic; data; experience; muscle; skeleton

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Introduction

Musculoskeletal (MSK) pain is a significant global health concern, contributing to disability, reduced work productivity, and diminished quality of life. [1] According to the Global Burden of Disease Study, MSK conditions, particularly osteoarthritis and lower back pain, are among the leading causes of years lived with disability (YLDs) worldwide. [2] In many countries, individuals experiencing MSK pain initially rely on self-medication and home remedies, including over-the-counter (OTC) pain relievers, herbal treatments, and traditional therapies, especially in

regions with limited access to healthcare.

This early-stage reliance on self-care not only reflects systemic healthcare access limitations but also underscores cultural norms that influence help-seeking behaviors in different populations. [3] Prolonged self-medication may delay diagnosis and contribute to chronic conditions, sometimes resulting in adverse health outcomes due to inappropriate medication use. [4] For example, excessive use of nonsteroidal anti-inflammatory drugs (NSAIDs) without medical supervision has been associated with gastrointestinal complications, renal impairment, and cardiovascular risks. [5] Similarly, unregulated traditional therapies can worsen symptoms or cause additional musculoskeletal injuries. [6] Consequently, many individuals seek physiotherapy care only after their condition has progressed, limiting the potential for timely and effective intervention.

Patient-reported data (PRD) have become essential in medical research and clinical practice, offering valuable insights into disease burden, symptom progression, and treatment outcomes. [7] Self-reported health data are commonly used in various medical fields to assess patient outcomes and quality of life. Numerous studies have highlighted the reliability and utility of patient-reported outcome measures (PROMs) in capturing the lived experiences of patients with chronic conditions. [8, 9]

However, the majority of these studies are concentrated in high-income countries and specialized care settings, where digital infrastructure and standardized PROM tools are more readily available. Despite their growing application in general medicine, less is known about the integration of PRD in physiotherapy, particularly in primary care contexts. This gap limits our understanding of patient experiences with MSK pain and hampers the development of patient-centered treatment strategies in physiotherapy.

Moreover, research on MSK symptom patterns often fails to disaggregate primary versus co-occurring pain sites, obscuring important clinical distinctions that could influence treatment planning. Additionally, relatively few studies investigate symptom recurrence trends—an important dimension in chronic pain prognosis.

Given the high prevalence of MSK pain and the widespread tendency for self-medication, understanding the symptom patterns of patients seeking physiotherapy is crucial. By analyzing patient-reported data, this study aims to identify trends in symptom site distribution, pain intensity, duration, and recurrence among patients in a primary care setting. The study also seeks to characterize subgroups based on symptom chronicity and recurrence profiles, offering a more granular perspective on clinical presentation. These insights may support the development of more tailored physiotherapy interventions and improve patient management strategies in primary care.

Materials and Methods

Study Design

This study employed a cross-sectional observational design aimed at analyzing patient-reported data concerning musculoskeletal (MSK) pain among individuals seeking physiotherapy care. The cross-sectional approach was selected due to its efficiency in capturing population-level symptom patterns and health-seeking behaviors at a single point in time. This design enables the examination of associations between variables such as pain location, intensity, and chronicity, which are critical for informing physiotherapy service planning and individualized care models.

Data were extracted from a national clinical database comprising patient responses to standardized pre-consultation questionnaires. These data reflect real-world patient experiences and were collected in naturalistic clinical settings, thus enhancing the ecological validity of the findings. No interventions were administered during the study, aligning with the observational nature of the design.

Study Setting

The study was conducted within a comprehensive network of physiotherapy clinics distributed across multiple urban and semi-urban regions in the Middle East. These clinics specialize in primary care physiotherapy and provide outpatient services for a wide spectrum of MSK disorders. The network's centralized data management system facilitated access to patient-reported outcomes collected at the initial point of care. This setting was purposefully chosen to reflect common primary care environments where physiotherapists function as frontline providers, particularly for non-surgical MSK conditions.

Study Duration

Data collection spanned a continuous 12-month period from January 2024 to December 2024. This duration was strategically selected to account for seasonal variability in healthcare utilization and symptom presentation, which are known to influence the frequency and type of MSK complaints. Collecting data throughout the calendar year also ensured a diverse and representative patient population reflective of routine clinical operations.

Sampling Method and Sample Size

A systematic random sampling strategy was implemented to minimize selection bias and ensure representativeness of the target population. Patients were systematically selected from the database based on a predefined interval to avoid over-representation of specific days or clinics.

Inclusion criteria specified adults aged 18 years and older who were presenting for their initial physiotherapy consultation for MSK pain, had completed the pre-consultation patient questionnaire, and had provided informed consent for the anonymized use of their data for research purposes. Patients were excluded if they had neurological disorders, were undergoing post-operative rehabilitation, or had incomplete responses on key variables.

The required sample size was calculated using standard epidemiological formulas for cross-sectional studies. Assuming a prevalence of MSK pain at 50%—a conservative estimate to maximize variability—with a 95% confidence level and a 5% margin of error, the minimum necessary sample was determined to be 1,600 patients. To enhance statistical power and account for potential exclusions, a slight oversampling was incorporated.

Patient Questionnaire and Data Collection

The primary data source was a standardized, self-administered questionnaire that patients completed before their first physiotherapy session. The questionnaire was developed by a multidisciplinary team of physiotherapists, epidemiologists, and biostatisticians. It was designed to capture critical pain-related variables, including the anatomical site of the primary symptom (e.g., neck, lower back, shoulder, knee), the presence of co-occurring pain sites, pain intensity as measured by a 0–10 Numeric Rating Scale (NRS), and the duration and recurrence of symptoms.

Pain duration was categorized into three clinically relevant stages: acute (symptoms lasting ≤6 weeks), subacute (between 6 and 12 weeks), and chronic (symptoms persisting for more than 12 weeks). Symptom recurrence was defined dichotomously based on patient-reported history as either a single episode or recurrent episodes. These classifications were aligned with international pain management guidelines to ensure consistency and comparability with existing literature.

The questionnaire was available in both Arabic and English. Its face validity, internal consistency, and clarity were assessed through a pilot study involving 16 participants. Bilingual field personnel were trained to assist patients with low literacy or limited fluency to ensure comprehension and completeness. Questionnaires were reviewed immediately after completion, and patients were prompted to clarify missing or ambiguous responses when appropriate, thereby improving data quality.

Data Management and Protection

Completed questionnaires were digitized and entered into a secure, centralized clinical database. Personal identifiers, such as names or contact details, were removed during the entry process and replaced with unique study identifiers to ensure confidentiality. Only authorized research personnel with institutional credentials had access to the de-identified dataset, which was stored on encrypted, password-protected servers in compliance with international data protection regulations.

Data accuracy was ensured through a double-entry verification process on a randomly selected 10% of records. Any discrepancies were resolved through audit trails and original questionnaire checks. The dataset was regularly backed up and subject to periodic integrity checks by a designated data manager.

The study protocol was reviewed and approved by the Institutional Review Board (IRB/RAK-2023-12-05), and all study procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and Good Clinical Practice (GCP) guidelines. Written informed consent was obtained from all participants.

Bias Reduction and Quality Assurance

Several methodological safeguards were implemented to minimize potential sources of bias. Sampling procedures were standardized across clinics to prevent location-based selection bias. Field personnel underwent centralized training to ensure uniform administration of the questionnaire. Missing data on continuous and categorical variables were addressed using multiple imputation with chained equations, incorporating demographic and clinical predictors to preserve statistical robustness.

Inter-rater reliability checks were conducted on both the data collection and data entry phases. Kappa coefficients exceeding 0.85 were considered acceptable and were achieved in all tested domains. These measures collectively enhanced the internal validity and reproducibility of the findings.

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics (version 29, IBM Corporation, USA; institutional license). Descriptive statistics were calculated to summarize the demographic and clinical characteristics of the sample. Categorical variables such as symptom site, duration category, and recurrence status were presented as frequencies and percentages. Continuous variables including pain intensity and age were described using means and standard deviations (SD) for normally distributed data, or medians and interquartile ranges (IQR) when data were non-normally distributed.

Normality was assessed using the Shapiro-Wilk test. Based on distributional characteristics, parametric or non-parametric inferential tests were applied. Chi-square tests were used to evaluate associations between categorical variables. Independent t-tests or Mann–Whitney U tests were employed for two-group comparisons of continuous variables, while one-way ANOVA or Kruskal–Wallis tests were used for comparisons involving more than two groups.

Correlations between continuous clinical variables such as symptom duration, pain intensity, and recurrence frequency were assessed using Spearman's rank correlation coefficients. To identify independent predictors of chronic MSK pain (defined as duration >12 weeks), multivariate logistic regression was performed. Predictor variables included demographic (age, sex) and clinical characteristics (pain intensity, recurrence, and number of pain sites). Odds ratios (ORs) and 95% confidence intervals (CIs) were reported. A two-tailed p-value of <0.05 was considered statistically significant for all tests.

Results

A total of 1,600 participants from primary care physiotherapy clinics across the Middle East were included in the analysis. The mean age of participants and their demographic information are presented in Table 1.

Table 1: Demographic Characteristics of Participants

Characteristic	**Mean ± S.D**
Age	39.9 ± 8.5
Gender	**N (%)**
Male	560 (35)
Female	1040 (65)
Past remedies for ongoing symptoms	**Yes, N (%)**
Medical Doctor	588
Chiropractor	570
Physiotherapist	150
Neurologist	12
Any other person	280

Primary Symptom Site and Co-occurring Pain

The most commonly reported primary symptom site was the lower back (38.5%), succeeded by the knee (22.1%), shoulder (14.3%), and neck (12.7%). Co-occurring pain was present in 47.8% of participants, with the most frequent co-occurring site being the hip and lower back (16.4%) (Table 2).

Table 2: Pain Characteristics Among Participants

Pain Characteristic	Value
Mean Pain Intensity (0-10 NRS)	6.7 (SD = 1.9)
Acute Pain (â‰¤6 weeks)	28.20%
Subacute Pain (6-12 weeks)	21.40%
Chronic Pain (>12 weeks)	50.40%
Recurrent Pain Episodes (%)	62.70%

Pain Intensity, Symptom Duration, and Recurrence

The mean intensity of pain reported on the Numeric Rating Scale from 0–10 was 6.7 (SD = 1.9). Acute pain (≤6 weeks) was reported in 28.2% of patients, subacute pain (6–12 weeks) in 21.4%, and chronic pain (>12 weeks) in 50.4%. Recurrent episodes of pain were reported by 62.7% of patients, indicating a high prevalence of persistent symptoms among physiotherapy seekers.

Associations and Predictors of Chronic Pain

Multivariate logistic regression analysis identified that higher pain intensity (OR = 2.3, 95% CI: 1.8–2.9, $p < 0.001$) and multiple co-occurring pain sites (OR = 1.9, 95% CI: 1.5–2.4, $p < 0.001$) were significant predictors of chronic pain (>12 weeks) (Table 3).

Table 3: Predictors of Chronic Pain (>12 weeks) in Multivariate Analysis

Predictor	Odds Ratio (OR)	95% Confidence Interval (CI)	P-Value
Higher Pain Intensity	2.3	1.8 - 2.9	<0.001
Multiple Co-occurring Pain Sites	1.9	1.5 - 2.4	<0.001

Discussion

This study analyzed patient-reported data from 1,600 individuals seeking primary care physiotherapy across the Middle East to understand pain characteristics, symptom patterns, and predictors of chronic pain. The findings revealed that the lower back (38.5%) was the most commonly reported primary symptom site, followed by the knee (22.1%), shoulder (14.3%), and neck (12.7%). Co-occurring pain was present in 47.8% of participants, with the most frequent additional pain site being the hip and lower back (16.4%). The mean pain intensity was reported as 6.7 (SD = 1.9) on a Numeric Rating Scale from 0–10, and chronic pain (>12 weeks) was found in 50.4% of participants. Recurrent pain episodes were reported by 62.7% of patients, highlighting the persistent nature of MSK conditions in this population. Multivariate logistic regression indicated that higher pain intensity (OR = 2.3, 95% CI: 1.8–2.9, $p < 0.001$) and multiple co-occurring pain sites (OR = 1.9, 95% CI: 1.5–2.4, $p < 0.001$) were significant predictors of chronic pain.

The findings align with previous research indicating that lower back pain is the most prevalent MSK condition globally, particularly in middle-aged and older adults. [10-12] A study by Wu and his team in the Global Burden of Disease Study also highlighted pain in the lower back as the leading cause of disability worldwide. [12] The high prevalence of knee pain in this study is consistent with research on osteoarthritis prevalence in aging populations, as knee pain is often linked to degenerative changes and mechanical stress. Additionally, the study's findings on co-occurring pain are comparable to a study by Curatolo, which found that multisite MSK pain is common among primary care patients, with over 40% reporting more than one pain site. [13]

Notably, the high prevalence of recurrent pain episodes and chronicity observed in this population indicates the need for prioritizing early screening protocols within physiotherapy practice. Implementing standardized screening tools at the point of care could assist clinicians in identifying patients at risk for chronic pain development, allowing for timely intervention. Furthermore, structured chronic pain management pathways should be considered a priority in physiotherapy settings, especially given the strong association between higher pain intensity, multisite symptoms, and long-term disability. These protocols could include education, pain neuroscience interventions, and individualized exercise programs tailored for chronic pain patients.

The high proportion of chronic pain cases (50.4%) suggests that many patients may delay seeking physiotherapy until symptoms become persistent or debilitating, reinforcing findings from research in Europe and North America, where delayed healthcare utilization contributes to chronicity. [14]

The association between higher pain intensity and chronic pain has been widely documented in the literature. A previous study suggested that sensory hypersensitivity and central sensitization play a key role in chronic pain persistence, potentially explaining why patients with higher pain scores in this study were more likely to experience prolonged symptoms. [15] The significance of co-occurring pain sites as a predictor of chronic pain suggests that patients with widespread musculoskeletal discomfort may have underlying factors such as systemic inflammation, altered pain processing, or biomechanical compensations contributing to their prolonged symptoms. This aligns with previous literature, which identified widespread pain as a predictor of

poor rehabilitation outcomes in physiotherapy patients. [16]

Cultural considerations also warrant discussion, particularly given the study's Middle Eastern setting. Pain expression and health-seeking behaviors in this region may be influenced by sociocultural norms, stigma surrounding chronic pain, gender dynamics, and traditional beliefs about illness and treatment. In some communities, self-reported pain may be under- or over-estimated due to social desirability bias or expectations about endurance. These cultural dynamics may partly explain the high rates of delayed care and chronicity observed.

While the study was regionally focused, the patterns of symptom distribution and predictors of chronicity are likely to be generalized to other primary care physiotherapy contexts, particularly in countries with similar healthcare access challenges, reliance on self-medication, or aging populations. However, caution should be exercised when applying findings to high-income countries with more integrated pain management models or routine early intervention.

This study has several strengths, including a large sample size (n = 1,600) and the use of validated self-reported measures to assess pain characteristics. Additionally, the inclusion of a diverse primary care population across multiple clinics enhances the generalizability of the findings. However, there are limitations to consider. First, self-reported pain data may be subject to recall bias and subjective variation in pain perception. Second, the study does not explain the psychosocial factors like stress, mental health, or socioeconomic status, which are known to influence pain chronicity. Incorporating instruments such as the Pain Catastrophizing Scale or Depression Anxiety Stress Scales (DASS-21) in future research could offer valuable insights into these psychosocial dimensions. Future research should consider longitudinal studies to track pain progression over time and incorporate objective clinical assessments (e.g., imaging, functional tests) to complement self-reported data. Additionally, exploring the impact of physiotherapy interventions on symptom improvement could provide useful apprehension into treatment success.

Finally, given the high burden of chronic MSK pain identified in this study, health policy implications should also be considered. Integrating physiotherapy more prominently into primary care pathways—alongside public education about early physiotherapy access—could potentially reduce chronicity rates and improve long-term outcomes.

Conclusion

Valuable insights were provided in this study regarding pain attributes, symptom patterns, as well as predictors of chronic pain among patients seeking primary care physiotherapy in the Middle East. The findings highlight the high prevalence of lower back and knee pain, the persistence of MSK symptoms, and the associations between pain intensity, co-occurring pain sites, and chronicity. Given these findings, early physiotherapy interventions and targeted rehabilitation strategies should be prioritized for high-risk patients to prevent long-term disability. Future research should explore multifactorial contributors to chronic pain and evaluate effective intervention approaches to improve patient outcomes in physiotherapy settings.

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Author Contribution

The author contributed substantially to the manuscript and is the sole contributor according to the ICMJE guidelines

Data Availability Statement

All relevant data are within the manuscript. Additional data supporting this study are available from the corresponding author upon reasonable request.

Ethical Considerations

All methods were carried out in accordance with the Declaration of Helsinki. The study was approved by Ethical Review Board of the parent institution (IRB/RAK-2023-12-05). Written and verbal consent was obtained from all participants.

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Conflict of Interest

None

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