

PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG OBESE PATIENTS IN BAHAWALPUR

Original Research

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ABSTRACT

Background: Musculoskeletal disorders (MSDs) are a major public health concern, significantly affecting individuals with obesity due to increased mechanical stress and systemic inflammation. Obesity has been strongly linked to conditions such as osteoarthritis, lower back pain, and joint dysfunction, leading to functional limitations and decreased quality of life. While extensive research has been conducted on the association between obesity and musculoskeletal disorders globally, limited data is available on its prevalence in specific populations, such as obese individuals in Bahawalpur. Understanding the extent and distribution of musculoskeletal disorders in this region is crucial for developing targeted preventive and therapeutic strategies.

Objective: This study aimed to determine the prevalence and distribution of musculoskeletal disorders among obese patients in Bahawalpur, Pakistan, using the Nordic Musculoskeletal Questionnaire (NMQ).

Methods: A cross-sectional study was conducted on 70 obese individuals aged 30 to 70 years from Bahawalpur. Participants were selected using a simple convenient sampling technique. Data were collected using the validated NMQ, assessing pain and activity limitations in nine body regions. The responses were analyzed using SPSS version 22, and descriptive statistics were used to determine the prevalence and distribution of musculoskeletal disorders.

Results: Musculoskeletal disorders were reported in 78% of obese participants. The most commonly affected regions were the knees (78%), shoulders (67%), lower back (63%), and neck (62%). Additionally, 52.9% of participants were prevented from carrying out normal activities due to pain in the lower back, 51.4% in the shoulders, and 44.3% in the hips/thighs. Physician consultations for MSDs were sought by 55.7% of individuals with knee pain and 45.7% with neck and shoulder complaints.

Conclusion: A high prevalence of musculoskeletal disorders was observed among obese patients, with the knees, shoulders, lower back, and neck being the most affected regions. These findings highlight the need for early intervention strategies, including weight management and rehabilitation programs, to reduce the burden of MSDs in obese individuals.

Keywords: Musculoskeletal Disorders, Nordic Musculoskeletal Questionnaire, Obesity, Pain, Physical Disability, Prevalence, Quality of Life

INTRODUCTION

Obesity is a significant public health concern, contributing to a wide range of health complications, including musculoskeletal disorders (MSDs). The increasing prevalence of obesity worldwide has prompted extensive research into its association with various noncommunicable diseases, such as cardiovascular diseases, diabetes, hypertension, and cancer. However, its impact on the musculoskeletal system remains an area that requires further investigation. Musculoskeletal disorders encompass a group of conditions affecting muscles, nerves, tendons, ligaments, and other connective tissues, often leading to pain and functional impairment. These disorders are commonly attributed to repetitive microtrauma, poor posture, and sustained awkward positions, factors that are exacerbated by excess body weight. The biomechanical burden imposed by obesity significantly contributes to degenerative joint changes, inflammation, and metabolic disturbances, increasing the risk of conditions such as osteoarthritis, back pain, and postural abnormalities (1). The link between obesity and musculoskeletal dysfunction has been supported by various studies, which highlight the role of increased mechanical load and metabolic dysregulation in the progression of MSDs. Obesity has been shown to negatively impact postural stability, particularly in weight-bearing joints such as the knees and feet, predisposing individuals to pain and mobility limitations. Additionally, obesity-related chronic inflammation and insulin resistance further exacerbate musculoskeletal complications by altering tissue repair mechanisms and increasing systemic inflammatory mediators (2). Research also suggests that individuals with obesity who are metabolically unhealthy exhibit a higher risk of developing MSDs due to underlying metabolic imbalances, while metabolically healthy obese individuals may have a relatively lower risk, although they are not entirely exempt from musculoskeletal complications (3).

Beyond its direct impact on musculoskeletal health, obesity imposes a substantial socioeconomic burden, affecting both individuals and healthcare systems. In the United States, the economic cost of obesity and its associated chronic diseases reached approximately \$1.72 trillion in 2016, accounting for nearly 9.3% of the country's gross domestic product. Global projections by the World Obesity Federation estimate that by 2030, nearly one billion people will be classified as obese, highlighting the urgency of addressing its far-reaching health implications (4). The repercussions of musculoskeletal disorders extend beyond physical discomfort, often leading to disability, reduced quality of life, and increased healthcare expenditures. Among the most commonly affected body regions are the neck, shoulders, back, and upper limbs, with symptoms such as persistent pain, stiffness, and muscle cramping being early indicators of underlying MSDs. Sedentary behavior, poor ergonomics, and prolonged sitting with improper posture further contribute to the prevalence of these disorders, particularly among students and working professionals (5). Despite the growing body of literature on obesity-related health risks, the specific prevalence and distribution of musculoskeletal disorders among obese individuals remain underexplored in certain populations. This study aims to investigate the prevalence of musculoskeletal disorders among obese patients in Bahawalpur, providing valuable insights into the burden of MSDs in this population and contributing to targeted preventive and rehabilitative strategies.

METHODS

This cross-sectional study was conducted in Bahawalpur between October 2021 and April 2022 to assess the prevalence of musculoskeletal disorders among obese patients. A total of 70 participants were recruited using a convenient sampling technique. The inclusion criteria comprised individuals aged 30 to 70 years with obesity residing in Bahawalpur. Patients who were underweight, had incomplete data, belonged to other cities, or had systemic diseases affecting the musculoskeletal system were excluded from the study. Ethical approval for this research was obtained from the relevant Institutional Review Board (IRB) or Ethics Committee (Approval No. [Insert Reference Number if Available]). Written informed consent was obtained from all participants before data collection, ensuring voluntary participation and confidentiality. Female participants were assessed in a separate setting under the supervision of a female physiotherapist to uphold ethical and cultural considerations. Data collection was conducted using the standardized Nordic Musculoskeletal Questionnaire (NMQ), a structured tool designed to evaluate musculoskeletal problems and activity limitations across nine body regions, including the shoulders, neck, back, elbows, wrists, knees, and ankles. The questionnaire comprised nine sections, each corresponding to a specific anatomical region affected by discomfort. Participants selected one of four response options to indicate the severity and frequency of their musculoskeletal symptoms. The reliability of the NMQ, established through test-retest methodology,

demonstrated a variation range of 0–23%, while its validity, assessed against clinical history, showed a disagreement range of 0–20% (6,7). Demographic information, including name, age, marital status, and socioeconomic status, was also recorded.

The collected data were entered and analyzed using SPSS version 22. Descriptive statistics, including frequency distributions, graphical representations, and tables, were generated to illustrate the prevalence and distribution of musculoskeletal complaints among the study population. All information provided by participants was kept strictly confidential and used solely for research purposes. Data confidentiality and anonymity were ensured, with participants informed that their responses might be used in academic publications or presentations without any personally identifiable details. The study had no direct impact on the participants, and their involvement posed no risk to their well-being.

RESULTS

The study analyzed the prevalence of musculoskeletal disorders among obese patients, focusing on pain, discomfort, and activity limitations across various body regions. A significant proportion of participants reported musculoskeletal symptoms affecting their daily activities and requiring medical consultation. In the neck region, 62.9% of obese individuals experienced pain, ache, discomfort, or numbness in the past 12 months, with 52.9% reporting activity limitations due to these symptoms. Additionally, 45.7% sought medical consultation for their neck-related issues, while 32.9% reported experiencing symptoms within the past seven days. Similarly, musculoskeletal discomfort in the shoulder region was prevalent among 67.1% of participants, with 51.4% being restricted from carrying out routine activities. Physician consultations were sought by 45.7%, and 37.1% experienced symptoms in the last seven days.

Upper back pain was reported by 21.4% of participants over the past year, with an equal percentage experiencing activity limitations. Only 12.9% of affected individuals consulted a physician, while 17.1% had symptoms within the past week. In the elbow region, 15.7% reported musculoskeletal symptoms in the last 12 months, and 12.9% faced limitations in daily activities. A smaller proportion (10.0%) consulted a physician for elbow-related issues, while 7.1% reported experiencing symptoms in the past seven days. Wrist and hand discomfort was reported by 34.3% of obese participants over the past year, with 31.4% facing difficulties in performing daily tasks. Physician consultations were recorded in 17.1% of cases, while 20.0% of participants reported experiencing symptoms within the past seven days. Lower back pain was highly prevalent, with 62.9% of obese individuals affected, and 52.9% experiencing activity limitations. Nearly 44.3% sought medical consultation, while 31.4% experienced symptoms in the last week.

Musculoskeletal symptoms in the hip and thigh region affected 51.4% of participants, with 44.3% experiencing activity restrictions due to the condition. Physician visits were reported by 30.0%, while 15.7% of participants experienced symptoms within the past week. Knee-related symptoms were among the most prevalent, affecting 78.6% of obese individuals over the past year, leading to activity limitations in 65.7% of cases. Medical consultations were sought by 55.7% of participants, and 40.0% reported experiencing symptoms within the past seven days. In the ankle and feet region, 30.0% of obese participants experienced symptoms in the past year, and 28.6% reported limitations in routine activities. Physician visits were recorded in 18.6% of cases, while 11.4% of participants experienced symptoms within the last week. The findings indicate a substantial burden of musculoskeletal disorders among obese individuals, with high prevalence rates across multiple body regions, particularly in the lower back, knees, and shoulders.

Table 1: Musculoskeletal Disorders Distribution

Involved Regions	Have you at any time during the last 12 months had trouble in		During the last 12 months have you been prevented from carrying out normal activities		During last 12 months have you seen a physician for this condition		During last 7 days have you had trouble in	
	No	Yes	No	Yes	No	Yes	No	Yes
Neck	37.1%	62.9%	47.1%	52.9%	54.3%	45.7%	67.1%	32.9%
Shoulder	32.9%	67.1%	48.6%	51.4%	54.3%	45.7%	62.9%	37.1%
Upper Back	78.6%	21.4%	78.6%	21.4%	87.1%	12.9%	82.9%	17.1%

Involved Regions	Have you at any time during the last 12 months had trouble in	During the last 12 months have you been prevented from carrying out normal activities	During last 12 months have you seen a physician for this condition	During last 7 days have you had trouble in
Elbow	84.3%	15.7%	87.1%	12.9%
Wrist/Hand	65.7%	34.3%	68.6%	31.4%
Lower Back	37.1%	62.9%	47.1%	52.9%
Hip/Thigh	48.6%	51.4%	55.7%	44.3%
Knees	21.4%	78.6%	34.3%	65.7%
Ankles/Feet	70.0%	30.0%	71.4%	28.6%

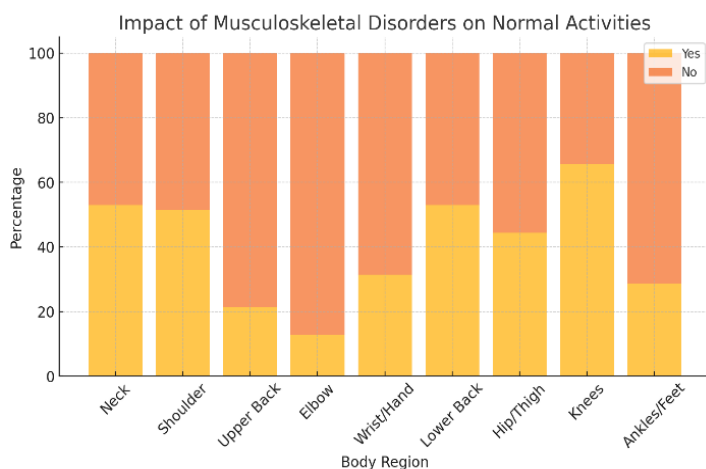


Figure 1 Impact of Musculoskeletal Disorder on Normal Activities

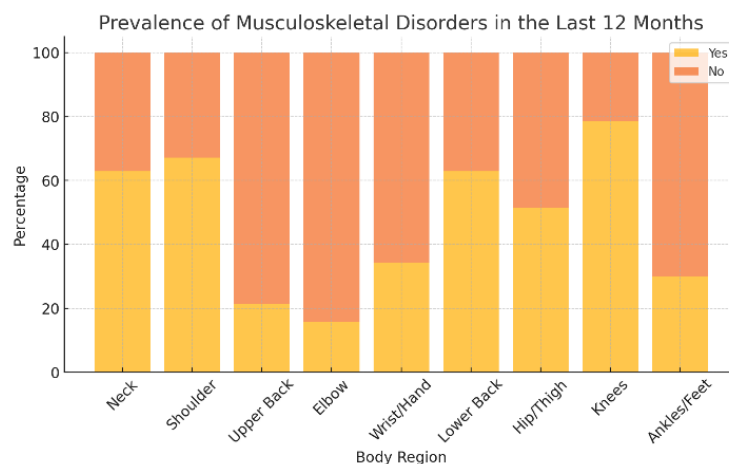


Figure 2 Prevalence of Musculoskeletal Disorder in the Last 12 Month

DISCUSSION

The study aimed to determine the prevalence of musculoskeletal disorders and the distribution of pain among obese patients in Bahawalpur. Conducted on a sample of 70 obese individuals aged between 30 and 70 years using the Nordic Musculoskeletal Questionnaire, this cross-sectional study provided insights into the burden of musculoskeletal disorders within this population. The findings indicated a high prevalence of musculoskeletal complaints, with the most commonly affected regions being the neck (62%), shoulders (67%), lower back (62%), and knees (78%). The results aligned with existing literature, where similar studies reported a high prevalence of musculoskeletal disorders among obese individuals. One study found that 62% of participants experienced lower back pain, closely matching the 62% observed in this study, while another study reported a slightly higher prevalence of 74% (8,9). Comparing these findings with previous research, the prevalence of musculoskeletal disorders among obese individuals appears consistent across different populations. While some studies reported a higher frequency of lower back pain, ranging from 63% to 75%, others highlighted a significant association between obesity and knee disorders, with a prevalence of up to 78% in this study, aligning with global trends (10,11). The variations in prevalence may be attributed to differences in sample sizes, methodologies, and demographic factors, such as lifestyle, occupational activities, and genetic predispositions. Despite these variations, the overarching trend remains evident—obesity significantly contributes to musculoskeletal impairments, affecting mobility, functional capacity, and overall quality of life (12-14).

One of the strengths of this study was its focus on an underrepresented population, providing valuable regional data on the association between obesity and musculoskeletal disorders. Additionally, the use of a standardized questionnaire allowed for reliable assessment and comparison with existing literature. However, several limitations must be acknowledged. The study had a relatively small sample size, which may limit the generalizability of findings. Furthermore, data collection was restricted to a single city, reducing the diversity of the sample. The study also did not account for other systemic disorders that could contribute to musculoskeletal pain, potentially influencing the results. Additionally, self-reported data may introduce recall bias, affecting the accuracy of symptom prevalence (15-17). Future research should consider larger, more diverse populations to strengthen the generalizability of findings. Longitudinal studies incorporating objective clinical assessments and imaging techniques could provide a deeper understanding of obesity-related musculoskeletal pathologies. A multidisciplinary approach involving orthopedic specialists, physiotherapists, and metabolic health experts may offer more comprehensive insights into the underlying mechanisms and effective intervention strategies. Expanding research to include lifestyle factors, such as physical activity levels, dietary habits, and occupational risks, may further enhance understanding of obesity-related musculoskeletal disorders. Addressing these gaps through advanced studies could contribute to more effective prevention and management strategies, ultimately improving the quality of life for individuals affected by both obesity and musculoskeletal conditions (18-20).

CONCLUSION

The study highlighted the significant burden of musculoskeletal disorders among obese individuals, emphasizing the strong association between excess body weight and musculoskeletal impairments. Findings revealed that obesity contributes to widespread pain and functional limitations, particularly affecting the neck, shoulders, lower back, and knees. The use of the Nordic Musculoskeletal Questionnaire provided valuable insights into the distribution of symptoms, reinforcing the need for targeted interventions to manage and prevent these conditions. Given the increasing prevalence of obesity, addressing musculoskeletal health through preventive strategies, lifestyle modifications, and early rehabilitation measures is crucial. This research underscores the importance of further studies with larger populations to develop more effective management approaches, ultimately improving the quality of life for individuals affected by obesity-related musculoskeletal disorders.

AUTHOR CONTRIBUTIONS

Author	Contribution
Hamza Siddique*	Substantial Contribution to study design, analysis, acquisition of Data
	Manuscript Writing
	Has given Final Approval of the version to be published
Zarqa Siddique	Substantial Contribution to study design, acquisition and interpretation of Data
	Critical Review and Manuscript Writing
	Has given Final Approval of the version to be published
Muhammad Umar	Substantial Contribution to acquisition and interpretation of Data
	Has given Final Approval of the version to be published
Arbaz Siddique	Contributed to Data Collection and Analysis
	Has given Final Approval of the version to be published
Kamran Bilal	Contributed to Data Collection and Analysis
	Has given Final Approval of the version to be published
Ishrat Bibi	Substantial Contribution to study design and Data Analysis
	Has given Final Approval of the version to be published

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