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Why Does Non-traumatic Musculoskeletal Pain Apply to the Emergency Department? Cross-sectional Study from a Fourth-level University Hospital

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Abstract

Aim: Overcrowding in emergency departments (ED) is one of the most important problems in healthcare systems around the world. musculoskeletal pain (MSP) is one of the most common non-emergencies and non-traumatic reasons for admission to emergency services. This study aimed to determine the proportion of non-traumatic MSP admissions to the ED of a university hospital in Istanbul.

Materials and Methods: Hospital records of emergency admissions were retrospectively reviewed according to International Classification of Diseases codes between January 01 and December 31, 2021. Patients aged 18 years who applied to the non-traumatic ED were included. The patients were separated according to gender, age groups, and diagnostic codes.

Results: The total number of patients admitted to the ED was 265.081. While 71.158 of these applications were for general pain, 5.940 (2%) patients applied for non-traumatic, non-specific MSP. Among these 5.940 patients, 3.058 (51.48%) were male and 2.882 (48.52%) were female.

Conclusion: Because of its high prevalence and social impact, MSP should be considered when planning policies for optimizing health resources in emergencies. Implementation of training programs to cope with these problems or the development of MSP emergency care units open to the use of emergency physicians may be a precautionary measure.

Keywords: Overcrowding, low back pain, inappropriate use, emergency, non-traumatic reasons, emergency admissions

Introduction

One of the most important problems in healthcare systems around the world is overcrowding in emergency departments (ED) (1). Due to the limited resources in the ED, there is a need to prioritize patients who come to receive emergency medical care. The patient's treatment is prioritized by evaluating the urgency of the current situation with the presenting complaint and preliminary diagnosis (2).

Acute musculoskeletal pain (MSP) has a wide variety of causes, from simple problems such as contusions, sprains, strains, and chronic low-intensity MSP to emergencies such as fractures or dislocations or severe traumas that are life- or limb-threatening (3). Although MSP is the leading cause of adult disability worldwide and is associated with reduced quality of life, persistent morbidity, and reduced working capacity (4) most of these conditions are short-term, self-limiting, or manageable with simple analgesia and/or physical therapy (5). MSP is one of the most common non-emergency reasons for admission to ED's (6) and most MSP admissions are non-traumatic (7). In general, non-traumatic MSP has been identified as a significant economic burden and care requirement for any health system (8). In particular, chronic and non-traumatic MSP represents more than 25% of all emergency room visits that emergency teams must evaluate and treat every day (4,5).

As MSP is the most common complaint in patients admitted to the ED, it is of obvious interest to researchers investigating inappropriate use of the ED and ED overcrowding (1,3). Despite

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this, the proportion of non-traumatic MSP admissions in EDs has been scarcely studied. This study aimed to determine the proportion of non-traumatic MSP admissions to the ED of a university hospital in Istanbul, which is a megacity.

Materials and Methods

Prof. Dr. Süleyman Yalçın City Hospital is a fourth-line university-based hospital serving a geographic region with a population of approximately 17 billion people. On average, our hospital receives approximately 1,750,000 patient visits per year. Our hospital's ED accepts approximately 2000 patients per day. Patients are first evaluated in the triage zone and consulted with the relevant department if necessary.

The study was conducted as a single-centered and retrospective. We retrospectively reviewed hospital records of emergency admissions according to International Classification of Diseases (ICD) codes between January 01 and December 31, 2021. Patients aged 18 years and older with ICD codes of low back pain (LBP), neck pain, and joint pain (knee-shoulder-hip, etc.) who applied to the non-traumatic ED were included. The patients were separated according to gender, age groups, and diagnostic codes.

This retrospective observational study was conducted in accordance with the amended Declaration of Helsinki and approved by the Ethics Committee of the İstanbul Medeniyet University, Prof. Dr. Süleyman Yalçın City Hospital (decision number: 2013-KAEK-64, date: 09.02.2022).

Statistical Analysis

Following the stratification of presenting patients into categories based on gender and age groups, a data analysis was performed to determine the association between the nature of presenting complaints and the demographic variables of gender and age.

Results

The total number of patients admitted to the non-traumatic ED between January 01 and December 31, 2021, was 265.081. While 71.158 of these applications were for general pain such as visceral pain or headache, 5.940 (2%) patients applied for non-traumatic, non-specific MSP with ICD codes of LBP, neck pain, and joint pain (knee-shoulder-hip, etc.). A summary of emergency service applications between the specified dates is shown in Table 1.

Among these 5.940 patients, 3.058 (51.48%) were male and 2.882 (48.52%) were female. Table 2 shows MSP diagnoses by gender.

We grouped MSP diagnoses according to age. The results are shown in Table 3.

Table 1. Ratio of patients diagnosed with MSP among all patients admitted to the ED [number (n)-percent (%)]

Pain	Total patient admissions (n)	Other diagnosis (n)	Other general pain (n)	MSP (n)	Ratio of MSP to total admission %
Total	265.081	187.983	71.158	5.940	2%

MSP: Musculoskeletal pain, ED: Emergency department

Table 2. MSP diagnoses by gender

Diagnosis	Men n (%)	Women n (%)	Total n
LBP	2.182 (71.35%)	1.968 (68.29%)	4.150
Neck pain	168 (5.49%)	187 (6.49%)	355
Joint pain	708 (23.15%)	727 (25.23%)	1.435
Total	3.058 (51.48%)	2.882 (48.52%)	5.940

LBP: Low back pain, MSP: Musculoskeletal pain

Table 3. MSP diagnoses according to age

Age (years)	18-39 n (%)	40-64 n (%)	65 and older n (%)	Total n
LBP	1.760 (67.77%)	2.036 (73.69%)	354 (61.03%)	4.150
Neck pain	209 (8.05%)	136 (4.92%)	10 (1.72%)	355
Joint pain	628 (24.18%)	591 (21.39%)	216 (37.24%)	1.435
Total	2.597 (43.72%)	2.763 (46.52%)	580 (9.76%)	5.940

LBP: Low back pain, MSP: Musculoskeletal pain

Discussion

The causes of ED overcrowding are multifactorial and include factors related to patients, hospitals, and the healthcare system (1). MSP complaints are a common reason for patients to visit the ED for prompt evaluation and treatment (9). Although non-traumatic MSP has been identified as an important reason for consultation in primary care, its impact on primary care and emergency services is an understudied issue (10). To the best of our knowledge, this is the largest study describing the burden of non-traumatic MSP in the ED setting and the only study investigating common non-traumatic MSPs such as LBP, cervical pain, and other joint pains. We scanned the details of non-traumatic MSP applications in the ED of our hospital from the hospital registry system. Our findings show that non-traumatic MSP is a relatively common reason for ED admissions.

Compared with other chronic diseases, patients with MSP complaints have a higher rate of referral to healthcare professionals (11) and represent a significant portion of the ED burden. It is appropriate for patients with acute or serious conditions to be admitted to the ED, but for patients with non-acute and non-serious conditions, it is more appropriate to seek service from a primary health care institution. However, it is observed that patients present to the ED significantly because of non-urgent low-risk MSP, and especially in our country, these patients are more likely to come to the ED for evaluation at a time convenient for them.

In our study, we found that the rate of non-urgent, non-traumatic MSP admissions to our hospital's ED was 2% of the total admissions in the last year, which corresponds to 5940 visits. These figures are slightly lower than expected on the basis of previously reported results (7,12). Pasta et al. (13) reported that chronic and non-traumatic MSP, which is a worldwide cause of adult disability, accounted for more than 25% of all ED admissions. Although the number of patients admitted is high, we were surprised that the rate of MSP was quite low compared with world data. This difference can be explained by differences in patient selection; while we searched the data, we excluded traumatic conditions, emergencies such as septic arthritis, and possible complications of known rheumatic diseases. It may also be appropriate to suggest that this difference is due to the ongoing effects of the pandemic.

Edwards et al. (14) stated that LBP, which is the most common cause of MSP, constitutes 4.39% of all ED admissions and is one of the most common complaints in admissions to emergency services worldwide. Another study showed that LBP accounted for 2.3% of all emergency admissions (15). In our study, LBP constituted 69.86% of all MSP and 1.56% of all ED admissions. Our finding was similar to the results of Baker et al. (4), who reported that 1.3% of all ED presentations were for LBP.

Other causes of MSP in EDs have been scarcely studied; for example, little is known about neck pain, which is the fourth leading cause of morbidity in the world and has a poor prognosis compared with LBP (16,17). Last year, 355 patients with neck pain visited our ED. This constituted 0.14% of all emergency admissions and 5.97% of all emergency MSP admissions.

The only study separating MSP subgroups reported the most common pains presenting to the ED as low back, neck, and chest (55%), shoulder (9%), wrists and hands (9%), and knee pain (9%) (12). In our study, the most common MSP was LBP (1.56%), followed by joint pain (0.54%) involving the shoulder, knee, and hip joints, and neck pain (0.14%).Studies have shown that there is an increasing worldwide referral for ED because of the ease of obtaining emergency medical care for non-emergent medical conditions (18). Among the wide spectrum of patients faced by emergency physicians, non-traumatic MSP, especially low back and neck pain, occupies a large place. This results in ED overcrowding, increased waiting times, reduced quality of care, and increased probability of adverse events. In addition to the overcrowding of the emergency room, the high care burden, significant health expenditures, and social cost of incapacity for work should also be taken into account (19).

Study Limitations

The fact that the study was retrospectively conducted from hospital records can be considered a limitation. There is also the possibility that ICDs are not written fully and adequately in hospital emergency situations, but we think that this is not significant enough to affect our statistical results. A limitation of our study was the inability to obtain patients' occupations as demographic data. This is because the nature of the patients' employment and their working hours could impede their ability to visit the outpatient clinic.

Conclusion

To conclude, one of the principal contributors to congestion in ED is non-urgent patients' improper utilization of emergency services. Although non-traumatic MSP is not an emergency or a risky situation, it continues to constitute a significant part of ED admissions. Because of both its high prevalence and social impact, non-traumatic MSP should be considered when planning policies for optimizing health resources in emergencies. Implementation of training programs to cope with these problems or the development of MSP emergency care units open to the use of emergency physicians may be a precautionary measure. Another recommendation for an appropriate solution

is that public service announcements could be utilized to inform individuals about the advisability of visiting family medicine rather than ED for conditions that generally do not require X-ray imaging. The scarcity of publications in the literature indicates the need for an in-depth study of this subject.

Ethics

Ethics Committee Approval: This retrospective observational study was conducted in accordance with the amended Declaration of Helsinki and approved by the Ethics Committee of the İstanbul Medeniyet University, Prof. Dr. Süleyman Yalçın City Hospital (decision number: 2013-KAEK-64, date: 09.02.2022).

Informed Consent: Retrospective study.

Authorship Contributions

Surgical and Medical Practices: O. İ., B. E., V. Ö., Y.Y., Concept: O. İ., B. E., V. Ö., Y.Y., Design: O. İ., B. E., Y. Y., V. Ö., Data Collection or Processing: O. İ., B. E., V.Ö., Analysis or Interpretation: O. İ., B. E., V. Ö., Literature Search: O. İ., B. E., V. Ö., Y.Y., Writing: O. İ., B. E., V. Ö., Y.Y.

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