

Frequency of orthopedic problems among patients attending an orthopedic outpatient department: a retrospective analysis of 23 495 cases

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BACKGROUND: Baseline statistical data on the current orthopedic outpatient load was needed to highlight the more frequent orthopedic problems.

OBJECTIVE: Describe the frequency of orthopedic problems among patients attending the orthopedic outpatient department (OPD).

DESIGN: Descriptive, retrospective medical record review.

SETTINGS: Four-year data (2013-2017) was extracted from the computer records of patients attending the orthopedics OPD.

PATIENTS AND METHODS: Computer entries of OPD visits were found, and after excluding incomplete and follow up data, age, gender, and diagnoses were described.

MAIN OUTCOME MEASURES: Frequency of orthopedic diagnoses.

SAMPLE SIZE AND CHARACTERISTICS: 23 495 patients, 19 377 (82.5%) males and 4 118 (17.5%) females, majority (18 155, 77.3%) 19-50 years of age.

RESULTS: Lower back pain (26%), tendinopathies and enthesopathies (18.3%), and bone fractures (11%) were the three common problems followed by arthritis (10.6%), nonspecific body ache (7.4%), and soft tissue injuries (9.9%). Others prominent diagnoses were ligamentous sprains (6.4%), neck-related problems (4.8%), joint stiffness (1.8%) and sports injuries (1%).

CONCLUSION: This overview of the orthopedic problems in a secondary care hospital may aid in the formulation of better protocols and strategies to manage orthopedic disorders in a healthcare setting.

LIMITATIONS: Retrospective and only included the primary diagnosis.

CONFLICT OF INTEREST: None.

A medical audit is the keystone of quality control of any healthcare center.¹ A clinical audit is a process to evaluate, assess and improve patient care in a systematic way that provides an opportunity to look at the patterns and frequencies of patients attending the hospital. Such knowledge helps in drawing up a plan to provide better patient care. An important component of medical audit is the analysis of patient hospital visits.² It gives useful clues on disease patterns and different presentations of disease. It also provides baseline data for comparison with similar studies from other parts of the world.¹ This information is also helpful in providing necessary training to the hospital staff and is useful in hiring specialized medical staff and planning health services. Furthermore, it provides crucial information about the disease pattern in a community and gives data about common diseases that present to a hospital.³

Orthopedics is a large and complex field of medicine that caters not only to patients with fractures and soft tissue injuries but also musculoskeletal conditions.⁴ Musculoskeletal problems contribute a significant workload to any hospital and massively increases the burden on outpatient clinics.⁵ We aimed to investigate the frequency of orthopedic problems among patients attending orthopedic outpatient department (OPD) in a private hospital in Jeddah. This study provides baseline statistical data on the current orthopedic outpatient load in order to highlight the more frequent orthopedic problems present in orthopedic clinics so that changes can be introduced to improve the quality of care. Moreover, the reported data could be beneficial for the policymakers to devise policies for tackling the increasing burden of orthopedic problems.

PATIENTS AND METHODS

This retrospective study was conducted in a private secondary care hospital in Jeddah. Data extraction was done by reviewing computer records of patients attending the orthopedics OPD between April 2013 and March 2017. Several patients followed up in the orthopedic OPD, so we refined our data by removing the follow-up patients. We divided our subjects according to medical record number into duplicated and primary cases. All duplicated patients were those who had visited the orthopedics OPD more than one time. In the final data, we only included the first visit in the orthopedics OPD and only included complete data on age, gender, and diagnoses. Our hospital is located in the center of the city so few specialist level orthopedic surgeons work in the OPD. Patient turnover is good so there are 3-4 orthopedic OPDs open for operation

in the hospital daily. A large number of expatriates and their families reside in the city. Ethical approval was obtained from the hospital administration and we kept strict anonymity and personal identity was not disclosed. Data was analyzed using IBM SPSS version 21 (Armonk, NY: IBM Corp). Descriptive statistics are presented as frequency and percentages. For inferential statistics, the chi-square test was used to compare categorical variables.

RESULTS

Of 32792 computer entries of orthopedic OPD visits found from April 2013 to March 2017, there were 7408 (22.6%) duplicated cases and 25384 (77.4%) primary cases. Out of the 25384 cases, 1889 cases had missing diagnoses, so we excluded those cases, and a total of 23495 cases were included in the study. However, there were a total of 4454 patients with missing diagnoses, 2565 from the duplicated cases and 1889 cases from the primary cases. A few patients (7.5%) were 0-18 years of age, while the majority of the patients (77.3%) were 19-50 years; 15.1% were older than 55 years. The ten most frequent diagnoses were lower back pain (25.9%), tendinopathies and enthesopathies (18.3%), bone fractures (11%), osteoarthritis (10.6%), soft tissue injuries (9.9%), nonspecific body aches (7.4%), ligamentous sprains (6.4%), neck-related problem (4.8%), and joint stiffness (1.8%) (**Figure 1**). All ten diagnoses were significantly higher among males and patients aged 19-50 years ($P < .001$) (**Table 1**).

The most common complaint was back pain, and the main cause was mechanical back pain (64%) (**Table 2**). Second most common problems were tendinopathies and enthesopathies with shoulder tendinosis (16.7%) in the upper limbs and plantar fasciitis (22.4%) in lower limbs. Next were bone fractures, and of all types of fractures, the fracture of phalanges (46.5%) was most common in the small bone category, while radius fracture (32.4%) was most prominent in the long bone category followed by humerus (15.2%) and tibial fracture (21.2%).

Of patients suffering from arthritis (10.6%), osteoarthritis of the knee was the most common issue. Complaints of nonspecific body ache, e.g., generalized body ache and myalgia, were diagnosed in 7.4%, 80% were male, and most were 19-50 years of age. Our data is compared with some international studies in **Table 3**.

DISCUSSION

The patterns and prevalence of any health problem vary from region to region due to differences in environmental and demographic factors.⁴ Knowing the prevalence and changes in prevalence over time is crucial for a

health center to equip itself with the necessary required facilities to cater to patients effectively. It also provides information that is useful in learning and training of the paramedical staff.⁵

This study gives a snapshot of patients attending the orthopedic OPD of a private hospital in Jeddah. Our study revealed that male patients are four times more likely than females to attend orthopedic OPD, indicating greater exposure to risk factors. The overall male:female ratio was 4:1 in our study, which is comparable to some other recent studies.^{4,6} The most plausible reason for more male patients attending orthopedic OPD than females could be that males are more exposed to risk factors because of occupational needs.⁴

In our study patients were mostly in the age group between 18-50 years. This gender and age distribution of patient reflects the fact that the population of Jeddah comprises a large number of expatriates and many of them are male workers who live alone without family. We found that 26% of patients attended the orthopedic OPD with lower back pain. This finding is analogous to the findings of previous studies.^{4,7} Mechanical back pain was most prevalent, while neuropathic low back pain and coccydynia were other causes of low back pain. Although the prevalence and the variety of symptoms vary in different parts of the world, back pain is the single most common symptom in patients attending

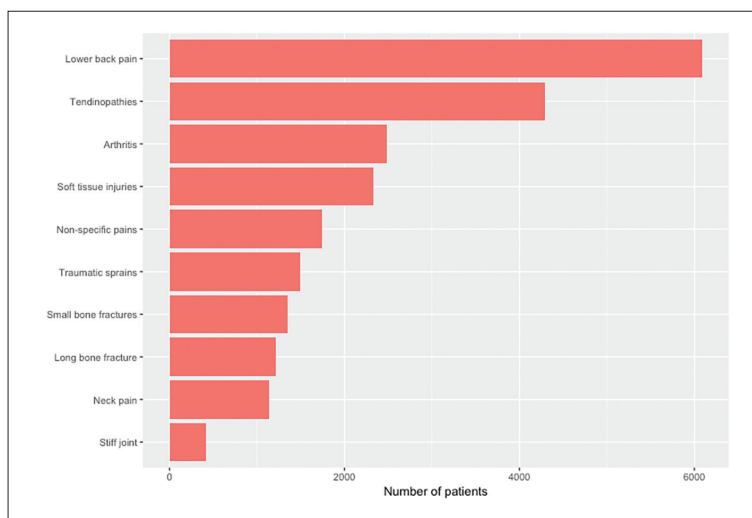


Figure 1. Most frequent diagnoses in the outpatient orthopedic clinic.

Table 1. Gender and age comparison of top ten diagnoses of patients who visited the orthopedic outpatient department (n=23 495).

Diagnosis		Gender		Age (years)		
		Males 19377 (82.4)	Females 4118 (17.5)	0-18 years 1781 (7.58)	19-50 years 18155 (77.2)	≥50 years 3559 (15.14)
Lower back pain	6089 (25.9)	5233 (85.9)	856 (14.1)	97 (1.6)	5237 (86)	755 (12.4)
Tendinopathies and enthesopathies	4289 (18.3)	3474 (81)	815 (19)	163 (3.8)	3628 (84.6)	498 (11.6)
Fractures	2567 (11)	2160 (84.1)	407 (15.8)	614 (23.9)	1666 (64.9)	287 (11.1)
Small bone fractures	1353 (5.8)	1151 (85.1)	202 (14.9)	207 (15.3)	996 (73.6)	150 (11.1)
Long bone fractures	1214 (5.2)	1009 (83.1)	205 (16.9)	407 (33.5)	670 (55.2)	137 (11.3)
Arthritis	2486 (10.6)	1954 (78.6)	532 (21.4)	3 (.2)	1506 (60.5)	977 (39.3)
Soft tissue injuries	2332 (9.9)	2013 (86.3)	319 (13.7)	358 (15.4)	1759 (75.4)	215 (9.2)
Nonspecific bodyaches	1748 (7.4)	1410 (80.7)	338 (19.3)	127 (7.3)	1408 (80.5)	213 (12.2)
Ligamentous sprains	1494 (6.4)	1196 (80)	298 (20)	223 (14.9)	1161 (77.7)	110 (7.4)
Neck pain	1134 (4.8)	883 (77.9)	251 (22.1)	24 (2.1)	934 (82.4)	176 (15.5)
Joint stiffness	414 (1.8)	330 (79.7)	84 (20.3)	04 (1.0)	235 (56.8)	175 (42.2)
Sports injuries	218 (1%)	200 (91.7)	18 (8.3)	14 (6.4)	178 (81.7)	26 (11.9)

Data are number (percentage). All comparisons (gender and age groups) were statistically significant (P<.001)

orthopedic clinics.⁸ The cause of this high frequency of back pain might be due to increasing sedentary lifestyle and obesity. Obesity affects nearly all age groups. It is essential to formulate clinical guidelines for managing common problems among obese subjects.⁹ Heavy physical work, prolonged working hours, mental distress, bad posture, and job dissatisfaction are also related to low backache.¹⁰

Table 2. Main subcategories of top three diagnoses of patients visited orthopedic outpatient department (n=23 495).

Diagnosis	n (%)
Lower back pain (n=6049, 26.8%)	
Mechanical low back pain	3898 (64)
Neuropathic low back pain	2087 (34.3)
Others	104 (1.7)
Tendinopathies/enthesopathies (n=4289, 18.3%)	
Plantar fasciitis	965 (22.4)
Shoulder tendinosis	720 (16.7)
Tennis elbow	490 (11.4)
Impingement syndrome	387 (9)
Metatarsalgia	348 (8.1)
Others	1379 (32.2)
Fractures (n=2567, 10.9%)	
Small bone fractures (n=1353, 5.3%)	
Phalanges	635 (46.9)
Metacarpals and metatarsals	380 (28)
Clavicle	145 (10.7)
Calcaneus	166 (12.3)
Others	27 (1.9)
Long bones fracture (n=1214, 4.7%)	
Distal radius	82 (6.7)
Forearm (both bones)	312 (25.7)
Humerus	185 (15.2)
Tibia shaft fracture	258 (21.2)
Hip fracture	77 (6.3)
Femur shaft	103 (8.4)
Others	197 (16.2)

Other leading reasons for orthopedic OPD visit were tendinopathies and enthesopathies. Tendon and ligaments disorders are common problems and are the cause of up to 30% of rheumatological consultations in the UK.¹¹ The leading cause of foot pain in our study was plantar fasciitis. Plantar fasciitis is also related to increased body weight and poor shoe wear. It has been reported that the majority of the population in Saudi Arabia (>75%) is overweight and obese.¹² The most common tendinopathies in this study were shoulder tendinosis and tennis elbow. In another study, the third most common reason for musculoskeletal pain was shoulder pain due to rotator cuff tendinopathy (RCT).¹³ Moreover, tennis elbow is considered the most common cause of elbow pain.¹⁴

Arthritis, a common disorder in the adult population,¹⁵ was also one of the frequent causes of orthopedic visits in our study, with knee joint arthritis outnumbering other kinds of arthritis in this study. Chapple et al showed that the development and advancement of radiographic osteoarthritis could be predicted by age.¹⁶ In our study, two-thirds of patients presented with arthritic pains were older than 40 years of age. Obesity (high body mass index), trauma, specific tough physical activities or professions are a few of the potential hazards for the development of osteoarthritis of the hand, hip, and knee.¹⁷ A significant number of patients also presented with gout-related arthritis. The incidence of gout is growing gradually due to poor dietary habits, lack of exercise and obesity.¹⁸ Nonspecific pain (7.4%), including body aches and polyarthralgia, was related to undiagnosed metabolic issues and poor lifestyle.¹⁹

About 2567 (11%) of patients visited OPD with fractures and 436 (17%) of patients were less than 12 years of age. The most common fractures were phalangeal and distal radius fractures. In emergency departments in the United States, the distal radius is the most common fracture location in the upper extremity and the reason for nearly one-sixth of fractures.²⁰ Phalangeal fractures are common small bone injuries, and are more common in young adult males.²¹ Only 0.5% pediatric patients attended the OPD for reasons other than fractures. In this subgroup, the most prominent diagnosis was pulled elbow and congenital deformities. Only nine children were diagnosed as having rickets because most now get balanced nutrition, or these patients are mainly seen and managed in pediatric clinics. Doctors who primarily treat adult patients sometimes treat pediatric patients who require orthopedic consultation so it is essential for a healthcare unit to provide essential information and training to treat the most common orthopedic cases of pediatric patients.²²

Around 9.9% of patients presented with soft tissue injuries, mainly because of contusions like soft tissue blunt trauma including bruises. Approximately 6.4% of people visited the OPD with traumatic sprains in which the majority had foot and ankle sprain. About 1% of patients presented with injuries related to sports, mostly involving internal derangement of the knee. Other

prominent injuries in this category were meniscal injuries and anterior cruciate ligament tears. Around 4.8% of patients came with neck pathology, with cervical radiculopathy and neck muscle pain being most common. Neck muscle spasm was the most common issue. This may be because of prolonged desk jobs and increasing use of smartphones and computers.²³

Table 3. Comparison of the present study with a few international studies.

	Present study	Gani, et al., (2016) ⁴	Kumar et al., (2018) ⁵	Shankar et al., (2007) ⁷	Muralikuttan et al (1998) ¹
Country	Saudi Arabia	India	India	Nepal	United Arab Emirates
Duration of study	4 Years	5 months	3 months	4 months	4 years
Study type	Retrospective study, Frequency of orthopedic problems	Prospective study, Frequency of orthopedic problems	Prospective study, Frequency of orthopedic illnesses	Prospective study, Prescribing patterns in the orthopedics	Retrospective study, audit of quality and quantity of orthopedic workload
Total patients	23495	524	200	178	4404
Population type	Adult, 92.2% Children, 7.8%	Adult, 76% Children, 24%	All adults	All adults	Adult, 75% Children, 25%
Gender					
Male	19377 (82.5)	310 (59)	124 (62)	86 (46.2)	3170 (72)
Female	4118 (17.5)	214 (41)	76 (38)	92 (40.5)	1234 (28)
Lower back pain	6089 (25.9)	136 (26)	58 (29)	31 (16.7)	700 (16)
Tendinopathies and enthesopathies	4289 (18.3)	NA	NA	NA	NA
Fractures	2567 (11)	141 (27)	7 (3.5)	8 (4.3)	1305 (30)
Small bone fractures	1353 (5.8)	NA	NA	NA	481 (37)
Long bone fractures	1214 (5.2)	NA	NA	NA	824 (63)
Arthritis	2486 (10.6)	38 (7.25)	31 (15.5)	NA	33 (0.75)
Soft tissue Injuries	2332 (9.9)	54 (27)	30 (15)	NA	NA
Nonspecific body-aches	1748 (7.4)	NA	NA	NA	NA
Ligamentous sprains	1494 (6.4)	NA	NA	6 (3.2)	NA
Neck pain	1134 (4.8)	NA	NA	NA	NA
Joint stiffness	414 (1.8)	30 (15)	NA	NA	NA
Sports injuries	218 (1)	NA	NA	NA	NA

Data are number (percentage). NA: Not available.

Of the one percent of people with bone tumors, only one was malignant. Only 0.2% of patients had established osteoporosis, osteomalacia and vitamin D deficiency. These figures might be misleading because these metabolic conditions mostly presented as other disorders or these patients usually go to internists, and only a few go to the orthopedic clinic. Our study shows that the primary cause of OPD visits is non-traumatic pain. This provides ample justification for the establishment of pain management clinics under trained specialist pain management staff, and physiotherapists and rheumatologists so that the burden on orthopedic OPD is reduced and patient care improves.

A literature search revealed that there is a scarcity of similar research data, so a particular comparison of our study with others is difficult. A few similar international studies are compared with this study in **Table 3**. Low back pain, fractures, and arthritis were common in all the studies. Since the present study data is large and comprehensive as compared to other studies, there are no noteworthy comparisons.

Our study has a few limitations, such as being retrospective only including the primary diagnosis. Being

a single-center study, our study may not be truly representative of the epidemiology of orthopedic problems in the society. However, it an approximate profile of different orthopedic problems that are common in the society.

In summary, in the large number of patients (32792) who visited the orthopedic OPD during the study period, the most common problems were lower back pain, tendinopathies and enthesopathies, fractures, arthritis and non-specific body aches. Middle-aged males were the most frequent visitors. This study provides a general overview of the orthopedic problems presented in a secondary care hospital. This information may aid in formulating better protocols and strategies to manage orthopedic disorders in a healthcare setting. Our study shows that musculoskeletal disorders pose a considerable burden on the orthopedic OPD. We need to establish pain management and back pain clinics, which will reduce the burden on the orthopedic OPD. A community awareness campaign would raise concerns about the healthy lifestyle and occupational safety to avoid orthopedic conditions like back pain, arthritis, and body aches.

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