Original Article

Prevalence of Musculoskeletal Disorders in the Physical Therapy Clinic at Najran University in Different Anatomical Sites and Association with Age

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Abstract:

Background and Aims: A musculoskeletal disorder (MSD) is one of the most common disorders worldwide. It includes a wide spectrum of degenerative and inflammatory diseases. The aim of this study is to establish and compare the prevalence of MSD in different anatomical sites in physical therapy clinic at Najran University.

Methods: This is a retrospective study. We retrieved the diagnosis of 1211 referrals made over a three-year period between January 2015 until September 2018.

Results: After filtration of the 1211 referrals, 851 were specifically included in this study and out of these, 779 were for a musculoskeletal disorder (MSD). Low back pain (LBP) was the most referred case to the clinic 244 (31.3%) and knee joint was the second-most referred disorder with 230 cases (29.5%). There was a significant association between age and affected anatomical site [$\chi 2 = 145.09$, df = 70, Cramer's V= 0.19, $p < 0.001$].

Conclusion: MSD is a very common disorder and needs more attention. In the physical therapy clinic in Applied Medical Sciences College at Najran University, LBP and knee joint disorder are more prevalent than other MSD disorders. There is a significant association between age and affected anatomical sites of MSD.

Key Words: Musculoskeletal disorders, Physical therapy University clinic, Low back pain, Knee pain.

الملخص

الخلفية: الاضطرابات العضلية الهيكلية هي واحدة من أكثر الاضطرابات شيوعا في العالم وتشمل مجموعة واسعة من الأمراض التنكسية والالتهابات. الهدف من هذه الدراسة هو تحديد ومقارنة انتشار الاضطرابات العضلية الهيكلية في مواقع تشريحية مختلفة على مرضى عيادة العلاج الطبيعي في جامعة نجران.

الطريقة: هذه دراسة مرجعية حيث تمت مراجعة 1211 تحويل لمرضى الاضطرابات العضلية الهيكلية خلال ثلاث سنوات بين يناير ٢٠١٥ وسبتمبر 2018.

النتائج: من بين ١٢١١ إحالة، تم إدراج ٨٥١ على وجه التحديد في هذه الدراسة، ومن بين هؤلاء المرضى 779 يشكون من الاضطرابات العضلية الهيكلية. كانت آلام أسفل الظهر هي الأكثر تحويلا إلى العيادة وهي عبارة عن 244 حالة (31.3٪). يشكل الم مفصل الركبة الثاني في ترتيب الاحالات 230 (٪ 29.5). كان هناك ارتباط ضعيف بين العمر والموقع التشريحي المتأثر [$\chi 2 = 145.09$, df = 70, Cramer's V= 0.19, $p < 0.001$].

الخلاصة: الاضطرابات العضلية الهيكلية هي اضطراب شائعة جدا وتحتاج إلى مزيد من الاهتمام. تشكل اضطراب أسفل الظهر واضطراب مفصل الركبة هي الأكثر انتشارًا من غيرها لدى عيادة العلاج الطبيعي بكلية العلوم الطبية التطبيقية, جامعة نجران. يوجد ارتباط بين العمر والمواقع التشريحية المتأثرة بالمرض.

Introduction:

Musculoskeletal disorders (MSD) are the second-most common cause of disability worldwide. They include a wide spectrum of degenerative and inflammatory disorders affecting joints, ligaments, muscles, peripheral nerves, facet joints, tendons, and blood supply [1-3] . The symptoms of MSD include pain, aching, tingling, burning, stiffness, numbness, or throbbing [4]. The cause of MSD can be trauma, repetitive movement, exertion, and/or sustained movement [2] .

The burden of MSD on the community and primary care services is huge. In a study conducted in Great Britain, they found around 15% of patients who visited primary care services were due to MSD disorders [5]. MSD comprises a diverse group of diseases and pathophysiology. However; MSD is anatomically related and its links with pain and disability. MSD can be acute and for a short duration, to a lifelong disability disorder. The prevalence of MSD obviously rises with age and levels of physical activity [6] . With the increasing number of older people in the population and the new lifestyle trend in, the burden on healthcare and communities will increase significantly. The United states and World Health Organization (WHO) have recognized this danger and it was endorsed with the Bone and Joint Decade [6]. MSD affects people of different ages. It is relevant in 1 in every 3 to 5 people that it limits mobility and function [7] . Most common forms of MSD are low back pain, knee pain, neck pain, shoulder pain, and hip pain. More specifically, spinal disorders are the most common ones [8].

Spinal disorders are heterogeneous conditions that affect the vertebral column and structure surrounding it [9] . These conditions may involve an intervertebral disc, tendons, facet joints, muscles, ligaments, the spinal cord, and nerve root [9]. Spinal disorders may include, but are not limited to degenerative changes, pain, radiculopathy, spondylosis, spondylolisthesis, osteoporosis, fracture, stenosis, and tumors. One of these specific spinal disorders is low back pain (LBP), which as a general ailment has a huge impact from personal, community, economic, and psychosocial aspects. For instance, it is the most common reason for disability in people who are 45 years or younger in the United States. It is the second-most common reason for someone requiring an appointment with their doctor or physician. Also, it is the third-most common reason for physical intervention (surgery) [10].

Physical therapy is usually utilized as a conservative (nonsurgical) intervention for different forms of MSD. Physical therapy plays an important role in assessing and treating patients with different forms of MSD. For example, 80% of doctors from different specialties look at physical therapy as a preferred intervention choice for low back pain [11]. In countries such as the United States, direct access is available for patients with LBP. However, in developing countries like Saudi Arabia, a medical doctor needs to refer their patient to obtain a physical therapy assessment and treatment [12].

The literature review revealed the lack

of study on the prevalence on MSD on different parts of the body in Saudi Arabia and the World. Identifying the prevalence of MSD in different anatomical sites and their association with age can guide resource allocation and enhance the outcome of the provided services. Therefore, this study aims to establish and compare the prevalence of MSD in different anatomical sites in the physical therapy clinic at Najran University over a three-year period and determine whether the patients' ages play a role in the prevalence of MSD.

Methods:

This is a retrospective study conducted at physical therapy clinic in Applied Medical Sciences College, Najran University. The ethical approval was obtained from the research ethics committee in Najran University.

For this study, we had to transform the data from paper-based into electronic based. Patients' files were retrieved, reviewed, and data recorded electronically. We retrieved all the referrals from doctors for patients attending this clinic for the three-year period between January 2015 up to September 2018. In certain circumstances, physicians referred the same patient with a recurring problem more than once. As a result, we excluded repeated referrals for the same patient and for the disorder. All diseases were re-coded from different forms into the anatomical site of the disorders. For instance, the term L4-L5 disc prolapse was recoded as low back pain (LBP). The disorders were categorized based on the anatomical sites for MSD as follows: neck, elbow, shoulder, hand, arm, forearm, wrist, upper back, low back, hip, thigh, knee, leg, ankle, and foot. Two certified physical therapists with10 years of experience had to agree on the name of the anatomical location of the disorder. If they did not reach a consensus on the site of the disorder, a third physical therapist would be consulted.

Statistical analyses:

Descriptive statistics of frequencies, percentages and confidence interval (CI) were utilized in presenting the subjects demographic and musculoskeletal disorders data. The prevalence of MSD for each anatomical site was calculated. The association between age and anatomical site affected was analyzed using the Chi-square test of association with Cramer's V tests. The 5% level of probability was used to indicate statistical significance. All statistical measures were performed through the statistical package for social sciences (SPSS) version 19 for windows (IBM SPSS, Chicago, IL, USA).

Results:

The physical therapy clinic in applied medical sciences at Najran University received 1211 new referrals in the period from January 2015 up to September 2018. We excluded pediatric and neurological cases to end up with 779 cases, with 91.5% of these cases involving MSD disorders. The age group 21-30 years represents the highest percentage of MSD disorders (30.3%) followed by 31-40 years age group (26.9%). 79.3% of patients were Saudi. All of our subjects were male. Table 1 illustrates the demographic characteristics of the sample.

Table 1: Demographic characteristics of studied data of 799 patients referred to the physical therapy clinic.

Parameter	n	(%)
Age (year)		
< 20	32	(4.1)
21-30	236	(30.3)
31-40	210	(26.9)
41-50	133	(17.1)
51-60	84	(10.8)
61 and more	84	(10.8)
Nationality		
Saudi	618	(79.3)
Non-Saudi	161	(20.7)

Low back was the most referred case to the clinic with 244 cases (31.32%), which included lumber and sacral spine disorders. Knee joint was the second-most common site of a disorder with 230 cases, (29.52%), (figure 1). The MSD anatomical site referred to the clinic and the year of the visit is illustrated in (Table 2 and Figure 2). MSD that included LBP or the knee joint were the most-referred ailment to our clinic.

Table 2: Numbers of cases categorized by anatomical sites and year of visiting the clinic

Part / Year	Cervic spine	Upper back	Low back pain	Shoul. joint	Arm	Elbow joint	Forearm	Wrist joint	Hand	Hip joint	Thigh	Knee joint	Leg	Ankle joint	Foot
2015	12 (17.9)	02 (25)	44 (18)	07 (9.7)	02 (25)	01 (6.2)	00 (0)	05 (38.4)	03 (13.6)	03 (2)	05 (31.3)	39 (16.9)	01 (100)	07 (14.3)	03 (27.3)
2016	13 (19.4)	0 (0.0)	49 (20.1)	09 (12.5)	03 (37.5)	03 (18.8)	00 (0.0)	02 (15.4)	01 (4.5)	06 (3)	02 (12.5)	45 (19.6)	00 (0.0)	12 (24.5)	00 (0)
2017	25 (37.3)	04 (50)	103 (42.2)	35 (48.6)	00 (0)	00 (0)	00 (0)	03 (23.1)	10 (45.5)	07 (3)	05 (31.25)	91 (39.6)	00 (0)	00 (0)	00 (0)
2018	17 (25.4)	02 (25)	48 (19.7)	21 (29.2)	3 (37.5)	12 (75)	02 (100)	03 (23.1)	08 (36.4)	04 (20)	04 (25)	55 (23.9)	00 (0)	30 (61.2)	08 (71.7)
Total (%)	67 (100)	08 (100)	244 (100)	72 (100)	08 (100)	16 (100)	02 (100)	13 (100)	22 (100)	20 (100)	16 (100)	230 (100)	01 (100)	49 (100)	11 (100)

Table (3) shows the association between age and affected anatomical site. There was a weak significant association between age and affected anatomical site [$\chi 2 = 145.09$, df = 70, Cramer's V= 0.19, $p < 0.001$]. Knee joint is the highest site affected in below 20 years age group (34.38%) and 21-30 years age group (36.86%). Low back pain is the highest site affected in 31-40 years age group (35.24%), 41-50 years age group (39.1%), 51-60 years age group (36.9) and in >61 of age group (40.48%).

Table 3: Numbers of cases categorized by anatomical sites and their relationship with age groups

	Cervical spine	Upper back	Low back	Shoulder joint	Arm	Elbow joint	Forearm	Wrist joint	Hand	Hip joint	Thigh	Knee joint	Leg	Ankle joint	Foot
< 20	0 (0)	0 (0)	4 (12.5)	2 (6.25)	2 (6.25)	3 (9.38)	0 (0)	2 (6.25)	1 (3.13)	3 (9.38)	0 (0)	11 (34.38)	0 (0)	3 (9.38)	1 (3.13)
21 - 30	11 (4.66)	4 (1.7)	49 (20.76)	19 (8.05)	3 (1.27)	3 (1.27)	1 (0.42)	3 (1.27)	6 (2.54)	6 (2.54)	12 (5.08)	87 (36.86)	0 (0)	30 (12.71)	2 (0.85)
31 - 40	17 (8.1)	3 (1.4)	74 (35.24)	22 (10.48)	2 (0.95)	4 (1.9)	0 (0)	6 (2.86)	7 (3.33)	5 (2.38)	1 (0.48)	57 (27.14)	0 (0)	9 (4.29)	3 (1.43)
41 - 50	18 (13.55)	0 (0)	52 (39.1)	13 (9.77)	0 (0)	3 (2.26)	0 (0)	2 (1.5)	2 (1.5)	1 (0.75)	2 (1.5)	33 (24.81)	1 (0.75)	5 (3.76)	1 (0.75)
51 - 60	11 (13.1)	1 (1.2)	31 (36.9)	11 (13.1)	1 (1.19)	3 (3.57)	1 (1.19)	0 (0)	2 (2.38)	2 (2.38)	0 (0)	17 (20.24)	0 (0.75)	1 (1.19)	3 (3.75)

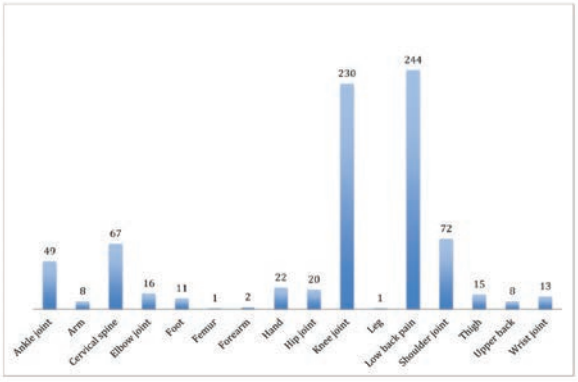


Figure 1: Numbers of disorders categorized by anatomical sites.

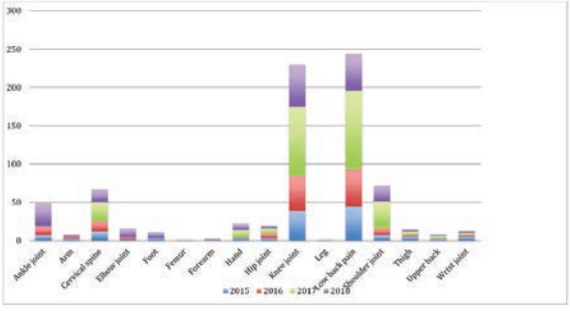


Figure 2: Numbers of disorders categorized by anatomical sites and year of visiting the clinic.

Discussion:

To the best of our knowledge this is the first research that has looked at the prevalence of MSD in patients who have visited the physical therapy clinic in College of Applied Medical Sciences at Najran University. We identified 779 cases with different diagnoses. Looking at the anatomical sites, low back pain, knee joint, shoulder joint, and cervical spine were the most common disorders presented at the clinic 31.3%, 29.5%, 9.2%, and 8.6%, respectively. Our results agreed with Brooks et al. research who revealed that low back pain and knee joint pain were the most prevalent MDS [3].

In the year 2018, knee joint disorder was more common than low back pain (25.3 % and 22.1%). Ankle joint disorder was third with 13.8%. For the other years 2015, 2016, and 2017 low back pain was the most common disorder, followed by knee joint disorder. For 2018, any anomaly may be due to the fact that data was correlated for only nine months, up to the month of September. However, October, November, and December months tend to have a higher frequency of patient referrals, as it is the beginning of the new semester.

knee joint disorder was more common in patients who were below 30 years of age with 36.6% of all patients with a knee joint disorder and 19.8% with low back pain. However, Symmons et al. revealed knee joint pain is more common in older patients [13]. This may

be due to the fact that more of our patients are college students and more involved in sports activities. Low back pain was more common in patients who were more than 30 years of age. So, MSD is a common ailment in different age group, but becomes more prevalent as the population ages. It is well known that MSD is commonly found in the adult community and prevalence of physical disability increases with age. Almost 35% of people over 75 have a significant musculoskeletal problem and mobility problems increases by up to 50% in patients over 75 years of age [14].

Low back paina and disc prolapse were most common diagnosis in our clinic, and non-specific low back pain was the second-most common. In a study of 35,000, individuals Leboeuf-Yde et al [15] revealed that LBP was most common disorder. The prevalence of LBP during a person's lifetime occurred in 85% of people and the prevalence and recurrence in the 12-month period subsequent to first diagnosis was up to 40% and 60%, respectively [9]. In a study of work-related MSD in Brazil, LBP was most prevalent form (54.8%). Another study in Saudi Arabia revealed a rate of 38.1% for LBP in work-related cases of MSD, while female school teacher in Alkhobar, Saudi Arabia had a rate of 63.8% in all MSD work-related forms [16-18]. LBP is a wide-ranging disorder that can be named based on the etiology or based on the time of the course of the disease. It can be Specific or non-specific, based on the etiology, or acute, sub-acute, or chronic based on the time of the course of the disease [9].

A current study showed that knee joint disorder was the second-most prevalent form of MSD in this clinic, with around 29.5% of all patients presenting with this specific ailment. Ligamentous/meniscal injury was the most common disorder with 44.8% of all knee joint disorders and osteoarthritis was the second-most common with 30.4% of all knee joint cases. This study agrees with the findings of Urwin M et al [14] that revealed the most common site of pain was the lower back and the knee joint constituted 23% and 19% respectively. In our research, LBP was more prevalent than knee joint disorder, which contradicts Symmons et al, which stated that knee pain is more common than LBP. This difference may be due to the limitation policy or the targeted population within our clinic for new patients' acceptance since this clinic is exclusive to students, staff, faculties and their immediate relatives.

Shoulder joint was the third-most common disorder. This is consistent with a study by Urwin where low back, knee and shoulder pain were the most common disorders [14]. More specific in our study, rotator cuff and adhesive capsulitis disorders were most common disorders in shoulder joint pathology. Sirajudeen et al. found a correlation between shoulder joint disorder and body mass index [19]. We were unable to establish this correlation between the two factors because we lack essential demographic information.

Limitation of the study:

We acknowledge that our data lacked important demographic information such as

weight, height, marital status, smoking history and occupation. Research showed that these factors may be associated with certain forms of MSD [20]. We recoded some terminology because referring physicians used different term for the same disorder, so we correlated them to their anatomical sites. This may have some impact on the results of this study.

Conclusion:

In the physical therapy clinic of the Applied Medical Sciences College at Najran University, cases of LBP and knee joint disorder were more prevalent than other forms of MSD. There was weak association between age and affected anatomical sites.

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