RESEARCH ARTICLE

Impact of musculoskeletal disorders on quality of life of patients visiting tertiary care hospital

Shah Khalid[1], Sayed Zulfiqar Ali Shah[2], Abid Ali Khalil[3], Ihsan Ullah[4]

Abstract

Objective: To determine the impact of musculoskeletal disorders on patients' quality of life.

Method: The cross-sectional study was conducted at the Khyber Teaching Hospital, Peshawar, Pakistan, from September 2018 to March 2019, and comprised patients of either gender having a variety of musculoskeletal disorders. Data was collected using a validated EuroQol-5-Dimension-3-Level scale. Data was analysed using SPSS 20.

Results: Of the 377 participants, 204(54.1%) were males, and 173(45.9%) were females. The overall mean age was 35.9±12.5 years. Muscular weakness was the most commonly encountered problem 153(40.6%), followed by muscle stiffness 49(13.0%) and adhesive capsulitis 39(10.3%). Patients with musculoskeletal disorders had moderately good 'health state today' score of 56.03±20.175 on VAS.

Conclusion: Musculoskeletal disorders were found to have a negative impact on quality of life and health status of the patients.

Keywords: Musculoskeletal diseases, Health, Quality of life, Visual analogue scale, Cross-sectional studies.

(JPMA 71: 1976; 2021) **DOI: https://doi.org/10.47391/JPMA.328**

Introduction

According to the United States Bureau of Labour Statistics (BLS), musculoskeletal disorders (MSDs) can be defined as any injury or illness of the musculoskeletal system caused by bodily action, including sprains, strains, tears, soreness, or musculoskeletal system and connective tissue diseases and disorders.[1] MSDs represent a diverse group of disorders with respect to their pathophysiology, but they can be classified anatomically on the bases of pain and the associated impaired physical functioning. MSDs comprise problems from acute onset and short duration to long-term disorders, like arthritis, low back pain (LBP). Lifestyle and advanced age increase MSD prevalence.[2] There can be a variety of causative factors for MSDs, but, according to the National Research Council and the Institute of Medicine, factors causing MSDs include physical, organisational, and social aspects of work and the workplace; physical and social aspects of life outside the workplace, like sports, exercise etc.; economic incentives and cultural values; and the physical and psychological characteristics of the individual.[3]

The exact prevalence of MSDs is unknown, but a study showed that MSDs affect 3.4% and 1.7% individuals in all diseases in high- and low-income countries respectively.[4] Work-related MSDs are increasing annually from 40% to 95% in Asian and Western countries respectively.[5] According to a study, lower back (29-64%), neck (34-63%), and shoulder (17-75%) are the most common affected areas.[6] Another study reported an increase in MSD incidence over the preceding 12 months in the neck (55.9%) compared to other parts of the body.[7] A study has shown that majority of MSD cases (61%) were non-traumatic, while 39% were traumatic, and in traumatic cases, exercise was the usual cause of injury. Among the traumatically injured patients, 32% had upper extremity injuries, 23% trunk injuries, and 45% had lower extremity injuries.[4]

It is well-known fact that MSDs symptoms are common among adults. Age plays a vital role in MSDs and the frequency of occurrence of these disorders and the associated physical disabilities increases with age. Approximately one-third of those aged >75 years have marked musculoskeletal issues. Locomotor disability increases from 3.1% in people aged <60 years to almost 50% in those aged <75 years, and these disorders put a huge burden on primary healthcare services.[8,9]

MSDs affect the capabilities of individuals to perform their routine activities in a normal fashion.[6] MSDs not only influence quality of life (QOL), but also affect the economy both directly and indirectly.[10,11] The primary effects are loss of working days, health expenditure, pay in case of absence, employee compensation and personal QOL,[5] while secondary effects account for almost 75% of the total cost of benefits, extra staff costs, emotional and mental

[1]Department of Anatomy, Institute of Basic Medical Science, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan; [2]Tongji Medical College of HUST, Wuhan City, China; [3]Department of Physical Therapy, Khyber Teaching Hospital, Peshawar, Khyber Pakhtunkhwa, Pakistan; [4]Institute of Basic Medical Science, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan.

Correspondence: Shah Khalid. e-mail: shahbms@msn.com

problems, manufacturing stoppage, employee benefit claims and changing occupation.[12]

The global gross domestic product (GDP) of these expenses account for 4% which contains budget of trauma, loss and illness associated with absenteeism, medical treatment, loss of functional capacity and loss of survivor benefit.[13] The impact of MSD on human productivity has been studied, but the exact cost remains unknown. Columbia reported 23,477 cases at the rate of 11.6 cases per 10,000 workers in 2005 and the approximate cost for these MSDs relative to the productivity of workers was US$171.[7] million, representing around 0.2% of Colombia's GDP for 2005.[11]

Over the past couple of decades, it has been understood that MSD is the leading cause of physical deformity. Physical activities that can lead to MSDs are being properly organised in many countries, but the magnitude of associated physical deformities will shoot up in the future.[6] A study reported MSD incidence of 13.6% per person-year in the spine, 4.6% per person-year at an extra-articular site, and 4.2% per person-year in some joint, and recommended prevention and early management of these disorders because of significant effect on QOL.[14] QOL can be used as an important indicator to highlight the burden of MSDs on communities and health sectors.[15]

The the best of our knowledge, no study has been conducted in Peshawar, Pakistan, on the impact of MSDs on QOL. The current study was planned to fill the gap by determining the impact of MSDs on QOL of patients at a tertiary care hospital.

Patients and Methods

The cross-sectional study was conducted at the Khyber Teaching Hospital, Peshawar, Pakistan, from September 2018 to March 2019. Those included were male and female patients aged >18 years with a variety of MSDs. Those excluded were patients having rheumatologic diseases, recent surgery or malignancy. The sample was raised using convenience sampling technique from among patients visiting physiotherapy outpatient department (OPD).

After obtaining approval from the institutional ethics review committee, and informed consent from the subjects, data was collected using the validated self-reporting EuroQol-5-Dimension-3-Level (EQ-5D-3L) questionnaire.[16] Some of the patients were not able to read the questionnaire so the questions were verbally explained to them and their responses were noted by the researchers.

The five dimensions of EQ-5D-3 Lare: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension had three statements to pick from, and the patients were asked to tick one statement for each dimension, which reflected the severity of the condition, with level 1 = no problem, level 2 = some problem and level 3 = extreme problem. EQ-5D-3L contains a visual analogue scale (VAS) which was used for health status evaluation, with the 'Best Health State' marked 100, and the 'Worst Health State' marked 0 (range: 0-100).[17]

The sample size was calculated using Roasoft calculator[18] with 95% confidence interval (CI) and 5% margin of error for an unknown population.

Data was analyzed using SPSS version 20.

Result

Of the 377 participants, 204(54.1%) were males, and 173(45.9%) were females. The overall mean age was 35.9±12.5 years. The largest age group was 18-27 years 110(29.2%) with 79(72%) males and 31(28%) females; followed by 28-37 years 109(29%) with 59(54%) males and 50(46%) females; 38-47 years 83(22%) with 23(28%) males and 60(72%)females; 48-57 years 48(12.8%) with 20(42%) males and 28(58%) females, and >60 years 27(7%) with 23(85%) males and 4(15%) females.

Most of the patients 282(78.4%) were from the Peshawar district, while 27(7.2%) were from tribal areas, 12(3.25%) were from Charsadda district, and the rest were from other districts of Khyber Pakhtunkhwa province. Majority of patients 132(35%) were housewives, while 49(13%) were students, 38(10.1%) had no occupation and the remaining were from different types of occupation. Most of the patients 184(48.8%) were referred by the orthopaedic OPD, while 104(27.6%) had come on their own, 31(8.2%) were referred by the neurosurgery department and the remaining were referred by other specialty physicians.

The mean score for the dimension of mobility was 1.75±.600, self-care 1.64±.630, usual activities 2.15±.567, pain/discomfort 2.31±.528, and anxiety/depression 1.91±.642. MSD patients had moderately good 'health state today' mean score of 56.03±20.175 on VAS.

The dimension and level score for different MSDs was noted, and it was found that those with muscular weakness had anxiety/depression (Table 1).

Data of respondents on EQ-5D-3L categories was further divided into different levels with respect to severity (Table 2).

Muscular weakness was the most commonly encountered problem 153(40.6%), followed by muscle stiffness 49(13.0%) and adhesive capsulitis 39(10.3%) (Table 3).

Table-1: EuroQol-5-Dimension-3-Level (EQ-5D-3L) dimension-wise score and levels.

EQ-5D-3L dimensions	Mobility			Self-care			Usual activities			Pain/discomfort			Anxiety/depression		
EQ-5D-3L levels	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Adhesive capsulate	25	12	2	5	26	8	4	26	9	1	23	15	15	18	6
Cervical spondylolisthesis	0	2	0	2	0	0	0	0	2	2	0	0	0	2	0
Cervical spondylosis	11	5	3	3	12	4	2	10	7	1	4	14	0	13	6
Epicondylitis	2	1	3	0	3	0	0	2	1	0	1	2	0	3	0
Joint lock (elbow)	6	2	0	1	7	0	1	4	3	1	6	1	1	6	1
Joint lock (knee)	2	12	2	9	6	1	3	12	1	4	10	2	4	7	5
Joint lock (wrist)	4	0	0	1	2	1	0	4	0	0	3	1	1	3	0
Lumber spondylolisthesis	0	4	0	4	0	0	0	2	2	0	1	3	1	3	0
Lumber spondylosis	0	1	0	1	0	0	0	1	0	0	1	0	0	1	0
Muscle stiffness	15	33	1	28	17	4	4	37	8	2	36	11	18	26	5
Muscle weakness	39	103	11	78	71	4	17	101	35	1	96	56	30	91	32
Osteoarthritis of knee	1	16	6	11	10	2	0	13	10	0	11	12	5	17	1
PFJ dysfunction	0	7	0	7	0	0	1	6	0	0	6	1	4	2	1
Piriformis syndrome	0	5	4	2	7	0	0	5	4	0	7	2	2	6	1
Planter fasciitis	0	5	1	6	0	0	0	5	1	0	3	3	1	4	1
Tendinitis	23	9	2	10	17	7	5	20	9	0	28	6	14	17	3

Table-2: EuroQol-5-Dimension-3-Level (EQ-5D-3L) dimensions and levels.

Levels	Mobility n (%)	Self-care n (%)	Usual activities n (%)	Pain/discomfort n (%)	Anxiety/depression n (%)
LEVEL 1	128 (34.0)	168 (44.6)	37 (9.8)	12 (3.2)	96 (25.5)
LEVEL 2	217 (57.6)	178 (74.2)	248 (65.8)	236 (62.6)	219 (58.1)
LEVEL 3	32 (8.5)	31 (8.2)	92 (24.4)	129 (34.2)	62 (16.4)
TOTAL	377 (100)	377 (100)	377 (100)	377 (100)	377 (100)

Table-3: Diagnosis and symptoms duration.

Diagnosis	Acute n (%)	Sub-acute n (%)	Chronic n (%)	Total
Adhesive capsulitis	15(38)	4(10)	20(51)	39
Cervical spondylolisthesis	2(100)	0	0	2
Cervical spondylosis	8(42)	1(5)	10(53)	19
Epicondylitis	2(67)	0	1(33)	3
Joint Lock (Elbow)	3(37.5)	1(12.5)	4(50)	8
Joint Lock (Knee)	1(6)	7(44)	8(50)	16
Joint Lock (Wrist)	2(50)	1(25)	1(25)	4
Lumber spondylolisthesis	3(75)	0	1(25)	4
Lumber spondylosis	0	0	1(100)	1
Muscle Stiffness	24(49)	4(8)	21(43)	49
Muscle weakness	58(38)	15(10)	80(52)	153
Osteoarthritis of knee	5(22)	2(8.6)	16(69.4)	23
PFJ dysfunction	0	0	7(100)	7
Piriformis syndrome	6(67)	0	3(33)	9
Planter fasciitis	3(50)	1(17)	2(33)	6
Tendinitis	19(56)	8(23.5)	7(20.5)	34

Discussion

MSDs substantially affect human performance and QOL. To study the impact of a variety of MSDs the current used EQ-5D-3L which is a validated instrument. A study on health-related QOL in rheumatoid arthritis (RA) patients reported EQ-5D-3L VAS score of 65 with +12 mean change over a course of three months.[19] A cohort study in farmers showed a EuroQol-VAS score of 67.7±18.7 (range: 0-100) showing good life quality.[20]

According to the current study, the most common MSD in 40.6% patients was muscle weakness, followed by muscle stiffness 13% and adhesive capsulitis 10.3%. A study comprising dentists from Pakistan reported a high prevalence 50.6% of shoulder disorders.[7] A study on the impact of upper limb MSDs in the general population reported results almost similar to tose of the current study.[21]

The current study showed different levels in the fine dimensions of EQ-5D-3L. Another study also showed the deleterious effects of newly-occurring MSDs on QOL and functional activities.[14] A study in the general population of Spain reported the prevalence of musculoskeletal conditions inconsistent with the findings of the current study, but musculoskeletal conditions significantly affected QOL.[11]

The current study indicated moderately good QOL-VAS score of 56.03±20.175 in MSD patients. MSDs usually cause pain, anxiety/depression; affect functional capacity and self-care; and hinder regular activities. Participants with muscle weakness, muscle stiffness, adhesive capsulitis and tendinitis reported the poorest QOL. The findings are consistent with an earlier study.[22]

The limitation of the current study is the use of a self-reporting questionnaire without any physical assessment.

Conclusion

MSDs were found to have a negative impact on QOL and health status of the patients.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. United States Bone and Joint Initiative: The Burden of Musculoskeletal Diseases in the United States (BMUS). 3rd ed. Rosemont IL. [Online] 2014 [Cited 2020 Feb 1]. Available from: URL: http://www.boneandjointburden.org..
2. Woolf AD, Åkesson K. Understanding the burden of musculoskeletal conditions. BMJ 2001; 322: 1079-80.
3. Panel on Musculoskeletal Disorders and the Workplace, Medicine Io. Musculoskeletal disorders and the workplace: Low back and upper extremities: NAP; 2001.
4. Amako M, Yato Y, Yoshihara Y, Arino H, Sasao H, Nemoto O, et al. Epidemiological patterns of traumatic musculoskeletal injuries and non-traumatic disorders in Japan Self-Defense Forces. Inj Epidemiol 2018; 5: 19.
5. Nur Azma B, Rusli B, Oxley J, Quek K. Work related musculoskeletal disorders in female nursing personnel: prevalence and impact. Int J Collab Res Intern Med Public Health 2016; 8: 294-8
6. Mäkelä M, Heliövaara M, Sievers K, Knekt P, Maatela J, Aromaa A. Musculoskeletal disorders as determinants of disability in Finns aged 30 years or more. J Clin Epidemiol 1993; 46: 549-59.
7. Hameed MH, Ghafoor R, Khan FR, Bada SB. Prevalence of musculoskeletal disorders among dentists in teaching hospitals in Karachi. J Pak Med Assoc 2016; 66: S36-8.
8. McCormick A, Flemming D, Charlton J. Royal college of general practitioners morbidity statistics fourth National Morbidity survey;1991-1992.
9. Urwin M, Symmons D, Allison T, Brammah T, Busby H, Roxby M, et al. Estimating the burden of musculoskeletal disorders in the community: the comparative prevalence of symptoms at different anatomical sites, and the relation to social deprivation. Ann Rheum Dis 1998; 57: 649-55.
10. Buckle PW, Devereux JJ. The nature of work-related neck and upper limb musculoskeletal disorders. Appl Ergon 2002; 33: 207-17.
11. Piedrahita H. Costs of work-related musculoskeletal disorders (MSDs) in developing countries: Colombia case. Int J Occup Saf Ergon 2006; 12: 379-86
12. Industry Commission. Work, health and safety: An inquiry into occupational health and safety. Canberra: Commonwealth of Australia; 1995: 1-388.
13. Dorman P. Estimating the economic costs of occupational injuries and illnesses in developing countries: essential information for decision-makers. Geneva, Switzerland: International Labour Organization; 2012.
14. Roux CH, Guillemin F, Boini S, Longuetaud F, Arnault N, Hercberg S, et al. Impact of musculoskeletal disorders on quality of life: an inception cohort study. Ann Rheum Dis 2005; 64: 606-11.
15. Scott D, Garrood T. Quality of life measures: use and abuse. Best Pract Res Clin Rheumatol 2000; 14: 663-87.
16. EuroQol Group. EuroQol-a new facility for the measurement of health-related quality of life. Health Policy 1990; 16: 199-208.
17. Wolfe F, Hawley D. Measurement of the quality of life in rheumatic disorders using the EuroQol. Br J Rheumato 1997; 36: 786-93.
18. Raosoft. Raosoft Sample Size Calculator. [Online] 2004 [Cited 2020 Feb 1]. Available from: URL: http://www.raosoft.com/samplesize.html.
19. Hurst N, Kind P, Ruta D, Hunter M, Stubbings A. Measuring health-related quality of life in rheumatoid arthritis: validity, responsiveness and reliability of EuroQol (EQ-5D). Br J Rheumato 1997; 36: 551-9.
20. Jo H, Baek S, Park HW, Lee SA, Moon J, Yang JE, et al. Farmers' cohort for agricultural work-related musculoskeletal disorders (farm) study: study design, methods, and baseline characteristics of enrolled subjects. J Epidemiol 2016; 26: 50-6.
21. Walker_Bone K, Palmer KT, Reading I, Coggon D, Cooper C. Prevalence and impact of musculoskeletal disorders of the upper limb in the general population. Arthritis Rheum 2004; 51: 642-51.
22. Picavet H, Hoeymans N. Health related quality of life in multiple musculoskeletal diseases: SF-36 and EQ-5D in the DMC3 study. Ann Rheum Dis 2004; 63: 723-9.