

# PREVALENCE OF MUSCULOSKELETAL DISORDER (MSD) IN HEALTHCARE PROFESSIONALS IN TRIHMS (A TERTIARY HEALTH CARE CENTRE)

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## ABSTRACT

**Introduction:** Musculoskeletal disorders (MSDs) are a significant occupational health concern worldwide, particularly among health care professionals such as doctors, dental professionals, physiotherapists, pharmacist, nursing officers and laboratory technicians. MSDs led to chronic pain, decreased productivity and reduced quality of life. These disorders have a significant economic and social impact. This study aimed to assess the prevalence of MSD's and identify the commonest musculoskeletal sites of trouble in various categories of health care professionals (doctors, dental professionals, physiotherapists, pharmacists, laboratory technicians and nursing officers) at TRIHMS.

**Methods:** This cross-sectional survey study was conducted in a tertiary care hospital Naharlagun, Arunachal Pradesh. Data were collected through- offline Nordic questionnaire. The questionnaires collected demographics information, assessed the prevalence of musculoskeletal pain using the Standard Nordic Musculoskeletal questionnaires (NMQ).

**Results:** In total,90.08% of the sample exhibited Musculoskeletal issues in the last 12 months, with lower back commonly affected area among doctors (47%), nursing officers (73.26%), technicians (48%), whereas, pharmacist and dental professionals have neck pain as the most prevalent site with 50% in pharmacist and 87% in dental professionals and physiotherapist have both upper and lower back equal prevalence of 66.6% as the most common affected site.

**Conclusion:** The result of this study showed that musculoskeletal pain is highly prevalent in HCPs like doctors, nursing officers, physiotherapists, pharmacist, laboratory technicians and dental professionals with a prevalence rate of 90.08% and it has a great impact in social as well as professional outcomes. Periodic ergonomic training is mandated among HCPs to limit occupational disability.

**Keywords:** Musculoskeletal disorders, prevalence, standardized Nordic musculoskeletal questionnaire, health care professionals, nurses, dental professionals, doctors, physiotherapist, pharmacist, laboratory technicians, Arunachal Pradesh.

## INTRODUCTION

Musculoskeletal disorders are defined as injuries or disorders affecting muscles, tendons, bones, nerves, ligaments, joints and circulatory systems.<sup>1,2</sup> Musculoskeletal disorders include a range of ailments affecting both hard and soft tissues of the musculoskeletal systems, including bones, tendons, ligaments, cartilage, muscles and nerves.<sup>3,4</sup> These ailments are typically characterized by pain and limitations in mobility and dexterity, reducing people's ability to work and participate in society. Musculoskeletal disorders are one of the major causes of morbidity<sup>5</sup> and the second most common cause of disability worldwide, measured by years lived with disability (YLDs) with lower back pain being the most frequent condition<sup>6</sup>. The global prevalence of MSD's ranges from 14% to as high as 42% on other hand in India, epidemiological studies indicate the community-based prevalence of about 20%<sup>7</sup> and occupation specific prevalence found to be as high as 90% in various studies. The world health organization estimates that globally approximately 1.71 billion people have had musculoskeletal conditions and the prevalence of musculoskeletal conditions varies by age and occupation specific prevalence of up to 90%. Musculoskeletal pain has been known as the most prevalent consequences in the working population.<sup>8</sup> According to Global Burden of Disease data, India has moved to first place from second place in 2007 when it comes to aggregate DALYs (disability adjusted life years) lost and now it has the largest number in the primary productive age of 15-49 years.<sup>9</sup> India exceeds other countries globally in terms of aggregate DALYs across all ages, ranking in second after china<sup>9</sup> Musculoskeletal problems are also the leading cause of global rehabilitation needs. They account for over two thirds of all adults in need of rehabilitation.<sup>10</sup>

Musculoskeletal disorders are very common among health care professionals.<sup>8</sup> It has become the major health problem worldwide. The prevalence of MSD's among healthcare professionals varies across different regions and professions, but studies consistently indicate a high burden. This not only affects the wellbeing of health care providers but also compromises the quality of patient care. The body areas most affected by the musculoskeletal disorders are low back, neck and shoulders. These are consistently represented among the different health care professionals.<sup>2</sup> Low back pain is the most common musculoskeletal disorder globally and a leading cause of disability in the working populations.<sup>11</sup> In 2020, low back pain affected 619 million people globally and it is estimated that the number of cases will increase to 843 million cases by 2050, driven largely by population expansion and ageing.<sup>12</sup> Five studies (Holder et al.,1999; Al-Eisa et al.,2012; Al Naser and Al Jadi 2019; Khairy et al.,2019; Glowinski et al.,2021) have listed thirteen activities that reinforce their occurrence. "Performing manual therapy techniques", "maintaining a position for a prolonged period", "bending or twisting", "lifting", and "transferring a patient" were the most cited.<sup>13</sup>

The prevalence of over 80% has been reported among PTs, nurses, dentists, surgeons. Numerous studies have highlighted the use of repeated awkward postures particularly among surgeons and physiotherapists.<sup>5</sup> Work related musculoskeletal disorders are highly prevalent among dental professionals with the prevalence rates reaching as high as 96%. The back and waist are the most commonly affected areas followed by upper and lower neck<sup>4</sup>

Awkward postures are known to be the most common and most significant factors associated with the occurrence of musculoskeletal disorders among nurses.<sup>14</sup>

Musculoskeletal disorders are a major issue for physical therapists. They perform daily tasks e.g. Manual therapy such as massage, patient handling and transfer-that require a high physical demand in a repetitive way that can lead to work related musculoskeletal disorders.<sup>15</sup>

Physical risk and organizational risk factors include handling loads especially when bending or rotating, repetitive or sudden movements awkward and static body positions, vibrations, poor lighting heat or cold in the environment, rapid pace of work, prolonged sitting or standing in same position<sup>16</sup> 80% of population will experience an episode of low back pain at some time during their lives and in which health care professionals are particularly vulnerable to developing low back pain due to physical and psychological demands of their work.<sup>16</sup>

There are many numbers of studies related to musculoskeletal disorders, specially work- related musculoskeletal disorders globally and nationally, but when compared to other parts of the country and the world, limited studies like work related musculoskeletal disorders among traditional weavers, MSD in handicraft workers in Arunachal Pradesh and MSD in badminton players are only few studies available in Arunachal Pradesh.

So, a comprehensive study on MSD in healthcare professionals at TRIHMS was very much needed, the main objective being to assess the prevalence of MSDs in health care professionals of TRIHMS and to identify the commonest anatomical site of trouble. Understanding the prevalence and associated risk factors is crucial for developing effective preventive strategies workplace ergonomic interventions and health promotion programs aimed at reducing the burden of MSDs in health care settings.

## **AIM AND OBJECTIVE OF THE STUDY**

### Aim of the study:

The aim of the study is to measure the prevalence of Musculoskeletal Disorders in health care professionals in TRIHMS.

### Objective of the Study

1. To estimate the prevalence of musculoskeletal disorders among various categories of health care professionals.

2. To identify the common site of musculoskeletal complaints among various categories of health care professionals.

## METHODOLOGY

1. **Study Design:** A cross-sectional descriptive survey design.
2. **Study Setting:** Tomo Riba institute of health and medical sciences (TRIHMS)
3. **Study Duration:** The study was conducted for a period of 12 months.
4. **Sample size:** The study included a total of 240 subjects.
5. **Sampling Method:** Purposive Sampling Technique
6. **Method of Data Collection:**
  - a) Questionnaire
  - b) Forms for data collection
7. **Target Population:** Doctors, Nursing officers, physiotherapist, dentist, laboratory technician and pharmacist.

### Inclusion criteria:

- Age: 25 to 50 years <sup>22,24</sup>
- Working since last 1 year in the same institute <sup>11,16</sup>
- HCPs of TRIHMS
- Both male and female
- Willing to participate and provide informed consent.

### Exclusion criteria

- History of traumatic injury or fracture in past 12 months <sup>12</sup>
- Post operative conditions <sup>12</sup>
- HCPs from other hospitals
- Not willing to participate

### Equipment required:

- Questionnaire (Standard Nordic Questionnaire)
- Laptop
- Mobile phones
- Internet
- Pen

### Data collection procedure

Prior to data collection, ethical approval was obtained from the Institutional Ethical committee, written permission was obtained from the Director TRIHMS where the data collection was conducted. Participants

were approached during the least busy hours to minimize any disturbances with their duties. Each participant received an information sheet about the study’s objectives, risk and benefits of participation, right to withdraw at any time, confidentiality assurance. The written informed consent was obtained from every participant before data collection started. Data was primarily collected through face-to-face interviews and filling up the questionnaire form for clarity and completeness. Completed forms were securely collected immediately after completion. The data were presented as measures of frequency and percentage of the variables with graphs. The results were analyzed using Microsoft Office Excel.

## RESULT

A total of 240 participants were included with a mean age of 34 years. The gender distribution showed a female predominance (163 females and 77 males) Most of the subjects were between (25-29 years).33% of the population are technicians,35.8% are nursing officers,19.8 % are doctors,5% pharmacist,3.32 % are dentist and a small percentage of 2.49% are physiotherapist. The participants work in various departments of TRIHMS with a mean working hour of 48 hours weekly.

**Table 1. Age distribution**

Age Range	Frequency (n=240)	Percentage (%)
25-29	93	38.75
30-34	57	23.75
35-39	32	13.33333333
40-44	23	9.583333333
45-50	35	14.58333333
Mean Age = ±34.025		

**Table 2. Gender distribution**

Gender	Frequency (n=240)	Percentage (%)
Male	77	32.08333333
Female	163	67.91666667

**Table 3. Gender distribution among various health care professionals**

Professionals	Gender	Frequency (n=240)	Percentage (%)
Technician	Male	35	14.58333333
	Female	45	18.75
Nursing Officer	Male	0	0
	Female	86	35.83333333
Dentist	Male	4	1.666666667
	Female	4	1.666666667
Physiotherapist	Male	1	0.416666667
	Female	5	2.083333333
Pharmacist	Male	6	2.5
	Female	6	2.5
Doctors	Male	31	12.91666667
	Female	17	7.083333333

80 % of HCP have working experience between 1-10 years,15.4% have 11-20 years of experience and a small percentage of 4.6% have experience over 20 years of working duration. The average BMI (Body Mass Index) of participants was recorded 24.43, indicating a healthy weight range.100 % of the study population were right hand dominant. Musculoskeletal disorders in the lower back are more prevalent with a percentage of 58.3% followed by neck (37.9%), shoulder (34.5%), upper back (33.75%), wrist (24.58%), hips/thigh (19.5%), knees, ankles /feet (17.5%) and elbow with the least prevalence rate of 12% in HCP during the last 12 months.

Out of 240 health care professionals,45 participants were prevented from doing work due to LBA, 23 from upper back trouble,21 participants from shoulder pain, 19 each had trouble with ankle/feet and neck,16 participants had trouble with wrist,14 with hips/thighs ,12 with knees and 8 with elbow trouble which prevented them from doing normal work in last 12 months.

Out of 240 participants, the prevalence rate was higher in LBA with 95 participants (39.58%)followed by upper back trouble in 43 participants(17.9%), followed by shoulder trouble in 40 participants(16.6%), neck with 39 participant(16.2%), hips /thighs with 29 participants (12.08%), wrist participants 28 (11.6%), knees 22(9%), and the least number of participants 15 (6%) had elbow trouble in the last 7 days.

In the last 12 months, among various categories of health care professionals, lower back is the most affected site of all 9 anatomical sites among HCP except dentist and pharmacist who had neck as the common affected site. The highest prevalence of low back pain was observed in the nursing officers, with a prevalence rate of 73.26%. In technicians also the commonest affected site was low back with a percentage of 48%, physiotherapy professionals had 66.6% of LBA, doctors had 47 %. All the above categories had shown LBA as the highest prevalent MSD except the pharmacist who had highest prevalence of neck pain with 50% and the dental professionals also had the same commonest site of neck with a prevalence of 87%. Whereas, among all the HCP categories the least prevalent MSD was elbow in common.

**Table 4. Distribution of Health Care Professionals having trouble in locomotive organs during the last 12 months**

Locomotive Organs	Neck	Shoulder	Elbows	Wrist	Upper Back	Low Back	Hips/Thighs	Knees	Ankles/feet
Total Health care professionals (n=240)	91	83	29	59	81	140	47	42	42
Percentage (%)	37.91666667	34.58333333	12.08333333	24.58333333	33.75	58.33333333	19.58333333	17.5	17.5

**Table 5. Distribution of Health Care Professionals that were prevented from doing normal work due to trouble in locomotive organs during the last 12 months.**

Locomotive Organs	Neck	Shoulder	Elbows	Wrist	Upper Back	Low Back	Hips/Thighs	Knees	Ankles/feet
Total Health care professionals (240)	19	21	8	16	23	45	14	12	19
Percentage (%)	7.91666667	8.75	3.33333333	6.66666667	9.58333333	18.75	5.83333333	5	7.91666667

**Table 6. Distribution of Health Care Professionals that had a trouble in locomotive organs during the last 7 days**

Locomotive Organs	Neck	Shoulder	Elbows	Wrist	Upper Back	Low Back	Hips/Thighs	Knees	Ankles/feet
Total Health care professionals (240)	39	40	15	28	43	95	29	22	20
Percentage (%)	16.25	16.66666667	6.25	11.66666667	17.91666667	39.58333333	12.08333333	9.16666667	8.33333333

17.5 % of technicians have accepted that LBA in the last 12 months have prevented from doing normal work, 25.5% of N.O accepted LBA, 37.5% of dentist, which is highest prevalence among all categories of HCP, 33.3% of physiotherapist, pharmacist 8.3% and 6.35 % of doctors have accepted that LBA have prevented them from doing their normal work during the last 12 months.

Now coming to the prevalence of MSDs in the previous 7 days of survey, the most common anatomical site was low back and least common anatomical site was the elbow joint, in which physiotherapists with 66.67 % is the highest prevalence followed by N.O with 50 %, technicians with 36.25%, pharmacist with 33.3%, doctors with 27.8 % and least was dentist with 25% of prevalence.

Among technicians, low back pain (48 %) was mostly affected common site followed by shoulder (35%) within the last 12 months. Among nursing officers, low back pain (73%) was most affected followed by neck pain (38.3%). Among dentist neck pain (87%) followed by low back pain (75%), pharmacist had neck trouble (50%) followed by low back (41.6%) doctors had low back as most affected with (47%) followed by neck pain (33.3%) and physiotherapists had both upper back and lower back (66.6%) as the most affected site followed by neck pain (50 %).

## DISCUSSION

MSDs are one of the most important occupational health issues among healthcare professionals, mostly neglected. This study investigated the prevalence of musculoskeletal disorders (MSDs) in the HCP like doctors, nursing officers, technicians, dental professionals, physiotherapists and pharmacists. And also identified the common anatomical site of musculoskeletal complaints among the various HCP's. The prevalence of musculoskeletal disorders (MSDs) in the target population over the past 12 months is alarming as the majority of them (90.08%) are affected with MSDs. The lower back is the most commonly affected area among the doctors (47%), nursing officers (73.26%), technicians (48%), whereas, pharmacists and dental professionals have neck pain as the most prevalent with (50%) in pharmacists and (87%) in dental professionals and physiotherapist have both upper back and lower back equal prevalence of (66.6 %) as the commonest MSD. These results are consistent with many studies done world -wide.

In our study, nursing officers have low back as most common affected site (73.2%) followed by neck Pain (38.3%). This result align with a meta- analysis conducted by Clari et al., involving 3590 nurses <sup>34</sup>, where the highest prevalence of MSDs was observed in the lower back. Similarly, a study conducted in China found that the most frequently affected areas among nurses were the lower back (73.5%) followed by the neck (73.2%).<sup>29,35</sup>

In dental professionals, the most-commonest MSD was neck pain (87%) followed by low back pain (75%). Several previous studies stated that the body region susceptible to work related MSD was the neck followed by back pain .<sup>36</sup>

According to this study, doctors had the highest prevalence of low back (47%) as the commonest MSD site followed by neck (33.3%). Several studies like Alnami et all <sup>32</sup> and Islam J et all <sup>11</sup> have found LBP to be the commonest MSD in doctors followed by neck pain.

In pharmacy professionals, neck pain (50%) followed by both LBA and UBA to be (41%) were the prevalence rate which is similar to a study done by sager H Alruwali.<sup>31</sup>

Technicians had 48% of low back pain as the commonest site followed by shoulder joint (35%) and neck pain (32%). Lower back and neck complaints were commonly recorded with multiple laboratory tasks, including sustained sitting and standing and repetitive movement, whereas lower back and shoulder pain were notably prevalent with pipetting work.<sup>37</sup> These findings align with the studies by Aldhabi R et al <sup>37</sup>. Lopez M.J et al <sup>38</sup> which reported similar results.

## CONCLUSION

The study found an overall one-year period prevalence rate of % for musculoskeletal disorder among the health care professionals in TRIHMS, and also it identified the common site of musculoskeletal complaints among various categories of health care professionals like doctors, nursing officers, physiotherapists, pharmacist, dental professionals and technicians. Notably, low back pain in doctors, physiotherapist, nursing officers, technicians were the most commonly affected site out of the nine anatomical-site given in the Nordic

questionnaire whereas, neck pain was the commonest musculoskeletal affected site in dental professions and pharmacist. The results of this study strongly advocate the implementation of frequent screening programs among HCPs to identify risk factors for MSDs, develop prevention strategies. There is lack of awareness about work ergonomics, Postural training, work organization and adjustment, working place modification and healthy lifestyle can be recommended for prevention of MSD and can prevent decline in work performance and prevalence of MSDs in HCP where such data and study was where During this study, it was found that there is vast difference in the number of participants in various categories of HCP.

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