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Managing Musculoskeletal Disorders among Physiotherapists

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ABSTRACT:

Background: This study investigates the occupational health challenges faced by physiotherapists, with a focus on work-related musculoskeletal disorders. It aims to identify key risk factors and offer recommendations to enhance their well-being.

Materials and Methods: 160 physiotherapists participated. The study used a combination of structured questionnaires, in-depth interviews, and observational studies to gather data. Additionally, relevant scientific literature was reviewed to support the findings.

Results: The study found that 90% of physiotherapists experienced lower back pain, 80% suffered from neck pain, 59% from wrist pain, and 42% from hip discomfort. These issues were largely attributed to poor posture during prolonged treatment sessions and repetitive strain from handling patients. Over 60% of participants reported having a high workload, and 36% stated that their work frequently encroached on personal time, contributing to stress and burnout. Female physiotherapists were particularly affected by emotional exhaustion due to work-life balance challenges. Despite 94% of participants being aware of ergonomic principles and 97% acknowledging their importance, only a minority fully adhered to ergonomic guidelines. Overwork was also a significant factor, with many physiotherapists working around 80 hours per week, leading to symptoms of burnout such as emotional fatigue, insomnia, and anxiety. If unaddressed, these issues could lead to long-term physical and psychological health problems.

Conclusion: The study underscores the need for ergonomic improvements and better workload management to reduce WRMSDs. It recommends promoting ergonomic education and implementing workplace controls to create a healthier work environment.

KEYWORDS: Ergonomics, Musculoskeletal Disorders, Occupational Health, Physiotherapists, Injury Prevention.

I. INTRODUCTION

Physiotherapists play a crucial role in helping patients recover from various ailments, employing techniques such as manual therapy, exercises, and modalities like heat and cold. Their work not only aids in physical recovery but also contributes to overall well-being, particularly for individuals dealing with musculoskeletal, neurological, or cardiovascular conditions.

In Mumbai alone, there are 1316 practicing physiotherapists, and Maharashtra state boasts 3,228 such professionals. Despite the significant population of India, accessibility to physiotherapy remains a challenge, with approximately 0.57 physiotherapists per 10,000 people. This underscores the importance of increasing the availability and accessibility of physiotherapy services nationwide. Trustworthy data is essential for understanding and addressing healthcare disparities, as noted by the World Confederation for Physical Therapy. Physiotherapists face numerous challenges, including managing heavy workloads, staying updated on medical advancements, meeting diverse patient needs, adapting to technological changes, and maintaining effective communication with patients and colleagues. Balancing these demands while upholding high standards of care is an ongoing challenge for them. This study is driven by the need to address the physical challenges faced by female physiotherapists and the growing importance of physiotherapy

in healthcare. Physiotherapy tasks, such as patient lifting and repetitive movements, put female practitioners at risk of musculoskeletal disorders (MSDs) and injuries. Improving their overall quality of life and the care they provide is the primary aim of this research.

Recognizing occupational hazards, including equipment handling and potential exposure to infectious diseases, underscores the importance of implementing safety measures. By addressing these issues, the research aims to create a safer work environment, safeguard the long-term health of female physiotherapists, and reduce workplace accidents. Furthermore, prioritizing well-being aligns with broader healthcare trends that emphasize the physical and mental health of healthcare professionals. Anticipated benefits include enhanced patient care, as contented physiotherapy staff can provide more personalized care.

This research aims to fill existing gaps in comprehensive studies in this field, particularly regarding the challenges faced by female physiotherapists. By providing vital information to healthcare organizations and policymakers through rigorous investigations, surveys, and analyses, its impact extends beyond the healthcare sector, influencing practices in all fields where physical therapy is employed. The goal is to safeguard the health and welfare of physiotherapists, leading to improved patient care, better working conditions, and positive effects on broader healthcare practices and workplace norms.

Physiotherapists, particularly those working with patients with neurological conditions, face significant occupational challenges. These challenges arise from the nature of their work, which often involves repetitive tasks and prolonged non-ergonomic postures. A study conducted by Manthan H. Purohit and Megha S. utilized the Rapid Entire Body Assessment (REBA) to evaluate the risk of developing work-related musculoskeletal disorders (WRMSDs) among physiotherapists. The study found that over half of the physiotherapists were at moderate to high risk of developing MSDs due to the physical demands of their profession. It emphasized the necessity of ergonomic interventions and preventive measures to mitigate these risks and promote the well-being of physiotherapists.

The prevalence of WRMSDs among physiotherapists has been well-documented across various studies. One such study by D. Sharan, et al., (2018) highlighted that approximately 81.25% of physiotherapists reported experiencing pain or discomfort in the past year. The most common areas of discomfort included the neck, upper back, lower back, wrist, shoulder, and ankle. The study identified several risk factors contributing to these conditions, including prolonged standing, static postures, awkward postures, forceful hand applications, and lifting heavy patients. While the study acknowledged that eliminating all risk factors may not be possible, it stressed the importance of further research and preventive strategies to improve the occupational health of physiotherapists.

Another significant study, conducted by Salik Y. and Ozcan A. in 2004, investigated the prevalence of musculoskeletal disorders among physiotherapists in Izmir, Turkey. The study involved 325 physiotherapists, of whom 205 were found to have experienced MSDs during their careers. The most common injuries occurred in the lower back (26%), hand/wrist (18%), shoulder (14%), and neck (12%). The study emphasized the high rate of injury associated with patient transfers, which accounted for 15% of the reported injuries. Moreover, between 60% and 69% of the physiotherapists had sought medical treatment for their injuries. The study concluded that changes in work habits and preventive interventions were crucial to reducing the risk of MSDs among physiotherapists.

Lastly, a longitudinal study by Joshua Samuel Raj Kumar assessed the prevalence of WRMSDs among physiotherapists in a rehabilitation center in an industrially developing country. Using a self-administered questionnaire and the Nordic Musculoskeletal Questionnaire (NMQ), the study found a high prevalence of MSDs in physiotherapists working in rehabilitation centers, with the lower back, upper back, wrist, and neck being the most affected areas. The study underscored the need for targeted preventive measures, particularly in rehabilitation settings, where physical exertion and handling are common job requirements.

Rationale

Despite the growing awareness of work-related musculoskeletal disorders (WRMSDs) among physiotherapists, there remains a gap in targeted interventions, particularly in high-demand urban environments like Mumbai. While previous research has extensively documented the prevalence of WRMSDs, there is limited data specific to the unique demographic and workload patterns of physiotherapists in Indian cities. Mumbai, with its fast-paced healthcare sector, presents distinct challenges such as long working hours, diverse patient needs, and an overwhelming demand for

physiotherapy services. This study aims to fill that gap by offering a detailed analysis of the ergonomic and occupational health risks faced by physiotherapists in this region. Furthermore, it will provide evidence-based recommendations for improving workplace ergonomics, mitigating MSDs, and enhancing the overall health and productivity of physiotherapists. By focusing on Mumbai, this research will offer valuable insights into the broader national context, paving the way for improved occupational health policies across India.

II. AIM AND SPECIFIC OBJECTIVES

The study aims to investigate the occupational health challenges and musculoskeletal disorders (MSDs) faced by physiotherapists. The specific objectives are to: (i) understand the demographic characteristics of physiotherapists in Mumbai and its suburbs, (ii) analyse the types of work-related MSDs they experience, and (iii) propose strategies to reduce work-related discomfort and improve their overall occupational health. These insights aim to foster a safer and healthier working environment for physiotherapists by addressing the specific physical challenges they encounter.

III. METHODOLOGY

This study adopts an exploratory research design to delve into the realm of Work-Related Musculoskeletal Disorders (MSDs) among physiotherapists in Mumbai, with the primary objective of enhancing their health, well-being, and safety while on the job. It aims to achieve this by scrutinizing the prevalence of MSDs and identifying effective strategies for injury prevention.

To attain a comprehensive understanding, the study presents to engage 160 physiotherapists, which corresponds to roughly 12% of the total physiotherapist population practicing in Mumbai and its suburban areas. The sampling methodology entails a combination of convenient and snowball sampling techniques, with an awareness of the potential bias introduced by the characteristics of the initial participants.

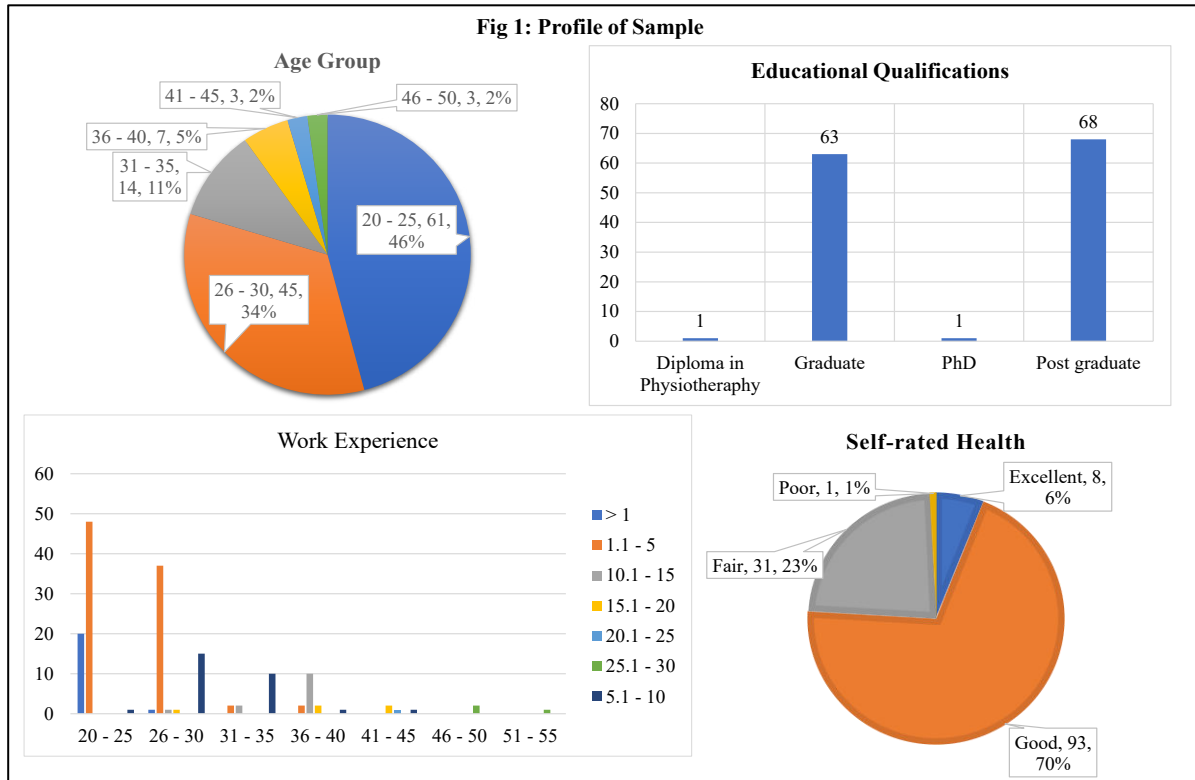
Participants in the study are registered, actively practicing physiotherapists in Mumbai, with a minimum of one year of professional experience. Those who are unwilling to participate or are retired or on long-term leave are excluded from the study.

A multifaceted approach is employed to gather data, including the utilization of a validated questionnaire designed to collect quantitative data on MSD prevalence, ergonomic practices, and injury prevention strategies. Additionally, structured interviews are conducted with each participant, lasting approximately 20-25 minutes, to delve into individual experiences, perceptions, and practices concerning MSDs and injury prevention. The Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) (CUergo: Musculoskeletal Discomfort Questionnaires (cornell.edu) is used to assess musculoskeletal discomfort, while observational studies capture real-time work practices and ergonomic postures during patient care activities.

Data collected is meticulously organized and analyzed using MS Excel, where rudimentary statistical analyses such as mean percentages and pivot charts are employed to conclude and identify interrelationships among various aspects of the research. This analytical approach facilitates a thorough examination of MSD prevalence, associated risk factors, and effective injury prevention strategies among physiotherapists in Mumbai.

Throughout the study, ethical considerations are of paramount importance. Informed consent is obtained from all participants, ensuring voluntary participation and the confidentiality of data. Furthermore, ethical approval is sought from the relevant institutional review board to ensure adherence to ethical guidelines and standards.

IV. RESULTS



Demographic insights help in customizing interventions that address specific health needs or challenges faced by physiotherapists. Knowledge of demographic data aids in recognizing the impact of these challenges on their occupational health and well-being.

106(80%) physiotherapists were aged 20 – 30 years, and the average age of the sample is 27.6 years. 1(0.6%) female physiotherapists have diploma in physiotherapy, 63(39%) female physiotherapists are graduates, 1(0.6%) female physiotherapist have doctoral degree and 68(42.5%) female physiotherapists are postgraduates. 33(24%) are married and 100(76%) are single. 8(6%) self-rated their health as excellent, 93(70%) as having good health, and only 1(1%) as poor health.

14(10%) physiotherapists have worked for less than a year, whereas 29(22%) with one year work experience, 15(11%) with two years of experience, 16(12%) with three years of experience. 20(15%) have 5 years or more than 5 years of experience.

The Cornell Modified Discomfort Questionnaire (CMDQ) is a tool used in research related to assessing discomfort in various contexts, particularly in ergonomics and human factors studies. It's designed to measure discomfort experienced by individuals due to ergonomic factors, such as posture, seating, workstation design, and repetitive tasks. The questionnaire consists of a series of questions or prompts that participants respond to, rating their level of discomfort, severity of pain and Interference with tasks with the help of table on a scale. The responses are used to identify patterns of discomfort and potential ergonomic issues that need to be addressed.

Body site	0		1		2		3		4	
	f	%	f	%	f	%	f	%	f	%
Neck	32	20.0	45	28.1	39	24.4	25	15.6	19	11.9
shoulder (Right)	129	80.6	14	8.8	12	7.5	1	0.6	4	2.5
Shoulder (Left)	126	78.8	22	13.8	7	4.4	3	1.9	2	1.3
Upper Back	121	75.6	8	5.0	13	8.1	11	6.9	7	4.4
Upper Arm (Right)	149	93.1	3	1.9	4	2.5	1	0.6	3	1.9
Upper Arm (Left)	148	92.5	6	3.8	4	2.5	1	0.6	1	0.6
Lower back	16	10.0	35	21.9	41	25.6	26	16.3	42	26.3
Forearm (Right)	146	91.3	5	3.1	6	3.8	1	0.6	2	1.3
Forearm (Left)	140	87.5	8	5.0	4	2.5	7	4.4	1	0.6
Wrist (Right)	65	40.6	25	15.6	29	18.1	22	13.8	19	11.9
Wrist (Left)	65	40.6	25	15.6	29	18.1	22	13.8	19	11.9
Hip/ Buttocks	93	58.1	21	13.1	29	18.1	7	4.4	10	6.3
Thigh (Right)	118	73.8	20	12.5	17	10.6	4	2.5	1	0.6
Thigh (Left)	118	73.8	20	12.5	17	10.6	4	2.5	1	0.6
Knee (Right)	138	86.3	4	2.5	15	9.4	2	1.3	2	1.3
Knee (Left)	142	88.8	3	1.9	12	7.5	2	1.3	2	1.3
Lower leg (Right)	122	76.3	25	15.6	3	1.9	8	5.0	2	1.3
Lower leg (Left)	120	75.0	26	16.3	4	2.5	8	5.0	2	1.3
Foot (Right)	130	81.3	15	9.4	13	8.1	1	0.6	1	0.6
Foot (Left)	129	80.6	14	8.8	13	8.1	1	0.6	1	0.6

75.1 – 100	Very High Risk
50.1 – 75	High Risk
25.1 – 50	Moderate Risk
10.1 – 25	Low Risk
> 10	Least Risk

Table A (CMDQ – A) sheds light on the specific body parts and the level of discomfort, aches, and pains experienced by Physiotherapists. The Body site experiencing the highest level of discomfort is found to be the Lower Back with 144(90%) physiotherapists experiencing pain. The next severely affected area is the Neck with 128(80%) physiotherapists experiencing persistent pain and discomfort. 95(59%) experience pain in right wrist and 67(42%) experience pain in Hip region. 42(26%) experience discomfort in Thigh region, 40(25%) in Lower leg, 39(24%) in Upper Back region.

A lower amount of pain was experienced in 34(21%) left shoulder, 31(19%) in right shoulder, 31(19%) in left and right foot, 22(14%) in right knee, 20(13%) in left forearm. The least amount of discomfort was experienced in 18(11%) left knee, 14(9%) in the right forearm, 12(8%) in the upper left arm and 11(7%) in upper right arm.

- Lower Back: 144 (90%) physiotherapists reported experiencing pain in the lower back. This discomfort is attributed to factors such as prolonged standing, frequent bending, and lifting patients, which can strain the lower back.
- Neck and Shoulder: 128 (80%) physiotherapists reported discomfort in the neck and shoulder region. This is often due to repetitive tasks such as assisting patients, performing manual therapies, or maintaining awkward postures during assessments, leading to tension and discomfort.
- Right Wrist: 95 (59%) physiotherapists reported experiencing pain in the right wrist. This discomfort typically occurs while administering treatments such as massage or manual therapy.

- Hip Region: 67 (42%) physiotherapists reported pain in the hip region. This discomfort is commonly associated with activities like squatting, kneeling, or maintaining certain positions while assisting patients in exercises or rehabilitation routines.
- Feet and Ankles: Continuous standing and walking on hard surfaces can result in discomfort in the feet and ankles. Conditions like plantar fasciitis or Achilles tendonitis may develop as a result of these activities

Table B: Interference of pain, ache, and bodily discomfort with work						
Body site	1 (Not at all)		2 (Slightly interfered)		3 (Substantially interfered)	
	f	%	f	%	f	%
Neck	24	15	76	47.5	28	17.5
Shoulder (Right)	27	16.8	4	2.5	0	0
Shoulder (Left)	27	16.8	7	4.3	0	0
Upper Back	24	15	13	8.1	2	1.25
Upper Arm (Right)	1	0.6	9	5.6	1	0.6
Upper Arm (Left)	1	0.6	9	5.6	2	1.2
Lower Back	30	18.7	85	53.1	29	18.1
Forearm (Right)	12	7.5	2	1.25	0	0
Forearm (Left)	17	10.6	3	1.9	0	0
Wrist (Right)	6	3.7	80	50	9	5.6
Wrist (Left)	8	5	79	49.3	8	5
Hip/Buttocks	21	13.1	39	24.3	7	4.4
Thigh (Right)	0	0	0	0	0	0
Thigh (Left)	0	0	0	0	0	0
Knee R	2	1.2	2	1.2	0	0
Knee (Left)	2	1.2	2	1.2	0	0
Lower Leg (Right)	0	0	0	0	0	0
Lower Leg (Left)	0	0	0	0	0	0
Foot (Right)	0	0	26	16.2	4	2.5
Foot (Left)	0	0	27	16.8	4	2.5

When the amount of pain as reported by the physiotherapists due to their work was analyzed, the peak amount of pain was experienced in the Lower Back area with 88(55%) physiotherapists being slightly uncomfortable, 49(30.6%) moderately uncomfortable and 7(4.4%) were very uncomfortable. The next affected area was the Neck where 41(25.6%) physiotherapists were slightly uncomfortable, 57(35.6%) moderately uncomfortable and 30(18.7%) were very uncomfortable. In the right and left Wrist region 76(47.5%) physiotherapists experienced slight discomfort, 12(7.5) with moderate discomfort and 7(4.3%) experienced high discomfort. In the Hip/Buttocks area, 39(24.3%) were slightly uncomfortable, 20(12.5) were moderately and 8(5%) were very uncomfortable with their level of pain experienced

Table B highlights the interference of pain, aches, and bodily discomfort experienced by physiotherapists due to their work activities showing the pains and aches of 85(53%) physiotherapists slightly interfered with their work and 29(18%) physiotherapists substantially interfered with their work. The discomfort in the Neck area slightly interfered with 76(47.5%) physiotherapists and substantially interfered with 28(17.5%) physiotherapists' work. 80(50%) physiotherapists say their pain in the Wrist region slightly interferes with their work and 9(5.6%) say the pain substantially interferes. 39(24.3%) physiotherapists experience Hip/Buttocks pain slightly interfering with their work and 7(4.3%) experience pain substantially interfering with work.

Table C: Musculoskeletal Discomfort among Physiotherapists		
Body Site of Discomfort	Tasks	f(%)
Lower Back	Mobilizing, Lifting, Manual Therapy. Exercises	144(90%)

Neck	Manual Therapy, Ultrasound, Needling	128(80%)
Wrist (right)	Manual Therapy, Massage, Tissue Release	95(59.4%)
Wrist (left)	Manual Therapy, Massage, Tissue Release	95(59.4%)
Hip	Mobilizing, Prolonged Sitting and Standing	67(42%)

Table C provides discomfort regions reported by physiotherapists and their associations with tasks contributing to discomfort in distinct anatomical areas. Noteworthy is the prevalence of lower back discomfort attributed to mobilizing, lifting, manual therapy, and exercises, affecting 144(90%) physiotherapists. In the neck region, contributory factors include manual therapy, ultrasound, and needling, as reported by 128(80%) physiotherapists. Discomfort in the wrist area aligns with tasks such as manual therapy, massage, and tissue release, affecting 95(59.38%) individuals. Similarly, hip discomfort is linked to activities involving mobilizing, prolonged sitting, and standing, impacting 67(41.9%) physiotherapists. This comprehensive analysis illuminates specific tasks and their frequencies correlated with discomfort, providing valuable insights for optimizing ergonomic strategies and addressing potential challenges encountered by physiotherapists in their professional practice.

V. DISCUSSION

The demographic insights provided offer valuable context for understanding the profile of physiotherapists surveyed and their occupational health challenges. The majority of respondents fall within the younger age bracket, indicating a trend of attracting younger individuals to the profession. Additionally, the educational attainment of physiotherapists, particularly females, reflects a commitment to higher education within the field. However, the prevalence of musculoskeletal discomfort among physiotherapists underscores the physical demands of their profession.

The data highlights specific anatomical regions where discomfort is reported, such as the lower back, neck, shoulder, wrist, hip, feet, and ankles. These discomforts are attributed to the tasks performed in their daily practice, such as lifting patients, performing manual therapies, and maintaining awkward postures during assessments. This suggests a need for targeted interventions to address ergonomic concerns and reduce the risk of work-related injuries among physiotherapists.

Understanding the demographic profile and associated occupational health challenges is crucial for developing effective interventions and support systems tailored to the needs of physiotherapy professionals. By addressing these challenges, healthcare organizations and policymakers can improve the well-being and job satisfaction of physiotherapists, ultimately enhancing the quality of patient care provided by this vital healthcare profession.

Work-related musculoskeletal disorders (WRMSDs) pose a range of detrimental effects on both individuals and workplaces. Principally, WRMSDs induce discomfort, pain, and limited mobility in affected muscles, tendons, ligaments, joints, and nerves, significantly hampering daily activities and overall well-being. Additionally, these disorders hamper productivity by slowing down task completion, increasing error rates, and reducing work efficiency. Consequently, affected individuals may experience heightened absenteeism as they seek medical treatment and rehabilitation, disrupting workflow and team dynamics.

Cornell Modified Discomfort Questionnaire (CMDQ) is a tool to typically assess individuals' discomfort levels related to various physical activities, postures, or environments. If the CMDQ follows a similar pattern, it could potentially help to identify and address sources of discomfort experienced by individuals in specific settings or activities. By quantifying discomfort levels and pinpointing contributing factors, such a questionnaire could inform interventions to improve ergonomics, workplace design, or rehabilitation strategies, ultimately enhancing comfort, productivity, and well-being.

A significant number of physiotherapists report experiencing discomfort in various areas of their bodies due to the

demands of their profession. Specifically, 90% of them suffer from lower back pain attributed to prolonged periods of standing, frequent bending, and lifting patients, which can strain the lower back. Additionally, 80% experience tension and discomfort in the neck and shoulder region from tasks such as assisting patients, performing manual therapies, or maintaining awkward postures during assessments. Furthermore, 59% report pain in their right wrist, often occurring while administering treatments like massage or manual therapy. Another 42% of physiotherapists endure hip pain, often resulting from activities such as squatting, kneeling, or maintaining specific positions while assisting patients in exercises or rehabilitation routines. Moreover, continuous standing and walking on hard surfaces may lead to discomfort in the feet and ankles, potentially causing conditions like plantar fasciitis or Achilles tendonitis.

Specific tasks such as mobilizing, lifting, and manual therapy are linked to lower back discomfort, while activities like manual therapy and ultrasound contribute to neck discomfort. Discomfort and pain not only impact physiotherapists' well-being but also interfere with their professional tasks, with a notable proportion experiencing interference with work. Conditions such as tendinitis, bursitis, rotator cuff injuries, carpal tunnel syndrome, and low back pain are frequently reported. These disorders can result in pain, discomfort, reduced mobility, and decreased work productivity, impacting the overall well-being of physiotherapists and potentially compromising patient care.

Moreover, continuous standing and walking on hard surfaces may lead to discomfort in the feet and ankles, potentially causing conditions like plantar fasciitis or Achilles tendonitis. These findings underscore the physical toll that the profession can take on physiotherapists and highlight the importance of addressing ergonomic concerns to ensure their well-being.

VI. RECOMMENDATIONS BASED ON THE RESULTS

Based on the study's findings, a series of recommendations are proposed to enhance the occupational health, comfort, safety, and overall well-being of physiotherapists:

Engineering Control:

1. Implementing ergonomic treatment tables, chairs, and specialized tools to reduce physical strain.
2. Using mechanical lifting aids to minimize manual handling risks during patient transfers.
3. Optimizing treatment area layouts by minimizing reaching distances, improving equipment placement, and integrating fatigue mats or cushioned flooring to alleviate repetitive motion fatigue and mitigate musculoskeletal injury risks.
4. Incorporating an AI-powered Virtual Reality (VR) training program for physiotherapists to learn proper ergonomic implementation could involve designing interactive scenarios where therapists can practice assessing and adjusting ergonomics in various settings.
5. Installing a local exhaust ventilation system to control exposure to airborne hazards.
6. Providing isolation rooms or negative pressure rooms to contain infectious agents.

Administrative Controls Implementation:

1. Implementing effective scheduling practices like job rotation, work rest schedules and task schedules to allow for adequate breaks between patient treatments, reducing overexertion risks.
2. Providing comprehensive training on proper body mechanics, safe patient handling, and ergonomics to enhance awareness.
3. Introducing job rotation strategies to diversify movements, reducing prolonged exposure to specific physical demands.
4. Establishing policies fostering a safety culture, encouraging the reporting of injuries and near misses to identify areas for improvement for safety work procedures such as body mechanics and patient handling techniques

Personal Controls:

1. Initiating biomechanical training programs focusing on correct lifting and transferring techniques to minimize physical strain.
2. Encouraging the use of supportive footwear, back belts, and rest supports for added protection.
3. Advocating regular exercise and structured stretching routines to enhance strength and flexibility while promoting awareness of personal limitations.
4. Emphasizing the importance of breaks and self-care practices to prevent overexertion and burnout among physiotherapists.

- Using gloves, and masks when handling infected patients.

These measures aim to create a comprehensive approach to address occupational health and musculoskeletal discomfort among physiotherapists, fostering a safer and healthier work environment that promotes their well-being and long-term sustainability in the profession, by implementing and combination of these controls can effectively help in mitigating occupational health hazards among physiotherapists.

VII. SCOPE OF THE STUDY

This study explores the occupational health challenges faced by physiotherapists in Mumbai, focusing on their susceptibility to work-related musculoskeletal disorders (WRMSDs) and the role of innovative workstation design in alleviating these issues. Given the increasing demands placed on physiotherapists, especially those handling physically intensive tasks like patient rehabilitation, it is crucial to analyze the exposure of physiotherapists to occupational health risks, particularly in the areas of neck and lower back discomfort.

The study seeks to examine the specific ergonomic challenges physiotherapists face, emphasizing the importance of developing tailored interventions to prevent or minimize musculoskeletal injuries. A central aspect of the research is to explore how innovative physiotherapy workstations can be designed to address these concerns effectively. These workstations could incorporate features such as adjustable support stilts, integrated lifting mechanisms to aid patient handling, ergonomic seating to maintain proper posture, and smart accessories for storing tools.

In addition to these design innovations, the study will assess the potential benefits of integrating sensor technologies that detect prolonged static postures and adjust the workstation accordingly, helping reduce the risk of musculoskeletal strain. Other features, like glare control and enhanced lighting, will also be considered to ensure an optimal working environment. The study's findings will provide a roadmap for creating more ergonomic and supportive work environments that prioritize the health and well-being of physiotherapists, thereby enhancing their capacity for effective patient care.

By focusing on these objectives, the study will contribute to a deeper understanding of how strategic workplace modifications can play a significant role in improving the occupational health of physiotherapists and reducing the prevalence of WRMSDs in the profession.

VIII. AUTHOR STATEMENT

- Acknowledgements:** The researchers express their sincere gratitude to the physiotherapists for their valuable contributions to this research.
- Informed Consent:** Before their participation, all participants provided written informed consent, demonstrating their understanding of the study's objectives, procedures, and potential risks.
- Conflict of Interest:** The authors disclose that they have no conflicting interests that could potentially influence the objectivity or integrity of the research conducted.
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REFERENCES

- Ayare, M., Rao, R. (2021). Work-Related Musculoskeletal Disorders (WRMSDs) among Healthcare Workers (HCWs). *Journal of Emerging Technologies and Innovative Research (JETIR)*. ISSN: 2349-5162. Volume: 8, Issue: 7. pp. e45 – e50. July 2021. <http://www.jetir.org/papers/JETIR2107509.pdf>
- Churchill Livingstone. (1990). *Ergonomics: The Physiotherapist in the Workplace*. (1990). United Kingdom.
- Cromie JE, Robertson VJ, Best MO. Occupational health in physiotherapy: general health and reproductive outcomes. *Aust J Physiother*. 2002;48(4):287-94. doi: 10.1016/s0004-9514(14)60168-9. PMID: 12443523.
- Dahodwala, A., Roopa, R. (2021). Psychosocial (Work-Related) Risk Factors Contributing to Occupational Stress Among Healthcare Workers (HCWs). *International Journal of Multidisciplinary Educational Research (IJMER)*; ISSN: 2277-7881. Volume: 10, Issue: 7(6), July 2021. pp. 53 – 58. [http://s3-ap-southeast-1.amazonaws.com/ijmer/pdf/volume10/volume10-issue7\(6\)/11.pdf](http://s3-ap-southeast-1.amazonaws.com/ijmer/pdf/volume10/volume10-issue7(6)/11.pdf)

5. Grobler, S. H. (2013). The Impact of a Change in Work Posture on Work-related Musculoskeletal Disorders Among Sewing-machine Operators, Managed Within a Physiotherapy and Ergonomics Programme. (n.p.): University of Pretoria.
6. Hedge, A. (1999). CMDQ - Cornell Modified Discomfort Questionnaire. CUergo: Musculoskeletal Discomfort Questionnaires (cornell.edu)
7. Iqbal Z, Alghadir A. Prevalence of work-related musculoskeletal disorders among physical therapists. *Med Pr.* 2015;66(4):459-69. doi: 10.13075/mp.5893.00142. PMID: 26536963.
8. Manna, A., Roopa, R. (2021). Coping Strategies Adopted by Healthcare Workers To Eliminate Negative Stressors. *International Journal of Creative Research Thoughts (IJCRT)*, ISSN:2320-2882Vol.9, Issue 7, pp.d534-d540, July 2021. <http://www.ijcrt.org/IJCRT2107398>
9. Milhem M, Kalichman L, Ezra D, Alperovitch-Najenson D. Work-related musculoskeletal disorders among physical therapists: A comprehensive narrative review. *Int J Occup Med Environ Health.* 2016;29(5):735-47. doi: 10.13075/ijomeh.1896.00620. PMID: 27518884.
10. Nagar, S. B. (2015). *Ergonomics and Physiotherapy: Human Factors & PT.* Germany: Lap Lambert Academic Publishing GmbH KG.
11. Roopa Rao, Geeta Ibrahim. (2020). Work-Related Musculoskeletal Morbidity among Nurses in India. *International Journal of Creative Research Thoughts.* Vol. 8. Issue 4. Aril 2020. http://ijcrt.org/viewfull.php?&p_id=IJCRT2004015
12. Sharan, D., Rajkumar, J. S. (2018). Musculoskeletal Disorders Among Physiotherapists Working in a Single Rehabilitation Centre: A Longitudinal Study: Volume I: Healthcare Ergonomics. *Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018).* Pp 715 – 716.
13. Vijendren A, Yung M, Sanchez J, Duffield K. Occupational musculoskeletal pain amongst ENT surgeons - are we looking at the tip of an iceberg? *J Laryngol Otol.* 2016 May;130(5):490-6. doi: 10.1017/S0022215116001006. PMID: 27095554.



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