

Work-Related Musculoskeletal Disorders Among The Administrators At Moi University-College Of Health Sciences, Eldoret, Kenya

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DOI: 10.29322/IJSRP.15.10.2025.p16606

<https://dx.doi.org/10.29322/IJSRP.15.10.2025.p16606>

Paper Received Date: 18th August 2025

Paper Acceptance Date: 29th September 2025

Paper Publication Date: 6th October 2025

ABSTRACT

Background: Musculoskeletal disorders are a group of conditions that are typically characterized by pain (often persistent), stiffness, weakness and decreased range of motion. The main risk factors for work-related musculoskeletal disorders (WRMDs) among administrators include awkward posture, sustained body position, inappropriate furniture, and inadequate rest breaks. Other reported risk factors are repetitive tasks, physical overexertion, multitasking, and neglecting precautions. WRMDs have greater effects on the workers which include absenteeism from work, disability, and early retirement. Publications on this disorder locally are hardly available, hence the need of this study.

Objectives: To determine the occurrence, the risk factors, perceived impact, and the targeted interventions of WRMDs among the administrators at the College of Health Sciences (CHS) of Moi University, Eldoret, Kenya.

Methods: This was a descriptive cross-sectional study that was conducted at the CHS of Moi University, after approval from relevant authorities. The study population included all the administrators from the four schools namely; School of Medicine (SOM), School of Nursing and Midwifery (SONMW), School of Public Health (SPH) and School of Dentistry (SOD), making a total of 24 participants who met the inclusion criteria. Data was collected using Nordic Musculoskeletal Questionnaire (NMQ), analyzed for descriptive statistics such as mean, median and mode, and presented in the form of diagrams and prose.

Results: Females were 18 (75%) while males were 6 (25%), indicating a higher representation of female. The ages ranged from 36 to 56 years, covering a broad spectrum of mid-level career and senior professionals, who had been in current job for 6- 29 years. Reported risk factors included prolonged sitting, repetitive hand movements, poor workstation ergonomics and heavy lifting. Nine (37.5%) believed their job contributed to their musculoskeletal disorders, while for musculoskeletal discomfort and pain, 14 (58.3%) mentioned their symptoms interfered with their work unlike in 6 (25%). Four (16.7%) did not experience any musculoskeletal pain or discomfort. Nine (37.5%) reported incorporating simple stretching exercises into their routine to alleviate discomfort, likely targeting muscle stiffness and improving flexibility, while 7 (29.2%) adjusted their chair and desk height, indicating an awareness of ergonomic practices to reduce strain and maintain proper posture. Only 5 (20.8%) sought medical advice, suggesting that their discomfort may have been more severe, requiring professional intervention. The remaining participants resorted to painkillers, which implied that they primarily relied on temporary relief rather than addressing the root cause of their discomfort.

Conclusion: This study underscored the high occurrence of WRMDs particularly in the lower back, neck and upper back among administrators, related to study risk factors highlighting the impact of prolonged sitting, poor ergonomics and repetitive movements, stressing the need for intervention and prevention aspects. WRMDs significantly impacted work productivity causing absenteeism and functional impairments while participants often resolved to temporary solutions like painkillers and medical consultations.

Recommendations: There is need for ergonomic interventions, particularly for those suffering from back and neck pain. Proper posture, particularly for workers in desk jobs, is crucial. There is need for stretching and exercise programs as part of the solution and frequent breaks to reduce the strain of static postures. Short breaks are crucial for mitigating the prolonged sitting that contributes to back and neck pain.

Key words: Administrators, Ergonomics, Nordic Musculoskeletal Questionnaire, Occurrence, Work-Related Musculoskeletal Disorders.

INTRODUCTION

Work-related musculoskeletal disorders (WRMDs) encompass a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, joints, nerves, and blood vessels. These disorders arise due to occupational risk factors, including repetitive motions, sustained static postures, excessive physical effort, and awkward joint positions. Additionally, workplace ergonomic factors contribute to their development (Aptel, Aublet- Cuvelier & Claude Cnockaert, 2002; Munala & Olivier, 2021).

According to Abebaw et al., (2024), these conditions lead to significant health concerns among workers globally, with administrative employees being particularly vulnerable due to their sedentary work environments. The study highlights the need for ergonomic interventions to mitigate these risks and improve workplace health outcomes.

WRMDs primarily affect the upper limbs, lower back, and lower limbs, with the aging workforce being particularly vulnerable due to a decline in physical capacity relative to job demands (Okunribido, Wynn & Lewis, 2011). Office-based occupations, particularly those involving prolonged computer use, are associated with a rising prevalence of WRMDs. Studies have demonstrated that employees who engage in extensive computer work are at heightened risk of developing musculoskeletal discomfort, leading to increased absenteeism and productivity loss (Korhan & Mackeih, 2010).

According to Okezue et al., (2020), in research on prevalence of WRMDs among office workers in higher education institutions, they found that most participants reported musculoskeletal complaints primarily affecting the back and upper extremities. Risk factors included prolonged working hours, female gender, increased work experience, and older age, necessitating targeted interventions. The global burden of WRMDs is significant, with prevalence rates ranging from 35.1% to 47% in America and 78.6% to 88% in Asia (Arsalani, Fallahi-Khoshknab, Josephson, Lagerstrom, 2014; Attar, 2014; Yan et al., 2017). In Kenya, a study by Wanyonyi, Frantz and Said, (2015) among administrative staff at Aga Khan University Hospital reported a 12-month prevalence rate of 75.5% for low back pain and 67.8% for neck pain

Ibrahim and Gaafar, (2024) further highlighted that, 74.7% of administrative employees experienced musculoskeletal complaints in at least one anatomical region over the past year. The most affected areas were the neck (47.1%), lower back (40.7%), and shoulders (36.3%). A significant correlation was found between WRMDs and prolonged sitting, poor ergonomic practices, inadequate workspace, sustained postures, awkward movements, and inadequate rest breaks. These findings underscore the urgent need for ergonomic interventions and preventive strategies to mitigate WRMDs in administrative work environments.

According to literature review, Forde, Punnett and Wegman, (2002) the WRMDs by definition are a subset of musculoskeletal disorders that arises out of occupational exposures. These conditions cause chronic pain and functional impairment, impose heavy cost on society, and reduce productivity.

Occupational use of computers has increased rapidly over recent decades and has been linked with various musculoskeletal complaints. Repetitive hand movements lead to overload of the upper extremity and neck, and prolonged sitting posture leads to overload on the lower back. Pain in the upper extremities and the neck-shoulder region will affect the workers' health and productivity and it accounts for most work-related time lost (Elkhateeb et al., 2018).

The WRMDs are on the rise as a result of excessive usage of desktop computers. People use computers in the office for communication, word processing, data processing, record keeping, and project management, among other applications (Nor Azmi & Abdul Aziz, 2022).

The researchers in this study have done the literature review and analyzed under the subtopics of: occurrence of work-related musculoskeletal disorders among the administrators, the risk factors associated with work-related musculoskeletal disorders among the administrators, the perceived impact of the work-related musculoskeletal disorders on the work productivity among the administrators, the targeted interventions and ergonomic improvements addressing the work-related musculoskeletal disorders among the administrators.

Regarding the occurrence of work-related musculoskeletal disorders, literature reviewed indicates that WRMDs lead to overwhelming consequences which would have otherwise been averted if stringent preventive measures would have been taken. According to WHO/ILO, (2020) yearly, over 2 million people worldwide die of occupational injuries and work-related musculoskeletal disorders.

Globally, the occurrence of WRMDs is high in different continents. For instance, in America WRMDs range from 35.1% to 47%, in Asia, WRMDs range from 78.6% to 88% (Arsalani, Fallahi-Khoshknab, Josephson & Lagerstrom, 2014; Attar, 2014; Yan et al., 2017).

The WRMDs have been identified as a significant public health concern, negatively impacting work performance and leading to various personal, social, and economic consequences (Waiganjo, Mwisukha & Onywera, 2012).

Chiwaridzo et al., (2023) stated that WRMDs occur among administrative personnel, including secretaries and clerks, in several African countries. They reported that research conducted among non-academic staff at the University of Zimbabwe indicated that 75% of participants had experienced lower back pain, while 69% had reported wrist and hand discomfort. Similarly, Okezue et al., (2020) found that a study among office workers in higher education institutions in Nigeria revealed a 71.9% occurrence of WRMDs, with the lower back, wrists/hands, and shoulders being the most affected areas. These findings were said to emphasize the urgent need for targeted interventions to address WRMDs among administrative staff across Africa.

Research conducted among computer-user employees in Nairobi's banking sector- including tellers, secretaries, clerks, and officers- revealed that 63.86% of participants suffered from various musculoskeletal injuries, with tellers being the most affected at 78.70% (Waiganjo, Mwisukha & Onywera, 2012). These findings underscore the critical need for targeted interventions to address WRMDs among administrative staff in Kenya.

Regarding the risk factors associated with work-related musculoskeletal disorders, literature review reveals that the risk factors with at least reasonable evidence of a causal relationship for the development of work-related musculoskeletal disorders include heavy physical work, smoking, high body mass index, high psychosocial work demands, and the presence of co-morbidities. The most commonly reported biomechanical risk factors with at least reasonable evidence for causing WRMDs include excessive repetition, awkward postures, and heavy lifting. Additional high methodological quality studies are needed to further understand and provide stronger evidence of the causal relationship between risk factors and work-related musculoskeletal disorders (da Costa & Vieira, 2009).

The individual risk factors related to musculoskeletal discomfort among flower farm workers are age, weight and height (Munala & Olivier, 2021). The occupational risk factors that are most significant are working experience, daily computer use, and virtual meetings during Work-From-Home (WFH). Work and leisure activities are the most affected by the pain experienced by the respondents. In terms of work aspects, this study determined that job performance is the most significantly affected due to musculoskeletal discomfort. This study gives office workers some awareness of risk factors related to musculoskeletal discomfort

during prolonged computer use and prolonged sitting. Providing prolonged computer use guidelines to reduce musculoskeletal discomfort among office workers is highly recommended (Nor Azmi & Abdul Aziz, 2022).

The biomechanical risk factors identified for the development of WRMDs are heavy physical work, awkward static and dynamic working postures, repetitive work, and prolonged sitting positions (Krishman, Raju & Shawkataly, 2021; Munala & Olivier, 2021). These risk factors have a causal relationship with WRMDs.

According to Bontrup and colleagues, the neck, shoulder, upper back, and lower back are the most painful body regions among office workers due to prolonged computer use and prolonged sitting. The socio-demographic risk factors related to musculoskeletal discomforts are age, weight, and height. The most significant risk factors are working experience, daily computer use, and virtual meetings. Work and leisure activities are the most affected by the pain experienced by the administrators. In terms of work aspect, job performance is the most significantly affected due to musculoskeletal discomfort. Prolonged sitting while using a computer with poor ergonomics is a risk factor for musculoskeletal problems. Administrators with chronic lower back pain or associated impairment have a stronger relationship between sitting behavior when using a computer as compared to those with acute pain (Bontrup et al., 2019).

As for the perceived impact of work-related musculoskeletal disorders, literature review reveals that WRMDs are the major causes of lost workdays, increased absenteeism and treatment costs, as well as, occupational diseases in all countries around the world. It has also become a critical workplace problem affecting occupational health, productivity, and the careers of employees and leaving to economic loss. The indicator of worker productivity index could be measured using absenteeism, disability consisting of scattered illnesses and short-term disability absences. Absenteeism can occur when an employee is sick, injured on the job and draw's workers' compensations, go on short or long-term disability, takes family medical or unpaid leave, or is lost to the workforce e.g., due to chronic illness. Absenteeism can lead to increased use of substitute temporary workers and overtime and can also create team dysfunction (Abdullah et al., 2022).

In a study by Fahmy et al., (2022) the presentation of WRMDs range from just discomfort and mild pain to severe medical condition which requires medical help or absence and frequent sick leaves from work. Treatment and recovery of chronic and persistent musculoskeletal pain are often unsatisfactory, frequently resulting in lasting functional impairment and disability. This can lead to reduced work productivity, job loss, early ill health retirement, and significant economic burdens due to healthcare costs and compensation for employers and organizations. They are also responsible for poorer and impaired quality of life.

The workstation design may directly or indirectly result in physiological and psychological, reactions such as crowding stress [psychological state of the inadequacy of space], occupationally induced fatigue, job satisfaction decrement, and increased levels of blood pressure. In addition, the long-term reactions included decreased performance, and negative health outcomes, such as psychosomatic health complications including chronic fatigue, burnout, and musculoskeletal disorders (Amadi et al., 2022).

In a study done by Alnaser, (2021) societies measure an individual's worth by the ability to contribute to the monetary needs of the family as well as being able to care for oneself. Through work, individuals seek a sense of balance and normalization between their needs and values to secure a feeling of satisfaction and belonging. Because of the centrality of work in people's lives, the inability to work due to injury may result in psychosocial distress. Moreover, workers with WRMDs who suffer from psychological distress report greater pain intensity as well as symptoms of depression, and fear of re-injury.

Injured workers may avoid physical activities both within and outside the workplace, ultimately delaying their return to work. Workers with WRMDs often attempt various adaptive responses to deal with pain and adjust to work activities with the motivation to

continue working (Alnaser, 2021). They require medical interventions, including consultations, physical therapy, medication, or even surgery in severe cases. The resulting healthcare costs can burden both the affected administrators and their employers.

Addressing and preventing WRMDs among administrators is essential. Employers can promote awareness of ergonomics, provide training on proper posture and stretching exercises, encourage regular breaks, and implement ergonomic workstation setups. Creating a supportive environment that values employee well-being and encourages a healthy work-life balance can also contribute to reducing the impact of WRMDs on administrators.

Regarding how the existing WRMDs are managed, literature review reveals that these disorders among administrators involve a comprehensive approach that focuses on prevention, early intervention, and promoting a healthy work environment. Ergonomic training is one of the most effective managements of WRMDs. A study by Robertson, Ciriello and Garabet, (2013) suggests that office ergonomics training programs are designed to address these disorders as well as the contributing workplace risk factors associated with intensive computer use. Training is a mechanism by which workers' performance and well-being are enhanced to maximize an organization's investment in people and technology. Ergonomically designed workstations that promote proper posture and reduce strain on the body. This includes adjustable chairs, ergonomic keyboards, and mice, monitor placement at eye level, and adequate lighting. Provide administrators with training on proper ergonomics, including posture, positioning, and techniques to reduce strain and fatigue. Educate them about the risk factors and early signs of WRMDs so that they can recognize and address the symptoms promptly.

Its higher occurrence makes it necessary for the responsible authorities to enforce suitable preventive measures. Assessment of exposure to WRMDs is the base for planning and implementation of interventional ergonomics programs in the work setting. The application of ergonomics principles to the workstations could reduce these health risks. The goal of such ergonomic processes is to redesign and modify the workspace to fit the individual capabilities and limitations. Early diagnosis is the key to easing the symptoms and decreasing further body damage. This can be done by periodic medical examinations. It is also recommended that improving psychosocial factors through modification of work organization would reduce the development of WRMDs. Frequent rest breaks between working hours have been shown to protect against the development of WRMDs. It limits computer exposure and allows muscle relaxation. Physical exercise and fitness activities like walking, swimming, running, and stretching exercise have also been shown to decrease pain associated with excessive computer use. Proper working posture should be promoted and employers must provide healthy working conditions which makes the work easier and more replaceable (Alghadir, Khalid & Ahmed, 2022).

Adding or interchanging office tasks [i.e., Task variability], such as taking the phone or using the coping machine, is one of the methods of providing recovery periods from exposure to repetition and static posture. Standing up and taking short, frequent, mini-breaks are other ways of decreasing repetition and static posture. Static posture can also be decreased by resting the upper limbs on the laps when not keying or mousing. In addition, this risk factor can be present if the keyboard and mouse are not frequently repositioned. Using a keyboard and mouse tray whose height and angle can be frequently adjusted may help change the positioning of the upper limbs. Split or tilted keyboards may also help to position the upper limbs in more neutral postures (Piligian et al., 1999).

Promoting a culture of physical activity among administrators encourages regular exercises which can help improve strength, flexibility, and overall musculoskeletal health. Organizations can provide access to fitness facilities or organize group activities like stretching and yoga sessions. Intensive physical exercise compared to none is effective in reducing back pain and disability, especially 4-6 weeks after surgery (Silverstein & Clark, 2004).

In a study by Alghadir, Khalid and Ahmed, (2022) the education of professionals by regularly organizing awareness programs, workshops, training programs, and lectures about the development and prevention of WRMDs has been shown to play an important part in preventing and coping with such disorders.

Health and awareness programs should be implemented in institutions to focus on promoting a healthy lifestyle. Offer resources and support for stress management, nutrition, and overall well-being. This encourages administrators to report any symptoms of WRMDs early enough to access treatment provided there is access to healthcare professionals such as physical therapists, and occupational therapists, who can assess and provide appropriate treatment for the WRMDs. Continuous improvement of ergonomic practices and feedback policies in place keeps the administrators informed of the evolution of WRMDs in the institution. This information can help identify areas of improvement and further guidance on preventive measures can be given.

It is important to note that every individual may have unique needs and requirements. Therefore, a personalized approach and ongoing communication with administrators is crucial for effectively managing WRMDs.

The WRMDs are quite a problem in Kenya and locally. As medical practitioners who majorly aim at the rehabilitation of patients with musculoskeletal disorders, knowledge about occurrence of work-related musculoskeletal disorders will be of great interest. According to WHO (2019), information on musculoskeletal health, analysis of the global burden of disease data showed that approximately 1.71 billion people globally live with musculoskeletal conditions.

Despite the critical role of administrators at the College of Health Sciences of Moi University, the Researchers observed that there was a lack of comprehensive understanding regarding the occurrence and contributing factors of work-related musculoskeletal disorders among this specific occupational group. The increasing demands and responsibilities placed on administrators may potentially lead to ergonomic challenges and musculoskeletal discomfort, affecting their productivity, health and overall well-being.

Therefore, this study aimed to explore the occurrence, identify risk factors and perceived impact of the WRMDs on their productivity at the college with the aim of informing targeted interventions and ergonomic improvement to promote a healthier work environment. This study will be of great importance to the next generation of administrators at the CHS as there will be established practices and prior knowledge.

The study justification is based on the following objectives: to determine the occurrence, risk factors, and perceived impact of work-related musculoskeletal disorders among administrators at the College of Health Sciences. This study should give a reflection on the projected pattern of work-related musculoskeletal disorders within the institution to show the burden of the conditions on the health sector, institution, and at an individual level and thus suggest treatment, rehabilitation, and prevention strategies. Furthermore, there is no previous research publication done at the CHS to find out the occurrence of WRMDs among administrators. Physical therapists should have the data and give enough input in the prevention, treatment, and rehabilitation process. As a result, this work will form a baseline for future studies and a guideline for the treatment, rehabilitation, and prevention of such conditions.

The study is significant in several aspects. It provides essential data on the occurrence of WRMDs among administrators at Moi University CHS highlighting their impact on health and productivity. By identifying risk factors and workplace conditions contributing to WRMDs, the findings will inform preventive measures such as ergonomic improvements, training and policy development. Addressing these issues will enhance employee well-being, reduce absenteeism and improve overall efficiency.

Additionally, the study will contribute to occupational health research, supporting evidence-based interventions to create a safer and a healthier work environment.

METHODOLOGY

Study Design: This was a descriptive cross-sectional study. This method used by Researchers was found to be efficient considering the time limitations and financial constraints involved.

Study site: The study was conducted at the College of Health Sciences (CHS) of Moi University, located along Nandi Road and about two kilometres from Eldoret town. The CHS is about 310 kilometres northwest of Nairobi, the capital city of Kenya (CHS website, n.d.).

MAP OF THE STUDY AREA

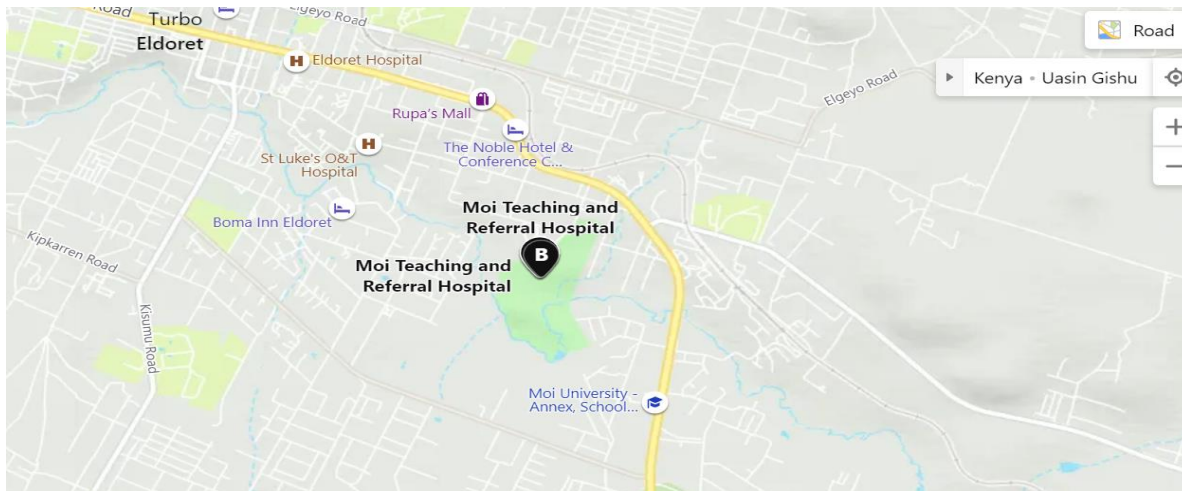


Figure 1: Location of MTRH- where CHS is hosted

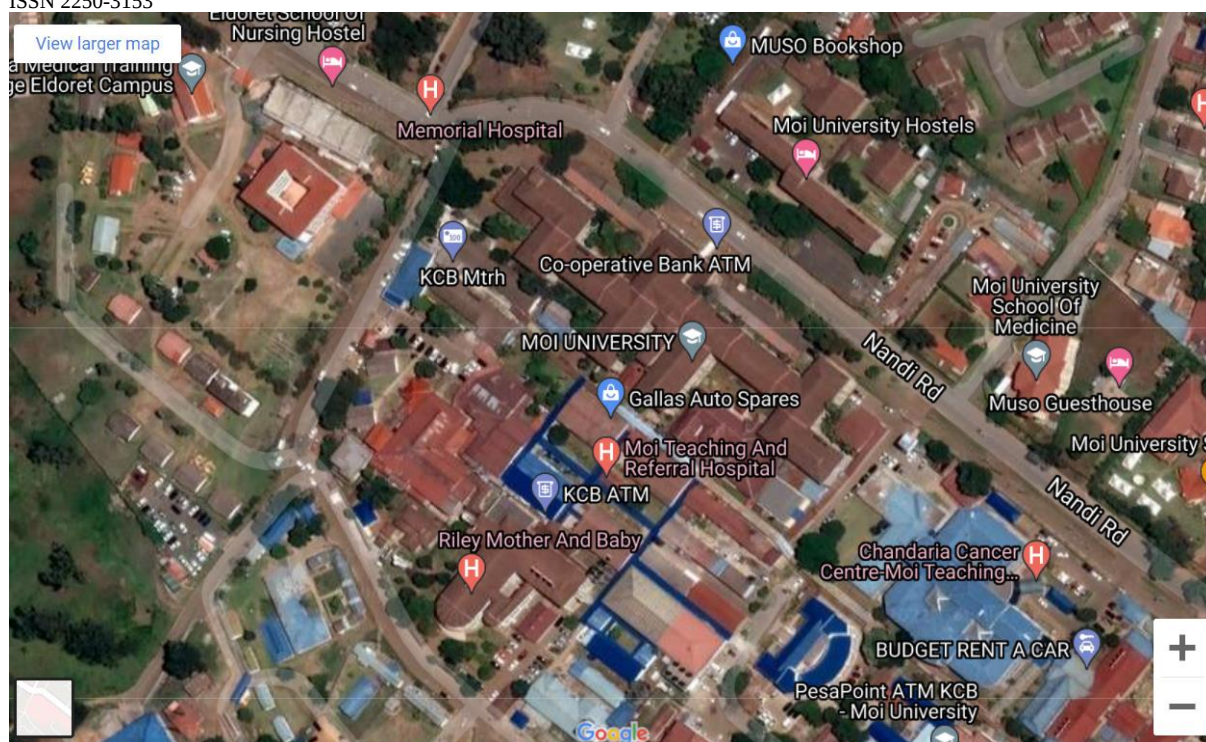


Figure 2: Location of both MTRH and CHS

Moi Teaching and Referral Hospital hosts the CHS as well as other institutions (MTRH website, n.d.). The health institution is the second largest in Kenya after Kenyatta National Hospital in Nairobi. It excels in healthcare provision, training of various cadres of healthcare providers as well as in research in various fields.

Target Population: Included all the administrative staff from the four schools at the CHS. The four schools are: School of Medicine (SOM), School of Nursing and Midwifery (SONMW), School of Public Health (SPH), and School of Dentistry (SOD).

Study Population: Included 27 administrators from the four schools at CHS who met inclusion criteria, eventually making a total of 24.

Eligibility Criteria: Inclusion- Participants were the administrators who had a minimum of one year work experience at the College of Health Sciences. Exclusion- Administrators in the College of Health Sciences who declined to consent or were absent during the study.

Sampling Frame: Recruitment of participants- All the administrators were conveniently recruited into the study. Sample Size- This was a study among administrators with a total of 27 participants who were given the NMQ validated data tool to complete and submit.

Table 1: Distribution of Administrators at the CHS

	ADMINISTRATORS
PRINCIPALS OFFICE	14
SOM	7
SONMW	2

SOD	2
SPH	2
CUMULATIVE TOTAL	27

However, only 24 out the 27 participants completed and submitted the NMQ validated data tool.

Data collection: Was done using Nordic Musculoskeletal Questionnaire (NMQ) – A standardized, validated tool for assessing musculoskeletal symptoms across different body regions (Chairani, 2020). This questionnaire has been shown in Table 2 below:

Table 2: NORDIC MUSCULOSKELETAL QUESTIONNAIRE (NMQ)

Instructions: Please answer the following questions regarding any musculoskeletal discomfort you have experienced in different body regions.																																																						
Section 1: Demographic Information 1. Age: ____ years 2. Gender: Male ☐ Female ☐ Other ☐ 3. Job Title: _____ 4. Years in Current Job: ____ years 5. Daily Working Hours: ____ hours	Section 2: Musculoskeletal Symptoms In the past 12 months, have you experienced pain or discomfort in the following areas? <table border="1"> <thead> <tr> <th>Body Region</th> <th>Yes</th> <th>No</th> <th>If Yes, did it interfere with work? (Yes/No)</th> <th>Did you seek medical care? (Yes/No)</th> </tr> </thead> <tbody> <tr> <td>Neck</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Shoulders</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Elbows</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Wrists/Hands</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Upper Back</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Lower Back</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Hips/Thighs</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Knees</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> <tr> <td>Ankles/</td> <td></td> <td></td> <td>☐ Yes ☐ No</td> <td>☐ Yes ☐ No</td> </tr> </tbody> </table>				Body Region	Yes	No	If Yes, did it interfere with work? (Yes/No)	Did you seek medical care? (Yes/No)	Neck			☐ Yes ☐ No	☐ Yes ☐ No	Shoulders			☐ Yes ☐ No	☐ Yes ☐ No	Elbows			☐ Yes ☐ No	☐ Yes ☐ No	Wrists/Hands			☐ Yes ☐ No	☐ Yes ☐ No	Upper Back			☐ Yes ☐ No	☐ Yes ☐ No	Lower Back			☐ Yes ☐ No	☐ Yes ☐ No	Hips/Thighs			☐ Yes ☐ No	☐ Yes ☐ No	Knees			☐ Yes ☐ No	☐ Yes ☐ No	Ankles/			☐ Yes ☐ No	☐ Yes ☐ No
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Feet			☐ No	☐ No				
Thank you for completing this questionnaire. Your responses will help us understand and improve workplace ergonomics to prevent musculoskeletal disorders.								

Data Storage: Involved use of password protected files for confidentiality purposes.

Data analysis: This was done for the descriptive statistics such as frequencies and percentages, and presented diagrammatically using tables, charts and prose format.

Ethical considerations: Approval for the research was granted by IREC (Ref: 1044/2024, Final Approval Number 0005005 dated 17/3/2025), Approval letter from Principal, CHS (Dated 13/3/2025) and NACOSTI license (Ref: No. 732079 dated 26/3/2025). Each participant signed an informed consent form. The rights and wishes of participants were respected as guided by IREC guidelines. Freedom to exit without jeopardizing their work was respected. The participants were neither coerced nor induced to take part in the Research. Data collected was stored in password protected files, to ensure confidentiality.

Study assumptions: WRMDs occurred among the study population at Moi University CHS due to prolonged sitting, repetitive tasks and poor ergonomic practices. The study population had limited awareness of the risk factors and preventive measures for WRMDs. Self-reported data from the study population was reliable and accurately reflected their experiences with WRMDs.

Study limitations and mitigation strategies: A limitation of this study was the relatively small sample size which might have affected the generalizability of the findings to a larger population and reduced the statistical power to detect significant differences and associations.

To address this limitation Researchers in future study are advised and requested to consider involving a larger and more diverse sample to enhance the generalizability and robustness of the findings or use multi-center collaboration to enhance participant recruitment and improve the study's external validity and statistical power.

RESULTS AND FINDINGS

Demographic data of administrators with work-related musculoskeletal disorders at the College of Health Sciences of Moi University

A total of 24 administrators participated in the questionnaire survey with the other 3 participants being absent during the study since they were on leave, and did not submit their NMQ validated data tool. Among them, 18 (75%) were female, while 6 (25%) were male, indicating a higher representation of female administrators in the study.

The ages of the respondents ranged from 36 to 56 years, covering a broad spectrum of mid- level career and senior professionals. This diversity in age suggests a mix of both relatively younger and more experienced individuals, potentially influencing their perspectives on workplace challenges.

In terms of work experience, the number of years spent in their current job varied from 6 to 29 years. This range highlights the presence of both recently appointed administrators and those with extensive experience in their roles. Such variation may contribute to different insights regarding occupational demands and long-term job-related challenges.

The demographic and occupational characteristics of the participants provide a comprehensive background for understanding their experiences, challenges, and perceptions, particularly in relation to workplace conditions and job-related stress factors.

Gender distribution

Table 3: Gender

Gender	No. of Participants	Percentage
Male	6	25
Female	18	75

Age distribution

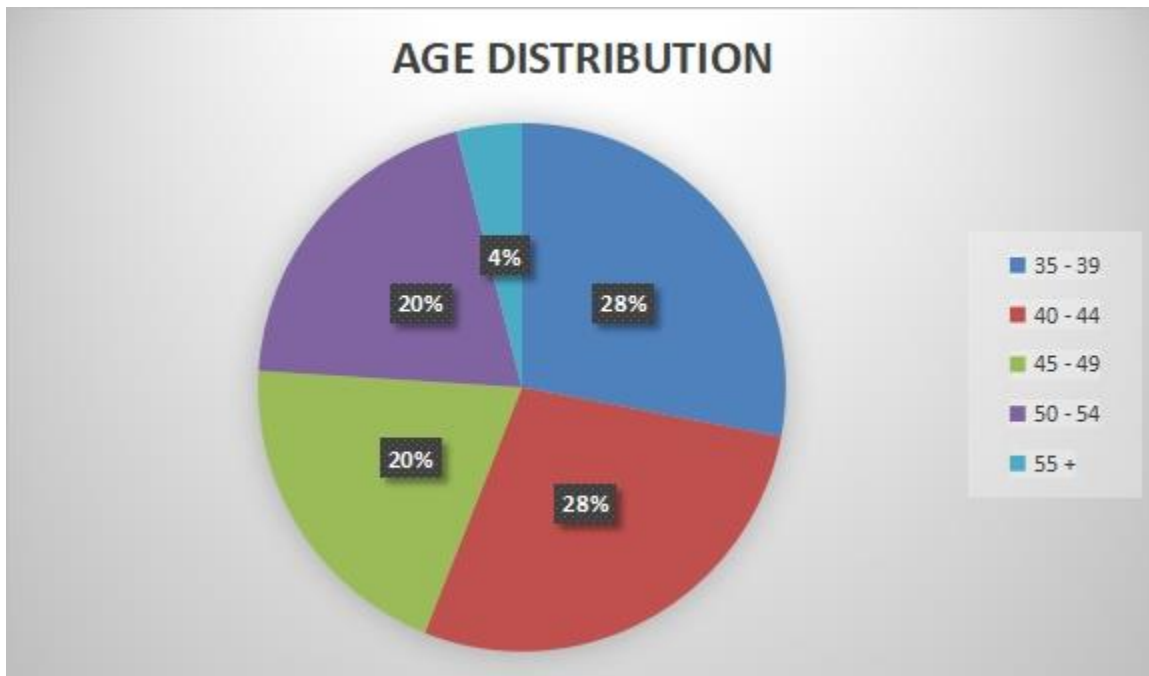


Figure 3: Age of participants

The pie chart shows that the majority of participants were in the age group 35- 44 (35- 39 and 40- 44 years old each at 28%) making a total of 56%. The least number of participants (4%) belonged to the age group 55 and above.

Years in the current job

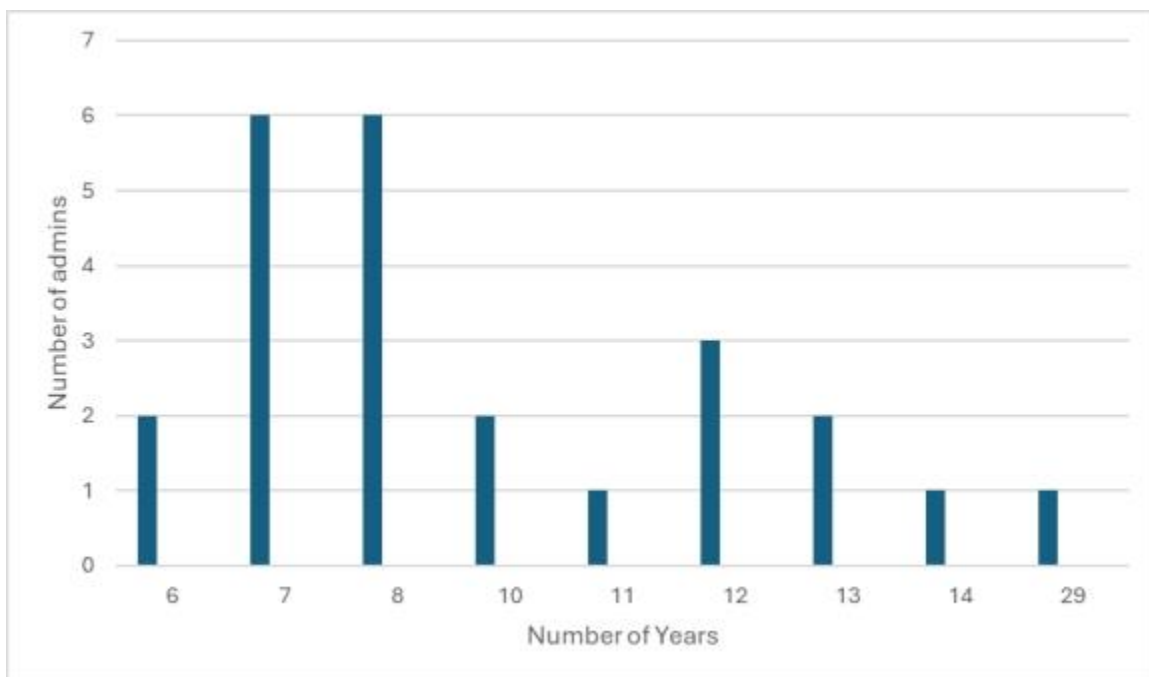


Figure 4: Duration worked

The bar chart (Figure 4) shows the majority of affected participants had worked for 7 and 8 years (each 6 or 25%). The longest serving participant at 29 years (1 or 4.2%).

The participants were employed as administrators at Moi University College of Health Sciences, where they worked full-time. They officially worked for at least 8 hours each day, 5 days per week. This position provided practical experience relevant to the scope of the research undertaken.

The occurrence of work-related musculoskeletal disorders among administrators at the College of Health Sciences of Moi University

Experience of pain and discomfort by body region in the past 12 months

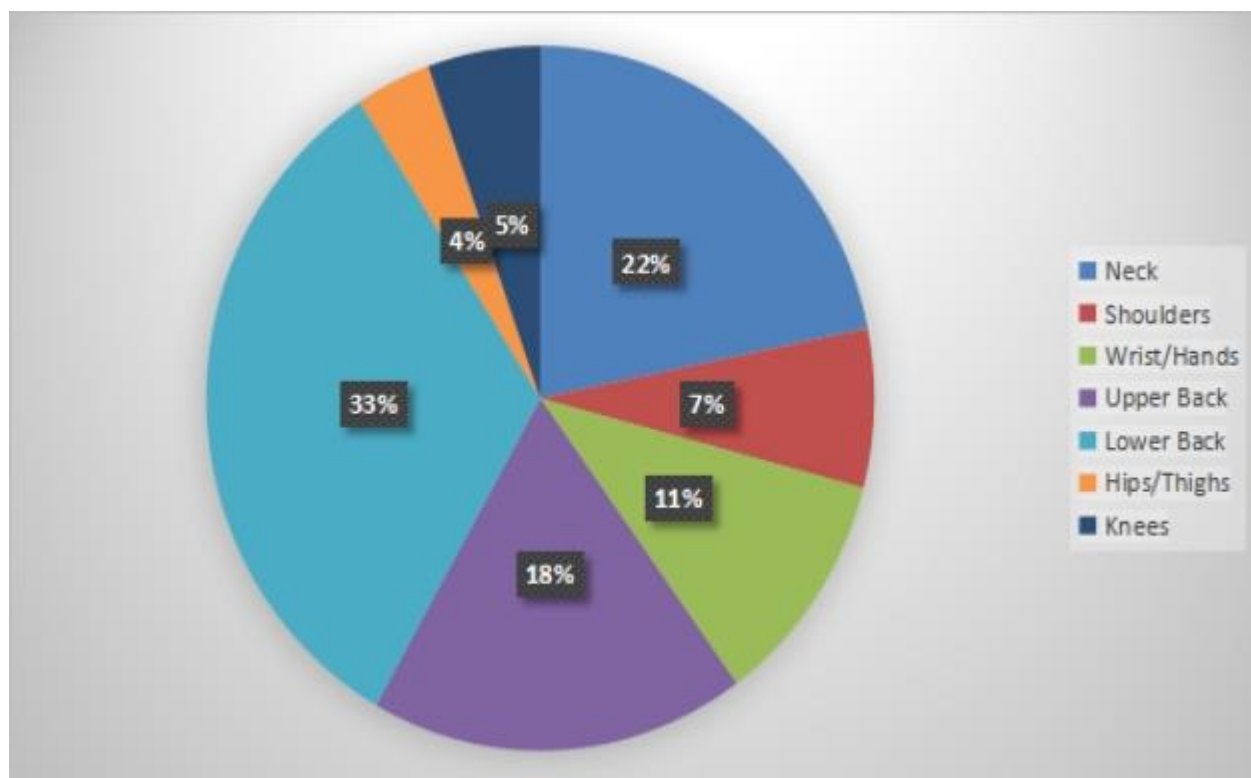


Figure 5: Experience of pain by the participants

The pie chart (Figure 5) shows that the majority (33%) of the participants were affected at the lower back, followed by the neck (22%), upper back (18%), wrist/ hands (11%), shoulders (7%), knees (5%), while the hips/ thighs (4%) being the least affected region.

Of those who reported musculoskeletal discomfort and pain, 14 (58.3%) participants mentioned that their symptoms interfered with their work. However, 6 (25%) participants with musculoskeletal pain reported that it did not interfere with their work.

Symptoms (pain and discomfort) in the past 7 days by body region

As for the symptoms (pain and discomfort) narrated by the participants in the past one week by body regions (Figure 6), the lower back (31%), was followed by neck (21%), upper back (15%), knees (12%), wrist/ hands (9%), shoulders (6%), hip/ thighs (3%) and ankle/ feet (3%).

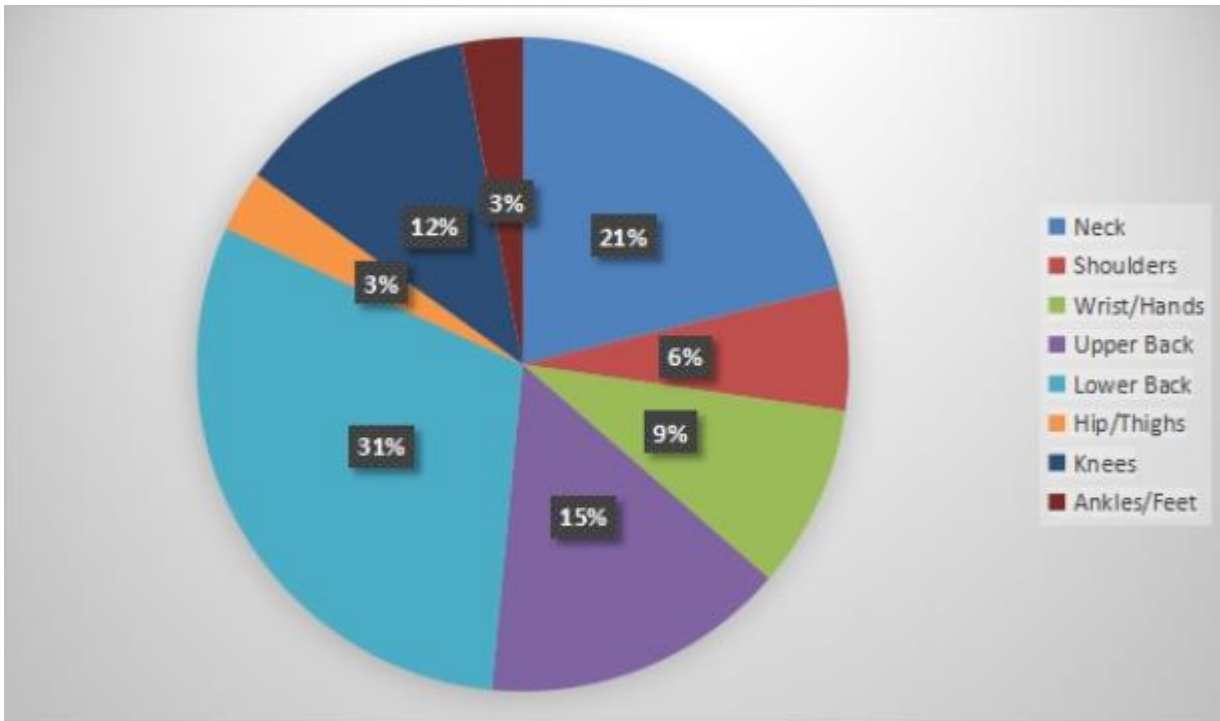


Figure 6: Symptoms narrated by the participants

Risk factors associated with work-related musculoskeletal disorders among the administrators at the College of Health Sciences of Moi University

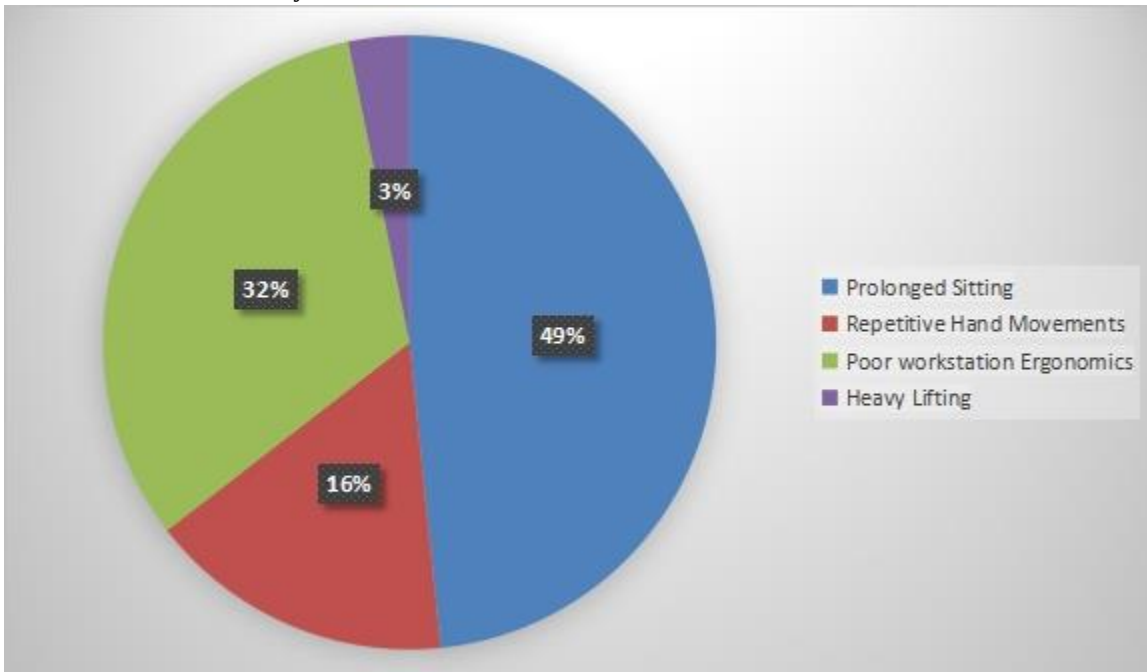


Figure 7: Risk factors associated with WRMDs as perceived by participants

The pie chart (Figure 7) shows that the majority of participants (49%) listed prolonged sitting as main risk factor. Others were poor workstation ergonomics (lack of lumbar support, non-adjustable chairs and tables) (32%), repetitive hand movements (16%) and lastly heavy lifting (3%).

The research also established that none of the participants had received any ergonomic training or guidance on preventing musculoskeletal disorders.

Perceived impact of work-related musculoskeletal disorders on productivity among administrators at the College of Health Sciences of Moi University

Out of the 24 participants, 9 (37.5%) believed their job contributed to their musculoskeletal disorders. This indicates that the group felt their work environment, tasks, or posture were significant factors in causing or worsening their physical discomfort. This suggests a noticeable link between their job roles and their musculoskeletal health.

Of those who reported musculoskeletal discomfort and pain, 14 (58.3%) participants mentioned that their symptoms interfered with their work. This represents a majority of the group, highlighting that the pain was severe enough to disrupt their daily responsibilities. It shows that musculoskeletal disorders are not just an inconvenience but could also impact their productivity and overall work performance.

However, 6 (25%) participants with musculoskeletal pain reported that it did not interfere with their work. This could indicate that while they experience some level of discomfort, it is either manageable or not intense enough to affect their job performance. Perhaps their symptoms are mild or they have found ways to cope with the pain, allowing them to continue working without significant disruption.

Four (16.7%) participants did not experience any musculoskeletal pain or discomfort, which shows that a portion of the group remains unaffected by such issues. This could be due to factors like job duties, ergonomic practices, or individual physical health. Overall, the findings reveal a mix of experiences, with most participants experiencing some level of discomfort that impacts their work.

Table 4: Perceived impact of WRMDs

Category	Number of Participants	Percentage
Pain interfered with work	14	58.3
Pain but did not interfere with work	6	25
No pain/discomfort at all	4	16.7

How the administrators at the College of Health Sciences of Moi University managed their existing work-related musculoskeletal disorders

Among the 24 participants surveyed, 9 (37.5%) reported incorporating simple stretching exercises into their routine to alleviate discomfort, likely targeting muscle stiffness and improving flexibility. Additionally, 7 (29.2%) participants mentioned adjusting their chair and desk height, indicating an awareness of ergonomic practices to reduce strain and maintain proper posture. Furthermore, 5 (20.8%) individuals sought medical advice, suggesting that their discomfort may have been more severe, requiring professional intervention. Other participants, 3 (12.5%) resorted to using painkillers, implying that they primarily relied on temporary relief rather than addressing the root cause of their discomfort. These responses highlight the varied approaches individuals take to manage physical strain, with some focusing on preventive measures while others opt for reactive solutions.

Table 5: Management of preexisting WRMDs

Management Techniques	No. of Participants	Percentage
Stretching Exercises	9	37.5
Adjusting chair/desk	7	29.2
Sought medical advice	5	20.8
Used painkillers	3	12.5

DISCUSSION

Demographics of the administrators with work-related musculoskeletal disorders at the College of Health Sciences of Moi University

Among the administrators at the College of health Sciences of Moi University, female formed the majority. The age range was 36- 56 with majority in the age group of 35- 44 years old. As for the work experience, the range was 6- 29 years with majority having worked for 7- 8 years. This demographic profile aligns with findings from previous studies as cited by some authors (Abebaw et al., 2024; Elkhateeb et al., 2018; Fahmy et al., 2022) who reported that WRMDs are more prevalent among middle-aged females in administrative roles and have documented risks associated with WRMDs in different types of occupations (which generally include: awkward posture, sustained body position, inappropriate furniture, inadequate rest breaks, repetitive tasks, physical overexertion, multitasking, and neglecting precautions) and seemingly involving more female than male and mainly in middle- age groups. Elkhateeb et al., (2018) found that 66.77% of school teachers in Cairo experienced WRMDs, with females and those aged between 36 and 45 being more affected. Similarly, Fahmy et al., (2022) reported that physiotherapists with more years of work experience showed higher WRMDs prevalence, particularly in the lower back (68.8%). These findings support the current study's demographic profile, emphasizing the administrative tasks especially among middle-aged female workers being most affected.

The occurrence of work-related musculoskeletal disorders among administrators at the College of Health Sciences of Moi University

The findings from this study highlight a noticeable occurrence of musculoskeletal discomfort among participants, particularly in the lower back 33% (18 participants), neck 22% (12 participants), and upper back 18% (10 participants) in the past 12 months. These results concur with those documented in the literature, which emphasize the high occurrence rate of WRMDs in administrative settings. According to Chiwaridzo et al., (2023) administrative staff in African countries often report significant musculoskeletal pain, with the lower back (35%), neck (28%), and upper back (21%) being commonly affected. Similar findings were noted by Okezue et al., (2020) where 32% of office workers reported lower back pain, 24% reported neck pain and 19% experienced upper back discomfort and Waiganjo, Mwisukha and Onywera, (2012) who also identified the lower back in 30% of administrative personnel as one of the most frequently affected regions.

The higher number of participants reporting pain in the lower back (33%) may reflect the nature of administrative tasks, which often involve prolonged sitting and repetitive movements, both well-documented risk factors for WRMDs. This concurs with the findings of Bontrup et al., (2019) who noted that the neck, shoulders, upper back, and lower back are the most common areas of pain among 75% office workers due to long periods of sitting and poor ergonomics. The mix of reported symptoms in this study supports the notion that administrative tasks- particularly those involving extensive computer use- are closely linked to musculoskeletal disorders, as also indicated by some authors (Forde, Punnett & Wegman, 2002; Nor Azmi & Abdul Aziz, 2022).

Risk factors associated with work-related musculoskeletal disorders among administrators at the College of Health Sciences of Moi University

The risk factors identified in this study- prolonged sitting, repetitive hand movements, poor workstation ergonomics, and heavy lifting- are frequently reported in the literature as contributing to work-related musculoskeletal disorders. Research by da Costa and Vieira, (2009) points to excessive repetition, awkward postures, and prolonged sitting as major biomechanical risk factors. In this

study, 15 participants reported prolonged sitting as a contributing factor, highlighting its role in the development of WRMDs. This finding correlates very well with the studies by Waiganjo, Mwisukha and Onywera, (2012) and Bontrup et al., (2019) which underscore the detrimental effects of extended sitting and poor workstation ergonomics.

The fact that 10 participants identified poor workstation ergonomics as a risk factor is in line with the recommendations from the literature that ergonomic interventions, such as workstation modifications, are crucial in preventing WRMDs (Robertson, Ciriello & Garabet, 2013). Furthermore, while heavy lifting was mentioned by only one participant as a risk factor, it remains relevant in the broader context of WRMDs, particularly in tasks that require physical labor or the lifting of heavy objects (Alghadir, Khali & Ahmed, 2022; Munala & Olivier, 2021).

Perceived impact of work-related musculoskeletal disorders on productivity among administrators at the College of Health Sciences of Moi University

The perceived impact of WRMDs on work productivity was evident in this study, with 14 participants reporting that their symptoms interfered with their work. This finding concurs with that documented in the literature, which consistently highlights how musculoskeletal disorders contribute to absenteeism, decreased work performance, and overall reduced productivity (Abdullah et al., 2022). In particular, the findings of Fahmy et al., (2022) and Amadi et al., (2022) point to the functional impairments caused by WRMDs such as decreased productivity, increased absenteeism and risk of long term disability, which can lead to increased absenteeism, reduced efficiency, and greater health care costs.

The fact that 9 participants reported their job contributed to their WRMDs further emphasizes the connection between work environment and musculoskeletal health. This is consistent with the studies by Chiwaridzo et al., (2023) and Alnaser, (2021), which stress the significant link between job tasks, posture, and the development of musculoskeletal pain. Additionally, the finding that some participants reported musculoskeletal pain but continued to work without significant disruption is consistent with observations by Alnaser, (2021) that workers often adapt to pain, although it may lead to delayed recovery and potential long-term issues.

How the administrators manage their existing work-related musculoskeletal disorders at the College of Health Sciences of Moi University

The strategies employed by participants to manage WRMDs- such as stretching exercises, ergonomic adjustments, medical consultation, and painkillers- reflect a mix of preventive and reactive measures. The use of stretching exercises and ergonomic adjustments (e.g., desk and chair modifications) supports the findings of Alghadir, Khalid and Ahmed, (2022) and Robertson, Ciriello and Garabet, (2013), who emphasize the importance of ergonomic training and workstation modifications in preventing and managing WRMDs. These strategies are particularly important in addressing the risk factors identified in this study, such as prolonged sitting and poor posture.

However, the use of painkillers and seeking medical advice by some participants suggests that for certain individuals, WRMDs may have reached a level of severity that requires professional intervention. This mirrors the concerns raised in the literature by Amadi et al., (2022), who highlight the negative consequences of untreated musculoskeletal disorders, including chronic pain, disability, and reduced quality of life. The fact that some participants rely on temporary solutions rather than addressing the root cause of their discomfort underscores the need for more comprehensive, long-term interventions to prevent WRMDs and promote better workplace ergonomics.

CONCLUSION

The study concluded that middle-aged female administrators were more likely to experience work-related musculoskeletal disorders (WRMDs), consistent with previous literature. The pattern aligned with known risk exposures, such as prolonged static postures and repetitive tasks, which are common in administrative roles.

There was a high occurrence of musculoskeletal discomfort, especially in the lower back, neck, and upper back among administrators. These findings reflected the sedentary and repetitive nature of administrative duties and were supported by existing studies on WRMDs in office environments.

The study identified prolonged sitting, poor workstation ergonomics such as lack of lumbar support and non-adjustable chairs and tables, repetitive hand movements as the main risk factors for WRMDs among administrators. These findings emphasized the need for targeted ergonomic interventions and support previous research linking these factors to musculoskeletal issues

WRMDs were found to negatively affect productivity, with many participants reporting that pain interfered with their work. Some continued working despite pain, suggesting a culture of adaptation, which might lead to long-term health issues and higher workplace costs.

Administrators used a mix of preventive (stretching, ergonomic adjustments) and reactive (painkillers, medical consultations) strategies to manage WRMDs. While some efforts aligned with best practices, the reliance on temporary relief highlights the need for sustained and comprehensive workplace ergonomic programs.

RECOMMENDATIONS

On the demographics of the administrators with work-related musculoskeletal disorders at the College of Health Sciences of Moi University

- Employer should conduct regular health and ergonomic risk assessments biannually for all administrative staff, with a focus on those aged 35–44 and above.
- Employer should raise awareness through training sessions tailored to age and gender-specific vulnerabilities to WRMDs.

On occurrence of work-related musculoskeletal disorders among administrators at the College of Health Sciences of Moi University

- Institution to introduce mandatory musculoskeletal health screening every six months to detect and address WRMDs early.
- Employer should reduce sedentary time by encouraging staff to take short breaks every 30-60 minutes and vary repetitive tasks when possible.
- Employee should learn early signs and symptoms of WRMDs to encourage prompt reporting and management.

On the risk factors associated with work-related musculoskeletal disorders among administrators at the College of Health Sciences of Moi University

- Employer should redesign workstations to meet ergonomic standards, with adjustable chairs and tables.
- Employer should promote proper lifting techniques and provide mechanical aids to reduce risk associated with heavy lifting, even if it is infrequent.

On the perceived impact of work-related musculoskeletal disorders on productivity among administrators at the College of Health Sciences of Moi University

- Institution should establish a clear workplace injury reporting system to monitor WRMDs and their impact on performance.
- Employer should incorporate flexible work schedules or modified duties for affected staff to prevent absenteeism and reduced efficiency.
- Institution should ensure access to occupational health professionals to provide support and rehabilitation services for staff with WRMDs.

How the administrators should manage their existing work-related musculoskeletal disorders at the College of Health Sciences of Moi University

- Employee should follow a structured WRMD prevention program, including stretching routines, ergonomic education, and physical activity breaks.
- Institution should provide access to physiotherapy and rehabilitation services for affected staff.

Further recommendations arising from the study limitations and suggested mitigation:

1. Self-reported data- Participants may under report or over report symptoms either due to recall bias, social desirability bias or misunderstanding of questions leading to inaccurate or skewed data. Future studies should combine self-reports with objective measures like observation.
2. Lack of a statistician, thus data suffered from inappropriate data analysis or incorrect interpretation of results potentially weakening the conclusions. The institution should consider hiring one.
3. Small sample size- this reduced the statistical power of the study and also limited generalizability of findings to a broader population. Future studies should plan for a larger sample size.
4. Use of limited data collection tools- has led to incomplete data, missing important variables or perspectives limiting the depth and richness of the findings of the research topic. Future studies can include pilot test tools to refine and ensure they capture key data.

ACKNOWLEDGEMENT

Researchers would like to express their sincere appreciation to everyone who contributed to the success of this study. Researchers would like to express their sincere gratitude to the IREC, Principal- CHS, NACOSTI and Community Based Education and Service Committee Members for critical role played in giving the Researchers this opportunity to develop a research paper, an activity that continues to help broaden the horizons and research capabilities and dissemination of the research findings.

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