

Prevalence and Departmental Variations of Work-Related Musculoskeletal Disorders among Electricity Distribution Workers

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Abstract

Introduction: Electricity distribution workers are exposed to occupational hazards that may cause Work-related Musculoskeletal Disorders (WMSDs). However, studies are sparse on the departmental variation of the prevalence of WMSDs among the electricity workers in Nigeria.

Objective: To examine the prevalence and departmental variations of WMSDs among Ibadan Electricity Distribution Company (IBEDC) employees.

Method: A descriptive cross-sectional survey was conducted among 240 employees from three different departments across five service hubs of IBEDC. Demographic and WMSDs data were collected using a standardised Nordic musculoskeletal questionnaire. Data were analysed using percentages, descriptive statistics, and regression to examine departmental variations.

Result: Customer service worker reported highest WMSDs prevalence in the past 7 days and 12 months at lower back (10.9 and 23.0%), knees (9.6 and 20.4%), hips/thighs (8.3 and 17.8%), ankles/feet (7.4 and 16.5%), and neck (7.4 and 16.5%), respectively, followed by technical, and then administrative staff. The body areas that prevented most of the employees from working were the lower back, knees, upper back, and ankles/feet across departments. The findings revealed a statistically significant ($p < 0.05$) difference between departments in variations of prevalence of the WMSDs among the workers.

Conclusion: The prevalence of work-related musculoskeletal disorders was found to be common among customer service workers but significantly varied across the three departments. Ergonomic interventions, job redesign, and health education programs based on the department are required to minimise musculoskeletal symptoms.

Keywords: ergonomics, occupational hazard, posture, electricity workers, service hub

Abstrak

Pendahuluan: Pekerja distribusi listrik terpapar berbagai bahaya kerja yang dapat menyebabkan Work-related Musculoskeletal Disorders (WMSDs). Namun, penelitian mengenai variasi prevalensi WMSDs antar departemen pada pekerja listrik di Nigeria masih terbatas.

Tujuan: Mengetahui prevalensi serta variasi antar departemen dari WMSDs pada karyawan Ibadan Electricity Distribution Company (IBEDC).

Metode: Penelitian survei deskriptif dengan desain potong lintang dilakukan pada 240 karyawan dari tiga departemen berbeda di lima pusat layanan IBEDC. Data demografi dan WMSDs dikumpulkan menggunakan Standardized Nordic Musculoskeletal Questionnaire. Data dianalisis menggunakan persentase, statistik deskriptif, dan analisis regresi pada $\alpha = 0,05$ untuk menilai variasi antar departemen.

Hasil: Pekerja layanan pelanggan melaporkan prevalensi WMSDs tertinggi dalam 7 hari dan 12 bulan terakhir pada punggung bawah (10,9% dan 23,0%), lutut (9,6% dan 20,4%), panggul/paha (8,3% dan 17,8%), pergelangan kaki/kaki (7,4% dan 16,5%), serta leher (7,4% dan 16,5%). Prevalensi tersebut diikuti oleh staf teknis dan kemudian staf administrasi. Bagian tubuh yang paling sering menyebabkan pekerja tidak dapat bekerja adalah punggung bawah, lutut, punggung atas, serta pergelangan kaki/kaki pada seluruh departemen. Hasil penelitian menunjukkan terdapat perbedaan yang bermakna secara statistik ($p < 0,05$) antar departemen dalam variasi prevalensi WMSDs pada pekerja. Kesimpulan: Prevalensi gangguan muskuloskeletal terkait pekerjaan ditemukan cukup tinggi pada pekerja layanan pelanggan, tetapi berbeda secara signifikan di antara ketiga departemen. Intervensi ergonomi, perancangan ulang pekerjaan, serta program edukasi kesehatan yang disesuaikan dengan departemen diperlukan untuk meminimalkan gejala muskuloskeletal.

Kata kunci: ergonomi, bahaya kerja, postur, pekerja listrik, pusat layanan.

Introduction

Ergonomics researchers over the years have identified Work-related Musculoskeletal Disorder (WMSD) as a major occupational problem among various workforces. Several publications on WMSD have revealed back pain as a major occupational risk; however, as much as the human back is an important structure for effective workers' performance, other areas of the human body are equally vital to worker productivity, which has not been given the required attention.

Ibadan Electricity Distribution Company (IBEDC) workers are the workforce that attend to electricity users within the State at the office or outside their office, depending on the department. The administrative staff work within the office building, customer service is a dedicated section that relates to electricity end users within the office building, while technical staff are outside worker who responds to customer complaints related to cable, transformer, meter and other related electrical faults. The vital role of efficient electricity distribution cannot be over-emphasised after generation and transmission. The electricity distribution workers are the last resort to society and play both within and outside office roles depending on the department. Hence, the a need to study the prevalence and departmental variation of work-related musculoskeletal disorders among electricity distribution workers.

The prevalence of the WMSD among workers as related to other body parts needs to be studied, while not neglecting the major impact on the back. ⁷stated that workers' compensation claim in the United States was mainly related to back problems, where 22.4 million workers experienced back pain every day for a week or more, without mentioning compensation claims related to other sections of their body. The WMSD encompasses a category of inflammatory and degenerative conditions which affect muscles, tendons, ligaments, joints, and peripheral nerves. The workers in the electricity distribution sector are particularly exposed to physically exhaustive tasks, including repetitive movements, awkward postures, climbing, manual handling of equipment, and prolonged sitting or standing, depending on the worker's department.⁸

Studied WMSD as related to the neck of the State Electricity Company Workers in Indonesia, adopting a descriptive, observational, cross-sectional method. The workers studied were administrative staff who

spent more time in the office than field and used electronic gadgets such as computers and smartphones. The frequent use of such gadgets, coupled with a lack of proper posture, was found to constitute a musculoskeletal problem of the neck. However, the present study is not restricted to the administrative staff of Ibadan Electricity Distribution Company (IBEDC) only, but includes customer service and technical staff to study the prevalence and departmental variations of work-related musculoskeletal disorders of the IBEDC employees. Also, the MSD studied among electrical employees in South East Nigeria was not segregated into different departments; rather, it was a general study among electricity distribution staff, who comprised technical staff.³ However, no organisation functions without the administrative and other unit or department staff. Therefore, this present study considered administrative and customer care staff to examine work-related musculoskeletal disorders in an electricity distribution company.

The work of an electricity distribution worker includes repair, installation, customer relations, receipt of payment for energy and others. The aetiology of musculoskeletal problems is seen as a multi-factorial process including physical, social, and psychological. Despite the known occupational health risks, there is limited empirical data on the prevalence and departmental of the WMSDs among electricity distribution workers in Nigeria. Therefore, there is a need to examine the prevalence and departmental variations of the WMSDs among electricity distribution workers in Nigeria.

Literature Review

Considered one-hundred and nine electrical workers, comprising seventy-six males and thirty-three females to assess the prevalence of musculoskeletal disorders among electrical workers in South Eastern Nigeria and body areas in which Musculoskeletal Disorders (MSD) occur, using descriptive, frequency, percentage distribution and inferential statistics of chi-square. However, the workers were not grouped into departments.³ The researchers found that MSD was prevalent among electrical employees. The body areas found affected were the neck, lower back, shoulder, upper back, wrist/hands, knees, hips/thighs, ankles/feet and elbows. The present study considers the prevalence and

departmental variation of work-related musculoskeletal disorders across three different departments in the Ibadan Electricity Distribution Company.

Studied one thousand two hundred male construction workers aged between 18 and 55 years in a cross-sectional site survey conducted in five existing construction sites in Uyo, Nigeria, through a semi-structured Nordic musculoskeletal and the job content questionnaire on demographics, work and lifestyle characteristics, and workplace risk factors for the WMSDs.⁵ The results revealed that age, race, weight, body mass index, and education status were factors that played a role in the workers experiencing WMSD, also identified based on the types of work and activities being carried out on the sites. However, the present study is focusing on the Electricity Distribution Company and three departments of administrative, technical and customer care across five service hubs of the electricity distribution company.

Assessed the prevalence of risk of musculoskeletal disorder signs among electrical utility workers to evaluate associations between musculoskeletal signs, the type of work being done, age, job stress, job physical loading, and habitual physical activity levels among the workers.¹² It was observed that workers who complained of high job stress were 4.06 times more likely to show musculoskeletal signs in the shoulder when compared to workers who reported lower job stress. Also, employees who saw their duty as highly physically demanding reported lower back musculoskeletal signs at 2.64 times the proportion of workers who perceived their job as low physical demand among the 565 electrical utility workers studied; however, this study examines departmental variations of the prevalence of work-related musculoskeletal symptoms.

In a cross-sectional study conducted through questionnaires among 853 shipyard workforces, associated musculoskeletal disorders to various individuals and the physicality of related works and psychosocial factors, while high-demanding job tasks led to high absenteeism and requests for sick leave among the workforce studied, the effect of the prevalence of the WMSDs among electricity distribution workers is also being considered in this study.² Also, a cross-sectional survey was conducted involving 164 armed forces working in three departments such as electrical, telecommunication and instrument mechanics to assess work-related musculoskeletal disorders among the military,¹³ the researchers reported that participants

indicated that work-related musculoskeletal disorder occurred in the neck, shoulder, ankle/foot, elbow/forearm, low back, and wrist/finger, across all the jobs studied. However, the associated factors were smoking, working hours, and types of jobs, such as electrical and telecommunication. The present study considers work-related musculoskeletal prevalence and its departmental variations.

Used a descriptive cross-sectional study design for a sample size of 414 workers of Port Harcourt Electricity Distribution (PHED) workers for an occupational hazard study, but researchers did not report departmental occupational hazard variation.¹¹ Their findings showed that 87.9% experienced occupational hazards due to psychosocial and physical hazards brought about by the nature of the jobs being done by the PHED workers. However, the nature of the job was not reported. In this present study, the IBEDC workers being studied were divided into technical, customer care and administrative staff. Furthermore, a standardized Nordic musculoskeletal questionnaire were administered to 176 e-waste workers (73 collectors, 82 dismantlers and 21 burners) to assess musculoskeletal disorder, it was reported that in a week discomfort prevalence were highest for collectors (91.8%), then dismantlers (89%) and burners (81%) at various areas of the body like lower back, shoulders, and knees,¹ it is yet to be seen whether this can be reported for the three different departments being considered in this study. Attested that several disciplines have provided advice and interventions to mitigate the occurrence of work-related musculoskeletal disorders among workers, still the problem persisted.¹⁵ A risk assessment was carried out for electric workers, and the highest risk factors were associated with personal components due to high human impacts in performing their tasks.¹⁴ Therefore, a further study is now being carried out to examine the risk effect on the workers' body sections.

A study to report musculoskeletal hazards among quarry workers was carried out using a cross-sectional study approach, and data were collected through a self-administered standard Nordic musculoskeletal questionnaire among 266 quarry workers in Nigeria.¹⁰ The researchers reported that the majority of the participants (89.8%) had experienced musculoskeletal disorders, and common musculoskeletal disorders among the workers were low back and elbow pain, while factors such as age, work experience, and working hours were associated with the musculoskeletal disorders;

however, the research did not divide the participants into their units. Purposively selected 20 soap baking workers in four soap-making industries in Nigeria to evaluate work-related musculoskeletal disorder risk using descriptive statistics and Ovako Working posture Analysis System (OWAS) to analyse the data collected through semi-structured oral questionnaire and observation methods.⁹ The participants indicated a hundred per cent of musculoskeletal disorders in the body areas such as lower back, wrists-hands, shoulders, and upper back and seventy-five per cent for elbows, and ankles/feet, while fifty per cent for neck. The present study considers percentage, descriptive statistics and regression analysis to study prevalence and departmental variation of musculoskeletal disorders in an electricity distribution company.

Used experienced workers to assess Musculoskeletal Disorder (MSD) complaints among 268 male workers from offshore wind energy companies in Germany.⁶ The participants indicated back pain, neck pain, lower back pain, shoulder, arm and leg pain. These were associated to other offshore occupations, and technicians indicated more frequently arm, back, shoulder and neck pain. The technical department is one of the departments being considered in this present study. A relationship between psychosocial factors and musculoskeletal pain among Chinese offshore technicians were studied by and reported prevalence of musculoskeletal pains for the past 12 months among the workers, which indicated that elbow and low back were the body parts where most of the worker experienced pains and at least 56% workers had one complaint or the other, also, significant ($p < 0.05$) relationships were observed between various psychosocial factors and musculoskeletal pains.⁴ The present research examines the prevalence of work-related musculoskeletal disorders in the past 7 days and 12 months among electricity distribution workers in Ibadan, Nigeria.

Methods

A descriptive cross-sectional study design was used for this study, while the study area was selected using a purposive sampling technique. This is to ensure the inclusion of electricity workers with a minimum of seven days and twelve months of experience. This approach was chosen to effectively track and involve participants in line with the present study. The study

was carried out in Ibadan, Oyo State, Nigeria and focused on five service hubs located at Apata, Dugbe, Challenge, Molete, and Ojoo of the Ibadan Electricity Distribution Company (IBEDC), Oyo State. The sample size was determined using Cochran's sampling formula to get an ideal sample size at a given confidence, proportion level, and error margin. Cochran's sampling formula is given as:

$$n = \frac{z^2 p(1-p)}{e^2} \quad (1)$$

Where:

n = Sample size

z = Standard error associated with the chosen level of confidence = 1.96 for 95%

p = proportion = 0.5 (to maximise sample size, since true prevalence was unknown)

e = error margin = 0.05

Substituting the values gives:

$$n = \frac{(1.96)^2 0.5(1-0.5)}{0.05^2} = \frac{0.9604}{0.0025} = 384.16 \quad (2)$$

Data were collected through a structured questionnaire that comprises demographic information and standardised Nordic musculoskeletal questions, which have been widely validated for assessing musculoskeletal pain and discomfort across nine body regions. The questionnaire was divided into two sections. The first section provides information on demographics, like the nature of the job, age, gender, and work experience. The second section comprised standardised Nordic questions, which were to evaluate different body regions where participants had experienced musculoskeletal disorders in the past 7 days or 12 months. Cochran's sampling formula indicated a required sample size of 384 for an infinite population. However, the total accessible workforce across the five service hubs of IBEDC was 240 employees. Therefore, questionnaires were distributed to all 240 employees, and 230 were completed and returned. Data were analysed using percentages and descriptive statistics to summarise prevalence, and regression/ANOVA () with Tukey post-hoc to examine departmental variations of work-related musculoskeletal disorders among the electricity distribution workers. The regression equation is given as:

Prevalence= $\beta_0 + \beta_1(\text{Technical}) + \beta_2(\text{Administrative}) + \epsilon$ (3)
 where

- = is the mean prevalence of the reference group (Customer Service)
- = This shows how much the Technical department differs from Customer Service
- = This shows how much the Administrative department differs from Customer Service
- = is the random error term

Ethical approval for this study was obtained from the UI/UCH Research Ethics Committee at the Institute of Advanced Medical Research and Training (IAMRAT) with Ethical Number: UI/EC/23/0708.

Results

The minimum required sample size was determined using Cochran's formula, which yielded approximately 384 participants. However, due to logistical constraints and the electricity distribution company's workforce size, 240 questionnaires were distributed across five IBEDC service hubs, of which 230 were correctly completed and returned, giving a valid response rate of 95.8%.

Table 1 shows the demographic distribution of the respondents. The distribution of gender among participants was predominantly male, constituting

73.0% of the sample, with females accounting for the remaining 27.0%. This gender disproportionality underscores a significant predominance of male representation within the workforce. For the department categories, it was observed that the majority of participants were employed in customer service (47.4%), followed by technical roles (35.2%), and administrative positions (17.4%). This distribution implies a hierarchical organisational structure within the company, emphasising roles that are directly involved in customer interactions and technical operations. The prominence of customer service roles indicated the company's commitment to providing satisfactory service experiences to its customers.

The participants encompassed a range of age groups, with the largest proportion falling within the 36-45 years (39.1%), followed by 26-35 years (31.3%). Relatively smaller proportions were observed in both younger and older age categories. Participants aged 18-25 years (8.3%) of the sample, while those aged 46-55, 56-65, and 65 and above years were 18.7, 1.7, and 0.9%, respectively. These findings indicated a relatively lower representation of younger and older workers within the workforce compared to the mid-age career groups.

Regarding work experience, a significant proportion of participants had 1-5 years of experience (36.5%), closely followed by those with 6-10 years of experience (27.4%). This suggested a relatively new workforce,

Table 1. Demographic distribution of respondents

Variables	Categories	Frequency	Percentage %
Gender	Male	168	73.0
	Female	62	27.0
Department Categories	Administrative	40	17.4
	Technical	81	35.2
	Customer Services	109	47.4
Age (years)	18-25 years	19	8.3
	26-35 years	72	31.3
	36-45 years	90	39.1
	46-55 years	43	18.7
	56-65 years	4	1.70
	66 years and above	2	0.90
Work Experience	Less than 1 year	13	5.2
	1-5 years	83	36.5
	6-10 years	63	27.40
	11 years or more	71	30.90

with a substantial portion in the early stages of their careers. However, it is noteworthy that a considerable proportion of employees also had over 11 years of experience (30.9%), indicating the presence of seasoned professionals who may play pivotal roles in mentoring younger colleagues and sustaining organisational continuity.

The prevalence of Work-related Musculoskeletal Disorders (WMSDs) among electricity distribution workers was examined based on participants' experience during the past 7 days and 12 months. The participants reported frequencies and percentages were presented in Table 2, where WMSD prevalence among electricity distribution workers in the past 7 days revealed that knees, lower back, shoulder, hips/thighs, neck, upper back, ankles/feet, wrist/hand, and elbow were 18.7, 17.8, 16.1, 15.7, 14.3, 13.9, 13.5, 11.7, and 8.3%, respectively, however, most WMSD prevalence occurrences in last 12 months were found in the lower back (44.3%), Knees (38.7%), shoulder (37.4%), neck (37.0%) and hips/thighs (30.4%), followed by ankles/feet (30.0%), wrist/hand (29.6%) and upper back (29.6%), then elbow 14.8% for pains felt. The area of the body where workers experienced the WMSDs prevalence occurrence that prevented electricity distribution workers from working in the past 12 months were ankles/feet, lower back, knees, upper back, hips/thighs, neck, elbow, wrist/hand, and shoulder were 22.6, 22.1, 21.7, 20.0, 17.8, 15.2, 14.3, 13.5, and

13.0%, respectively.

The prevalence of WMSDs reported by participants across different body areas in the past 7 days is shown in Figure 1. This was based on the department categories. The customer service staff reported the highest prevalence of the WMSDs in their body sections, followed by the technical department staff, and the administrative department staff revealed the lowest prevalence of the WMSDs.

The prevalence of WMSDs reported by participants across different body areas in the past 12 months is shown in Figure 2. This is based on the department categories. The customer services department staff reported the highest prevalence of WMSDs in their body areas, followed by the technical personnel. While the administrative department staff revealed the lowest prevalence of the WMSDs.

Table 3 presents the regression/ANOVA outcome of the prevalence of Work-related Musculoskeletal Disorders (WMSDs) variation within the three departments in the past seven days, which shows that the prevalence of WMSDs varied significantly among the three departments' staff [(F(2,12)=25.6, p<0.001)]. The estimated mean prevalence of the WMSDs among the staff of the three departments was highest among the customer service workers (8.7%), followed by technical workers (5.0%) then administrative workers (2.0%), which had the lowest WMSD prevalence.

Table 4 presents the regression/ANOVA outcome

Table 2. Prevalence of the WMSD among electricity distribution workers

	Area of WMSD prevalence in the past 7 days N (%)	Area of WMSD prevalence in the past 12 months N (%)	The area of body parts that prevented EDW from working due to the prevalence N (%)
Neck	33 (14.3)	85 (37.0)	35 (15.2)
Shoulder	37 (16.1)	86 (37.4)	30 (13.0)
Elbow	19 (8.3)	34 (14.8)	33 (14.3)
Wrist/hand	27 (11.7)	68 (29.6)	31 (13.5)
Upper back	32 (13.9)	68 (29.6)	46 (20.0)
Lower back	41 (17.8)	102 (44.3)	51 (22.1)
Hips/thighs	36 (15.7)	70 (30.4)	41 (17.8)
Knees	43 (18.7)	89 (38.7)	50 (21.7)
Ankles/feet	31 (13.5)	69 (30.0)	52 (22.6)

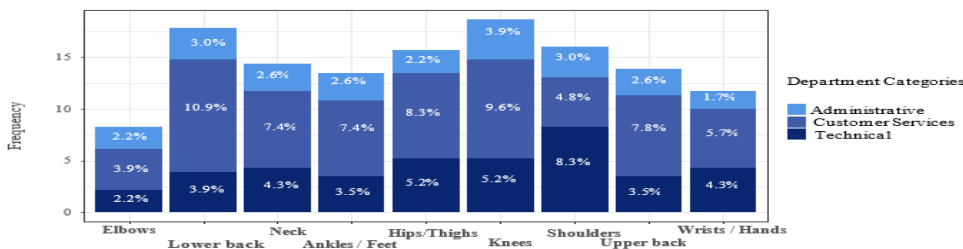


Figure 1. Prevalence of work-related musculoskeletal disorders across departments in the past 7 days

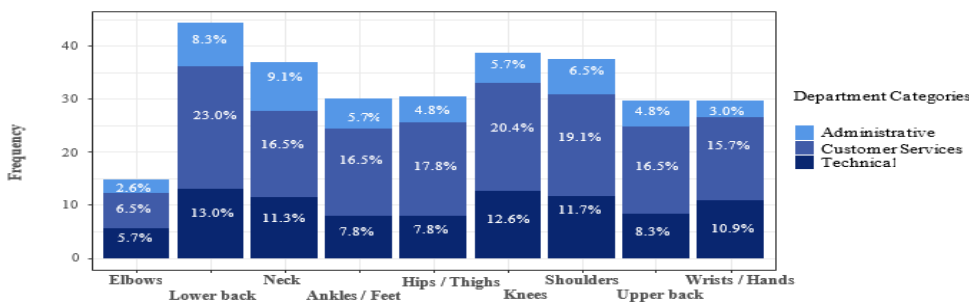


Figure 2. Prevalence of work-related musculoskeletal disorders across departments in the past 12 months

Table 3. Seven-day departmental WMSD prevalence variation

Source	ss	df	F	p-value
Department	113.24	2	25.58	<0.001
Residual	26.56	12		

Table 4. Twelve-month departmental WMSDs prevalence variation

Source	ss	df	F	p-value
Department	403.44	2	34.44	<0.001
Residual	70.30	12		

of the prevalence of Work-related Musculoskeletal Disorders (WMSDs) variation within the three departments in the past twelve months, which shows that the prevalence of WMSDs varied significantly among the three departments' staff [(F(2,12)=34.4, p<0.001)]. The estimated mean of prevalence of the WMSDs among the staff of the three departments was highest among the customer service workers (19.1%), followed by technical workers (11.3%), and then administrative workers (6.5%), which had the lowest WMSD prevalence.

Table 5 presents the post-hoc Tukey outcome of the

prevalence of Work-related Musculoskeletal Disorders (WMSDs) variation within the three departments in the past seven days, which shows that the prevalence of the WMSDs varied significantly among the three departments' staff (p<0.05).

Post-hoc Tukey HSD comparisons presented in Table 5 revealed that each pair of departments differed significantly. Customer Service workers reported significantly higher prevalence than both technical (mean difference = 4.5%, 95% CI [1.7, 7.4], p = 0.003) and Administrative personnel (mean difference = 6.8%, 95% CI [3.9, 9.6], p < 0.001). Technical staff

Table 5. Seven-day departmental WMSD prevalence variation Post-hoc Tukey HSD comparison

Departmental Paired Comparison	Mean difference	95% CI (Lower, Upper)	p-value
Administrative-Customer Service	-6.78	-9.63, -3.93	<0.001
Administrative-Technical	-2.28	-5.13, 0.57	0.15
Customer Service-Technical	4.50	1.65, 7.35	0.003

Table 6. Twelve-month departmental WMSDs prevalence variation post-hoc Tukey HSD comparison

Departmental Pair	Mean difference	95% CI (Lower, Upper)	p-value
Administrative-Customer Service	-12.58	-16.66, -8.50	<0.001
Administrative-Technical	-4.76	-8.84, -0.68	0.023
Customer Service-Technical	7.82	3.74, 11.90	<0.001

also reported a higher prevalence than administrative staff (mean difference = 2.3%, 95% CI [0.6, 5.1], *p* = 0.15) for the workers' past 7-day WMSD experience.

Discussion

In the last 12 months, customer service department personnel revealed the highest rates of prevalence of the WMSDs compared to administrative and technical departments. In the customer services department, WMSDs were notably prevalent in the lower back (23.0%), knees (20.4%), shoulders (19.1%), and neck (16.5%). These findings suggest susceptibility to WMSDs in the lower extremities, possibly due to prolonged standing and repetitive motions. The Technical staff department showed WMSDs prevalence particularly in the lower back (13.0%), knees (12.6%), shoulders (11.7%), neck (11.3%), wrists/hands (10.9%), upper back (8.3%), hips/thighs (7.8%) and ankles/feet (7.8%), and elbows (5.7%). These findings indicate susceptibility to WMSDs in the lower extremities due to the physical demands of their roles. Administrative personnel displayed varying rates of WMSDs across body parts, with the highest prevalence in the neck (9.1%) and lower back (8.3%), followed by shoulders (6.5%) and knees (5.7%). The wrists/hands (3.0%) and elbows (2.6%) showed the lowest WMSD prevalence. This suggests susceptibility to WMSDs in the lower back and neck, likely due to prolonged sitting and computer use.

The regression/ANOVA analysis revealed a statistically significant effect of department on both past 7 days and 12 months, respectively, of prevalence of work-related musculoskeletal disorders among the

participating departments, while the post-hoc Tukey HSD comparison of departments for past 7 days and 12 months, respectively, revealed that each paired departments varied significantly, except administrative and technical (*p*=0.15) for the past 7days. Customer service workers showed significantly higher prevalence than both technical (mean difference = 7.82%, 95% CI [3.74, 11.90], *p*<0.001) and administrative personnel (mean difference = 12.58%, 95% CI [8.50, 16.66], *p*<0.001), but technical staff reported higher difference than administrative staff (mean difference = 4.76%, 95% CI [0.68, 8.84], *p*=0.023) for past 12months departmental WMSDs prevalence variation, while past 7days revealed that WMSDs prevalence was highest among customer service workers, which significantly greater than both technical and administrative department workers. However, departmental WMSDs variation of the technical staff for the past 7days did not differ significantly from administrative staff at the 5% level, suggesting that most of the short-term work-related musculoskeletal disorders were concentrated among customer service employees. The high prevalence among customer service staff may be linked to prolonged sitting or standing, repetitive motions, and awkward postures when attending to customers and followed by the reported WMSDs body parts by technical staff, which may be associated with lifting, climbing, and other physically demanding tasks. The administrative workers showed comparatively lower WMSD prevalence, which reflected their lower physical workload, but with susceptibility to neck and lower-back symptoms from prolonged computer use and static postures.

These findings align with previous reports from Nigeria and other countries that highlighted WMSDs

as a common occupational concern among utility workers and other physically active professions.^{3,12} Studies on administrative staff in similar sectors also support the association between sedentary tasks, poor workstation design, and musculoskeletal discomfort.⁸ The results emphasise that risk factors are not uniform across electricity distribution roles, underscoring the need for department-specific preventive strategies. Therefore, ergonomic interventions should be tailored to the nature of work. For customer service staff, workstation redesign, provision of adjustable seating, and regular posture breaks may reduce strain on the back, neck, and lower limbs. Technical staff would benefit from training in safe lifting techniques, the use of personal protective equipment, and the scheduling of rest periods during field operations. Administrative staff require attention to workstation ergonomics and awareness of the importance of postures and micro-breaks. Therefore, the persistence of the WMSDs despite growing awareness of ergonomics highlights the need for stronger workplace health policies, regular risk assessments, and active monitoring of musculoskeletal complaints among electricity workers.

Limitation

This present study examines the prevalence and departmental variations of work-related musculoskeletal disorders among electricity distribution workers in Ibadan Electricity Distribution Company (IBEDC) across five service hubs in three departments. Although Cochran's formula suggested a sample size of 384 for an infinite population. However, the total accessible workforce across the five service hubs of the IBEDC was 240 employees. Hence, all the eligible staff were invited to participate, and 230 valid responses were obtained. The near-census approach ensures high coverage of the targeted population.

Conclusion

The study demonstrates that work-related musculoskeletal disorders are common among electricity distribution workers, with marked variations across departments. Customer service staff reported the highest prevalence, followed by technical staff, while administrative staff were the least affected. The lower back, knees, shoulders, neck, and ankles/feet

were the most frequently affected body regions. These findings highlight the need for targeted ergonomic interventions, job redesign, and health education tailored to the specific demands of each department. Future research should consider the lifestyle of the electricity distribution workers as related to the prevalence of work-related musculoskeletal disorders.

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