Work-Related Musculoskeletal Disorders: A Case of Office-Based Civil Servants in Rivers State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author ILN served as a major thesis supervisor, involved in study design and wrote the protocol. Author TGCO involved in literature survey, data collection and statistical analysis. While author SSA served as co-supervisor and also involved in study design. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

This study was carried out to investigate Work-Related Musculoskeletal Disorders (WRMDs) among office-based civil servants in selected ministries (Ministry of Education and Health) –Min-C and local government areas (Ikwerre and Obio/Akpor) LGA-C of Rivers State using 200 office-based civil servants as the study population. A lykert model response questionnaire was used as the instrument of primary data collection to investigate prevalence of WRMDs among the study population. The data obtained were analyzed using Kendall's coefficient of concordance (w). The w-values for general office ergonomic awareness were 0.271 (27.1%) for LGA-C and 0.739 (73.9%) for Min-C while that of workstation ergonomics awareness were 0.297(29.7%) and 0.323(32.3%) for LGA-C and Min-C, respectively. When Workstation Ergonomic Practice was considered the w-values for LGA-C were 0.771 (77.1%) and 0.9896 (99%) for Min-C while that of Musculoskeletal Disorder/Pain complaints were 0.995 (99.5%) for LGA-C and 0.992 (99.2%) for Min-C. These values suggest that there is low level of ergonomics awareness and practice, and high prevalence

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of musculoskeletal disorders/pains among the study population. The study also indicates that the most affected body regions were waist, back, and neck.

1. INTRODUCTION

Work-related musculoskeletal disorders (discomforts) are particularly common among workers who spend much of their time in the office, and office-based civil servants are no exception. According to Bernard and Putz [1], musculoskeletal disorders are named according to the body parts affected. The body parts frequently affected are arm, neck, shoulder and lower back, and diverse names are given to arm, neck and shoulder musculoskeletal disorders depending on the country of origin. For example cervicobrachial syndrome in Japan, repetitive strain injury in Australia, cumulative trauma disorders of the upper extremity in North America and work-related upper extremity musculoskeletal disorders.

Ergonomics basic principle is: 'alter the task to suit human capability, rather than force human to adapt to an inappropriate task' [2]. Musculoskeletal pain is that which affects the muscles, ligaments, tendons, and bones [3]. Awareness and application of ergonomics principles which include among others job and workstation design, adequate break time, good posture while working, use of ergonomic chairs and desk could reduce work-related musculoskeletal disorders. Also, proper placement of document, writing materials, monitor and key board for easy reach may be a guide for putting in place adequate control measures that could eliminate the prevalence of musculoskeletal disorders experienced by office-based civil servants.

According to Centre for Disease Control and Prevention USA [4], Musculoskeletal disorders (MSDs) can affect the body's muscles, joints, tendons, ligaments, bones and nerves. Typically, Musculoskeletal Disorders (MSDs) or Musculoskeletal Injuries (MSI) affect the back, neck, shoulders and upper limbs, and less often they affect the lower limbs. Musculoskeletal disorder problems range from discomfort, minor aches and pains, to more serious medical conditions requiring time off work and even medical treatment. In more chronic cases, treatment and recovery are often unsatisfactory - the result could be permanent disability and loss of employment.

According to Mfon [5] ergonomic hazards are related to the work/office environment. The factors include among others office furniture, and office design and space. Lyndall and Gabriele [6], asserted that the connection between illness and workplace factors is typically obscured unless a specific effort is made to link exposure to disease. On the other hand, Harrington et al. [7] revealed that studies on the recognition of risk factors for the development of work-related musculoskeletal disorders has shown that these disorders may not be caused solely by high physical job demands but also by psychosocial demands. It is in the light of above that this research is embarked upon.

According to Asogwa [8], the control of occupational hazards decreases the incidence of accidents and work-related diseases/disorders and as well improves the health and general morale of the labour force. This in turn leads to increased efficiency and decreased absenteeism from work. In most cases, the economic benefits far outweigh the costs of eliminating hazards.

2. MATERIALS AND METHODS

2.1 Study Area

The three study sites are the two Local Government Areas (LGAs) namely Ikwerre LGA with latitude $5°0'$ 37.47″N and longitude $6°52'$ 15.93″E; Obio/Akpor LGA with latitude $4°52'$ 2193″N and longitude $7°0'$ 0.41″E; and State Ministries of Education and Health in one location with latitude $4°46'$ 21.3″N and longitude $7°1'$ 0.75″E, respectively. All the study sites are within Port Harcourt metropolis, which is the home of oil and gas activities in the Niger Delta in Nigeria. This study area was chosen because of the high concentration of civil servants within the area and as such was assumed to have a true representation (reflection) of civil servants in Rivers State (see Fig. 1).

2.2 Sample Size Estimation

Prevalence formula was adopted for the sample size estimation, that is:

$$N = \frac{Z^2 P(1-P)}{T^2} \qquad (1)$$

Where T is tolerance error (0.05), P is the prevalence taken as 14% and Z is the level of significance that corresponds to 95% confidence level (that is, Z = 1.96). Thus, direct substitution of Equation (1) yields,

$$N = \frac{1.96^2 (0.14)(1-0.14)}{0.05^2} = 185.011$$

An attrition rate of 8% (or 15 persons) is added to the sample size of 185 to obtain an overall sample of 200 workers.

2.3 Methods of Data Collection

2.3.1 Inclusion criteria

The criterion includes employees of both local governments category (LGA-C) and Ministry category (MIN-C) who are aged 18 years and above who gave their informed written consent for the study.

2.3.2 Exclusion criteria

The criteria excluded pregnant employees and those who were sick at the time of data collection or physically deformed, who may have suffered one kind of pain or another (see Table 1 on respondents' physical disability status).

2.3.3 Participants

A study population of two hundred (200) office-based civil servants were used and their opinions sampled on the Questionnaire Parameters (Questions) The respondents included senior and junior office-based civil servants. The study population were divided into two categories- Local Government Area (LGA-C) and Ministries (Min-C) and equal questionnaires were distributed to each group. The general (socio-demographic) information about the respondents cut across gender, age groups, years spent on job (years of experience), hours spent daily in the office working, job description/position, and disability. The information from the socio-demographic survey represents the random outcome from the field (see Table 1).

2.3.4 Questionnaire

A Lykert model response questionnaire was used to solicit the views of office-based civil servants within the study area on issues concerning work-related musculoskeletal disorders. The questionnaire was structured with four answer options namely: Strongly Agree, Agree, Disagree and Strongly Disagree with the following rating 4, 3, 2, and 1, respectively. Fifty (50) questionnaires each were randomly distributed to office-based civil servants in Ikwerre and Obio/Akpor Local Government Areas, and Ministries of Health and Education, all in Rivers State. The questionnaire was checked for clarity, readability, understandability, accuracy and consistency on a test run with twenty staff of the University of Port Harcourt.

The questionnaire consisted of thirty three (33) questions covering: General Office Ergonomic Awareness, Workstation Ergonomic Awareness, Good Workstation Ergonomic Practice, and Musculoskeletal Disorders [10]. Other questions cover socio-demographic characteristics of the respondents, and an open-ended question requesting the respondents to state where pain(s) is/are commonly felt. All the respondents in this survey were anonymous. Summary details on respondents demographic information are as shown in Table 1.
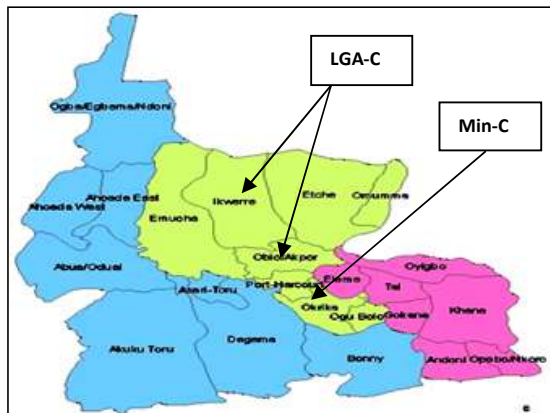
LGA-C: Local Government Area Category

Min-C: Ministry Category

Fig. 1. Map of the study area (2No. LGAs & 2No. ministries in Port Harcourt)
Source: Wikipedia [9]

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Table 1. General information on study population

Age group	Local govt. category (LGA-C)		Ministry category (MIN-C)	
	Male	**Female**	**Male**	**Female**
18 – 25	2	2	1	1
26 – 34	10	7	11	8
35 – 40	10	8	8	5
>40	16	12	23	16
Total	**∑ 38**	**∑ 29**	**∑ 43**	**∑ 30**
Hours spent daily at the office				
	Local govt. category (LGA-C)		Ministry category (MIN-C)	
	Respondents	**Percent**	**Respondents**	**Percent**
0 – 4 hrs	1	1.5%	0	0%
5 – 8 hrs	43	64.2%	55	75.3%
>9 hrs	23	34.3%	18	24.7%
Total	**∑67**	**100%**	**∑73**	**100%**
Physical disability				
	LGA-C		Ministry category (MIN-C)	
	Respondents	**Percent**	**Respondents**	**Percent**
Yes	0	0%	0	0%
No	67	100%	73	100%
Years spent on the job				
	Local govt. category (LGA-C)		Ministry category (MIN-C)	
	Respondents	**Percent**	**Respondents**	**Percent**
0-5 yrs	26	39%	28	38.4%
6-10 yrs	8	12%	9	12.3%
11-15 yrs	7	10%	5	6.8%
> 16	26	39%	31	42.5%
Total	**∑67**	**100%**	**∑73**	**100%**
Job description / position				
	Local govt. category LGA-C		Ministry category (MIN-C)	
	Respondents	**Percent**	**Respondents**	**Percent**
[a]CO/ R/ TP	13	19%	16	22%
[b] DT/SP/ HOD	46	69%	32	44%
[c]SEC/ Clerk	8	12%	25	34%
Total	**∑67**	**100%**	**∑73**	**100%**

[a]CO/ R/ TP: Computer operator/Receptionist/Typist; [b]DT/SP/ HOD: Director/Supervisor/Head of Department; [c]SEC/ Clerk: Secretary/Clerk

Out of the two hundred (200) questionnaires distributed to the study population, one hundred and forty (140) were duly completed and returned; that represents a response rate of seventy percent (70%). For the returned questionnaires, 67 were from the Local Government Areas (LGA-C) and 73 from the ministries (Min-C), respectively. All the returned questionnaires were correctly filled, thus they were analyzed.

2.4 Method of Data Analysis

The data obtained from the survey were collected and analysed using Kendall's Coefficient of Concordance (W). The application of Kendall's statistic is to determine the level of agreements amongst the respondents as per ergonomic awareness and practice, and complaint of musculoskeletal disorders/ discomfort among office-based civil servants. Kendall's coefficient is a non-parametric statistic used to assess agreement among raters [10]. Its values range from zero (no agreement) to unity (complete agreement) while intermediate values signify low or high degree of unanimity between raters.

The formula for calculating Kendall's Coefficient of Concordance (W) is given as Equation (2) [11]:

$$W = \frac{12 \sum [R_i - \bar{R}]^2}{m^2 n(n^2 - 1)} \qquad (2)$$

Where R_i represents the total rank by respondents and is given by:

$$R_i = \sum_{j=1}^{m} r_{ij} \qquad (3)$$

Where i is an object, given a rank/rating, r_{ij} by respondent, j; "m" represents the total number of respondents while "n" represents the total number of objects (in this case questions); and $\bar{R}$ is the mean value of the total ranks and is given by:

$$\bar{R} = \frac{1}{2}m(n+1) \qquad (4)$$

3. RESULTS AND DISCUSSION

3.1 Results

The study sets out to ascertain the level of complaint of musculoskeletal disorders/ discomfort, and by extension office ergonomic awareness and practice among office-based civil servants in Rivers State. The results are thus presented according to how the respondents responded to the various sections of the questionnaire in the tabular format (see Tables 2-5).

Table 2. Response on General Office Ergonomics Awareness (GOEA) for LGA-C & MIN-C

Parameter[±]	Questions on GOEA	LGA-C				MIN-C			
		SA	A	D	SD	SA	A	D	SD
OEA-P1	An office must be well lit, without being overly bright or harsh	10	19	23	15	33	20	14	6
OEA-P2	An office must be spacious	39	20	6	2	15	28	10	20
OEA-P3	An office humidity level and temperature should be comfortable	29	30	8	0	8	8	20	30
OEA-P4	An office should be occasionally quiet	16	18	11	22	4	4	27	38
OEA-P5	An office should occasionally be ventilated	20	17	14	16	10	10	10	45
OEA-P6	The floor of an office should be occasionally slippery	12	19	13	23	5	5	18	40

[±]*Office Ergonomics Awareness – Parameter (OEA-P)*

Table 3. Response on Workstation Ergonomics Awareness (WEA) for LGA-C & MIN-C

Parameter[a]	Questions on WEA	LGA-C				MIN-C			
		SA	A	D	SD	SA	A	D	SD
WEA-P1	A comfortable workstation makes work easier	30	20	11	6	16	26	21	10
WEA-P2	A workstation must be divided into "easy reach and maximum reach zones" [xx]	22	15	24	6	16	24	18	15
WEA-P3	The position of a computer monitor and key board should be just below eye level and close to elbow level respectively	14	19	17	17	25	20	11	17
WEA-P4	An office desk should be too high	11	12	12	32	10	29	15	19
WEA-P5	An office chair must be adjustable	20	24	14	9	32	17	10	14
WEA-P6	An office chair must have back and arm supports, and footrest	16	23	13	15	11	14	20	28

[a]*Workstation Ergonomics Awareness Parameter (WEA-P)*
[xx] *"easy reach & maximum reach zone" implies areas within reach of about 4060 cm of where one is sitting on ones desk which is easily reached without having to stretch to access frequently used tools*

Table 4. Response on Good Workstation Ergonomics Practice (GWEP) for LGA-C& MIN-C

Parameter[c]	Questions on GWEP	LGA-C				MIN-C			
		SA	A	D	SD	SA	A	D	SD
WEP-P1	I occasionally sit without back support	37	20	0	10	24	21	18	10
WEP-P2	I reach out to frequently used items without ease from my sitting position	25	30	5	7	21	23	11	18
WEP-P3	I sit for a long time (2hrs or more) in a position	47	14	5	1	30	12	13	15
WEP-P4	I do not often take different positions (stand, walk) every 15-30 minutes	33	22	6	6	39	22	12	0
WEP-P5	I occasionally use my shoulder to hold phone to my ear while doing something else	50	7	3	7	38	21	9	5
WEP-P6	I often hold large/heavy items in the hand while carrying them long distance	23	10	5	3	10	23	14	13
WEP-P7	I occasionally discomfort myself by straining my eyes to see clearly	32	16	10	6	46	20	3	4
WEP-P8	I occasionally discomfort myself by bending to the desk due to bad furniture/poor arrangement	27	30	7	3	41	27	5	0
WEP-P9	I often look back and forth (down/up) between computer monitor and source document when typing	30	13	4	8	24	12	5	8
WEP-P10	I occasionally take regular breaks for at least 1-2 minutes every 1 hour	26	37	3	1	45	10	8	10
WEP-P11	My work break times are not enough	30	23	1	1	33	13	8	5
WEP-P12	I often get jobs at short notice	45	17	1	1	30	24	11	8
WEP-P13	I often get more jobs than is usual	40	10	7	10	25	30	12	6

[c]*Workstation Ergonomic Practice – Parameter (WEP-P)*

Table 5. Response on Musculoskeletal Disorder Complain (MDC)

Parameter[d]	Questions on MDC	LGA-C				MIN-C			
		SA	A	D	SD	SA	A	D	SD
MDC-P1	I have had work-related musculoskeletal pains/disorders	31	19	10	7	44	24	3	2
MDC-P2	The pain/disorder was caused by repetitive activities	41	15	4	7	25	28	16	4
MDC-P3	The pain/disorder was caused by awkward posture	20	35	11	1	46	23	1	3
MDC-P4	The pain/disorder was caused by a hard or sharp surface	36	16	5	10	36	28	3	6
MDC-P5	The pain/disorder was caused by slip, trip or fall	28	24	2	13	28	20	10	15
MDC-P6	I occasionally stay away from work because of work-related pains/disorders	38	10	14	5	33	17	12	11
MDC-P7	I have visited hospital because of work-related pain/disorder	20	28	9	10	20	22	26	5
MDC-P8	I feel discomfort/ pain after a day's work	29	29	3	6	60	8	4	1

[d]*Musculoskeletal Disorder Complain –Parameter (MDC-P)*

In order to have a quick overview of the response distributions for the two categories of employees in the study area, plots of questionnaire parameters against percent (%) of respondents are presented for each of the following: i) General office ergonomics awareness (see Fig. 2); ii) workstation ergonomics awareness; (see Fig. 3);

iii) workstation ergonomic practice (Fig. 4); and iv) musculoskeletal disorder complains (Fig. 5). The data on general ergonomics awareness for both LGA-C and MIN-C (see Table 2) were employed to demonstrate the computation of Kendall's statistic (w). The applicable parameters in the Kendall Equations (2- 4) were evaluated as shown in Table 6 using data from Table 2. Thus, direct substitutions were made for computation of w-statistic; viz:
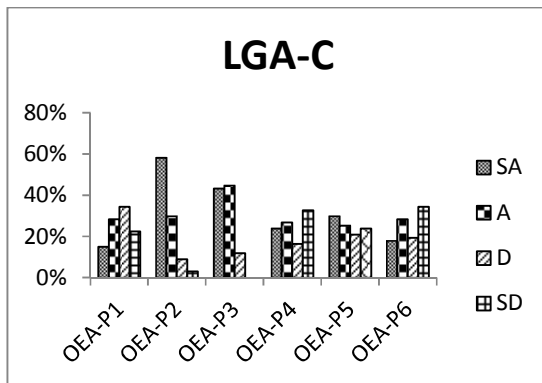
For LGA-C

$\bar{R} = \frac{1}{2}67(6 + 1) = 234.5$

$W = 12\frac{21305.5}{942690} = 0.271209\ (27.1\%)$

For Min-C

$\bar{R} = \frac{1}{2}73(6 + 1) = 255.5$

$W = 12\frac{68887.5}{1119090} = 0.738681\ (73.9\%)$

a) For LGA-C
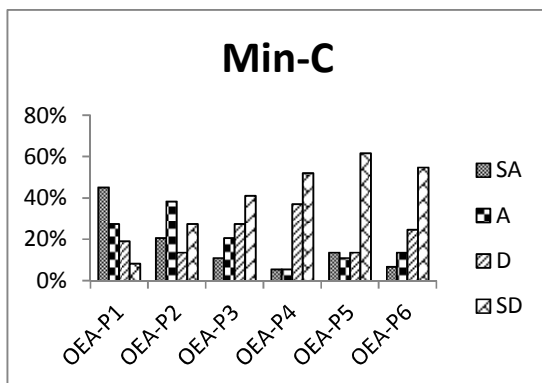
b) For MIN – C

Fig. 2. Percentage of respondents on general office ergonomics awareness

Similar approach was adopted to evaluate Kendall's statistic (w) for the remaining three sections of the Questionnaire groups (see Table 7). The plots of musculoskeletal pains and body regions for LGA-C and MIN-C are as shown on Fig. 6. Also, the plots of job description or position of an employee with respect to work related musculoskeletal pains for LGA-C and MIN-C are as presented in Figs. 7a & b.
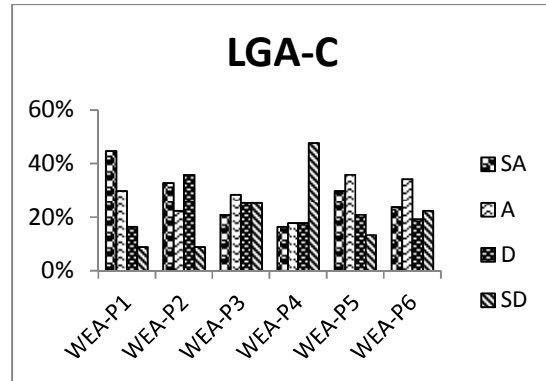
a) For LGA-C
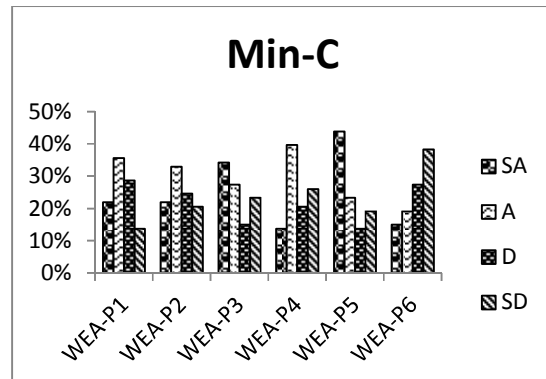
b) For MIN-C

Fig. 3. Workstation ergonomics awareness

3.2 Discussion

3.2.1 General office and workstation awareness

On general office ergonomics awareness a total of six questions were responded to (see Table 2). The knowledge level of the respondents indicated some gaps. For instance, the awareness parameter that an office should be occasionally quiet (OEA-P4) attracted a total of 89% for both disagree and strongly disagree (see Table 2). The response distribution for

employees of Local Governments (LGA-C) and ministries (MIN-C) as per the office ergonomics awareness parameters as shown in Fig. 2 may be taken as average with isolated gaps (little or no knowledge). Given Kendall's coefficient of concordance of 0.2712 (27.1%) for the Local Government category (LGA-C) and 0.7387 (73.9%) for ministry category (MIN-C), we can claim low and high degrees of agreement for LGA-C and MIN-C, respectively. This assertion tallies with respondents' response distribution shown in Fig. 2.

For the workstation ergonomics awareness, a total of six parameters (questions) were responded to (see Table 3). The response distribution for LGA-C and MIN-C yielded an average of 50% agreement (strongly agree and Agreed options) against 50% disagreement (Disagree and strongly disagree options), see Fig. 3. This confirms the level of awareness on workstation ergonomics, (limited knowledge) for the employees in the study area. The Kendall's statistic (W) for the level of awareness of workstation ergonomics among the respondents were **0.297** and **0.323** for the Local Government Area Category (LGA-C) and Ministry Category (Min-C) respectively. This indicates a low degree of agreement amongst respondents in both categories. However, there was a high consensus amongst respondents of both categories that office chair must be adjustable and have back support, and an office desk must not be too high.
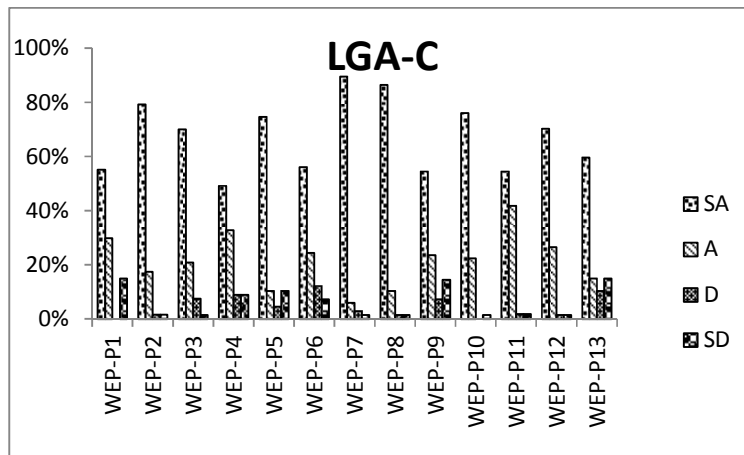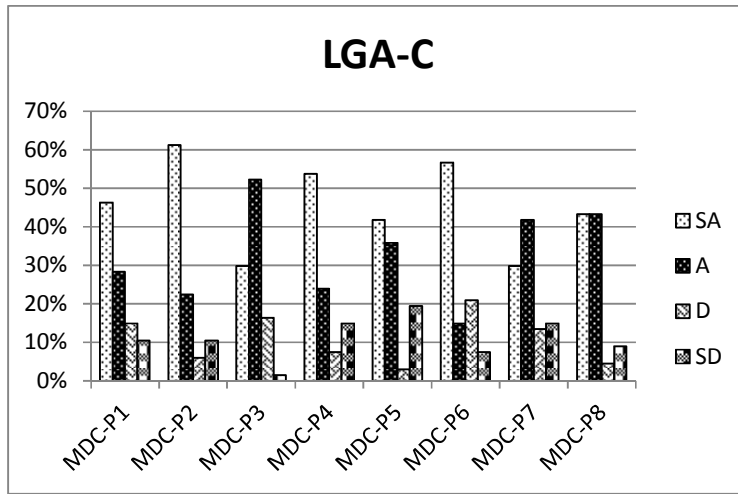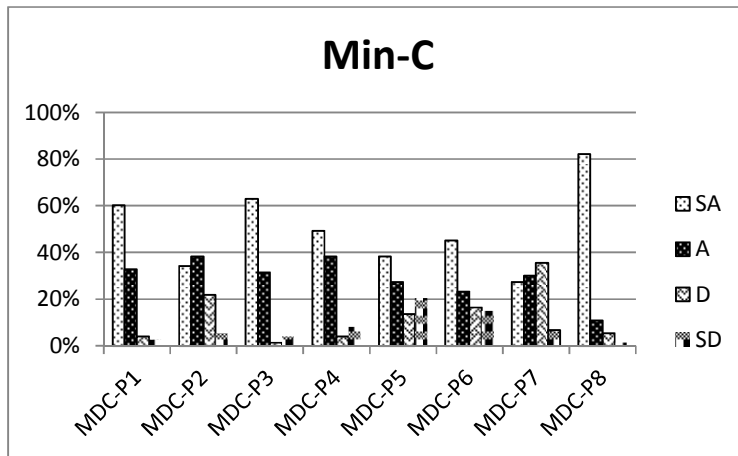

a) For LGA-C
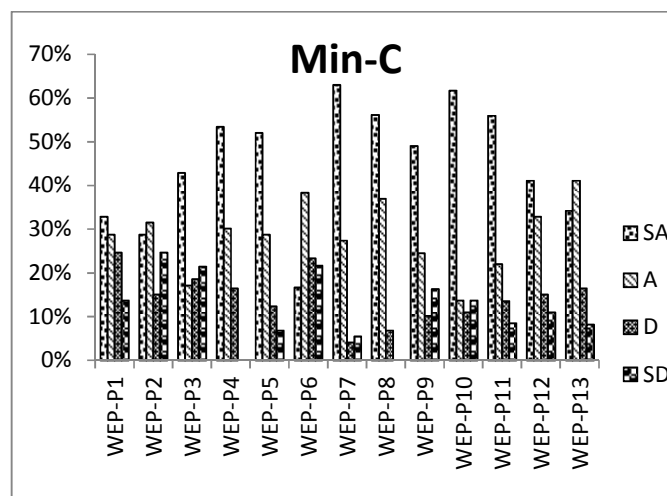
b) For MIN-C

Fig. 4. Workstation ergonomic practice

LGA-C

a) For LGA-C

Min-C

b) For MIN-C
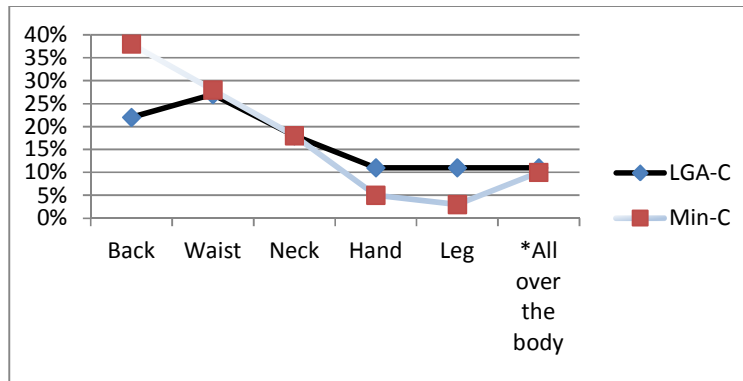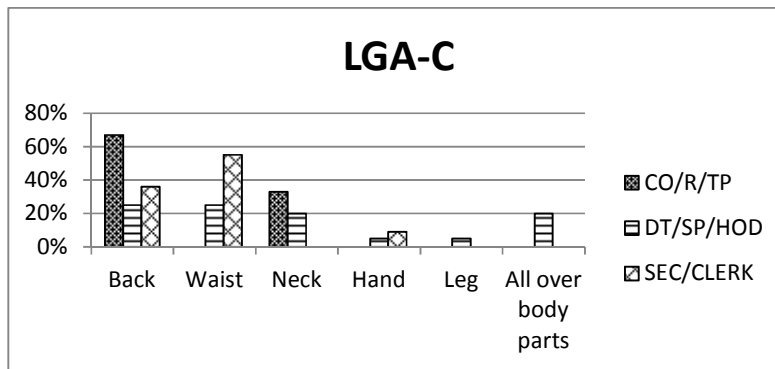
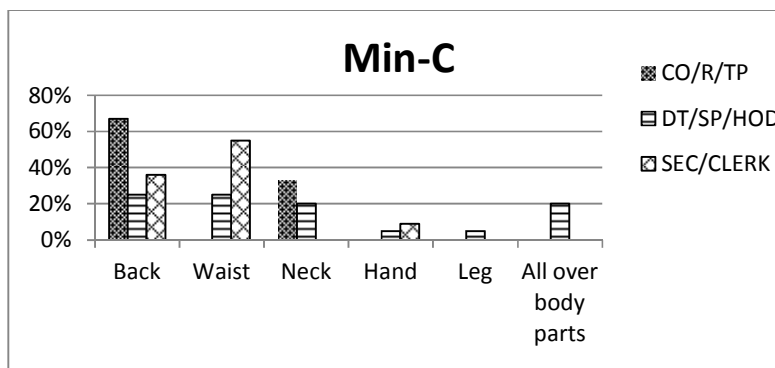**Fig. 5. Musculoskeletal disorder complain**

Fig. 6. Relationship between the two categories against musculoskeletal pains and body regions

a) For LGA – C

b) For MIN - C

Fig. 7. Job description/position as per regions of work-related musculoskeletal pains

Table 6. Kendall's statistic (w) for general office ergonomics awareness

Parameters	LGA-C			Min-C		
	R_i	$\bar{R}$	$(R_i - \bar{R})^2$	R_i	$\bar{R}$	$(R_i - \bar{R})^2$
OEA-P1	158	234.5	5852.25	226	255.5	870.25
OEA-P2	230	234.5	20.25	184	255.5	5112.25
OEA-P3	222	234.5	156.25	147	255.5	11772.25
OEA-P4	162	234.5	5256.25	120	255.5	18360.25
OEA-P5	175	234.5	3540.25	129	255.5	16002.25
OEA-P6	154	234.5	6480.25	126	255.5	16770.25
			∑ **21305.5**			∑ **68887.5**

Table 7. Summary of Kendall's statistic (w) for various questionnaire groups

S/N	Questionnaire group	Kendall's statistic	
		LGA-C	MIN-C
1	General Office Ergonomics Awareness (OEA-P)	0.2712	0.7387
2	Workstation Ergonomics Awareness (WEA-P)	0.2974	0.3227
3	Good Workstation Ergonomics Practice (WEP-P)	0.7709	0.9896
4	Musculoskeletal Disorder Complains (MDC-P)	0.9950	0.9917

3.2.2 Workstation ergonomic practice

A total of thirteen questionnaire parameters (questions) were responded to on workstation ergonomics practices (see Table 4). The response distributions for both LGA-C and MIN-C indicate very high values for both strongly agree and agree options (see Fig. 4). Thus, there is an established trend as evident in Fig. 4, the case of "wrong ergonomics practices" in the study area given that the questions were in the negative tone (wrong practices) which attracted high positive responses. Therefore the respondents are not observing good ergonomics practices. The Kendall statistics (W) for the workstation economic practice among respondents were 0.771 and 0.99 for the local government area and ministry categories, respectively. This indicates a high degree of agreement among respondents in both categories. Therefore the respondents are not observing good ergonomics practices. Our study is strongly supported by the global trend documented by CDC [4]. The rate of musculoskeletal disorder (especially in Nurses) ranges from 17.90 – 318.0 incident rate per 10,000 workers.

3.2.3 Musculoskeletal disorder complains

For musculoskeletal disorder complains, a total of eight questionnaire parameters (WDC-P) were responded to (see Table 5). The response distributions for both the Local Government Area category (LGA-C) and Ministry category (MIN-C) are as shown in Fig. 5. The trend in Fig. 5 is similar to that of Fig. 4 with high positive responses for the two categories of employees. The Kendall's statistic (w) for the level of Musculoskeletal Disorder Complains (Prevalence) among the respondents were **0.995** and **0.992** for the Local Government Area Category (LGA-C) and Ministry Category (Min-C), respectively. This indicates a high degree of agreement amongst respondents in both categories to Musculoskeletal Disorder/Pain complain. This is strongly supported by the responses on questions MDC-P7 and MDC-P8 (see Table 5). Apparently there was a high consensus amongst respondents of both categories that they have visited hospital or stayed away from work because of work-related Musculoskeletal Disorders/Pains. But more than half of the respondents feel pain after a day's work. When the number of those who complained of having Musculoskeletal Disorder/Pain were considered, it was observed that 87% and 93% of LGA-C and Min-C respectively complained of Pains (see MDC-P8,

Table 5). Apparently, these figures are above 50% average and thus, cannot be ignored. An obvious correlation (relationship) does exist between poor awareness on general office and workstation of both categories of employees in the study area as noted by Kendall's w-statistic of 29.7% for LGA-C and 32.3% for MIN-C (see Table 7).

Evaluating musculoskeletal pains with respect to Body Parts/Regions among respondents in the Government Area Category (LGA-C), it was observed that 22% complained of pains around the Back, 27% around the Waist, 18% around the Neck, 11% each around the Hand, Leg and all over the body regions. While in the Ministry Category (Min-C) 38% complained of pains around the Back, 28% around the Waist, 18% around the Neck, 5% around the hand, and 3% around the Leg regions, and 10% reported pains all over the body regions (see Fig. 6). The results indicate that back and waist are two body regions employees in the study area experienced most pains. There is generally, incidence of Musculoskeletal Disorders/Pains among respondents who worked between 5-8 hours and more than 8 hours daily. However, respondents who worked for more than 8 hours complained of pains all over the body region (particularly back and waist regions).

The parts of the body where pain was felt is in line with the findings of Bernard and Putz-Anderson [1], where epidemiological evidence of work-related musculoskeletal disorders were found to affect the neck, hand and back. From the analysis of the result (Figs. 6 & 7), it was observed that most of the respondents in both categories reported back, waist and neck pains. This agrees with the reports of Byron et al. [12]. where physical therapist had high incidence of low back pains, hand/wrist pain followed by upper back and neck pains; Bolande et al. [13] where there was high incidence of low back pains (WRMDs) amongst nurses. This also agrees with the observation of Nicole et al.[14] on WRMDs among physical therapists. The result is also in line with the findings of Melinda [3] suggesting that posture, repetitive activities and job of an individual affects the musculoskeletal system by causing either chronic inflammation of the joints or fibrotic and structural tissue changes. Apart from job designation and activities, the workstation and office environment were shown to be a factor of musculoskeletal disorder. This is not far from the assertion of Pascale et al. [15], and Devereux et al. [16].

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

Based on this study, the following conclusion can be drawn:

i) Office-based civil servants in Rivers State are unaware of office and workstation ergonomics, particularly those at the Local Government category;
ii) There is low level of ergonomics practice among office-based civil servants in Rivers State.
iii) There is high prevalence or complain of Musculoskeletal Disorders among office-based civil servants in Rivers State.
iv) The most frequently affected body regions of Musculoskeletal Disorders/Pains among office-civil servants in Rivers State are waist, back and neck; and
v) There is relationship between job designation and Musculoskeletal Disorders/Pains with respect to body regions frequently used. But it does not follow exactly the same trend in the two categories.

4.2 Recommendations

Based on the findings from this study, the following recommendations are made:

i) Government should provide good workstation for civil servants particularly at local government level;
ii) Office-based civil servants should be trained on good ergonomic practices; and
iii) Adequate control measures must be put in place by concerned agency to ameliorate or check MSDS disorder.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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