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Point prevalence and risk factors for work-related musculoskeletal disorders among academic staff in a Nigerian University

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Work-Related Musculo-Skeletal Disorder (WRMSD) is a common complaint among the working population. In spite of the keen interest of Nigerian researchers in this subject, there is a dearth of information concerning university academic staff. Yet, this group of workers are critical to high-level manpower development. The aim of this study is to assess the risk factors and determine the point prevalence of WRMSD among academic staff of Nigeria premier University Ibadan. Two hundred and two (202) academic staff from all faculties in the university participated in this cross-sectional study. The methodology involved a two-part process namely: An observational assessment of each academic staff by one of the researchers; and completion of a self-administered questionnaire. The Standard Nordic Questionnaire and the Rapid Office Strain Assessment (ROSA) were used to assess musculoskeletal disorders and the ergonomic environment, respectively. Descriptive statistics of frequency percentage, mean and standard deviation were used to summarise the data. Inferential statistics of chi-square was also used at $p<0.05$. Participants were aged 49.3± 11.21 years. Results showed a WRMSDs prevalence of 86.6 and 64% reported that the musculoskeletal disorders or pain interfered with their work. The risk factors identified were inappropriate chairs and desk height; reaching for items in the workplace; prolonged sitting time and poor ergonomic awareness. The most common reported WRMSDs were those of upper back (78.7%); hip/buttocks (78.2%); knees (70.3%); and low back (41.6%). Based on the assessment of academic staff's office work environment, 66.3% of them were adjudged to be at a high risk of developing WRMSDs. The importance of appropriate office furniture and an improved work environment for academic staff were highlighted.

Key words: Work-related musculoskeletal disorders, university academic staff, University of Ibadan, prevalence.

INTRODUCTION

Musculoskeletal Disorders (MSDs) are a spectrum of clinical presentations that typically include pain, limitations in mobility, dexterity and functional ability that reduces the affected person's ability to work or participate in social roles and which impacts on mental well-being (WHO, 2018 Factors that is reportedly associated

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with MSDs include individual characteristics, such as age, sex, occupational risk factors and non-work-related exposures (Magnago et al., 2007). Activities or tasks such as handling loads, repetitive movements or vibrations are among the well-established workplace risk factors for the occurrence of MSDs (Bernal et al., 2015). Forceful exertions, repetitive movements, awkward and/or sustained postures such as prolonged sitting and standing have also documented (Sirajudeen et al., 2018). The MSD that is job- or occupation-related is described as Work-Related Musculoskeletal Disorders or WRMSDs. Work-Related Musculoskeletal Disorders (WRMSDs) therefore refer to a wide range of inflammatory and degenerative disorders which originate from or are exacerbated largely by the performance of work or related work settings (Kaka et al., 2016). The WRMSDs reportedly result in a significant economic burden in terms of lost wages, treatment and compensation globally (Sirajudeen et al., 2018). They also exert considerable impact on the quality of life of workers apart from increasing sickness absenteeism, early retirement and poor productivity at work (Devare, 2019).

Musculoskeletal Disorders (MSDs) are regarded as one of the most common and important occupational health problems in the teaching profession, and according to Erick and Smith (2014) had only recently been receiving the deserved attention. A cursory observation revealed that University academic staff is also exposed to risk factors such as high workload, short pauses for rest, intensive working pace, and high levels of stress. These, combined with job descriptions which entail prolonged sitting, prolonged standing, use of inappropriate furniture, awkward postures that may be adopted when writing on the board, helping students with their work, reading, marking students' work or preparing lessons. As noted by Ogunboyo et al. (2019), the works of lecturers are not only limited to classwork. It involves body movements such as frequent bending, twisting, sudden movement, and working in bent-over postures. These postures are assumed while reading, preparing notes or during fieldwork, thus making them more vulnerable to WMSDs (Ogunboyo et al., 2019).

An Irish study identified musculoskeletal problems as one of the leading causes of ill health cause-specific retirement among lecturers (Beyen et al., 2013). Lima and Silva (2014) studied WRMSDs among university professors in Brazil and reported a prevalence rate of 85.7% in their studied sample. Most of the lecturers sampled in the study by Sumaila et al. (2016) had adequate knowledge of risk factors associated with the development of their lecturing job-related musculoskeletal disorders, yet most had poor knowledge about appropriate prevention strategies. The scope of lecturing job in a university tends to be similar and this typically entails research, teaching and services. However, the conditions of working may not be the same for all countries and or societies. There was a paucity of such information about university lecturers in Nigeria, hence this study. The objective of this study was to determine the point prevalence of WRMSDs and explore the distribution of WRMSDs by region of the body affected, and pattern by academic cadre among academic staff of the University of Ibadan. The relationship between the workstation configuration and WRMDs among the participants was also explored.

SUBJECTS AND METHODS

Two hundred and two (202) consenting academic staff recruited using a proportionate stratified sampling technique from all the 16 Faculties at the University of Ibadan participated in this cross-sectional study. The University of Ibadan consists of 16 Faculties and 28 Centres with 1409 academic staff. Participants were recruited for this study based on the overall percentage of academic staff in each Faculty/Centres of the University of Ibadan. The total number of participants was determined using the formula (Yamane, 1967):

$$n=\frac{N}{1+N(e)2}$$

Where, n= sample size; N= total number of academic staff in University of Ibadan, 1409; e= error margin, 0.05

$$n=\frac{1409}{1+1409(0.05x0.05)}$$

n= 311.55 = 312.

The number of academic staff in each faculty and centre was obtained. A proportionate stratified sampling was used to determine the number of participants recruited from each Faculty and Centre. For example, the Faculty of Arts has 113 academic staff; the number of participants that was selected from the Faculty of Arts was 34.3 = 35 participants. Using the following formula;

$$\frac{\text{Sample size}}{\text{Population size}} \times \text{Strata size}$$

Data required from each participant was collected on the same day. In addition, data collection spanned a period of two months (November and December 2019) for all participants. The participants were eligible to participate if they have been full-time lecturers at the university for at least four consecutive years preceding this study. Eligibility criteria included no history of any systematic disorder or other musculoskeletal injuries such as unhealed/recent fracture, soft tissue injuries due to accidents in any of the regions of the body at the point of data collection.

A data gathering form was used to obtain information on the demographic data, pain-related questions, questions on the work environment of the participants, perceived level of work and pain. The Standard Nordic Questionnaire considered being a valid and reliable tool in a wide range of occupational groups was used to investigate areas of musculoskeletal problems. This instrument was designed by Kuorinka and his team in 1987 (Kuorinka et al., 1987). It consists of a human body diagram showing clearly marked nine anatomical regions (neck, shoulder, elbow, hand/wrist, upper back, lower back, hip/thigh, knee, and ankle/foot). Participants were asked whether they currently have troubles in the indicated areas which affect their normal activity (Crawford, 2007). Good psychometric properties have been reported for the NMQ (Kuorinka et al., 1987; Akinpelu et al., 2011; Hamzat et al., 2014; Ojo et al., 2014).

Table 1. Demographic characteristics of the participants (N = 202).

Variable		Frequency (n)	Percentage (%)
Gender	Female	87	43
	Male	115	57
Age group	30-39	9	4.5
	40-49	94	46.5
	50-59	72	35.6
	60-69	27	13.4
Faculties	Clinical Sciences	19	9.4
	Dentistry	8	4.0
	Public Health	6	3.0
	Basic Medical Sciences	16	7.9
	Sciences	26	12.9
	Social sciences	15	7.4
	Arts	17	8.4
	Agriculture	23	11.4
	Education	22	10.9
	Law	5	2.5
	Pharmacy	10	5.0
	Technology	14	6.9
	Vet medicine	14	6.9
	Research institute	7	3.5
Academic rank	Assistant Lecturer	3	1.5
	Lecturer II	36	17.8
	Lecturer I	47	23.3
	Senior Lecturer	67	33.2
	Reader	24	11.9
	Professor	25	12.4
Dominant hand	Left	6	3.0
	Right	196	97
Exercise	Yes	133	65.8
	No	69	34.2

The physical assessment of participants work station was carried out using the Rapid Office Strain Assessment (ROSA) with the participants asked to assume their typical work sitting positions in their offices while completing the data gathering form and the standard Nordic questionnaire. Rapid Office Strain Assessment (ROSA) was developed by Sonne et al. (2012). It is a picture-based posture checklist designed to quantify exposure to risk factors of office workers in an office work environment. The risk factors are diagrammed and coded as increasing scores from 1 to 3. ROSA final scores ranged in magnitude from 1 to 10, with each successive score representing an increased presence of risk factors. A score of 5 indicates an increased risk of discomfort for workstations with final scores equal to or above that score. Several studies have reported good psychometric properties of the ROSA (Sonne et al., 2012; Andrews, 2011; Ferasati and Jalilian, 2014; Valdes et al., 2018).

The protocol for this study was approved by the University of Ibadan/ University College Hospital (UI/UCH) Joint Ethics Committee was obtained.

Statistical analyses

Data obtained were coded and analysed using SPSS version 23. Descriptive statistics of range, mean, standard deviation and frequency percentages were calculated. Chi-square test of association was used to test the association between the risk factors and prevalence of the WRMDs. Chi-square test of difference was also used to test for the difference in the prevalence of WRMSDs across various discipline areas among the academic staff of the University of Ibadan. The level of significance was set at 0.05.

RESULTS

Participants were aged 30-69 (49.3± 11.21) years. The majority (46.5%) of them were in the 40-49 years age range. Classification based on academic rank revealed that 23.3% were lecturer I; 33.2% were senior lecturers and 12.4% were professors (Table 1). Distribution based

Table 2. Work-related characteristics of participants.

Variable		Frequency (n)	Percentage
Breaks to rest at work	Never	0	0
	Rarely	26	12.9
	Sometimes	102	51.3
	Often	71	35.7
Hours spent at desk	<2	2	1
	2-4	50	25.1
	5-7	77	38.7
	>7	70	35.2
Move away from desk	<5 times	111	55
	6-11 times	73	36.1
	>11 times	15	7.4
Ergonomic awareness	Yes	75	37.1
	No	127	62.9
Injury leading to musculoskeletal pain or discomfort	Yes	9	4.5
	No	193	95.5
Cause of injury	Road traffic accident	0	0.0
	Fall	1	0.4
	Other	8	4.0

on faculty is also shown in Table 1. Fifty-seven (57%) of the participants were males and 97% were right-handed compared to 2.7 who were left handed and the rest ambidextrous. Information obtained as regards the academic staff's work-related characteristics is presented in Table 2. About one third (35.2%) spend more than 7 hours at their desks in a day with about one third (37.7%) reported often taking breaks to rest or stretch at work. Among the respondents, 37.1% reported to have had or are aware of some forms of ergonomic training or information.

Our findings showed that 27(13.4%) had no musculoskeletal pain in any body part and 175 (86.6%) were experiencing musculoskeletal pain. The majority of the 86.6% respondents who were experiencing musculoskeletal pain had the neck region accounting for 41.1% of the complaints (Table 3). Table 4 presents the workstation configuration and risk assessment profile of participants where 134 (66.3%) of the respondents scored above 5, indicating a high risk of developing work-related musculoskeletal disorders.

The results of findings with respect to the 175 (86.6%) who had musculoskeletal complaints are presented in Tables 5, 6a, 6b and 6c. Table 5 showed the pattern of parts of the body affected, academic rank and faculty. There was no significant association between WRMSDs and inappropriate workstation configuration ($p = 0.208$) and academic rank ($p = 0.147$) as shown in Tables 6a and 6b respectively. There was however a significant association between the age of participants and WRMSDs ($p = 0.02$) as shown in Table 6c. No significant difference was obtained in the comparison of prevalence of WRMDs across different faculties ($p = 0.68$) as presented Table 6d.

DISCUSSION

Participants in this study were university lecturers at different cadres of their careers. Results obtained from the analysed data revealed that the majority of the studied staff had work-related musculoskeletal disorders –WRMSDs, which followed a pattern along age, cadre, and their work station design. The WRMSDs pattern obtained with respect to age and location of the pain showed those between the ages of 40 and 49 years recording the highest cases of neck pain, while the highest incidence of shoulder or upper arm pain, hip or buttock pain and ankle or feet pain was recorded by those in the age range 50 to 59 years. This finding is similar to that reported by Brulin et al. (1998) and Seibt et al. (2005). Pain in the neck and shoulders could be as a result of wrong postures like sustained neck flexion while reading, writing on the tables or boards and marking of papers for many hours. Shoulder pain has been observed to be a work-related problem among educators worldwide and with a prevalence of 7.8% reported in Estonia by Pihl et al. (2002) and 74.4% in China by

Table 3. Current pain distribution in different body parts.

Body part		Frequency (n)	Percentage
Whole body/neck	No pain at all	27	13.4
	No pain	175	86.6
	No pain	119	58.9
	Have pain	83	41.1
Shoulder/upper arm	No pain	125	61.9
	Left shoulder pain	9	4.5
	Right shoulder pain	29	14.4
	Pain at both shoulders	39	19.3
Upper back	No pain	43	21.3
	Have pain	159	78.7
Low back	No pain	118	58.4
	Have pain	84	41.6
Fore arm	No pain	185	91.6
	Left forearm pain	1	0.5
	Right forearm pain	15	6.9
	Pain at both forearms	1	0.5
Wrists/hands	No pain	167	82.7
	Left wrist pain	8	4.0
	Right wrist pain	19	9.4
	Pain at both wrists/hands	8	4.0
Hip/buttocks	No pain	44	21.8
	Have pain	158	78.2
Knees	No pain	60	29.7
	Have pain	142	70.3
Ankles/feet	No pain	168	83.2
	Have pain	34	16.8
Interference with work	Not at all	63	36
	Slightly interferes	96	54.9
	Substantially interferes	16	9.1

Chong and Chan (2010).

More cases of pain at different joints were observed among the older individuals in this study. Findings from age and low back pain (Hoy et al., 2014). Low back pain reportedly caused more global disability than any other condition, especially in the ageing population and was said to be the leading cause of activity limitations and absence from work globally (Hoy et al., 2014). While this was outside the scope of the study, it is plausible to assume that the experience of the pain of WRMSDs could have resulted in the loss of man-hour or missed days of work of the lecturers surveyed.

Data from this study also revealed that more females suffer from WRMSDs in different body parts, that is; neck pain (48.2%), shoulder or upper arm pain (51.9%), upper back pain (51.2%), hips or buttocks pain (52.3%) and ankle or feet pain (55.9%) compared to men. A number of studies had noted women to be at higher risk of WRMSDs than men (Ekman et al., 2000; Wahlstrom, 2005; Widanarko, 2011). In their study of musculoskeletal symptoms in the Swedish workforce who used computers and a desktop mouse, Ekman et al. (2000) found that the prevalence of musculoskeletal disorders was far greater in women than men for all occupation groups. Factors that put women at risk of MSDs according to the authors included household work and childcare (Ekman et al., 2000; Wahlstrom, 2005). Anthropometric differences may also cause women to work in more extreme postures or use higher relative muscle forces than men, which could result in greater mechanical stress (Titoranonda et al., 1999), and resultant musculoskeletal disorders. This may also be applicable to the women surveyed in the present

Table 4. Workstation configuration and risk factor assessment of participants.

Workstation configuration		Frequency (n)	Percentage
Chair height/depth	Non-adjustable	148	73.3
	Adjustable	54	26.7
Backrest/.Lumbar support	Unavailable	0	0
	Available	100	100.0
	Unavailable	93	46.0
Armrests	Available	109	54.0
	Hard/damaged surface	115	56.9
	Appropriate	87	43.1
Desk height	Too high/too low	99	49.0
	Appropriate	103	51.0
Document holder	Unavailable	180	89.1
	Available	22	10.9
Score on ROSA	Above 5	133	66.0
	Below 5	67	34.0

Table 5. Prevalence of work-related musculoskeletal disorders by academic rank and faculty of the respondents.

Variable	N%	S/UA%	UB%	LB%	FA%	W/H%	H/B%	K%	A/F%
By academic rank (N=175)									
Assistant Lecturer	0	0	4.7	3.6	0	0	6.8	3.3	0
Lecturer 1	16.9	18.2	20.9	21.4	41.2	40	20.5	20.0	11.8
Lecturer 2	26.5	16.9	32.6	23.8	11.8	8.6	11.4	13.3	11.8
Senior Lecturer	31.3	45.5	37.2	27.4	35.3	28.6	38.6	28.3	35.3
Reader	15.7	16.9	4.7	11.9	5.9	5.7	18.2	6.7	23.5
Professor	9.6	2.6	0	11.9	5.9	17.1	4.5	28.3	17.6
By Faculty (N=175)									
Clinical sciences	3.6	5.2	7.0	9.5	5.9	5.7	9.1	15.0	5.9
Dentistry	7.2	5.2	2.3	3.6	11.8	2.9	2.3	1.7	5.9
Public Health	3.6	2.6	2.3	2.4	5.9	5.7	0	0	5.9
Basic Medical Sciences	7.2	11.7	14.0	6.0	5.9	8.6	13.6	6.7	5.9
Sciences	14.5	15.6	11.6	11.9	0	11.4	13.6	15.0	23.5
Social sciences	6.0	6.5	7.0	7.1	11.8	14.3	2.3	1.7	8.8
Arts	6.0	3.9	7.0	9.5	17.6	11.4	13.6	10.0	2.9
Agriculture	14.5	13.0	14.0	13.1	17.6	17.1	13.6	11.7	11.8
Education	13.3	7.8	9.3	13.1	11.8	8.6	6.8	13.3	17.6
Law	4.8	3.9	4.7	4.8	0	0	4.5	1.7	0
Pharmacy	4.8	5.2	2.3	2.4	0	5.7	4.5	5.0	2.9
Technology	3.6	6.5	7.0	7.1	0	0	9.1	11.7	2.9
Veterinary Medicine	9.6	9.1	4.7	8.3	11.8	8.6	4.5	3.3	5.9
Research institutes	1.2	3.9	7.0	1.2	0	0	2.3	3.3	0

N = Neck; S/UA=Shoulders/ Upper Arm; UB= Upper back; LB =Lower back; FA=Fore arm; W/H= Wrists/ Hands; H/B=Hips/ Buttocks; K = Knees; A/F =Ankles/ Feet.

study. With respect to job cadres, our findings showed that WRMSDs was mostly reported by those at the Senior Lecturer cadre for most body part with the exception of the forearm pain where those of Lecturer cadre had the

Table 6a. Association between inappropriate workstation configuration and work-related musculoskeletal disorders.

Workstation configuration	Yes (n)	%	No (n)	%	Total (n)	%	X^2	p-value
Chair height/depth	129	87.2	19	12.8	148	100.0		
Backrest	0	0.00	0	0.00	0	0.00		
Lumbar support	84	90.3	9	9.7	93	100.0		
Arm rest	101	87.8	14	12.2	115	100.0	7.17	0.20
Desk height	90	90.9	9	9.1	99	100.0		
Document holder	156	86.7	24	13.3	180	100.0		

*The Chi-square statistic is significant at the 0.05 level. “Yes” and “ No” refers to the presence or absence of work-related musculoskeletal disorders.

Table 6b. Association between academic rank and work related musculoskeletal disorders (N=175).

Academic rank	Yes (n)	%	No (n)	%	Total (n)	%	X^2	p-value
Assistant lecturer	3	100.0	0	0.00	3	100.0		
Lecturer 1	38	80.9	9	19.1	47	100.0		
Lecturer 2	36	100.0	0	0.00	36	100.0		
Senior lecturer	56	83.6	11	16.4	67	100.0	8.17	0.14
Reader	20	83.3	4	16.7	24	100.0		
Professor	22	88.0	3	12.0	25	100.0		

“Yes” and “No” refers to the presence or absence of work-related musculoskeletal disorders.

Table 6c. Association between age of participants and work related musculoskeletal disorders (N=175).

Age group	Yes (n)	%	No (n)	%	Total (n)	%	X^2	p-value
30-39	7	77.8	2	22.2	9	100.0		
40-49	75	79.8	19	20.2	94	100.0	9.15	0.02*
50-59	67	93.1	5	6.9	72	100.0		
60-69	26	96.3	1	3.7	27	100.0		

*The Chi-square statistic is significant at the 0.05 level. “Yes” and “ No” refers to the presence or absence of work-related musculoskeletal disorders.

Table 6d. Comparison of prevalence of work related musculoskeletal disorders across different faculties using the chi-square test of difference.

Faculty	Yes (n)	%	No (n)	%	Total (n)	%	X^2	p-value
Clinical sciences	17	89.5	2	10.5	19	100.0		
Dentistry	6	75.0	2	25.0	8	100.0		
Public Health	5	83.3	1	16.7	6	100.0		
Basic Medical Sciences	14	87.5	2	12.5	16	100.0		
Sciences	22	84.6	4	15.4	26	100.0		
Social Sciences	10	66.7	5	33.3	15	100.0		
Arts	15	88.2	2	11.8	17	100.0	10.13	0.68
Agriculture	22	95.7	1	4.3	23	100.0		
Education	19	86.4	3	13.6	22	100.0		
Law	5	0	0	0.00	5	100.0		
Pharmacy	8	80.0	2	20.0	10	100.0		
Technology	13	92.9	1	7.1	14	100.0		
Veterinary medicine	13	92.9	1	7.1	14	100.0		
Research institutes	6	85.7	1	14.3	7	100.0		

*The Chi-square statistic. “Yes” and “ No” refers to the presence or absence of work-related musculoskeletal disorders.

highest prevalence. This high prevalence of WRMSDs among senior lecturers could be due to higher workload and responsibilities as job description demands increasing age, reduced joint flexibility, reduced strength, reduced cardiovascular function and less elastic tissue which also occur with increasing age. Older adults tend to compensate for these effects of ageing changes behaviourally.

The findings of the study showed that nearly all (97%) the academic staff is right-handed. The predominance of right-handedness may account for the observed trend of higher presence of right shoulder/upper arm, forearm, and wrists/hands pain when compared to the left. This study also revealed that about one-third of academic staff did not exercise regularly. This could be due to the work demand associated with the occupation. Numerous studies revealed that exercise has a positive impact on the body, reducing the prevalence of MSDs (Handschin and Spielgman, 2008; Owen et al., 2010; Beinart et al., 2013; O'Connor et al., 2015).

Compared to some other professionals that had been studied including Nigerians, a much higher prevalence of WRMSDs (86.6%) was obtained among the academic staff in this present study. This may be explained by improper postures assumed such as prolonged sitting or bending of neck to prepare lecture notes, reading, marking of papers, writing on tables or boards for many hours. The prevalence rate obtained is higher than that obtained among nurses in eastern Nigeria (Tinubu et al., 2010); construction workers in Uyo, Nigeria (Ekpenyong and Inyang, 2014); and office workers in Kenya (Mukandoli, 2004). The prevalence recorded in this study is however lower than the prevalence rate of 91.3% among physiotherapists in Nigeria (Adegoke et al., 2008).

The majority of the academic staff spend more than 5 h daily at their workstation. It was also observed that more than half get up from their desks less than five times per day. This practice could be because of the heavy academic workload and perceived need to concentrate on their job-related activities. This work-related sedentary lifestyle is known to impact negatively on human health. Several studies had established the importance of breaking the monotony of work practice by observing pauses at intervals. Accelerometer measurement studies conducted by Owen et al. (2010) found that breaks in sedentary time had beneficial associations with metabolic biomarkers. These breaks included transitions from seated positions to standing or transitions from standing to walking. Galinsky et al. (2007) reported that the traditional two fifteen minutes rest breaks and thirty-minute lunch break is insufficient to minimize discomfort in a workday. They recommended that office workers should be required to move away from the workstation every twenty to thirty minutes (Galinsky et al., 2007). Regular rest periods are known to be effective in reducing the prevalence of MSDs among computer users especially for the neck and shoulder regions (Goodman et al, 2012). A study by Davis and Kotowski (2014) revealed that computerised reminders to take breaks at thirty-minute intervals decreased discomfort in the shoulders, upper back and lower back. The authors noted that although many of these breaks were less than sixty seconds, they proved effective in reducing the discomforts of MSDs (Davis and Kotowski, 2014).

In terms of workstation design, evaluation carried out in this study showed that about three-quarters of academic staff use office chairs that are non-adjustable, all academic staff use chairs with backrests but 46% of these chairs do not have lumbar support. This could be linked to the prevalence (41.6%) of low back pain among the academic staff. Prolonged sitting is a risk factor for low back pain due to the prolonged and monotonous mechanical load which may result in increased intradiscal pressure, static loading of joint and muscle tissue leading to pain and discomfort (Pope et al., 2002). Recommendations made to avert the resultant back pain includes that the chair should allow for movement and adjustability through adjustability of the seat pan and backrest (Queensland Government, 2012). According to CSA International, an adjustable office chair allows for the user to adopt postural changes and avoid static postures that can be harmful and which can limit blood flow to the muscles leading to muscle fatigue and pain (CSA International, 2000). Similarly, approximately half of the academic staff use office desks that are either too low or too high for their height. This could have contributed to the neck pain (41.1%), shoulder or upper arm (38.1%) and upper back (78.7%) pain experienced by the academic staff. Biomechanically, if the desk height is too low, the user will flex the back to compensate for the inadequate height of the desk. This result in shift in the cervical sagittal alignment and therefore, the muscles supporting the head are stressed and strained (Tayyari and Smith, 1997). The elbow angle is further increased causing the forearms to be unsupported and leading to stress and strain of the musculature of the upper extremity (Tayyari and Smith, 1997). In addition, if the keyboard height is too high, the user compensates by tensing or shrugging the shoulders, which results in shortening of the musculature (Peek, 2005). The desk height would ultimately affect the forearm support and consequently the wrist and hand positioning, depending on how the worker compensates for the unnatural position. It was also observed that more than half of these chairs have hard or damaged armrests. Using a chair with an improper armrest creates pressure points on the arms and could be responsible for the forearm (7.1%) and wrists/hands (17.4%) pain experience reported by the staff. The majority of the workstations and desks did not have document holders, with 89.1% of academic staff having their documents and stationery situated far away from easy reach. This could also be responsible for the shoulder/upper arm pain and low back pain as the staff strains to reach objects far away from the body.

There was no significant difference in the prevalence of

WRMSDs across various faculties. This could suggest that the work descriptions of academic staff are similar across faculties and that they are similarly exposed to the risk factors for WRMDS. The finding from this study also revealed that 62.9% of academic staff had no ergonomic awareness. This could be the reason for the high prevalence (86.6%) of WRMSDs among the academic staff. Montreuil et al (2006) stated that it is essential for staff members in a workspace to have increased awareness of the effects their office environment and workstation have on their health. The findings of our study are in concordance with a study carried out among office workers at the Universiti Teknologi Malaysia where the researchers reported a low level of office ergonomics awareness and high prevalence rates of WRMSDs in the shoulder (51.6%), neck (48.2%) and, back (42.2%). The Malaysian study and other studies also concluded that office ergonomic training improved workstation habits and reduced WRMSDs among office workers (Robertson et al., 2008, 2009; Noroozi et al., 2015).

More than half of the surveyed staff who had WRMSDs in this study reported a slight interference with work; about one-tenth reported substantial interference and approximately one-third reported that the pain or discomfort did not interfere with their work. Work interference by pain or discomfort could lead to poor productivity at work (Maguire and O'Connell, 2007).

Using a standardised instrument, the academic staff's exposure to risk factors in their office work environment was also quantified in this study. About one-third of the academic staff were at low risk of developing WRMSDs while two-thirds had a high risk of developing WRMSDs. This corroborates previous research studies carried out using the ROSA of office workers in Iran (Ferasati and Jalilian, 2014; Nasiri et al., 2015).

Conclusion

This study concluded that there is a high prevalence of work-related musculoskeletal disorders among academic staff of the University of Ibadan where the majority have inappropriate workstation configurations with poor ergonomic designs and no ergonomic awareness. The importance of educating academic staff about ergonomic principles and the effects of poor ergonomic designs on their health, including periodic examinations of work conditions is recommended. The academic staff would also benefit from appropriate office furniture and equipment that will reduce their vulnerability to work-related musculoskeletal disorders. Inability to enlist the number of academic staff in the calculated sample size is an important limitation in this study.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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