SONOGRAPHERS KNOWLEDGE ON THE PREVENTION AND MANAGEMENT OF WORK RELATED MUSCULOSKELETAL DISORDERS IN NORTH EASTERN NIGERIA

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Abstract

Work-related musculoskeletal disorders (WMSDs) are common among health workers in all ages across all socio-demographic strata of the society and it has significant impact on Sonographers. They are a group of painful disorders of muscles, tendons, and nerves with impact on all aspects of life through pain and by limiting activities of daily living typically by affecting dexterity and mobility. This study is a cross-sectional survey design aimed at determining the knowledge of sonographers on the prevention and management of WMSDs in North Eastern Nigeria. A total of 52 copies of 18 1tem self-administered, structured and pretested questionnaires were distributed to sonographers. Items include demographic information, section on knowledge of prevention and management of WMSDs. The study showed the same result 26(50%) for those who exercise and those who do not exercise in between examination. 29(55.8%) of the respondents do not use height adjustable couch during scanning, 40(76.9%) use finger grip to hold the transducer while 23(12%) do not use finger grip. Majority 41(78%)of the respondents change scanning position between examinations while 22(11%) do not change scanning position between examinations. 48(25%) of the respondents carry out the same examination always while 51(27%) responded no.32(61%) respondents take short but frequent breaks from scanning while 38(20%) did not take breaks. 39(75%) of sonographers take responsibility to address personal work load while 13(25%) do not address personal work load. Sonographers have good knowledge of the prevention and management of WMSDs, however, general awareness and regular trainings are recommended in order to avoid occurrence.

Keywords: Musculoskeletal, Disorders, Prevention, Management, Radiographers,

Introduction

Work related Musculoskeletal disorders (WMSDs) are the most common work related health problems in the world affecting millions of workers (Kayode and

Adeyekun,2013).WMSDs include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, Joints, Peripheral nerves and supporting blood vessels (Punnet and Wegman, 2004). They are impairments of the bodily structures which are caused or aggravated primarily by the performance of work and by the effects of the immediate environment in which work is carried out. (Takala, 2007). WMSDs have become increasingly common worldwide during the past decades. (Anderson,1999). It is a common cause of work related disability among workers with substantial financial consequences due to workers compensation and medical expenses Anderson, (1999). MSDs have been described as one of the main occupational problems among health workers. (Takala, 2007).WMSDs are responsible for morbidity in many working populations apart from lowering the quality of workers life and reducing the productivity (Sandul and Paramasivan, 2014). WMSDs are considered to be multifactorial that are caused due to interactions between various risk factors, which results in conditions that vary across different occupations (Sandul and Paramasivan, 2014).Health Professionals are also vulnerable to WMSDs during the course of routine work especially those who are in direct contact with the patients (Kayode and Adeyekun, 2013). The dynamics of man's relationship to his work environment has a lot to do with the productivity, output and results obtainable (Egbe *et al.,* 2012).

Scientific evidence associates WMSDs with stresses to various body parts caused by the way certain tasks are performed. The positioning of the body and the type of physical work that must be done to complete a job may cause persistent pain and lead to deterioration of the affected joints, tissues, and muscles. The longer the worker must maintain a fixed or awkward posture, exert force, repeat the same movements, experience vibration, or handle heavy items, the greater the chance that such a disorder will occur. These job-related stresses are referred to as "workplace risk factors," and the scientific literature demonstrates that exposure to these risk factors, particularly in combination, significantly increases an employee's risk of developing a WMSDs. Jobs involving exposure to workplace risk factors appear in all types of industries and in all sizes of facilities.(Lorusso *et al*., 2007).There is prevalence of WMSDs among health workers in Nigeria (Mbada *et al.*,2010).Several epidemiological studies have shown that physical factors such as manual handing, and awkward postures are important determinants of MSDs (Lorusso *et al*., 2007).

Ultrasonography is real time medical imaging of the internal structures of the body for diagnosis of various pathological conditions.it involves the use of transducer (probe) placed on the skin surface after applying an ultrasound gel to create an interphase for better visualization of structures. Due to the wide number of patients scanned per day, this diagnostic modality requires the operator to stand or sit for longer time. Sonography is the application of ultrasound examination for diagnostic purposes.(Mark *et al*., 2015) Musculoskeletal disorders have been extensively studied in nursing profession where it was attributed to manoeuvres during work (Burdorf and Sorock,1997). It has been

reported that various physical risk factors, such as manual handling, continuous repetition of these manoeuvres, awkward frequent bending and twisting, forceful movements and body posture, furniture that does not fit the awkward working postures. Most of the previous studies on WMSDs among health care workers are limited to any of the professional groups such as Nurses, Physiotherapist, Dentists, Doctors and others. Hence, the aim of this study was to determine sonographers knowledge on the prevention and management of WMSDs in Northern Nigeria.

Materials and Methods

This study is a cross- sectional survey conducted among sonographers in various hospitals in North Eastern Nigeria from January to May 2015. Informed consent from the participants were obtained before administering the questionnaires. An 18 item self-administered, pretested, validated and standardized questionnaire was used to collect information from the participants for this study. The questionnaires were validated by two senior Radiographers with at least 10 years cognate experience in ultrasonography. Information sought from the questionnaire included socio demographic data, work setting and location, knowledge on the prevention and management of WMSDs. Copies of the questionnaire were administered to the Sonographers working in University teaching hospitals, Federal Medical Centers, General hospitals and Private hospitals. Inclusion criteria includes all sonographers with at least Bachelor's degree in Radiography and three years' experience in ultrasonography practice, Data was analyzed using SPSS Version 21.0 and the results were presented using descriptive statistics of mean, frequency and percentages.

Results

A total of 52 copies of questionnaire were properly filled and returned from the 56 copies distributed, indicating 92.8% response rate. Table 1 showed that the frequency of males as 37(71.2 %) while that of females 15(28.8%). 45(78.8%) are clinical Radiographers while 7(13.5%) are lecturers in the university. 10(19.2%) of the respondents had less than five years' experience, 32(61.5%) had five to ten years, there were 5 respondents each with ten to fifteen years and greater than fifteen years cognate experience respectively. Location of the respondents is presented as follows 8(15.3%) each from Adamawa, Yobe State and Taraba States respectively, 10(19.2%) from Bauchi State and 18(18%) from Borno State. Maximum age was 49 years, the minimum age was 22years and mean age of 30.1±6.64.

Table 2 shows that respondents Knowledge on the prevention and management of WMSDs. From the table 50% (n=26) of the respondents exercise and stretch before scanning and in between examination. 50% (n=26) do not exercise and stretch before and in between scanning.55.8% (n=29) of the respondents use height adjustable couch during scanning and 44.2% (23) do not use it at all. 73.1% (n=38) of sonographers adjust the scanning arm to the least degree of angle possible by positioning the patient appropriately

while 26.9% (n=14) responded No to the use of adjustable scanning arm to the least degree of angle possible by positioning the patient appropriately. 36.5% (n=19) sonographers responded yes to the use of power grip to hold the transducer while 33% (n=63.5) of sonographers do not use power grip to hold the transducer. 40% (n=76.9) sonographers use finger grip to hold the transducer while 12 (n=23.1%) do not use finger grip. 41 (78.8%) respondents change scanning position between examinations while 11 (21.2%) do not change scanning position between examinations.

Table 3 shows respondents Knowledge on management of WMSDs. 25 (48.1%) of the sonographers carry out the same examination always while 27 (51.9%) responded no (do not carry out the same type of examination always). 20% (n=38.5) angulate scanning monitor to be viewed at 15 degree downward angle while 32 (61.5%) do not angulate scanning monitor to be viewed at 15 degree downward angle. 48 (92.3%) had air conditioner in their ultrasound scanning rooms. 35(67.3%) adjust the ambient light to suitable levels for both examination and report writing. 32 (61.5%) sonographers take short but frequent breaks from scanning whereas 39 (75%) of sonographers take responsibility to address personal work load.

Table 1: Respondents demographic information and their percentages

Predictors	Category	Frequency	Percentage
Age	< 25years	8	15.4
	25 – 35 years	38	73.1
	>35 years	6	11.5
Gender	Male	37	71.2
	Female	15	28.8
Area of Practice	Clinical	45	78.8
	Clinical and Academics	7	13.5
Experience	<5	10	19.2
	5 – 10	32	61.5
	10 – 15	5	9.6
	>15	5	9.6
Location	Adamawa	8	15.3
	Taraba	8	15.3
	Bauchi	10	19.2
	Yobe	8	15.3
	Borno	18	34.6
Age (years)	Mean	30.13	4.81
	Standard deviation	6.6	5.8
	Minimum	22.00	1.00
	Maximum	49.00	30.00

Table 2: Respondents Knowledge of the prevention of WRMSDs

S/n	Questions	Frequency (%)	
1.	Do you exercise and stretch before starting to scan in between examination?	26 (50.0)	26 (50.0)
2.	Do you use a height adjustable couch?	23 (44.2)	29 (55.8)
3.	Do you adjust the scanning arm to the least degree of angle possible by positioning the patient appropriately?	28 (73.1)	14 (26.9)
4.	I use power grip to hold the transducer?	19 (36.5)	33 (63.5)
5.	I use finger grip to hold the transducer?	40 (76.9)	12 (23.1)
6.	Do you change scanning position between examinations (sitting / standing?)	41 (78.8)	11 (21.2)

Table 3: Knowledge of management of WRMSDs

S/n	Questions	Frequency(Percentage)n(%)	
7.	Do you carry out the same type of examination always	25 (48.1)	27 (51.9)
8.	Do you angulated your scanning monitor to be viewed at 15 degree downward angle?	20 (38.5)	32 (61.5)
9.	Do you have air condition in your room	48 (92.3)	4 (7.7)
10.	If yes to question 9 do you adjust the ambient light to suitable levels for both examination and report writing	35 (67.3)	17 (32.7)
11.	Do you take short but frequent breaks from scanning	32 (61.5)	20 (38.5)
12.	Do you take responsibilities to address personal work load issue	39 (75.0)	13 (25.0)

Discussion

Sonographers knowledge on the prevention and management of WMSDs varies across various locations, regions, groups and over national boundaries. Organizational differences in work settings and reports on pain and disorders are adduced for the variation in rates of WMSDs in many studies. The study showed that the male respondents were higher 71.2% (n=37) than the females 28.8% (n=15). This disagrees with a study that reported women predominance but agrees with a Nigerian study which investigated the impact of ultrasonography on occupational stress among radiographers. (Sandul and Paramasivan, 2014, Ugwu *et al.,* 2009). However, the gender pattern in this study is similar to studies from Italy, United states of America and Nigeria showed responses of 76.4%, 80% and 93% respectively (Takala, 2007, Magnavita *et al*. 1999, Kayode and Adeyekun 2013). Minimum age was 22 years while the maximum age was 49 with mean age of 30.1. The age group distribution reveals and work experience reveals that younger age group of 30 years and below with less than five years' experience has a greater chance of developing WMSDs which supports the findings by Cromie *et al*., 2000.

Knowledge of the prevention and management of WRMSDs. Study showed that 26 (50%) of the sonographers exercise and stretch before starting ultrasonography or in between examination. While 26 (50%) do not stretch. This shows that not all the participants understand the implication of taking frequent but short breaks in between scanning period when you have a lot of patients waiting. There is need for awareness among sonographers on the importance of taking short breaks to be enlightened on the knowledge of preventing WMSDs from ultrasound scans. The study revealed that only half of the sonographers are aware that taking frequent but short breaks is important in order to avoid the chances of WRMSDs. Reduced workload and observance of regular breaks in between procedures were recommended as relieving measures in a previous study. (Kayode and Adeyekun, 2013). Studies on sonographers have also linked reduced workload and regular breaks to reduce musculoskeletal symptoms. (Magnavita *et al.*, 1999, *Pike et al*, 1997, Mirk *et al.*, 1999). However, the work of Schoenfeld did not find reduced frequency of scanning to be associated with reduced symptoms among sonographers. (Schoenfeld *et al*., 1999).

The results obtained in our study shows that 23(44.2%) of the sonographers use a high adjustable couch while 29(55.8%) do not use high adjustable couch. 38(73.1%) of the sonographers adjust the scanning arm to the least degree of angle possible by positioning the patient appropriately whereas 14(26.9%) do not. 19(36.5%) respondents use power grip to hold transducer while 33(63.5) do not use power grip, 40(76.9%) use finger grip to hold the transducer.41(78.8%) change scanning position between examinations while 11(21.2%) do not change scanning position between examinations. 25(48.1%) carry out the same examination always while 27(51.9%) do not carry out the same type of examination always. 20(38.5%) of sonographers angulate scanning monitor to be viewed at 15 degree downward angle while 32(61.5%). 48(92.3%) of the respondents had air conditioner in their scanning rooms while 4(7.7%) do not have. 35(67.3%) of the sonographers adjust ambient light to suitable levels for examination and report writing. 39(75%) sonographers take responsibility to address personal workload issue while 13(25%) do not . To manage WMSDs among sonographers, the couch must be adjusted to a level that will be convenient to the sonographers arm. Not complying to these set down rules that has been proven to have empirical evidence can limit the capacity of sonographers to continue working in a physically demanding role. The present study revealed that sonographers have to knowledge of prevention and management of WMSDs, however there is need for continuous awareness among Sonographers

Conclusion

Sonographers in North Eastern Nigeria have knowledge on prevention and management of WMSDs However, Education and training are suggested to improve their knowledge and reduce factors that predispose them

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Conflict of Interest: Nil

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