

PREDICTORS OF MUSCULOSKELETAL DISORDERS AMONG PUBLIC ELDERLY CARE HOME WORKERS IN WEST COAST MALAYSIA

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ABSTRACT

Background: Work related musculoskeletal disorders (WMSD) among elderly care home workers is related to the type of movement and work environment. Frequency and burden of manual handling while assisting elderly residents and domestic tasks contributed to the MSD symptoms over several body parts such as neck, shoulder, forearm, hand, lower back leg and foot. The objectives of this study are to determine the prevalence of MSD among elderly care home worker, associated factors and predictors contribute to MSD symptoms among the workers.

Materials and Methods: A cross sectional study was conducted in eight elderly care home in West Coast Malaysia from February until July 2016. Eight elderly care home was selected. A total of 252 workers were randomly selected based on simple random sampling method. Validated and reliable self-administered questionnaire was used. The dependent variable was worker with MSD symptoms and independent variable were socio demographic factors organizational and factors ergonomic factors. Analysis was done using SPSS Version 22. Chi-square test and logistic regression was used for analysis.

Result: Based on respondents report, prevalence rate of WMSD in the previous 12 months was 50%. Prevalence rate was highest at lower back (33.8%). Twenty three percent (23%) of them needed to get treatment and 15.3% needed to take sick leave due to MSD. Highest prevalence rate of WMSD was among female (56.9%) and assistant nurse (55.6%). The predictors for WMSD were female (AOR=2.0, 95% CI=1.1-3.6) and burden of manual task (AOR=2.2, 95% CI=1.3-4.0).

Conclusion: The prevalence of WMSD was high among the female workers and assistant nurses. Burden of manual handling tasks was an important factor associated with MSD. Hence ergonomic intervention is important to reduce prevalence of WMSD among the workers.

Keywords: Work related musculoskeletal disorders, elderly care home workers, physical demand tasks.

1.0 Introduction

Malaysia's population has increased from 18.26 million in 1990 to 29.9 million in 2014 and population age at 65 years old also increased from 4% in 1990 to 6% in 2014 (world bank, 2015). Therefore, Malaysia is becoming an aging nation in 2030 (Ruhani Zawawi, 2013). This aging population is vulnerable to degenerative disease, stroke, and cancer, then lead them to disability. Meanwhile, workers in the geriatric home suffered from work related musculoskeletal disorders (WMSD) as they are dealing with the elderly people and most of them are dependent on their daily activities. Physical demanding occupation as it involves manual handling tasks such as lift or transfer the elderly from bed or wheel chair without help, bath the elderly, grooming or dressing the elderly, push the wheelchair, support elderly while walking and bowel management (Kim et al, 2010 & Feng et al, 2007). The study of physical demand workloads and the risk of musculoskeletal disorders in care home in the USA showed that 56% prevalence of physically demanding work among care home worker (Kim et al, 2010).

Feng et al (2007) in the study of prevalence and risk factors for different measure of low back pain among female nursing aides in Taiwanese nursing home found that 66% of the respondent had low back pain lasting for at least one day. The risk factors contribute to low back pain in this study were manual transfer the elderly between bed or wheelchair, perceived physical exertion and psychological demand. In the study of prevalence and potential determinants of musculoskeletal disease symptoms among care workers in long term care facilities in South Korea by Park et al (2014) showed that 34.7% of respondents had pain in four or more parts. MSD symptoms in lower back and legs present in 46% of them. Majority of the care activities were performed every day and most difficult activities were bathing (30.9%) and also changing position (18.9%).

Musculoskeletal disorders among workers in the elderly care home also related to physically workload demand. A cross-sectional study among care worker in long-term care facilities in South Korea 2010 confirmed that care activities by elderly care home worker involved repetitive movement and uncomfortable. The task included personal hygiene, moving, and assistance with urination and defecation for the patient (Park et al, 2014). A study discovered WMSD occurred among nurses due to work condition was a risky job as working in the same positions for long periods, lifting or transferring dependent patients and treating an excessive number of patients in one day were (Tinubu et al, 2010).

Musculoskeletal disorders among workers can have a bad impacts toward organization itself and also the workers. There were employees on sick leave due to a diagnosis of the musculoskeletal system. The study of self-reported and tested function in health care workers with musculoskeletal disorders on full, partial or not on sick leave showed workers with MSD which was getting partial sick leave need a longer duration of leave compare to the worker with full sick leave (Ask et al, 2014). Some of the workers come across with disability consequence of musculoskeletal disorders during working. Musculoskeletal is the most prevalent conditions reported as a cause of participation or activity limitation with 46% of adult Canadian had activity limitation due to musculoskeletal disorder (Goodridge, D. et al, 2011).

2.0 Materials and Methods

2.1 Study design and study population

The study was conducted in elderly care homes in West Coast Malaysia. There are only 8 elderly care homes in West Coast Malaysia and all 8 care homes included in study population. There are total 387 staff including physiotherapist, occupational therapist, staff nurse, assistant nurse and assistant welfare officer. Cross sectional study was conducted from February until July 2016. The 252 staffs involved were randomly selected. The staffs included in the study was permanent or temporary who worked more than 12 months duration and directly manage the residents and not diagnosed by doctor having rheumatological diseases, spine disease or with MSD symptoms due to trauma or accident.

2.2 Study instrument and data collection

For MSD symptoms, modified Nordic Questionnaire was used. It was validated and standardized questionnaire by Kuorinka et al (1987). The human body divided into 6 regions (neck, shoulder, arm/elbow, wrist, lower back and leg/foot). The questionnaire consists of a few sections. Namely socio-demographic factors, individual, work condition, musculoskeletal disorder symptoms, history of seeking treatment and sick leave due to WMSD, ergonomic factor is including frequency, burden of the task involving manual handling tasks and organization factor. The questionnaire determined the occurrence of musculoskeletal symptoms within 12 months and in the last 7 days.

The pre-test questionnaire was done. The validity and reliability of questionnaire was carried out for face validity, content validity and internal consistency of questionnaire. The cronbach alpha value were more than 0.837. For BMI measurement, the instruments used in this study were Secca weighing scale to measure the weight and Stadiometer for height measurement. A self-administered questionnaire was given to the workers in care home. They were given one week to complete the questionnaire. Employer in the organization and were interviewed on ergonomic devices availability, on certified sick leaves and any verification done before the sick leave been recorded. The BMI was measured by a trained nurse in each care home on correct steps of measuring weight and height. The musculoskeletal disorders was defined as one or more body part having pain, numbness, tingling, aching, stiffness, or burning. Pain continued for at least a few hours during the period for the past 12 months then asked whether they have one or more following measurements, the intensity of pain is the moderate pain on average based on 5 point pain scale, medical seeking treatment due to MSD symptoms either visit doctor or physiotherapist and sick leave due to MSD symptoms.

2.3 Data analysis

Data was analysed using SPSS Version 22. Descriptive statistics summarized variables. All independent variables were converted into categorical. Chi-square test was used to measure associations between two categorical independent and dependent variables. Binary logistic regression analysis was used to measure the predictors of MSD among workers. All hypotheses tests were two-sided and level of significance α was set at 0.05.

3.0 Result

3.1 Response rate

In this study, 252 self-administered questionnaires were distributed among eight elderly care home workers in West Coast Malaysia. Received 216 responses, analysed and achieved minimal numbers of sample size which is 210 respondents. Therefore the response rate was 86.7%.

3.2 Socio demographic factors and organizational factors of respondents in elderly care home

Table1: Socio-demographic factors and organizational factors of respondents

Socio demographic factors	Frequency (n)	Percentage (%)	Median (IQR)
Age (years)			33(14)
<34	127	58.8	
35-44	41	19.0	
>44	48	22.2	
Gender			
Male	100	46.3	
Female	116	53.7	
Years of service			7.00 (8)
≥ 10 years	40	18.5	
Job title			
Occupational therapist	3	1.4	
Physiotherapist	6	2.8	
Staff nurses	15	6.9	
Assistant nurses	160	74.1	
Assistant welfare officer	32	14.8	
Organizational factors			
Had training (< 5 years)	196	90.7	
Doing work shift	176	81.5	
Duration of work (> 40 hours per week)	141	65.3	
Adequate ergonomic facilities (≥3 devices)	161	74.5	3(2)

Table 1 shows the socio-demographic factors and organizational factors of the elderly care home workers. Age distribution of respondents was between 22-59 years old. The median age was 33 years old, interquartile range was 14 and majority of the respondents were below 34 years old (58.8%). For service period, 18.7 % of the workers have been working for more than ten (10) years. Majority were assistant nurse (74.1%).

For organizational factors, 90.7% attended training of elderly care handling every 5 years of their service period and 71.3% attended training every year. Majority of respondents doing work shift (81.5%) and 65.3% worked more than 40 hours per week. There were six basic devices of handling elderly residents. More than half (74.5%) of the respondents reported that the devices provided in their care home were adequate.

3.3 Prevalence of work related musculoskeletal disorders (WMSD) among elderly care home worker.

Table 2: Prevalence of work related musculoskeletal disorders (WMSD) among elderly care home worker

No	Factor	Category	Frequency (n=216)	Percentage (%)
1	WMSD at any part of body		108	50
2	WMSD at different body part (Last 12 months)	Neck Shoulder Elbow/arm Hand/wrist Lower back Foot/leg	37 44 40 43 73 61	17.1 20.4 18.5 19.9 33.8 28.2
3	WMSD at different body part (Last 7 days)	Neck Shoulder Elbow/arm Hand/wrist Lower back Foot/leg	33 47 36 38 68 62	15.3 21.8 16.7 17.6 31.5 28.7
4	WMSD according to job title	Occupational therapist physiotherapist Staff Nurses Assistant nurses Assistant welfare officer	1 3 3 89 12	33.3 50.0 20.0 55.6 37.5
5	Prevalence of seeking treatment		50	23.1
6	Prevalence of sick leave		33	15.3

Prevalence of work-related musculoskeletal disorders (WMSD) among respondents are show in table 2. Half (50%) of the respondents met the definition of WMSD in at least one part of the body. Highest WMSD for last 12 months was at lower back (33.8%) and followed by foot/leg. Lower back was the highest WMSD prevalence rate for last seven (7) days (31.5%) and followed by foot/leg (28.7%). Assistant nurse appeared at the highest rate of workers experienced MSD due to work activities (55.6%) while staff nurses appeared as the lowest prevalence rate (20.0 %) among other job titles. The percentage of respondents undergoing treatment for WMSD were 23.1% and 15.3% of respondents with the symptom of MSD took sick leave.

3.4 Ergonomic factors (physical demand tasks) of respondents in elderly care home

3.4.1 Burden of manual handling tasks

Majority of manual handling tasks were difficult to perform as shown in Table 3. Lift or transfer resident from wheelchair or bed without help and support client while falling considered difficult tasks by respondents.

Table 3: Burden of manual handling tasks (N=216)

Direct care of client (manual handling)	Burden of performing task, n (%)				
	Not difficult (1)	Slight difficult (2)	Moderate difficult (3)	Very difficult (4)	Total
Score					
1. Lift or transfer resident from wheelchair without help	42 (19.4)	80 (37)	58 (26.9)	36 (16.7)	216 (100)
2. Lift or transfer resident from bed without help	45 (20.8)	53 (24.5)	62 (28.7)	56 (25.9)	216 (100)
3. Bath the client	100 (46.3)	50 (23.1)	39 (18.1)	27 (12.5)	216 (100)
4. Push the wheelchair	118 (54.6)	39 (18.1)	35 (16.20)	24 (11.1)	216 (100)
5. Dressing client	123 (56.9)	43 (19.9)	28 (13.0)	22 (10.2)	216 (100)
6. Support client while walking	111 (51.4)	41 (19.0)	41 (19.0)	23 (10.6)	216 (100)
7. Support client while falling	64 (29.6)	63 (29.2)	49 (22.7)	40 (18.5)	216 (100)

3.5 Association between socio-demographic and organizational factors with WMSD

Table 5: Association between socio-demographic and organizational factors with WMSD (N=216)

Socio demographic	WMSD prevalence		Organizational factors	WMSD prevalence	
	n (%)			n (%)	
Age (years)			Training (< 5 years)		
≤34	66 (52)	$X^2=1.475$	Below 5 years	100 (51.0)	$X^2=0.882$
35-44	17(58.5)	$P=0.478$	5 years & above	8 (40.0)	$P=0.348$
≥45	23(47.9)				
Gender			Work shift		
Male	42 (42.0)	$X^2=4.769$	No	18 (45.0)	$X^2=0.491$
Female	50 (56.9)	$P=0.029$	Yes	90 (51.1)	$P=0.484$
Years of service			Duration of work		
< 10 years	73 (47.4)	$X^2=1.448$	≤ 40 hours	32 (42.7)	$X^2=2.471$
≥ 10 years	35 (56.5)	$P=0.229$	> 40 hours	76 (53.9)	$P=0.116$
Job title			Ergonomic facilities		
Non nurses	15 (37.5)	$X^2=3.068$	Not adequate	26 (47.3)	$X^2=0.220$
Nurses	93 (52.8)	$P=0.08$	Adequate	82(50.9)	$P=0.639$

p significant at < 0.05

Association of WMSD and socio-demographic and organizational factors among respondents are shown in Table 5. Staff nurse and assistant nurse were included in the nurses group while occupational therapist, physiotherapist and assistant welfare were included in non-nurses group. Gender significantly associated with WMSD ($X^2=4.79$, $p=0.029$).

3.6 Association of burden of manual handling tasks and WMSD

Table 6: Association of burden of manual handling tasks and WMSD (N=216)

Burden of manual handling tasks	WMSD prevalence		
	Yes n (%)	No n (%)	
1. Lift/ transfer resident from wheelchair without help	14 (33.3)	28(66.7)	$X^2=5.793$
Not difficult	94 (54.0)	80(46.0)	P=0.016
difficult			
2. Lift/ transfer resident from bed without help	13 (28.9)	32(71.1)	$X^2=10.133$
Not difficult	95 (55.6)	76(44.4)	P=0.001
difficult			
3. Bath client	40 (40.0)	60(60.0)	$X^2=7.448$
Not difficult	68 (58.6)	48(41.4)	P=0.006
difficult			
4. Push wheelchair	54 (45.8)	64(54.2)	$X^2=1.868$
Not difficult	54 (55.1)	44(44.9)	$P=0.172$
difficult			
5. Dressing client	56 (45.5)	67(54.5)	$X^2=2.285$
Not difficult	56 (45.5)	41(44.1)	$P=0.131$
difficult			
6. Support client while walking	49 (44.1)	62(55.9)	$X^2=3.132$
Not difficult	59 (56.2)	46(43.8)	$P=0.077$
difficult			
7. Support client while falling	24 (37.5)	40(62.5)	$X^2=5.684$
Not difficult	84 (55.3)	68(44.7)	P=0.017
difficult			

p significant at < 0.05

Table 6 shows the association of burden of manual handling tasks and WMSD. For the burden of manual handling tasks, seven (7) questions were asked to the respondents. The score was ranged from 1 to 4 for each question. For each task if the respondents give scale value at 2 and above in the question of burden of manual handling tasks, the task was considered as difficult to perform and gave burden to respondents. Respondent who perceived that the manual handling tasks was difficult had higher prevalence of WMSD. Manual handling tasks that difficult to performed by respondents and significantly associated with WMSD were lift/ transfer resident from bed without help, bath client and support client while falling.

3.8 Predictors of WMSD in elderly care home

Table 7: Predictor of general WMSD among respondents

Variables	B	S.E.	p value	OR	95% CI	
					Lower	Upper
Gender						
Male				1		
Female	0.701	0.294	0.017	2.0	1.1	3.6

Burden manual handling task						
Not difficult					1	
Difficult	0.800	0.316	0.006	2.2	1.3	4.0

B coefficient, S.E=standard error, *p* significant at < 0.05, OR= odd ratio, CI= confident interval

Binary logistic regression was used to analyse the predictors of WMSD among worker in elderly care home. The analysis revealed that female respondents was 2 times higher than male respondents to develop MSD (AOR = 2.0, 95% CI = 1.1- 3.6). Respondents who perceived that they performed difficult manual handling tasks was 2 times higher to develop MSD as compared to respondents who perceived that their manual tasks was not difficult (AOR =2.2, 95% CI = 1.3-4.0).

4.0 Discussion

The purpose of this study is to determine the prevalence of musculoskeletal disorders symptoms (MSD) among elderly care home workers in West Coast Malaysia. This study comprises of 81% nurses and 18.5% non-nurses. Out of 216 participants, 50% had symptoms of MSD in the past 1 year. In the previous study, Nur Azma et al, 2014 reported 73.24% of the nurses had MSD symptoms while Park et al, 2014 documented 88.7% of geriatric long-term care workers were having MSD symptoms related to work. The prevalence of MSD was relatively low in this study compared to other studies because in previous studies their target was on those who were had regular contact with the patient but in this study, we targeted to all staff that had contact with elderly resident but regardless of their frequency. In this study, the twelve-month prevalence of MSD was highest in the lower back (33.8 %) followed by foot/leg (28.2%) and shoulder (20.4%). Lower back area was among the highest prevalence of MSD last seven days (31.5%) followed by foot/leg (28.7%) and shoulder (21.8%). This finding was in line with other studies such as Smith et al (2005), Hou, J.Y. et al (2006) and Reed et al (2014) which the lower back pain was the highest prevalence area of WMSD.

Among all respondents in this study, assistant nurses were the most affected group to develop MSD due to work activities (55.6%). In this study population, the assistant nurse had spent more time in handling elderly resident such as lifting, transferring and assisting in dressing or bath the dependent resident. They also need to perform other tasks such as serving meal, laundry, cleaning room and toilet. This is explained on why most of the assistant nurses are prone to develop MSD compare to another job title. Our result was congruent with another study of musculoskeletal injury resulting from patient handling tasks among hospital worker done Pompeii et al (2009) and Smith et al (2003) where they also found that assistant nurse works were associated with MSD in multiple body regions.

In our study, out of 216 respondents, 50 (23.1%) workers who had MSD symptoms need to seek treatment either from doctor or physiotherapist. The percentage of seeking treatment is relatively low compared to another study because many of the respondents only had mild pain and it resolved by its self within few days. However seeking treatment due to MSD is important to be considered as it is the indicator that WMSD negatively gives impact to the worker and affecting the quality of life of the employee (Munabi et al, 2014). Park et al (2014) and Feng et al (2007) also found that female nurses' aides need to seek treatment for low back pain.

A further consequence of WMSD to workers was the need for taking sick leave. Many studies found that taking sick leave associated with WMSD. In the study of Hou, J.Y. et al (2006) found that musculoskeletal pain symptoms were associated with taking sick leave at lower back with adjusted OR=2.54, 95%CI (1.84-3.52), wrists with adjusted OR=2.36,95%CI (1.60-3.42) and ankles/feet with adjusted OR=1.83,95%CI (1.12-2.87). Taghinejad et al (2016) also showed 22.2% of the nurses had one to seven working days during the past year due to MSD related taking sick leaves. It is documented that only 15.3% of respondent required taking sick leave were related with MSD. The finding in the previous study showed the prevalence of taking sick leave due to MSD was relatively high because they focused on nurses, in which the nurses in the hospital had regular contact with patient, while in this study other workers such as assistant welfare officers were not only exposed with manual handling of elderly residents but also involve in administrative task. The frequency of manual handling task performed by staff nurses also infrequent compared to assistant nurses. Staff nurses concentrated on serving medication, dressing the wound and sometimes bring residents for follow-up in clinic or hospital. Therefore assistant welfare officer and staff nurses had less prevalence of taking sick leave due to WMSD in our study.

In socio demographic factors, the majority of the studies found older age were associated with WMSD as in the study of Heiden et al (2013), Abedini et al(2013), Nur Azma et al (2014), Pellisier et al (2014), Jellad et al (2014) and Reed et al (2014). However, it was found that WMSD was high among respondents below age 33 years old (52.1%) but there was no association of age and WMSD ($X^2= 0.4$, $p=0.493$). The reason is because the majority of our respondents were at the younger age with the median age was 33 years old and furthermore many elder staffs were assigned to do lighter work or administrative tasks.

Gender was the only socio demographic factor that significantly associated with WMSD. The prevalence rate of WMSD was higher among female (56.9%) compared to male (42.0%) and $p=0.029$. The female prevalence rate was high most probably due to housework and taking care of children at home where women usually perform house chores for a longer time compared to men (Choi et al, 2013 and Munabi et al,2014). Prevalence of WMSD was higher among respondents worked more than 10 years (56.5%) but no significant association between duration of work and WMSD in this study. This is because as the longer they work in this field, the staff are more experienced in handling elderly resident as supported by Yitayeh et al (2015). This finding was same with the study of Wong et al (2010).

In this present study found that MSD occurred in all types of occupational group and nurses had the highest prevalence of MSD among the staff (55.6%). This finding was similar with another study which was done by Wong et al (2010) where the low back pain was associated with professional categories ($p=0.01$) and nurses among the highest prevalence of low back pain (19.0%). However, in this study found that job title was not associated with WMSD ($p=0.08$). In this study population, not only nurses deal directly with elderly but also by other staff. Other types of job titles such as the physiotherapist, occupational therapist and assistant welfare officer also had contact with elderly. Every day they have their own schedule regarding their activities with elderly resident but less frequent compared to nurses.

In term of organizational factors, the results in this study showed there was no significant association between WMSD and shift work ($p=0.484$). However in the study done by Abedini et al (2013), nurses who had shift work were seven times to develop MSD as compared to

nurses that work in the day time (OR=7.11, 95%CI 2.75–18.37), p value<0.001). This is not congruent in our study and it is most probably there was good teamwork per shift to perform patient care or patient lifting activities. As in another study documented teamwork is important in order to accomplish the patient lift and care tasks safely by applying good manual handling technique (Waters et al, 2009). Other than that Abedini et al (2013) found that weekly working hour was not associate with WMSD. This is in line with our study which is the duration of work more than 40 hours per week was not associate with WMSD ($p=0.116$).

Our study showed that availability of ergonomic devices was not associated with WMSD ($p=0.639$). Apart from the training of manual handling techniques, ergonomic devices also very important in order to reduce the prevalence of WMSD among worker. Waters et al (2009) also documented that combination of equipment and technology with safe manual handling techniques is needed for safe patient handling and movement. In this present study all elderly care home provided basic devices for lift or transfer the elderly residents such as sheet or transfer board, adjustable wheelchair, adjustable bed, back belt and rolling shower for bath. However, none of the care home had provided the mechanical lifting equipment for the worker in handling the residents. Compliance among workers in using basic ergonomic device also in doubt. This is the reason why the prevalence of MSD in our study still high with half of the respondents (50.9%) had MSD among who claimed that the ergonomic devices were adequate at their care home. Therefore monitoring from upper level in term of using ergonomic devices while assisting elderly very important.

It was well established that training is very important in order to overcome the staff from developing work related musculoskeletal disorders disease. Several studies proof the role of training manual handling activities as mentioned in the study of Dockrell et al (2011) and D'Arcy et al (2012). However, in this study the finding was different, the frequency of staff that had training at least within 5 years was 90.7%. Seventy-one point three percent (71.3%) respondent underwent training once a year, yet the prevalence of WMSD still high among respondent who had training within every 5 years of working period which was 51% but statistically training was not associated with WMSD ($p=0.348$). Further investigation need to be done as not only the frequency of training is important but also the information regarding manual handling technique given is really understood by staff or not. This is supported by Dockrell et al (2011) found that the majority of injury claims was due to system failure either the training was not updated or not provided at all.

For ergonomic factors, the manual handling tasks found to be give burden and difficult to perform by respondents and associated with WMSD were lift/ transfer resident from bed without help, bath client and support client while falling. The burden of manual handling tasks is not equal among staff in elderly care home due to some have more dependent residents compared to other care homes. However, none of the mechanical ergonomic devices provided in those care home. This is most probably the workers not apply proper manual handling technique due to time-consuming to practice good manual handling technique. Therefore awareness among workers is really important to reduce the prevalence of WMSD in elderly care home. They also sometimes had short of staff to perform proper manual handling technique, and they prone to transfer elderly resident alone. Another study in line with this was Feng et al (2007). The study showed that increase by one point of perceived physical exertion was significantly associated with intensity LBP (OR=1.99) and taking sick leave (OR= 1.48).

Inferential statistic showed there was significant association between WMSD and gender. The female worker was two times higher to develop WMSD compare to the male worker (OR=2.0, 95 % CI=1.1-3.9, p=0.017). Female are prone to develop WMSD due to strong hormonal changes during pregnancy and menopause. Hormonal changes will increase body fluid retention and physiological changes. These changes will contribute to differences in muscle strength and anthropometry such as weight and height (Pamela M.B, 2012). The burden of manual handling tasks also significantly associated with WMSD where the worker who perceived they performed difficult manual tasks was two times higher to develop MSD (OR=2.2, 95%CI=1.3-4.0, p=0.006). Smith et al (2003) also showed that the tasks perform in the nursing home is physical demand task and associate with MSD. The task were moving patient with five times higher to develop shoulder MSD (OR=5.1, 95% CI=1.7-17.3, p=0.004), changing clothes was associated with arm MSD (OR=30, 95% CI=5.5–564.0, p=0.001) and moving patient was associated with lower back MSD (OR= 10.3, 95% CI=2.3–81.0, p=0.008). Thus, these results explained with regards to nature of work in elderly care home involve physical demand tasks.

5.0 Conclusion and recommendation

The prevalence of WMSD was high among the female workers and assistant nurses. Burden of manual handling task was an important factors associated with MSD. Hence training and ergonomic intervention is important to reduce prevalence of WMSD among the workers.

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Declaration

The authors declare that:

- i. The article mentioned above has not been published or submitted for publication in any other journal.
- ii. We also declare that the authorship of this article will not be contested by anyone whose name is not listed here.
- iii. We deck that we contributed significantly towards the research study ie, conception, design, analysis and interpretation of data and to drafting of the article or revising it critically for important intellectual content.
- iv. There is no conflict of interest on this article

Authors' contribution

The 1st author carried out the research, analysed the data and prepared draft of manuscript, while the 2nd supervised the research, data analysis and, edited draft and final of manuscript.

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