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Prevalence of work related musculoskeletal disorders among Physiotherapists in Sabah: A cross-sectional study

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Abstract

Objective: The study is aimed to find out the prevalence work-related musculoskeletal disorders among physiotherapists in Sabah.

Background: Physiotherapists are known to be prone to Work-Related musculoskeletal disorders (WRMDs) but its prevalence among physiotherapists in Sabah (East) Malaysia has not been reported. This study investigated the prevalence and work factors of WRMDs among physiotherapists in Sabah.

Design: A cross-sectional survey.

Methods: A survey was administered to physiotherapists in different parts of Sabah. 100 copies of the questionnaire were distributed to different Hospital or Rehabilitation centres in Sabah.

Result: A 12-month prevalence of WRMDs among physiotherapists in Sabah was 70 respondents with odds ratio 2.333333= 70%. Injuries have been occurred mostly in low back region with odds ratio 0.785714= 44%, followed by the neck with odds ratio 0.25= 20.0% from 20 respondents. The highest risk factors in causing the injury were working in the same position for long periods of time with odds ratio 4.833333= 82.9% from 58 respondents, and 4.384615= 81.4% from 57 respondents by lifting or transferring dependent patients.

Conclusion: According to the results of this study, the rate of WRMDs among physiotherapists in Sabah has been found to be high due to their work factors. Respondents felt that a change in work habits was required in order to decrease the risk of another injury.

Keywords: Physiotherapist in Sabah, WRMDs questionnaire etc.

Introduction

Physical therapist or physiotherapist (sometimes abbreviated to PT) is a health care profession primarily concerned with the remediation of impairments and disabilities and the promotion of mobility, functional ability, quality of life and movement potential through examination, evaluation, diagnosis and physical intervention. In addition to clinical practice, other activities encompassed in the physical therapy profession include research, education, consultation, and administration. Many physical therapists experience work-related musculoskeletal disorders (WMSDs). Investigators in studies of physical therapists in Europe, North America and Australia² used different definitions to describe WMSDs and reported a variety of prevalence's for musculoskeletal disorders. For example, investigators in a British study of 212 physical therapists reported a 12-month prevalence of low back pain (LBP), which was defined as "any intermittent or constant pain in any area of the back for three or more days" of 38%. A lifetime prevalence of LBP, which was defined as "pain below T10 and the lowest ribs which lasted three or more days," of 29% was reported in a study of 500 Californian therapists. American study of all graduates of a particular physical therapy program, Bork *et al*^[1] defined LBP as "job-related ache, pain, discomfort, and so on" reported an annual prevalence of 45%. In an Australian study of 536 therapists, Cromie *et al*^[2] define LBP as "job-related ache, pain, etc" and reported a prevalence of 62.5%. The researchers in both of these more recent studies also examined the annual prevalence of WMSDs in body areas other than the low back, and they reported WMSDs in the neck (24.7% and 47.6% for Bork *et al*^[1] and Cromie *et al*^[2], respectively), shoulders (18.9% and 22.9%), upper back (28.7% and 41%), wrists and hands (29.6% and 21.8%), and knees (10.9% and 11.2%). The Australian researchers also reported an annual prevalence of thumb pain of 33.6%.

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Materials and Methods

Study Design: This research is conducted as a cross-sectional survey.

Study Settings: Participants are taken from the different private or government Hospitals and centers which located in Sabah (East) Malaysia, whom are physiotherapist including male and female with the age between 22 – 55 years old. The study was conducted by distributing 100 questionnaires to every Hospital or centers in Sabah.

Sampling method: purposive sampling

Sampling size: N=100

Study location: SABAH (EAST MALAYSIA)

Study sample: Aged 22 to 55 years

Inclusion Criteria

- Clinical Physiotherapists
- Age 22 and 55 years
- Both male and female clinical physiotherapist

Exclusion Criteria

- Subjects who were not willing to participate
- Subjects who cannot comprehend
- Neurological condition and rheumatoid disease
- Physical therapist with less than 12 months of experience

Procedure

The surveys conducted on Clinical Physiotherapist who are

working in Sabah (East Malaysia). Standardized Nordic Questionnaires were used. The survey consists of 26 questions with Section A and Section B. in Section A comprise of personal details where a Section B consists working areas.

Data Analysis

Statistical Analysis

(ODD RATIO)

$$\pi = \frac{\text{Frequency}}{N}$$

$$\Sigma = \frac{\pi}{(1 - \pi)}$$

π = number of sample size

Σ = odds ratio

- The results were presented through frequency counts percentage and odds ratio.
- Every answers in each questions were calculated using odds ratio formula and find out the total percentage.

Socio-demographic characteristics of participants

Characteristics	
Age (years) (n=100)	
□ Mean (SD)	28.02 (5.9)
□ Range	22 - 51
Height (m) (n = 100)	
□ Mean (SD)	1.6 (0.07)
□ Range	1.41 - 1.78
Weight (Kg) (n = 100)	
□ Mean (SD)	58.79 (12.14)
□ Range	41 - 92
BMI* (kg/m2) (n = 100)	
□ Mean (SD)	22.9 (4.18)
□ Range	16.42 - 37.32
Years of PT Experiences (Years) (n = 100)	
□ Mean (SD)	4.46 (4.44)
□ Range	1 - 27
Gender (n = 100)	
□ Female	69 (69%)
□ Male	31 (13%)
Work Status (n = 100)	
□ Full Time	100 (100%)
□ Part Time	-
Work Setting (n = 100)	
· Tertiary	6 (6%)
· Secondary	92 (92%)
· No Response	2 (2%)
Postgraduate Training (n = 100)	
□ Yes	-
□ No	100 (100%)
Ergonomic Training (n = 100)	
□ Yes	92 (92%)
□ No	8 (8%)

12-month prevalence by body parts.

Body areas	(n)	(%)
Low Back	44	44%
Neck	20	20%
Upper Back	14	14%
Knees	11	11%
Shoulders	8	8%
Wrists/Hands	5	5%
Ankles/Feet	3	3%
Thumbs	2	2%
Hips/Thighs	1	1%
Elbow/Forearm	-	0

The table 1 shows that the 12-month prevalence by body parts among physiotherapists in Sabah, low back area was the most common site of disorders (44%) while the Hips/thighs joint (1%) was the least affected body part and (0%) for elbow/forearm joint.

Prevalence of WRMDs according to demographic characteristics

Characteristics	WRMD	No WRMD
	n (%)	n (%)
Age Group		
< 30	58 (58)	22 (22)
>30	12 (12)	8 (8)
BMI Group		
< 20	16 (16)	7 (7)
20-25	36 (36)	19 (19)
25-30	14 (14)	2 (2)
> 30	4 (4)	2 (2)
Years of experience (yrs.)		
1-5	52 (52)	21 (21)
6 -15	13 (13)	9 (9)
> 16	5 (5)	-
Gender		
Female	50 (50)	19 (19)
Male	20 (20)	11 (11)
Work Status		
Full Time	70 (70)	30 (30)
Part Time	-	-
Work Setting		
Tertiary	3 (3)	1 (1)
Secondary	67 (67)	29 (29)
Ergonomic Training		
Yes	62 (62)	26 (26)
No	8 (8)	4 (4)
Postgraduate Training		
Yes	1 (1)	-
No	69 (69)	30 (30)

Work Factors that physiotherapist identified as contributors to WRMDs

Risks	Number of Respondents	(%)
Working in the same position for long periods (standing, bend over, sitting, etc)	58/70	(82.9)
Lifting or transferring dependent patients	57/70	(81.4)
Bending or twisting your back in an awkward way	54/70	(77.1)
Treating a large number of patients in one day	52/70	(74.3)
performing manual orthopaedic techniques (joint or soft tissue mobilization)	48/70	(68.6)
Carrying, lifting or moving heavy materials or equipment	45/70	(64.3)
Working in awkward or cramped positions	43/70	(61.4)
Continuing to work when injured or hurt	43/70	((61.4)
Working at or near your physical limits	42/70	(60)
Work scheduling (over time, irregular shift, length of workday)	41/70	(58.6)
Reaching or working away from your body	39/70	(55.7)
Performing the same task over and over	38/70	(54.3)
Not enough rest breaks during the day	38/70	(54.3)
Inadequate training in injury prevention	37/70	(52.9)
Assisting patient during gait activities	33/70	(47.1)
Working with confused or agitated patients	28/70	(40)
Unanticipated sudden movement or falls by patients	17/70	(24.3)

Coping strategies used by physiotherapists with WRMDs.

Strategies	Percentages		
	Almost always	Sometimes	Almost Never
	Number (%)	Number (%)	Number (%)
I modify patient's position/my position	44/70 (62.9)	26/70 (37.1)	0/70 (0)
I adjust plinth/bed height before treating a patient	43/70 (61.4)	22/70 (31.4)	5/70 (10)
I Get someone else to help me handle a heavy patient	34/70 (48.6)	29/70 (41.4)	7/70 (10)
I select techniques that will not aggravate or provoke my discomfort	27/70 (38.6)	38/70 (54.3)	5/70 (10)
I use electrotherapy instead of manual techniques to avoid stressing an injury	24/70 (34.3)	33/70 (47.1)	14/70 (20)
I use different part of my body to administer a manual technique	23/70 (32.9)	39/70 (55.7)	8/70 (11.4)
I stop a treatment if it causes or aggravate my discomfort	21/70 (30)	26/70 (37.1)	23/70 (32.9)
I pause regularly so I can stretch and change posture	20/70 (28.6)	21/70 (30)	8/70 (11.4)
I warm up and stretch before performing a manual techniques	13/70 (18.6)	37/70 (52.9)	20/70 (28.6)

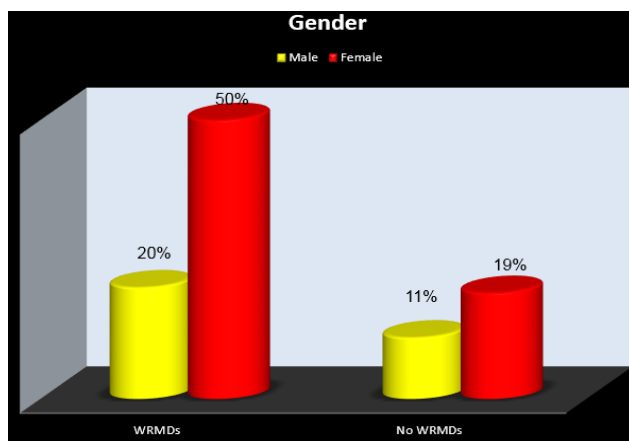
Result: The 100 respondents included (70) 70% females and (30) 30% males had a mean age of 28.02 ± 5.9 years (range, 22 – 55). Total response rate was 50% for women, 22% for male in WRMDs. No WRMDs 19% for female and 11% for male. General information about the group.

Age group participated in the study



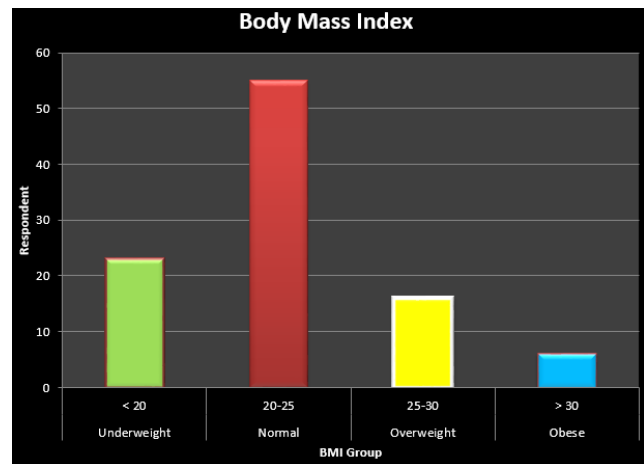
above shows that WRMDs related to age of participants. 45% (n=45) majority of the respondents were in the age range between 22 -25 years old with odd ratio $0.818182 = 45\%$ from the 45 physiotherapists. Followed by age range 26-30 years old 34% (n=34) with odd ratio $0.515152 = 34\%$, 31-35 years old with odd ratio $0.123596 = 11$, 36-40 years old with odd ratio $0.06383 = 6\%$, between 46-50 and 51-55 years old with odd ratio $0.020408 = 2\%$ and 41-50 years old with odd ratio $0 = 0\%$.

Gender group participated in the study*



above shows that there are more female than male physiotherapists and categorized into WRMDs and no WRMDs. In WRMDs among physiotherapists, there were fifty percentages are among female with odd ratio $1 = 50\%$ and twenty two percentages are among male with odd ratio $0.282051 = 22\%$. In no WRMDs among physiotherapists, odd ratio $0.234568 = 19\%$ are among female and $0.123596 = 11\%$ are among male. Table 4.2 shows the detailed about age of the respondents.

Body Mass Index

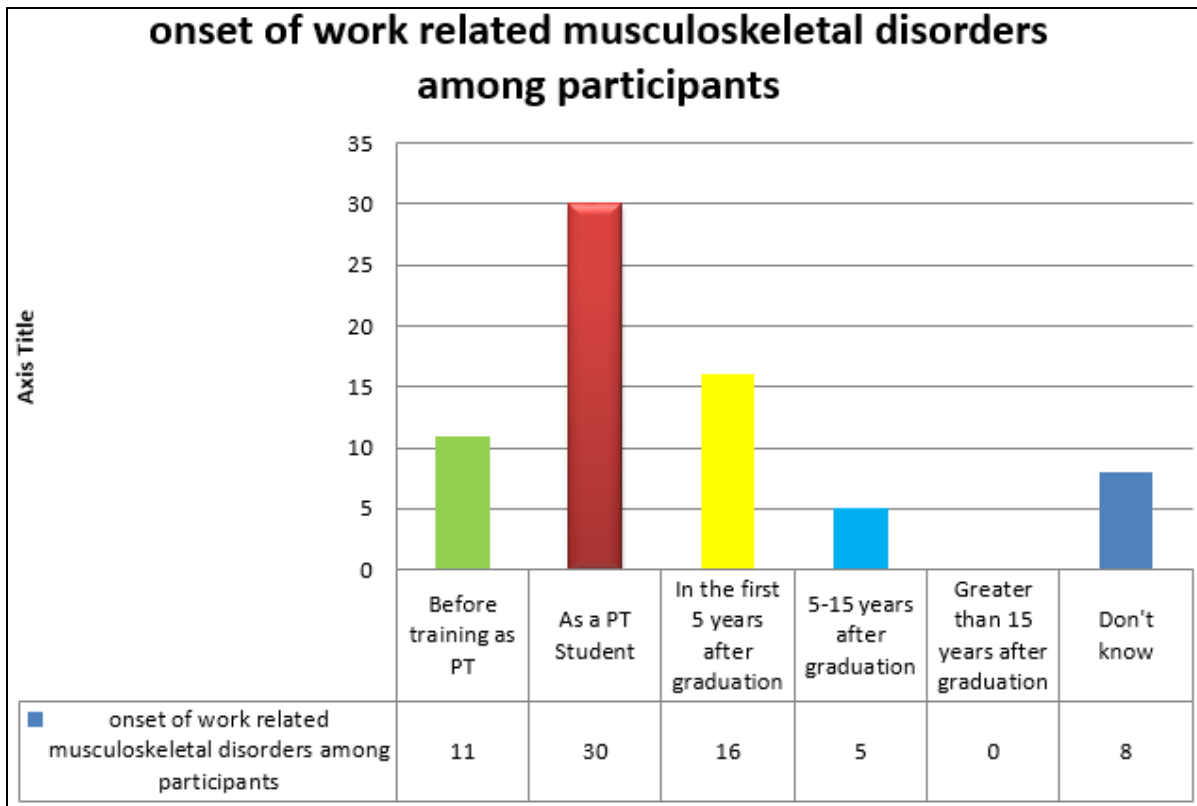


Body mass index (BMI) of 22.9 ± 4.18 kg/m² between the ranges $16.42 - 37.32$ (kg/m²). The majority of the respondents were in the normal BMI category (kg/m²) $55\% (n=55)$ with odd ratio $1.222222 = 55\%$, followed by underweight category $23\% (n=23)$ with odd ratio $0.298701 = 23\%$, overweight category $16\% (n=16)$ with odd ratio $0.190476 = 16\%$ and obese category $6\% (n=6)$ are the lowest with odd ratio $0.06383 = 6\%$. Ninety-two (92%) of the respondents were working in secondary work setting with odd ratio $11.5 = 92\%$, while 100 (100%) were working full-time. Table 4.1& 4.3 shows the detailed characteristics of the respondents.

Onset of Disorders

Thirty 30 of the respondents first experienced their WRMDs as a physiotherapy student with odd ratio $0.428571 = 30\%$, while only 5 respondents had it within 5-15 years after graduation with odd ratio $0.052632 = 5\%$ and 0 respondent more than 15 years after graduation.

Onset of work related musculoskeletal disorders among participants.

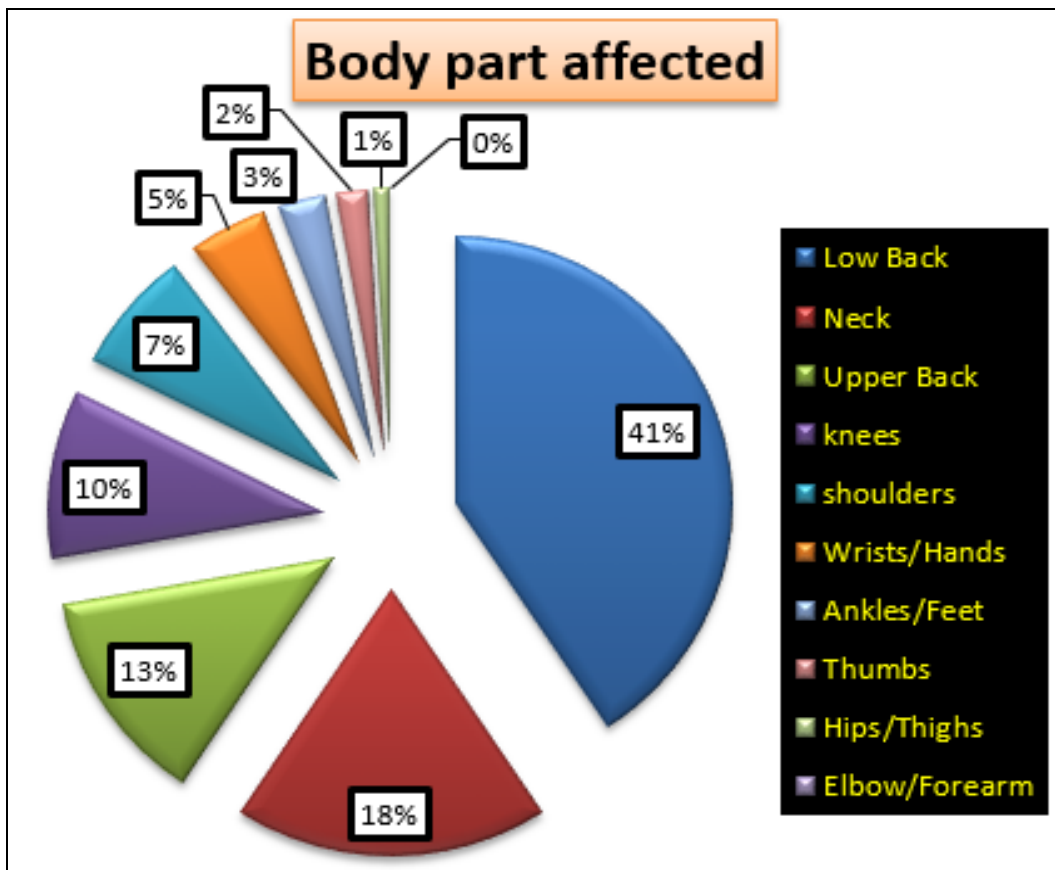


Prevalence by body parts

Seventy physiotherapists (70%) reported experiencing WRMDs during the 12-month prevalence of WRMDs in different body parts is present in Table 4.2. The low back was the most common site of disorders (44%) while the

Hips/thighs joint (1%) was the least affected body part and (0%) for elbow/forearm joint.

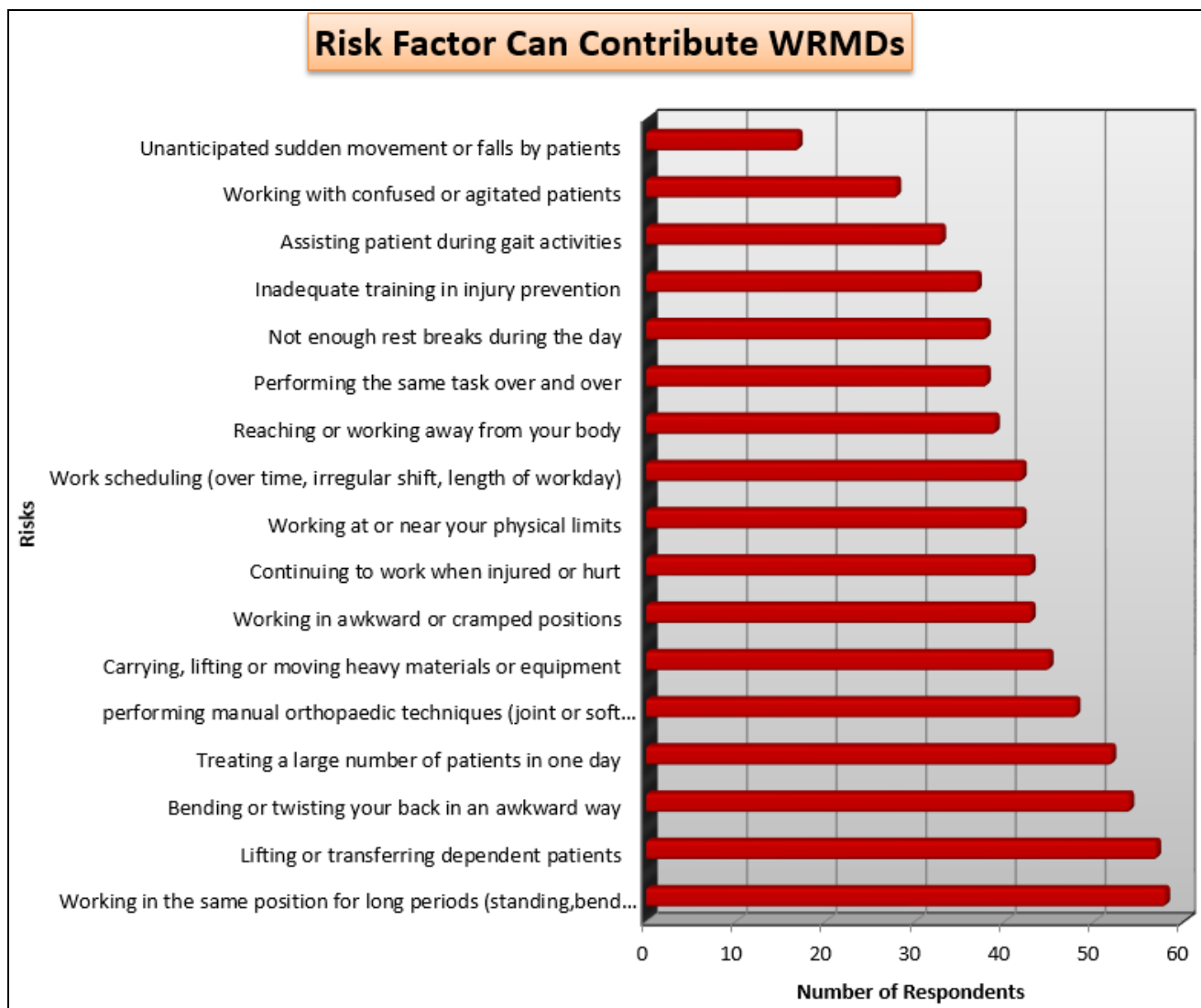
12-month prevalence by body part



The frequencies of WRMDs at body part affected. The low back was the region affected in the majority of cases with odds ratio 0.785714= 44% from 44 respondents, followed by the neck with odds ratio 0.25= 20%from 20 respondents and upper back 0.162791= 14% from 14 respondents. Other regions were

also cited, such as the knees 0.123596= 11%, shoulder with odds ratio 0.086957= 8%, wrists/hands with odds ratio 0.052632= 5%, ankles/feet with odds ratio 0.030928= 3% and thumbs with odds ratio 0.020408= 2%, hips/thighs with odds ratio 0.010101= 1% and odds ratio 0= 0% for elbow/forearm.

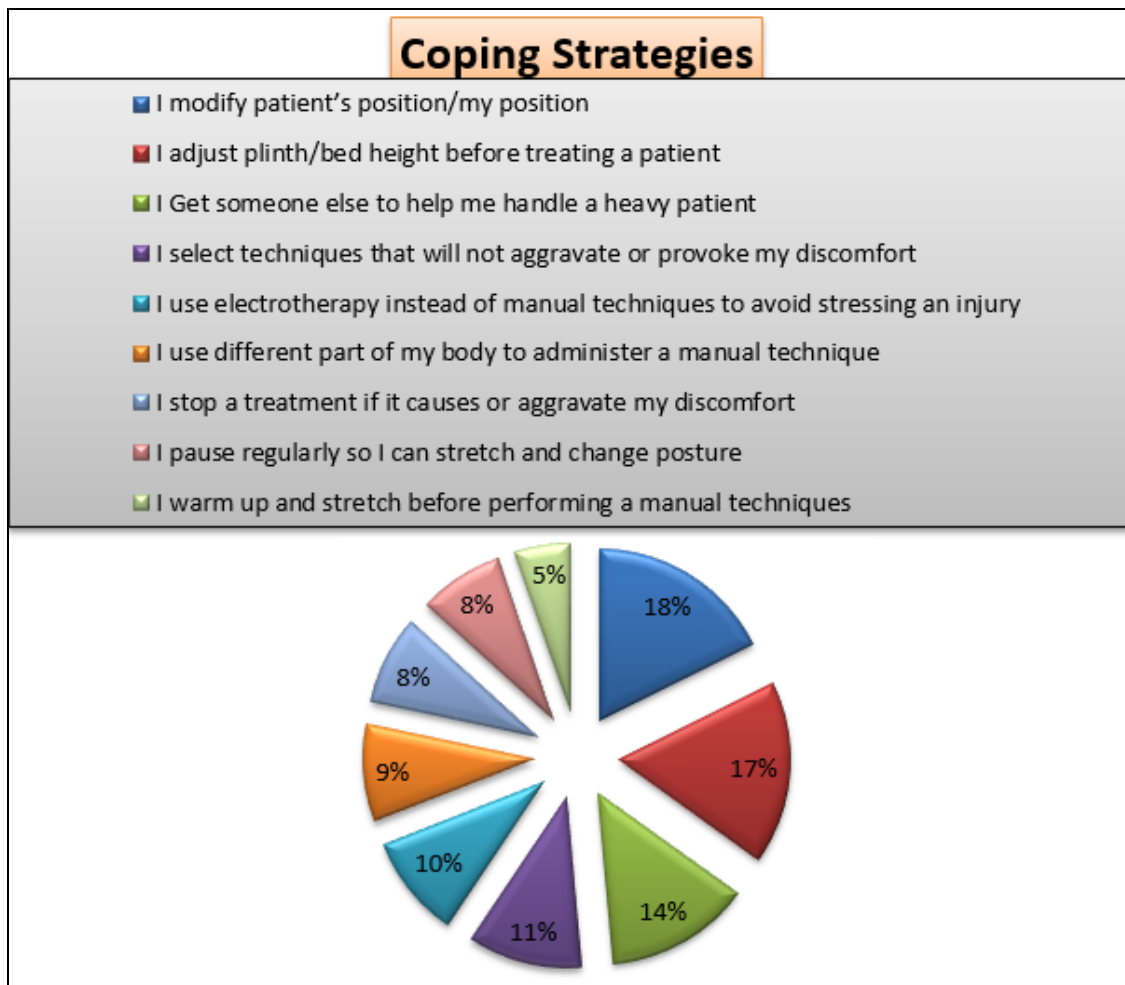
**Work Factors
Risk Factors of WRMDs**



A likert scale ranging from 1 (indicating not important) to 4 (indicating major importance) was use to ascertain which job risk factor was important in the occurrence of their WRMDs. For each work factor the responses were dichotomized into categories of ‘not important’ (1 and 2) and ‘important’ (3 and 4). Results were obtained by expressing important responses as percentages of the total responses for each work factor. The two most important work factors commonly identified by physiotherapists were working in the same position for long periods of time such as standing, bend over, sitting and etc with odds ratio 4.833333= 82.9% from 58 respondents, and lifting or transferring dependent patients with odds ratio 4.384615= 81.4% from 57 respondents. Working with confused or agitated patients 1.333333= 40% from 28 respondents and unanticipated sudden movement or falls by patients 0.320755= 24.3% from 17 respondents was cited as the most unimportant work factors (Table 4.4).

Coping Strategies
The coping strategies adopted by physiotherapists with WRMDs in Sabah are shown in Table 4.5. The two most commonly adopted coping strategies were therapists modifying their position or the positions of their patients with odds ratio 1.692308= 92.9% from 44 respondents and adjust plinth/bed height before treating a patients with odds ratio 1.592593= 91.4% from 43 respondents.

How to Cured or Reduced the Pain/WRMDs



The two least adopted coping strategies were regularly stretched and changed their posture with odds ratio 0.4= 28.6% from 20 respondents and warming up and stretching before performing manual technique with odds ratio 0.22807= 18.6% from 13 respondents.

Discussion

This study to determine the prevalence of WRMDs among physiotherapists in Sabah. The aim of this study was to investigate the 12- month prevalence and work factors of work related musculoskeletal in the lifetime and may be due to the nature of the occupation. The occupational hazards and job factors that include lifting or transferring dependent patients among physiotherapists in Sabah. Musculoskeletal system problems connected to occupational conditions are common among health care workers. The costs of these are substantial, both in terms of money and in terms of work time lost. The results from studies on WRMDs in physiotherapists have generally been similar, though some have differed according to country. Such variations are linked to level of development, the status of the profession of physiotherapy in given country, psychology, and epidemiological factors. My finding that there were more female than male physiotherapists in the survey is a reflection of the population from which our sample was drawn. This finding is similar to the findings from previous studies that reflected more female than male physiotherapists.

Limitation of study

- Respondents might have given vague answers to questions asked in this study as they might not have remembered the information requested of them easily. In an attempt to curtail the influence of this in my study.
- Sample was randomly chosen among the physiotherapist in SABAH.
- Area of study was limited.

Recommendation

- Study can be done in larger area.
- Study can be done to all the Malaysian physiotherapist
- A comparison of WRMD among male and female physiotherapist in Malaysia could be done.

Conclusion

This study concluded that the prevalence of work-related musculoskeletal disorders among physiotherapists in Sabah is high as those reported in other similar studies. The prevalence of WRMDs is higher among female than males and higher for therapists working in secondary work setting and full time. Adequate preventive and appropriate management strategies are recommended to minimize work-related musculoskeletal disorders in the physiotherapy practice.

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