

## Relation of Work-related Musculoskeletal Disorders and Over-commitment of Rehabilitation Staff in Saudi Arabia

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**Abstract: Background:** Physical and occupational therapy professions are perceived as physically demanding. Occupational positions, patients handling techniques and therapeutic applications may result in job-related and postural stresses. **Objectives:** The research aimed at identifying the musculoskeletal disorders reported by physical and occupational therapists in the region of Jeddah and the relation to the level of Over-commitment and work factors. Demographic variables, productivity and job stress were studied in correlation with the musculoskeletal problems expressed by the therapists. **Methods:** A cross sectional survey approach by questionnaire identified the musculoskeletal disorders and related Effort-Reward Imbalance and over-commitment amongst therapists in various physical rehabilitation departments of public, profit making and teaching hospitals. **Results:** Results indicated that 50.6 % of the surveyed staff (N=166) reported to experience physical stress related to their work and whilst 39 % of the staff claimed to suffer from physical symptoms regularly after their working day. It was found that 56.6 % of the staff felt their symptoms were proportional with the workload intensity and severe enough to force them to take time off work. The main work-related complaints were back, neck and shoulder pain and for 25 % of the staff myalgia in different areas of the body. Complaints were significantly correlated to the Over-commitment score and to the number of patients treated when associated to absences from work. The incidence of the musculoskeletal problems appeared higher amongst males and in teaching and private rehabilitation departments. **Conclusion:** Musculoskeletal disorders expressed by rehabilitation staff in the area of Jeddah appeared to be strongly related to the level of Over-commitment in work. The work-related complaints varied according to gender, age and hospital type. The main symptoms were back pain and generalized myalgia which were severe enough to lead to sick leave and medical consultations. The prevention of exaggerated efforts at work and recognition of the hardship related to the professional occupation could be emphasized in management strategies of physical rehabilitation services.

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### 1. Introduction

Rehabilitation services' professions, particularly physical therapists, have been considered at risk of developing work-related musculoskeletal disorders in various countries [1-6]. During patients' treatments, physiotherapists frequently need to use manual handling and awkward postures increasing the risk of developing musculoskeletal injury associated with the physical handling of the patients [7, 8]. Physical stress could also increase with additional workload and the work situation of the staff. Previous studies have shown that job stress, measured by the Effort and Reward Imbalance model, is strongly correlated with the types and number of treated patients per day and the number of worked hours per week [9]. An intrinsic element of Effort- Reward Imbalance is considered as "over-commitment". This has been defined as an enduring cognitive-motivational pattern of maladaptive coping with demands characterized by excessive striving and an inability to withdraw from obligations

[10]. The present study aimed at identifying work factors and related physical work stress factors amongst rehabilitation services staff in the region of Jeddah in Saudi Arabia.

### 2. Methods

#### Study design:

A cross sectional survey by a written questionnaire followed approval by relevant ethics committees of the university hospital and other concerned hospitals.

#### Subjects:

222 therapists working full time in the physical rehabilitation services were included in the survey of ten randomly selected healthcare facilities. They included the Ministry of Health, private sector and teaching hospitals located in the region of Jeddah in Saudi Arabia. The inpatient hospitals ranged from capacity of 250 to 700 beds and several outpatient

healthcare facilities that were also included in the survey.

#### Methods:

Two written survey questionnaires were specifically adapted for this research and simultaneously distributed to each subject. The first questionnaire aimed at identifying the job stress based on the Effort- Reward Imbalance measure [11] and its intrinsic component by the over-commitment score. Over-commitment was assessed by a uni-dimensional scale composed of six Likert-scaled items. In these the respondents indicated to what extent they personally agreed or disagreed with the given statements on a four-point rating scale. The items were as follows: (1) I get easily overwhelmed by time pressures at work; (2) As soon as I get up in the morning I start thinking about work problems; (3) When I get home, I can easily relax and “switch off” work; (4) People close to me say I sacrifice too much for my job; (5) Work rarely lets me go, it is still on my mind when I go to bed; (6) If I postpone something that I was supposed to do today I’ll have trouble sleeping at night. The score ranges from 6 to 24 with higher scores reflecting higher Over-commitment [10]. The questionnaire included twenty three questions without modifications from the original standardized questionnaire. The sum of the values of the efforts was related to the values of rewards and a ratio of “1” is considered as the optimal reference Effort-Reward Imbalance value at work [11].

The second survey questionnaire included questions to precise demographic data, working

situation, productivity of the staff. Questions graded on a five point Likert scale also investigated the physical complaints and symptoms related to work and perceived as increasing with workload (Appendix). Both questionnaires sections were personally distributed to each subject and collected within a period of two weeks.

#### Statistical Analysis:

The results of the questionnaires and collected data were encoded in an SPSS (Statistical Package for Social Sciences) program for analysis. Data were computed by descriptive statistics *P*-values less than 0.05 were considered as significant. Variables of hospital category, position, specialty, nationality, age and gender of the therapists were analyzed and compared in a cross tabulation analysis. Normality test of the distribution by one-sample Kolmogorov-Smirnov test was made. Pearson test for significance and Kruskal Wallis nonparametric tests for ranks were made and Spearman-rho test was applied with numerical variables correlations for the number of patients treated per day and Effort-Reward Imbalance ratio.

### 3. Results

The survey was completed by 166 rehabilitation therapists with a response rate of 74.9 %. Results indicated that 50.6 % of the surveyed staff reported to regularly experience physical stress related to their work and 39 % of the staff reported also to suffer physical symptoms after their working day.

**Table (1):** Percentage of staff with work related complaints

Statements related to work related complaints	Percentage of Staff
Experience of physical stress related to work	50.6
Complains of symptoms after work day	39.0
Symptoms are increasing with workload	56.6
Have consulted a medical expert for the symptoms	31.0
Complaints have resulted in sick leave or work absence	25.9
N =166	

A primary symptom was expressed by 45% of physical rehabilitation staff and 22.3 % of the subjects have mentioned a second symptom in addition to the first one. Table (2) resumes the various symptoms per percentage of staff.

**Table (2):** Work related complaints per percentage of rehabilitation staff

Work related complaints	Staff with primary symptom (%)	Staff with a secondary symptom (%)
Back pain	23.5	5.4
Myalgia ( not specified)	6.6	4.2
Neck/ Shoulder pain	4.2	3.0
Lower limbs pain	3.0	2.4
Wrist pain	1.8	1.2
Others (fatigue, stress, headache)	6.0	6.0
Total staff with complaints (N =166)	45.2 %	22.2 %

Back pain was the most commonly expressed symptom in all categories of positions and more specifically low back pain (13.9 %) and this for 50 % of the occupational therapists and 57.7 % of the physiotherapists. Respiratory therapists complained more of lower limbs pain for 33.3 % of them and 23.3 % expressed other complaints such as stress, fatigue or headaches. Back pain appeared the most amongst therapists assigned to treat both inpatients and outpatients. On average, a higher number of therapists treating mainly adult patients mentioned suffering from work related musculoskeletal problems compared to the therapists with a pediatric caseload. It was also found that the symptoms of low back pain were reported by most of the staff working in the teaching or private hospital categories.

Results indicate that 57% of the staff aged between 21 and 30 years were in general expressing

back pain and generalized myalgia while 50% of the therapists aged between 31 to 40 years old complained mainly of backache and 18.8% of them of generalized myalgia. Staff aged of 41 years and above reported stress, headaches and general fatigue.

While 58% of the male therapists were suffering from back pain symptoms, analysis showed 28 % of the male therapist expressed work-related physical complaints in general and reported an increase in their symptoms with additional work (32.2 %,  $P < 0.005$ ) and obliging them to take sick leave ( $P < 0.002$ ). Results indicated a significantly ( $P < 0.023$ ) higher value for the mean number of patients per day for the staff expressing physical stress after work (mean of  $10.99 \pm 3.98$  compared to  $9.59 \pm 3.82$ ) and for the staff having related sick leave or absence days ( $P < 0.010$ ) with a mean number of  $11.45 \pm 3.57$  compared to  $9.7 \pm 4.05$ .

**Table (3):** Mean Over-commitment score per expressed work symptoms

Statements related to work symptoms	Over-commitment Score			
	N	Mean $\pm$ SD	Chi <sup>2</sup>	P-value
Experience physical stress related to work	81	15.55 $\pm$ 2.94	.233	.003**
Complains of symptoms after work day	63	15.66 $\pm$ 2.93	.213	.007**
Symptoms are increasing with workload	63	15.61 $\pm$ 2.76	.270	.001**
Have consulted a medical expert for the symptoms	39	16.31 $\pm$ 3.01	.207	.001**
Complaints have resulted in sick leave or work absence	49	15.98 $\pm$ 2.97	.313	.001**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Analysis outlined a highly significant correlation ( $P < 0.001$ ) between the over-commitment score and all the statements indicating the work related symptoms. While there was no significant correlation evidenced, higher mean Effort-Reward Imbalance ratio was also seen for the staff reporting experiencing work related physical complaints and suffering from symptoms after a working day. A higher mean Effort-Reward Imbalance ratio was seen for the persons that felt their symptoms increased with additional workload though correlation analysis failed to reach significance. Finally, results identified a significantly ( $P < 0.001$ ) higher mean Effort-Reward Imbalance for the staff who mentioned taking sick leave or time off work and having consulted a medical expert regarding their occupational related symptoms.

#### 4. Discussion

Confirming other studies, rehabilitation services staffs in the present survey expressed to suffer from muscular strains and musculoskeletal pain related to work and appearing to increase with their professional activity [12,13]. The severity of the symptoms lead one

fourth of the staff to consult medical experts or to take sick leave from work. In addition, one fourth of the surveyed staff expressed to suffer from cumulated symptoms with mainly lower back, neck and shoulder pain.

The present research outlined a clear evidence of the relation between over-commitment and work-related complaints expressed by the therapists. Overcommitted persons are driven by their high need for control and approval, thereby repeatedly overtaxing their own resources and, thus, precipitating exhaustion and breakdown in the long run [14]. Several studies have suggested that over-commitment increases musculoskeletal pain [15] and coronary heart disease risk [11,14,16]. In this context, "over-commitment is thought to magnify stressful experience resulting from high cost/low gain conditions at work because it induces exaggerated efforts which are not met by extrinsic rewards" [11].

Job stress measure based on the Effort-Reward Imbalance and the workload intensity measured by the daily average number of patients treated per therapists were not significantly correlated to the complaints of

musculoskeletal pain. An increased number of patients and higher workload were however associated to the severity of musculoskeletal disorders and resulting in work absences caused by sick leave. It could then be supposed that in the present study population, repeated exaggerated efforts in work, more than the factors of rewards, are identified as strongly related factors to musculoskeletal discomfort.

Previous researchers have also identified a link between job strain and job turn-over and musculoskeletal disorders in physical therapists [2,17].

While the main musculoskeletal complaints appeared to be back pain principally in the lumbar region, other complaints included generalized muscle pain, shoulder and neck pain as well as lower limbs pain. These results are in line with other research [12] and some older therapists had expressed to suffer from headaches and generalized fatigue related to their work which may be reflections of stress at work. Several researches have confirmed the relation between occupational stress and subjective health complaints in healthcare professionals and physiotherapists [18-20].

In accordance with other studies, back pain appeared more prevalent amongst the young therapists which could possibly be related to higher workload [3] with repetitive transfers or mobilization of patients performed by that category of staff. Lifting and transferring dependent patients have been outlined as the main factors likely to contribute to musculoskeletal disorders [2,13,21]. In accordance to a heavier professional workload in their professional activity, male therapists appeared more prone to develop musculoskeletal complaints compared to their female colleagues.

From their educational background, physical and occupational therapists are very well aware of work ergonomics though the physical workload appears mainly related to their specific work tasks and proportional to the level of commitment. In accordance to other studies [17], a higher incidence of musculoskeletal disorders was seen in male staff and confirmed by a higher proportion of males that have sought medical advice for their problem.

The educational degree of the therapists was related to the expression of work-related musculoskeletal symptoms. Master and doctoral degree holders were complaining of back pain in general, while bachelor and diploma holders were mainly complaining of low back pain possibly due to a higher proportion of patient treatments in their assignments. This could be attributed to non-clinical duties such as education, administrative duties or documentation as well as complex medical cases which are more often assigned to senior staff. Increased pressure and work demands on qualified staff is often associated with high professional standards to the detriment of related physical stress. It was also noted that the severity of the

symptoms were more evident in the profit making and teaching hospitals. This was supported by a higher number of patients-therapist ratio in these hospital categories associated with a higher Effort- Reward Imbalance [9].

In comparison between specialties, occupational therapists appeared to have a similar risk of developing back pain or upper extremity strains in the wrist or the shoulder and no significant differences have been found between the rehabilitation specialties. Similar risks in other categories of health professions such as nurses were identified in other researches [21,22].

The recommendations for practice guidelines and load management have been outlined by Cromie *et al.* [2] and the need of specific strategies for work load management by cases distribution could be also emphasized. The importance of a positive work environment and decreased over-commitment or exaggerated efforts was recognized to affect the musculoskeletal strains at work among rehabilitation staff.

## CONCLUSION

The musculoskeletal complaints expressed by rehabilitation staffs in the area of Jeddah were related to their professional activity and severe enough to lead to sick leave and medical consultation.

The main symptoms were back pain and generalized myalgia which were related to the work stress caused by the over-commitment at work and a high number of treated patients. These symptoms were also high amongst young therapists and of higher incidence in the teaching and profit making hospitals.

Preventive strategies to adopt compensatory mechanisms by modifying body mechanics, monitoring the workload but also analyzing the factors contributing to the over-commitment could be encouraged. An emphasis should be considered on the decrease of exaggerated efforts at work and on the recognition of the hardship related to the professional occupation in physical rehabilitation services.

## Competing Interests

The authors declare that they have no competing interests.

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**Appendix:** Questions relevant to the musculoskeletal disorders and strains related to work from the questionnaire.

Relating to the statement on the left, please select the number that best describes your viewpoint.

Thank you for answering all the questions.

On the present job, this is how I feel about the following statements:

1. I strongly disagree
2. I disagree
3. I sometimes agree
4. I agree
5. I strongly agree

Question1: I experience physical stress complaints related to the work on regular basis.

Question 2: I am regularly suffering of physical symptoms experienced after a working day

Question3: Mention the main symptom related to work:.....

Question 4: These symptoms increase as the work intensity increase.

Question 5: These symptoms/complaints are sometimes forcing me to take sick leave or time off from work.

Question 6: I have consulted a medical expert for relieving these symptoms.