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## Postural discomfort faced by nurses of various hospitals of Ludhiana city

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### Abstract

Nursing is, by its very nature, an occupation exposed to stressful work load which in turn is linked with poor physical and psychological health. Likewise patients approaching hospitals are themselves suffering a considerable degree of stress often being difficult, frightened and resentful. Nurses working in hospital routinely perform activities that require lifting heavy loads in awkward posture. Daily exposure to heavy job strain increases the risk of musculoskeletal pain. Nurses perform a wide range of non-clinical and clinical functions necessary to the delivery of health care and musculoskeletal disorders represent a significant problem among health care workers. Therefore, the present study was undertaken to know the personal profile of the nurses and to assess the postural discomfort faced by nurses through using subjective ergonomic scales. Results showed that while performing activities by nurses at workplace, they faced more discomfort in neck, shoulder, lower back and upper back. Therefore, the ergonomic designed equipment is provided by hospital management, the postural difficulties can be reduced of nurses.

**Keywords:** Musculoskeletal problems, posture, postural discomfort, stress

### Introduction

Nursing is a profession within the health center focused on the care of individuals, families, and communities so they may attain, maintain, or recover optimal health and quality of life. There are always heavy demands for medical services in both the government and private hospitals. Nursing profession is established as a physically and psychologically demanding profession with high prevalence rates of musculoskeletal complaints. The workplace can result in a variety of disorders in affected workers, including tendon and joint inflammation, ligament sprains, muscle pain, tears and strains, herniated spinal discs, pinched nerves and other conditions. These conditions, collectively referred to as musculoskeletal disorders (MSDs), may develop gradually over time or may result from instantaneous events such as a Pain, single heavy lift, disorders and loss of work. The term musculoskeletal disorders represent a significant inflammatory and degenerative condition that affects the muscles, tendons, ligaments, joints, spines, peripheral nerves and supporting blood vessels which consequent ache, pain or discomfort (Goswami et al 2013) [4]. There are a great variety of activities involved, including: Manual lifting, laterally transferring between two horizontal surface, ambulating, repositioning in bed or chairs, manipulating extremities, transporting patients, resident and equipment, performing activities of daily living, stopping falls or transfers from the floor, assisting in surgery etc. Postural discomfort were found to be higher in tasks like changing body position of patients, transfer of patients, saline infusion, blood sampling and injecting medicine, dressing help and eating help. The safety of healthcare workers at work place is very important to healthcare suppliers as well as to the patients; they faced number of problems such as injury, pain and illness from their workplace. Well-rested and healthy nurses are played vital role to providing wakeful monitoring, vigorous advocacy, and care of patient. Many workplace stressors that may produce injuries and diseases are present in nursing work environments. This type of stressors includes factors related to the contiguous work context, features of the administration and changes that are occurring external to the organization but throughout the health care industry. Healthcare suppliers experience important psychological and physical demands during their working period and work safety climate which can be contrary. For downsize pressure within organization, healthcare provider can be use alternative arrangements (pool and traveling staff) patient care time (discharging patients, loads of patients) these are the factors are that are compulsory at an organizational level.

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So the present study has been undertaken with following objectives: to know the personal profile of the nurses and to assess the postural discomfort by using ergonomic subjective scales

### Materials and methods

The present study was conducted in multispecialty hospitals of Ludhiana city. Total numbers of 120 nurses were randomly selected. For collecting the relevant data, a pre-interview schedule was used to collect the information regarding personal profile of the nurses and find out the postural discomfort faced by nurses in Ludhiana city. The mean score were calculated to find postural discomforts faced by nurses on the basis of five point scale and analyzed by applying Z-test by using the following formula:

$$\text{Mean score} = \frac{\sum Sn}{N}$$

S= Score assigned to respondents, n=Frequency distribution, N=Total number of respondents. Further the ranks were given on the basis of mean score.

$$Z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{N}}}$$

$\hat{p}$  = sample proportion

P = population proportion

n = sample size

### Results and discussion

The data collected on various aspects by respondents have been analyzed and presented in Table 1, 2 and 3 and Fig 1:

The personal profile of respondents which includes: age, family income, family type, education of the respondents. Data enfolded in Table 1 reveals the maximum number of respondents were from the age group of 22-33 years (44.17%) followed by age group of 33-44 years (35.00%) and least number of respondents (20.83%) were in the age group of the 44-55 years. Average age of the respondents was found as 34 years with standard deviation of 9.07. More than half (59.17%) of respondents had family income in the range of Rs 15000-28000/- per month and 22.50 per cent of respondents had family income between 41000-54000/-per month. Only 18.34 per cent of the respondents had family income in the range Rs 28000-41000/per month. Average family income was found as Rs 28450/- per month. Table 1 shows that maximum numbers of respondent (69.17%) belonged to the joint family. Whereas, 30.83 per cent of the respondents had the nuclear type of family. Regarding education (Table 1), it was found that nearly half of respondents (47.50%) were diploma holders, followed by graduation (34.16%) and less number of respondents (18.34%) was post graduate.

Intensity of perceived musculoskeletal pain felt by respondents were recorded by administering body map with questionnaire to know the intensity of pain in different body parts while performing activities at workplace. The mean

scores for the intensity of pain in different body parts were calculated on a five point scale ranging from 1 to 5 viz. 1 for very mild and 5 for very severe pain in the affected body parts. Mean ranks were assigned to the mean score calculated. It was observed from Table 2 respondents felt more pain in neck, shoulder, lower back and knees. Therefore, these body parts got 1, 2, 3 and 4 ranks respectively, while pain in ankle/feet was low and no pain in leg and thighs. (Daraiseh *et al* 2003) [3] reported that MSDs in various body regions of nurses were influenced by stressful working conditions. It was reported that neck, shoulder and low back pain of the nurses was not only associated with physical factors but also with a complex interaction of working condition. Knees discomfort score was the most in patients transfer activities (Goswami *et al* 2013) [4]. Joshi (2006) [5] also observed that incidences of mild to moderate pain was observed by respondents in neck, shoulder joints, lower back, upper back due to faulty postures adopted for long hours of work. Figure 1 shows the rating of perceived exertion in different body parts felt by respondents while performing activities at workplace. It was a five point continuum varying from "Very Severe" to "Mild" levels with the mean score of 5 to 1 respectively. Ranks were given on the basis of mean scores. On the basis of these mean scores, mean ranks were given. It was observed that respondents felt light to moderate exertion in neck followed by shoulders and lower back. This may be because of the reason that they adopted awkward postures while patient handling. While respondents felt very light exertion to light exertion in upper back and ankle/feet. Aiken *et al* 2007 [2] reported that among nurses in India the occurrences of symptoms of the neck pain, shoulder pain, lower back pain is very common. The musculoskeletal problems and the body pain perceived by the respondents were determined by administering of Standardized Nordic Musculoskeletal Questionnaire. The responses from respondents were taken through standard worksheet and were analyzed by applying Z-test. Table 3 revealed that respondents had trouble (ache, pain, discomfort) during last 12 month in different body parts like neck, shoulder, upper back and lower back which is significant analyzed by z test. Whereas, less pain were observed in elbow followed by wrist/hand, hips, knees and ankle/feet. Table 3 also shows that respondents prevented from doing normal work due to pain in upper back, lower back, neck and shoulder which was according to significant z test. Respondents had trouble in their upper back, lower back, neck and shoulder during last 7 days and less trouble felt in their other parts of body. Therefore, it can be concluded that though respondents felt pain in different body parts but not of high severity and requires ergonomic intervention with respect to prevention and management of various risk factors caused by awkward postures which were adopted mainly during patient handling. Musculoskeletal problems can affect many different parts of the body including upper and lower back, neck, shoulders and extremities (arms, legs, feet, and hands). MSDs can arise from a sudden exertion (e.g., lifting a heavy object), or they can arise from making the same motions repeatedly repetitive strain, or from repeated exposure to force, vibration, or awkward posture (Mohammed 2013) [6].

**Table 1:** Personal profile of respondents

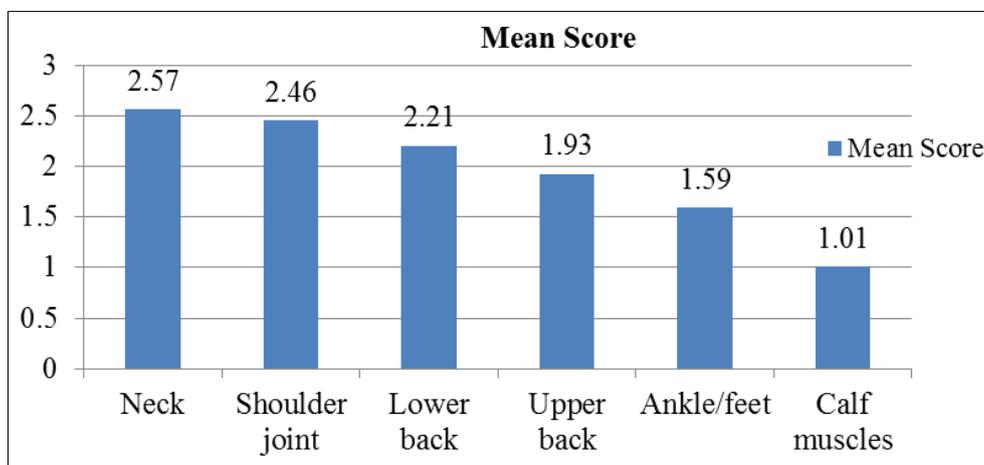
Personal profile	Number	Percentage (%)
<b>Age (year)</b>		
22-33	53	44.17
33-44	42	35.00
44-55	25	20.83
<b>Average</b>	34	
<b>SD</b>	9.07	
<b>Family income (Rs.)</b>		
15000-28000	71	59.16
28000-41000	22	18.34
41000-54000	27	22.50
<b>Average</b>	Rs 28450/-	
<b>SD</b>	12182.68	
<b>Family type</b>		
Joint	83	69.17
Nuclear	37	30.83
<b>Education</b>		
Diploma	57	47.50
Graduation	41	34.16
Post-graduation	22	18.34

\*Multiple responses

**Table 2:** Postural discomfort experienced by respondents by using Corlett and Bishop Scale 1976

Body parts	Mean Score	Mean rank
Neck	2.54	1
Shoulder joint	2.40	2
Lower back	2.22	3
Knees	2.12	4
Ankle/feet	1.64	5
Leg	0.68	6
Thighs	0.62	7

Multiple responses Figure indicates Rank On the basis of 5 point scale from very heavy exertion (5) to very light exertion (1)



**Fig 1:** Discomfort experienced by respondents by using rating of Perceived Exertion Scale by Varghese *et al* (1994)

**Table 3:** Assessment of musculoskeletal problems of respondents by using Standardized Nordic Musculoskeletal Questionnaire

Body parts	I		II		III	
	Percentage	Z-score	Percentage	Z-score	Percentage	Z-score
Neck	60.00%	15.42**	40.83%	10.84**	53.33%	13.37**
Shoulders	45.83%	11.85**	25.83%	8.38**	43.33%	11.19**
Elbows	21.66%	5.54**	10.00%	2.50**	15.83%	4.02**
Wrist/hands	16.66%	4.24**	1.66%	0.32*	10.00%	2.50**
Upper back	67.50%	17.49**	35.83%	9.52**	53.33%	13.81**
Low back	66.66%	17.27**	37.50%	9.96**	52.50%	13.59**
Hips/thighs	5.00%	1.19*	NIL	NIL	2.50%	0.54*
Both knees	35.00%	9.74**	14.16%	3.58**	25.83%	6.62**
Ankles/feet	8.33%	2.06**	4.16%	0.97*	6.66%	1.63*

NS- Non significant; \* Significant at 5% level; \*\* Significant at 1% level

- i. Have you at any time during the last 12 months had trouble (ache, pain, discomfort)?
- ii. Have you at any time during the last 12 months been prevented from doing your normal work (at home or away home) because of the trouble?
- iii. Have you had trouble at any time during the last 7 days?

### **Conclusion**

On the basis of above finding this study concludes that postural discomfort faced by nurses were predominantly increased in neck, shoulder, lower back and upper back. There are variant changes in ergonomics posture. They should be provided ergonomically designed device by the administration which will be helpful from preventing postural discomfort.

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