

Work related musculo-skeletal disorders (WMSDs) of the workers engaged in tailoring units

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■ **ABSTRACT** : Work related musculo-skeletal disorders (WMSDs) are common health problem throughout the world. Assessment of exposure levels to WMSDs risk factors can be an appropriate base for planning and implementing interventional ergonomics programmes in the workplace. The presents study is focused on posture analysis of the workers working in tailoring units. For the purpose OWAS (Ovaku work posture analysis) method was used to assess specific body postures of the workers and recommend the changes to be made in the body postures while working. The prevalence of WMSDs was studied by using NMQ. The study was conducted on 100 workers engaged in various process of tailoring activities of Jorhat district of Assam, India. The photographs of different sections like measuring, marking, cutting, stitching garments and running wheel etc. showing different movements of the workers during performance of activities was observed. Postural analysis of workers found that 100 per cent workers have some harmful effect on musculo-skeletal system. Light stress, no immediate action is necessary, but changes should be considered in future working in acceptable posture and requires no corrective measures. All the respondents perceived moderate type of joint pain in the body during performances of different sub-activities. Cent per cent of the respondent experienced very severe pain in eye, neck, shoulders, legs, knees, calf muscle and feet. For increasing efficiency and reducing disorders of the workers their working posture should be changed.

■ **KEY WORDS**: Posture analysis, OWAS, Risk levels, WMSDs

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Poor work posture constitute one of the main risk factor for work related musculo-skeletal disorders (WMSDs), ranging from minor back problems to severe handicapping. The effect of poor posture will continue unless proactive steps are taken to evaluate the problem. Therefore, it is essential to recognize early the patterns of work related MS symptoms and disorders and their risk factors in the workplace. More suitable

working posture may have a positive effect on workers musculo-skeletal symptoms, and may allow for more effective control of work performance and reduction in the number of occupational accidents. One practical method for analyzing and controlling poor working postures in industry is OWAS. The study used Ovaku Work posture analysis system (OWAS) and recommends the changes to be made in the body posture while

Table A : The OWAS action categories for evaluation of working postures

OWAS scores	OWAS categories	Description
1.	Action category I	Work postures are considered usually with no particular harmful effect on musculo-skeletal system No actions are needed to change work postures
2.	Action category II	Work postures have some harmful effect on musculo-skeletal system Light stress, no immediate action is necessary, but changes should be considered in future
3.	Action category III	Work postures have a distinctly harmful effect on musculo-skeletal system The working methods involved should be changed as soon as possible
4.	Action category IV	Work postures with an extremely harmful effect on musculo-skeletal system Immediate solution should be found to change these postures

working. OWAS is a method for the evaluation of postural load during work. The OWAS method is based on a simple and systematic classification of work postures combined with observations of work tasks. The method can be applied for the development of a workplace or a work method, to reduce its musculo-skeletal load and to make it safer and more productive. The presents study is focused on posture analysis of the workers working in tailoring units. The study was conducted on 30 workers engaged in various processes of tailoring units.

■ RESEARCH METHODS

The study was conducted on 30 workers engaged in various process of tailoring activities of Jorhat district of Assam, India. The photographs of different sections like measuring, marking, cutting, stitching garments and running wheel etc. showing different movements of the workers during performance of activities was observed. The activity is divided into five different sections like measuring, marking, cutting, stitching garments and running wheel etc showing different movements of the workers during the activity was recorded. The postures were analyzed to fill the scores in OWAS score sheets. As a protocol of the study, the first step was overall body posture assessment using OWAS method. The jobs with the involvement of high risk were numbered higher and those with less risk involvement were numbered 1. Immediate corrective actions and necessary changes were recommended for activities numbered higher to avoid any risk. The prevalence of work related musculo-skeletal disorders (WMSDs) was studied by using Nordic Musculo-skeletal Questionnaire (NMQ). Nordic Musculo-skeletal Questionnaire (NMQ) was used to determine the prevalence of WMSDs symptoms. NMQ comprises information about work experience and problems on the whole body and body part-specific

questions (neck, shoulders and lower back). A body “map” was also used to make it easier for workers to pinpoint their problems in each body area.

■ RESEARCH FINDINGS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under following heads :

Background information :

The age of the respondents belonged to 30-50 years of age and educational qualification was upto higher secondary school. The monthly income of the respondents ranges from Rs. 10,000/- to Rs. 20,000/- per month. They spend 8 hours in the tailoring activity daily. All the respondents performed measuring, marking, cutting, stitching garments and running wheel for stitching activity. The movements of different body parts of the workers are as follows.

Workers at measuring cloth:

The worker at measuring cloth in such a position that back is bent and twisted or bent forward and sideways, both arms are below shoulder level, forearm at pronation and standing with both legs straight.

Workers at marking cloth:

The worker at measuring cloth in such a position that back is bent and twisted or bent forward and sideways, both arms are below shoulder level, forearm at flexion and pronation and standing with both legs straight.

Worker at cutting cloth :

The worker at measuring cloth in such a position that back is bent and twisted or bent forward and sideways, both arms are below shoulder level, forearm

at flexion and pronation and standing with both legs straight.

Worker at stitching cloth :

The worker at measuring cloth in such a position that back is bent and twisted or bent forward and sideways, both arms are below shoulder level, forearm at flexion and pronation and legs at walking or moving.

Worker at running wheel :

The worker at measuring cloth in such a position that back bent forward and backward, both arms are

below shoulder level, forearm at flexion and pronation and legs at walking or moving.

The results of the OWAS assessment of the workers are shown in Table 1. According to this technique of posture analysis 100 per cent of workers work postures have some harmful effect on musculo-skeletal system. Light stress, no immediate action is necessary, but changes should be considered in future working in acceptable posture and requires no corrective measures.

Using the OWAS analysis method, it was observed that almost all the workers in different sub activities were working in acceptable posture while the problem was in



Fig. 1 : Photographs showing different activities performed in tailoring units

Table 1 : Overall distribution of OWAS score

OWAS score	Action categories	No. of workers	Percentage of workers
1	No corrective measures		
2	Corrective measures in the near future	30	100%
3	Corrective measures as soon as possible		
4	Corrective measures immediately		
Total		30	

Table 2 : Process wise distribution of OWAS score

Job description		OWAS score				Total
		1	2	3	4	
Cutting	Measuring	-	30	-	-	30
	Marking	-	30	-	-	30
	Cutting	-	30	-	-	30
Stitching	Stitching	-	30	-	-	30
	Running wheel	-	30	-	-	30

the back, where the workers were working in unacceptable posture at high risk levels. It was observed that, if the workers to work in the same posture they suffer from the WMSDs related to back and lower extremities in the near future. It was recommended to take the corrective action as soon as possible (Table 2).

Prevalence of musculo-skeletal disorders of the respondents :

Prevalence of musculo-skeletal disorders of the respondents was assessed by using NMQ method. All the respondents perceived moderate type of joint pain in different sub-activities. Cent per cent of the respondent experienced very severe pain in eye, neck, shoulders, legs, knees, calf muscle and feet. The highest prevalence of WMSDs symptoms among the workers were related to upper body regions such as eye, neck, upper back, low back, knees, calf muscles, ankle, feet, shoulders, elbow, and wrist. The results showed that the highest prevalence of work related musculo-skeletal disorders (WMSDs) were in shoulder (72.2 %), elbow (63.3 %), eye (55.2 %), upper back (47.7 %), hand and wrist (36.8 %), low back (33.3 %), ankle (29.6 %), neck (23.9 %), knees (22.9 %) and calf muscles (21.5 %). Sarajil *et al.* (2004) found that the highest prevalence was reported in lower back, knees and upper back and recommendations were made for elimination of awkward postures and manual material handling.

The reasons for the problem were lack of proper sitting arrangement for the workers and lack of proper arrangement to suit the machines. It was suggested that proper sitting arrangement for the workers, proper arrangement for the machine to adjust their level and

proper rest periods for the workers could solve their problems.

Conclusion :

On the basis of analysis of results and scores obtained by the OWAS technique, it can be concluded that, there is a lack of ergonomics planning and methods in tailoring units. And there is a not a proper sitting arrangement for the workers of the tailoring units. Proper ergonomically designed seat with back support can improve the posture of the workers at the back. To reduce the WMSDs the workers should be rotating among jobs and revision of work rest schedule should be provided.

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