



# Work related Musculoskeletal Disorders (WMSDs) of the Workers Engaged in Tailoring Units

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**Abstract:** Work Related Musculoskeletal 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 programs in the workplace. The presents study is focused on postural analysis of the workers engaged in tailoring units. For the purpose OWAS (Ovaku Work Posture Analysis System) method was used to assess specific body postures of the workers and recommend the changes to be made in the body postures while working (McAtamney and Corlett, 1993). 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. Postural analysis of workers found that 100 percent workers have some harmful effect on musculoskeletal system. All the respondents perceived moderate type of joint pain in the body during performances of different sub-activities. Cent percent 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.

## 1. Introduction

Tailoring is a common enterprise of Assam. Construction of clothes on machines is done to decrease the amount of manual labour and increasing productivity with comfort. The activity of constructing cloths consists of five different sub activity like measuring, marking, cutting, stitching garments and running wheel. Tailors adopted standing and sitting postures. Poor work posture constitute one of the main risk factor for work related musculoskeletal 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 musculo skeletal symp-toms 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 (Karhu et. al. 1977). One practical method for analyzing and controlling poor working postures in industry is OWAS. 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 musculoskeletal load and to make the work safer and more productive. The presents study is focused on postural analy-sis of the workers working in tailoring units.

## 2. Methodology

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. 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 musculoskeletal disorders (WMSDs) was studied by using Nordic Musculoskeletal Questionnaire (NMQ).

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 musculoskeletal system. No actions are needed to change work postures
2	Action category II	Work postures have some harmful effect on musculoskeletal 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 musculoskeletal system. The working methods involved should be changed as soon as possible
4	Action category IV	Work postures with an extremely harmful effect on musculoskeletal system. Immediate solution should be found to change these postures

Nordic Musculoskeletal Questionnaire (NMQ) was used to determine the prevalence of work related musculoskeletal disorders (WMSDs) symptoms. Nordic Musculoskeletal Questionnaire (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.

## 3. Results

**3.1 Details of study:** In construction of clothes on machines involves five different sub activities such as measuring, marker marking, cutting, stitching and running wheel. The first three sub activity includes measuring, marker marking, and cutting which were done on the table by adopting standing and forwarding bending position where as stitching and running wheel were done by adopting sitting and forward bending position. The products made by the tailors are blouse, kurta, pyjama, pant, shirt, frock etc. On an average the tailors spent 8



hours in a day in the tailoring units.

**3.2 Background information:** The age of the respondents belonged to 30-50 years of age and educational qualification was up to 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 in the tailoring units. The movements of different body parts of the workers are as follows.

**3.3 Workers at measuring cloth:** Postural analysis of the tailors at measuring cloth showed that the back was bent and twisted or was bent forward and sideways, keeping both arms below shoulder level, forearm was in pronation and standing with both legs straight.

**3.4 Workers at marking cloth:** Postural analysis of the tailors at marking cloth observed that back was bent and twisted or bent forward and sideways, both arms were keeping below shoulder level, forearm was flexed and in pronation and standing with both legs straight.

**3.5 Worker at cutting cloth:** Postural analysis of the tailors during cutting cloth revealed that back was bent and twisted or was bent forward and sideways, keeping both arms were below shoulder level, forearm was in flexion and in pronation and standing with both legs straight.

**3.6 Worker at stitching cloth:** Postural analysis of the tailors while stitching cloth moved their back and twisted or was bent forward and sideways, keeping both arms were below shoulder level, forearm was flexed and in pronation and legs were in walking or moving.

**3.7 Worker at running wheel:** As regards to running wheels the tailors back was bending forward and backward, keeping both arms were below shoulder level, forearm was in flexion and in pronation and legs were in walking or moving.



Fig. 1 Different sub-activities of Blacksmith work. a – measuring cloth for design, b - mark-

ing, c –cutting, d – stitching, e – running wheel.



The results of the OWAS assessment of the are shown in Table 1. According to the technique of posture analysis 100 percent of tailors works in awkward postures which have some

harmful effect on musculoskeletal system. Light stress, no immediate action is necessary, but changes should be considered in future working in acceptable posture and requires no corrective measures.

Table 1 Overall Distribution of OWAS Score.

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

OWAS Score	Action Categories	Number of Workers	Percentage of Workers
1	No corrective measures		
2	Corrective measures in the near future	100	100%
3	Corrective measures as soon as possible		
4	Corrective measures immediately		
Total		100	

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

**3.8 Prevalence of Musculoskeletal disorders of the respondents:** Prevalence of musculoskeletal disorders of the respondents was assessed by using NMQ method. All the respondents perceived moderate type of joint pain in different sub-activities. Cent percent 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, el-bow, and wrist. The results showed that the highest prevalence of work related musculoskeletal disorders (WMSDs) were in shoulder (72.2 per cent), elbow (63.3 per cent), eye (55.2 per cent), upper back (47.7 per cent), hand and wrist (36.8 per cent), low back (33.3 per cent), ankle (29.6 per cent), neck (23.9 per cent), knees (22.9 per cent) and calf muscles (21.5 per cent). 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.

#### 4. Conclusion

Maintenances of correct body posture is essential for enhancing productivity and comfort and also for reducing work related musculoskeletal problems in tailoring units. The results of postural analysis and scores obtained from OWAS technique, it can be concluded that, work postures have some harmful effect on musculoskeletal system of the workers. No immediate action is necessary, but changes are required in future. For increasing efficiency



and reducing disorders of the tailors their working posture should be changed.

## References

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