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Occupational Health Problems Among Female Sewing Machine Operators

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ABSTRACT

A vast majority of women working in textile and apparel industries serve as sewing machine operators. Sitting in a fixed position constantly in view of the sight requirements at the machine, leads to a static burden that threatens the health of the worker. The present study was formulated to explore the work profile of female sewing machine operators and their resultant health problems. The present study was conducted with 80 female sewing machine operators who were performing sewing activity from last 4 years in Hisar city of Haryana state. A pre tested and well planned questionnaire was used to along with interview schedule to collect the responses of the respondents. The results of the study revealed that the mean working years of the respondents were 11.91 where the mean working hours were 5.74. About 91.25 per cent respondents did not have rest during the work. Among the physiological problem, lower back pain (72.50%) and body ache (52.50%), in symptomatic problems, muscle stiffness (50%), and joint stiffness (45%) and in psychological problems, low motivation (33.75%) and frequent bad mood (16.25%) were found to be the most due to sewing activity. A significant difference was found between health problems and working years, working hours and age of the respondents.

Key words: Workplace, sitting position, work profile, health problems

INTRODUCTION

Sewing machine operators performs monotonous and high speed precision task that require sustained non neutral joint posture and highly repetitive movements. The workers usually sit and work in same position for a long period of time (5-6 hours) in non-adjustable work station furniture, creating a sustained load on neck and shoulder muscles. The women had to maintain a constant seated position with body inclined forward. Long-term sewing works have a cumulative load on the musculo-skeletal structures, including the vertebral column and reflected in the form of high prevalence of discomfort and pain in different body parts which contribute towards their adverse health condition. Highly repetitive works for a long time could increase the intensity of pain felt and lead to repetitive strain injuries as could be observed from the study of Banerjee and Gangopadhayay (2003) on handloom weavers. Most WMSD's affect the hands, wrist, elbows, neck and shoulders. Sarder *et al.* (2006) revealed that employees in sewing activity often work under difficult conditions such as work hours with poor safety, fragile labour relations and inappropriate practices. A low cost solution presented to management by the investigators, was implemented for a period of six months, showed significant improvements in throughput (14.6%), reduction in absenteeism (65%), job satisfaction (40%) decrease in employee turnover (75%) and reduction in health complaints (50%). Women's participation in the sewing activity shows the importance and contribution of women to economic productivity and therefore this study was undertaken to assess the occupational health and safety practices covering sewing machine operators.

METHODOLOGY

The present study investigated the occupational exposure and the health related problems of the female sewing machine operators. The study was conducted in the Hisar city of Haryana state on 80 female sewing machine operators. Only those respondents were selected who stitch the garments at their home for their financial support from at least 4 years. The data were collected with

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well structured pre tested interview schedule. The collected information includes number of working years, number of working hours per day, type of machine used and health problems faced during sewing activity. To know the relationship between occupational exposure and health problems chi-square test was applied.

RESULTS AND DISCUSSION

Table 1: Work profile of sewing machine operators

n=80

Information	Category	Frequency	Percentage	Mean ±S.D.
Type of sewing machine	Hand operated	36	45.00	-NA-
	Paddle operated	23	28.75	
	Electric	21	26.25	
Number of working years	Upto 10 years	43	53.75	11.91± 6.26
	11-20 years	29	36.25	
	21-30 years	8	10.00	
Working hours / day	4-5	31	38.75	5.74 ± 1.03
	6-7	45	56.25	
	8-9	4	5	
Rest pause	Yes	7	8.75	-NA-
	No	73	91.25	
No. of garments stitched / day	1-2	28	35.00	3.187 ± 1.21
	3-4	43	53.70	
	5-6	9	11.25	

The work profile of the sewing machine operators has been presented under the following sub-heads:

Type of sewing machine used: Appraisal of Table 1 revealed that majority of sewing machine operators (45%) were using hand operated sewing machine followed by 28.77 per cent who were using paddle operated machine and remaining 26.25 per cent were using electric operated sewing machine for the sewing activity.

Number of working years: More than half of the sewing machine operators (53.75%) were involved in sewing activity from last 10 years and 36.25 percent sewing machine operators were working from 11-20 years and only one fourth of sewing machine operators were working from last 21-30 years. The mean working years of respondent was 11.91 years.

Working hour per day: It was found that a massive number of sewing machine operators (56.25 %) were working 6-7 hours per day in sewing activity. Table 1 further revealed that 38.75 percent sewing machine operators were working for 4-5 hours per day and very few sewing machine operators (5%) were working 8-9 hours per day in sewing activity. The mean working hours of the sewing activity was 5.74 hours per day.

Rest pause: Table 1 illustrated that a huge number of sewing machine operators (91.25%) were working continuously for 6-7 hours without any planned rest break during the activity. Less than one tenth sewing machine operators (8.75%) were taking rest for 5-10 minutes between sewing activities. The long working hours without any rest might contribute to musculoskeletal disorders. Kaegard and Anderson (2000) reported that sewing machine operators working more than 9-10 years had more health problems.

Garment stitched per day: The table 1 illustrated that little more than half of the sewing machine operators (53.70%) were stitching 3-4 garments (suits) per day followed by 35.00 percent who were stitching 1-2 suits and rest of 11.25 percent sewing machine operators were stitching 5-6 suits per day. The average garments stitched by sewing machine operators were 3.18 per day.

Health related problems of the sewing machine operators

The women engaged in sewing activity suffer from various health problems. Table2, 3 and 4 depicted the physiological, symptomatic and psychological health problems suffered by the sewing machine operators since last 2 years. The health problems can be due to work stress, other reasons and with both work stress and other reasons. The illness from other reasons may be due to extreme weather conditions, faulty food habits, household related problems, environmental pollution or involvement in other activities.

Table 2: Physiological problems among sewing machine operators

n=80

Physiological problems			
Problems	**From work stress**	**Other reasons**	**Both reasons**
Lower back pain	58 (72.50)	4(5.00)	18 (22.5)
Body ache	42(52.50)	8(10.00)	26(2.5)
Joint pains	42(52.50)	24(30.00)	11(13.75)
Strain on eyes	30(37.50)	14(17.50)	15(18.75)
Insomnia	14(17.50)	11(13.75)	13(16.25)
Blood pressure	4(5.00)	24(30.00)	26(32.5)
Gastrointestinal disorders	3(3.75)	5(6.25)	3(3.75)

Note: Multiple responses
Figures in parenthesis are percentages

Physiological problems: From the perusal of Table 2 it is evident that among the physiological problems from the work stress *i.e.* long working hours of sewing activity, "lower back pain" was reported by about three fourth (73%) of the sewing machine operators. About half of the sewing machine operators (52.50%) were suffering from body ache and joint pain both. In this order 37.50 percent sewing machine operators had strain on eyes due to increased concentration and 17.50 per cent reported insomnia due to work stress. About one third (32.5%) of

sewing machine operators were suffering from blood pressure problems due to both reasons i.e. the stress from work and from other reasons. Physiological problems were mainly due to work stress and not from the other reasons. Similarly, in this line a detailed study was conducted on production line female sewing workers, and found that all the women work at the machine. More than the half (55.5%) of the women have problems arising from the working environment and the equipment. The women who have problems mostly complain from the waist (51.1%), the back (30.5%), the neck (27.0%) and the shoulder (15.6%) aches. These problems are followed by the foot, the leg and the arm aches as reported by Kalinkara *et al.* (2011).

Table 3: Symptomatic problems among sewing machine operators n=80

Symptomatic problems			
Problems	**From work stress**	**Other reason**	**Both reasons**
Muscle stiffness	40(50.00)	20(25.00)	2(2.5)
Joint stiffness	36(45.00)	24(30.00)	1(1.25)
Excessive perspiration	36(45.00)	7(8.75)	13(16.25)
Hand trembling	32(40)	12(15.00)	7(8.75)
Fatigue	29(36.25)	17(21.25)	34(42.50)
Numbness in hand/ arms	29(36.25)	15(18.75)	15(18.75)
Difficulty in posture change	23(28.75)	19(23.75)	14(17.50)

Note: Multiple responses
Figures in parenthesis are percentages

Symptomatic problems: Regarding the symptomatic problems, half of the sewing machine operators (50 %) were suffering from muscle tightness in upper back, hips, neck and shoulders from work stress. Forty five percent sewing machine operators felt stiffness in the neck, back and joints due to prolonged hours of sitting in slouching the neck while sewing. Along with this excessive precipitation was also felt by 45 per cent sewing machine operators especially in summer season due to too hot climate.

Hand trembling problem was faced by 40 percent sewing machine operators. Fatigue and numbness in hands/arms and legs was faced 36.25 per cent sewing machine operators due to work stress. Fatigue was the problem faced by 42.5 per cent sewing machine operators due to both reasons as a result and dual nature of task *viz.* household work and sewing activity. Problem of difficulty in posture change was faced by 28.75 percent sewing machine operators due to work stress (Table 3). Chouhan (1999) identified major health problems in women in basket making workers. It was revealed that the major health problem related to abnormal work postures were the "problem of aches". The other problems were low back pain and pain in joints and muscles of the upper and lower extremities.

Table 4: Psychological problems among sewing machine operator n=80

Psychological problems			
Problems	**From work stress**	**Other reason**	**Both reasons**
Low motivation	27(33.75)	18(22.50)	10(12.50)
Frequent bad mood	13(16.25)	46(57.50)	8(10.00)
Increased negativity and irritation	17(21.25)	15(18.75)	6(7.50)
Low self confidence	0(0)	14(17.5)	0(0)

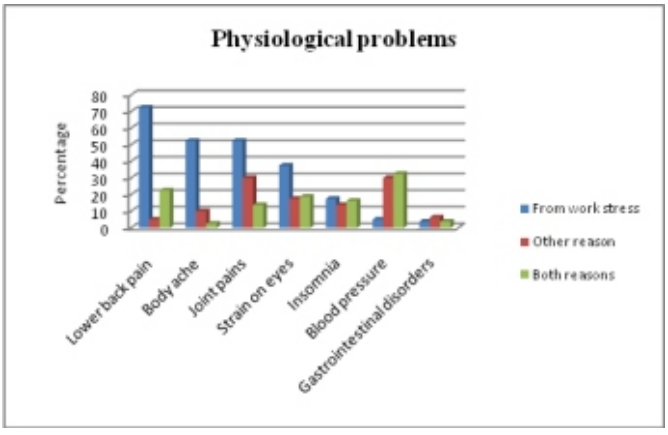
Note: Multiple responses
Figures in parenthesis are percentages

Psychological problems: The Fig 1 further reveals that some of the sewing machine operators suffered from psychological problems but they were more due to other reasons rather than work stress. Pathak and Rana (2004) concluded that under the personal and health problems, mental fatigue was identified as a major psychological problem perceived by majority of workers of carpet weaving industry.

Problem of low motivation was faced by 33.75 percent sewing machine operators.

Low motivation was due to low sewing charges and no appraisal from customers. More than half (57.50%) sewing machine operators felt frequent bad moods due to other reasons. Twenty one percent sewing machine operators had faced increased negativity and irritation due to work stress at the time of urgency of demand and high expectation of customers. Problem of low confidence was in 17.5 per cent sewing machine operators only due to other reasons. Hales and Corelett (1995) conducted a research to find out the factors affecting posture for sewing machine task.

They indicated that sewing machinist suffered from muscular fatigue and pain which has been attributed to poor posture as well as repetitive and prototype hand and arm movements.



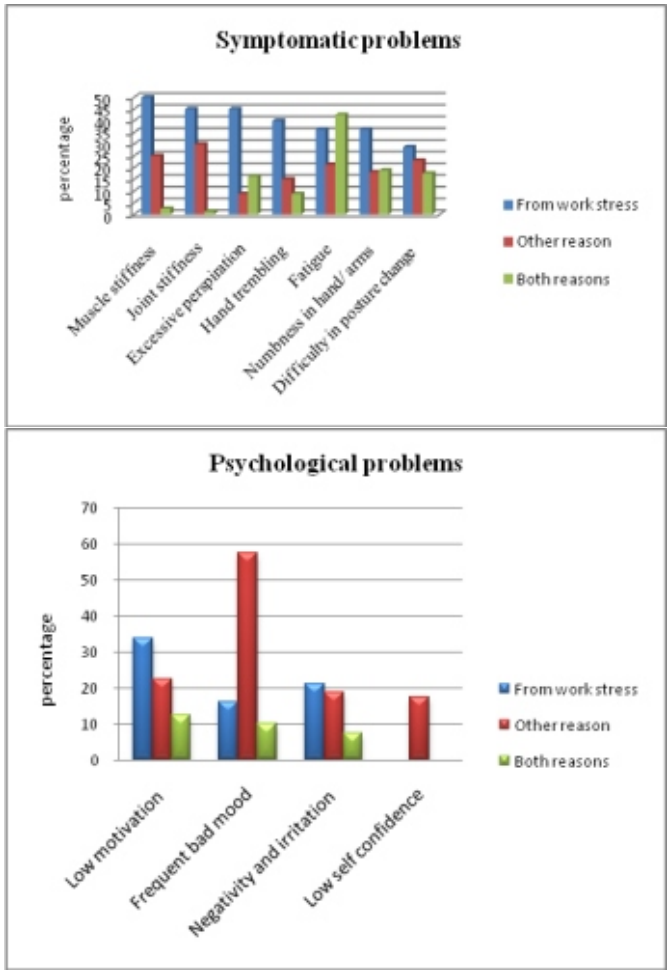


Fig. 1: Physiological, symptomatic and psychological Problems faced by sewing machine operators

Table 5: The *x*2 value showing the association between the independent and dependents variables

Independent variables Dependent variable	Age	Working years	Working hours/day
Health problems			
Physiological	13.76**	13.80*	11.53**
Symptomatic	12.56*	4.32*	12.38*
Psychological	1.47 Ns	3.35*	4.67*
Extent of problems faced	11.45*	7.45Ns	5.13*

**Significant at 1% level
* Significant at 5% level
Ns= non significant

Association between the independent and dependents variables

Table 5 depicted that the age was significantly associated with physical, symptomatic and musculoskeletal problems faced by the sewing machine operators. The table further depicted that number of working years was also significantly associated with physiological, symptomatic psychological and with musculoskeletal disorders. Number of working hours was significantly associated with all the dependent variables.

The age was significantly associated with health problems, musculo-skeletal problems and extent of problem faced. Working years and working hours per day of the sewing machine were significantly associated with dependent variables (health problems, musculo-skeletal problems and extent of problem faced). The reason might be long working hours per day and more years of working sewing machine operator leads to musculoskeletal disorders. It was also reported by Kaegard and Anderson (2000) that sewing machine operators working more than 9-10 years had more health problems. A further study of Dellemem (2000) supports the motion that the textile mill workers usually sits and work in same position for the entire shift (5-6 hours) of a long period of time in non-adjustable work station furniture, creating a sustained load on neck and shoulder muscles.

CONCLUSION

The sewing machine operators faced various physiological, symptomatic and psychological problems. Among the physiological problems due to work stress i.e. 'long working hours of sewing activity', 'lower back pain' was reported by three fourth of sewing machine operators. The other problems faced by the sewing machine operators from work stress were 'body ache and joint pain', 'eyes strain', and 'insomnia due to fatigue and pain'. Regarding the symptomatic problems, due to work stress half of the sewing machine operators were suffering from 'muscle tightness' in upper back, hips, neck and shoulders. Some of the sewing machine operators also suffered from psychological problems i.e. 'frequent bad mood increased negativity and irritation', and lastly 'low self confidence' but these psychological problems were more due to other reasons rather than work stress.

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