Asian Journal of Pharmaceutical and Health Sciences
www.ajphs.com

Musculoskeletal disorders and respiratory illness of workers in small scale textile industries in Meerut District

Sartaj Ahmad*[1], Pawan Parashar[2], Rahul Bansal[3], Ankur Srivastava[4], Subhajit Shyam[5] , Gurmeet Kaur[6]

1 Assistant Professor, Medical Sociology,
2 Professor, Department of Community Medicine,
3 Professor & Head, Department of Community Medicine,
4 Assistant Professor, Department of Community Medicine,
5 Junior Resident III, Department of Community Medicine,
6 Junior Resident III, Department of Community Medicine,
Subharti Medical College, Swami Vivekananda Subharti University, Meerut.

ARTICLE HISTORY

Received: 04.07.2013

Accepted: 16.09.2013

Available online: 10.11.2013

Keywords:

Textile workers, Occupational health status , Addiction.

***Corresponding author:**

Email : sartajsaleem@gmail.com

ABSTRACT

Throughout the world, work related injuries continue to cause serious public health problems and are leading cause of death, disability and disease.The objective of the study was to know the socio demographic status and morbidity disorders among textile workers in the small scale industries in Meerut. This community based, cross-sectional study was conducted among the 206 textile workers of small scale industries of Meerut. The subjects were then interviewed by using a pre-designed, pre-tested semi-structured interview schedule. Interviews were conducted during home visits in Hindi/local language from July 2012 to December 2012. Health status was assessed by asking questions regarding their health problems (in the past three month period) followed by clinical examination by a physician. At least two home visits were undertaken before indicating that a worker was not available. The interview took approximately 25 - 30 minutes to complete the schedule. Data was compiled and analyzed using Microsoft Excel and the results were expressed as proportions . 93.68% of the workers were males , 73.30% were illiterate and 18.93% belonged to lower middle. 80.10% of the workers were addicted. 68.44% Musculoskeletal problems and respiratory problem were the common health problem. This study revealed that work related musculoskeletal disorders was found among small scale textile industrial workers. Improve their socio economic status, counseling should be given for addiction and health education should be provided.

INTRODUCTION

The textile industries are the largest economic sector, nearly 3.8 million handlooms provide employment to 6.5 million workers, who are engaged in producing natural fiber fabrics like cotton, silk and woolen, as well as man-made and mixed fiber fabrics.

Weaving processes are done on two types of hand operated looms e.g., (i) desk-bench type workstation and (ii) sitting on floor with their legs hanging to operate the pedals at a lower level. . The task of weaving demands repeated movement of upper and lower limbs to operate pedals and shuttles, with arms raised away from the body.

Weaving in textile units involves working with warping and weaving machines. The workers are exposed to vibration, cotton dust and noise. Standing work posture is maintained throughout the shift in operating power loom looms simultaneously. After raw materials are warped, the workers push and move iron beams weighing 75100 kg for a distance of about 2 m and this kind of materials handling are performed 67 times per day. The job demands high attention in observing threads do not break off, mending the breaks and then change the beam after one is completed [1].

The working environment and living conditions of the textile workers are poor and pathetic and even hazardous to their health.

They often do not have proper housing, ventilation, sanitation, water supply, proper electricity, natural and artificial lighting in working environment. There is no compensation for work stoppages by the employers. Many workers are Muslim by religion and weavers by caste. The textile work is a family affairs occupation and it is a based on home industry. Women and children are involved as co-supportive in weaving.

Textile workers suffer many serious illnesses such as respiratory problems, musculoskeletal problems, mental disorders, stress, eye diseases, skin problem, gastritis and injuries. The ill health is compounded by various socio-economic factors such as poverty, lack of education, poor diet, addictions, poor working condition, excess working hours etc.[2]

We conducted this study among textile workers in the small scale textile industries in Meerut District .We had the following objective:

(1) To know the socio demographic status and morbidity disorders of textile workers in the small scale industries Meerut

MATERIALS AND METHOD

This community based, cross-sectional study was conducted among the textile workers of small scale industries of Meerut. 206 workers were randomly selected. The subjects were then interviewed by using a pre-designed, pre-tested semi-structured interview schedule. Interviews were conducted during home visits in Hindi/local language from July 2012 to December 2012. Written informed consent was obtained after explaining clearly the purpose of the study. Information was sought on socio-demographic profile, addictions, health status. Health status was assessed by asking questions regarding their health problems (in the past three month period) followed by clinical examination by a physician. At least two home visits were undertaken before indicating that a worker was not available. The interview took approximately 25 - 30 minutes to complete the schedule.Data was compiled and analyzed using Microsoft Excel and the results were expressed as proportions.

RESULTS

Table 1: Socio-demographic characteristics of textile workers.

Characteristics		Power Loom Workers (n=150)	Handloom Workers (n=56)	Total Workers n=206)
Age	< 45 years	117 (78.00)	45 (80.35)	162 (78.64)
	> 45 years	33 (22.00)	11 (19.65)	44 (21.36)
Gender	Male	150 (100)	43 (76.78)	193 (93.68)
	Female	0 0 (00.00)	13 (23.22)	13 (06.32)
Religion	Hindu	12 (08.00)	07 (12.50)	19 (09.23)
	Muslim	138 (92.00)	49 (87.50)	187 (90.77)
Marital Status	Married	129 (86.00)	50 (89.50)	179 (86.90)
	Unmarried	21 (14.00)	06 (10.72)	27 (13.10)
Education	Illiterate	108 (7.002)	43 (76.78)	151 (73.30)
	Literate	42 (28.00)	13 (23.22)	55 (26.70)0
Socio-economic status	Lower Middle	30 (20.00)	09 (16.07)	39 (18.93)
	Upper Lower	120 (80.00)	47 (83.93)	167 (81.07)
History of Smoking	Present	117 (78.00)	48 (85.72)	165 (80.10)
	Absent	33 (22.00)	08(14.28)	41 (19.90)

The socio demographic profile of the study population shows that most of the workers were males 193 (93.68%) and they were in the 15-45 years age-group 162 (78.64%) . It was found that 151 (73.30%) of the workers were illiterate and most of them belonged to lower middle class 165 (18.93%) socioeconomic status according to modification Kuppuswami Classification 2012.165 (80.10%) of the workers were addicted to one or more substances i.e. smoking, and tobacco chewing and both.

Table 2: Occupational Status and Morbidity profile of textile workers.

Occupational Status		Power Loom Workers (n=150)	Handloom Workers (n=56)	Total Workers n=206)
Years of working	Less than 5 years	26 (17.33)	11 (19.64)	29 (14.07)
	5-10 years	40 (26.66)	20 (35.71)	51 (24.75)
	More then ten Years	84 (56.00)	26 (44.64)	109 (52.91)
Hours of works / per day	Less than 8 hrs	22 (14.66)	10 (17.85)	32 (15.53)
	5-10 hrs	36 (24.00)	10 (17.85)	56 (17.18)
	More than 10 hrs.	92 (61.33)	20 (35.71)	118 (57.28)
Morbidity profile				
	Musculoskeletal disorders	105 (70.00)	36 (64.28)	141 (68.44)
	Respiratory illness	20 (13.33)	12 (21.42)	32 (15.32)
	Others	25 (16.66)	08 (14.28)	33 (16.01)

Musculoskeletal problems 141 (68.44%) were the commonest health problem. The other morbidities that we detected were respiratory illness 32(15.53%), and other common general diseases were found 33(16.00%)

DISCUSSION

The ' textile ' industry of India is one such industry. It is an unorganized sector, mostly run by private establishments. The employees of this industry hardly ever benefit from occupational health-and-safety provisions. In India, there is a lack of awareness about occupational safety and environmental hazards that severely affect the vulnerable and marginalized working population. According to WHO, over 1000 million people worldwide are employed in small scale industries.[3]

In this study (80.10%) workers were addicted to one or more substances i.e. smoking, and tobacco chewing or both . Similar findings were observed in a study conducted by Zaki A et al (2010) who suggested that the overall prevalence of tobacco use was 85.9% and prevalence of smoking was 62.28% among the power loom workers.[4]

The reasons of tobacco consumption may be low educational status, occupation involving hard labour work doing night shift and low socio-economic status. The ill health is compounded by various socioeconomic factors such as poverty, lack of education, poor working conditions, excess working hours, and poor diet.[5]

In this study we found that musculoskeletal problems 141 (68.44%) were the commonest health problem. Several work

place factors, such as repetitive work, awkward and static postures, have been identified as being associated with upper extremity pain and discomfort.[6] Work-related musculoskeletal disorders (WMSDs) have emerged as major health problem among workers in both industrialized and industrially developing countries. [7] In a study by Saha TK et al, musculoskeletal problems (69.64%) were the commonest problem.[8] Studies in Iranian hand woven carpet industry have reported high prevalence of musculoskeletal problem among weavers due to constraints of working postures, poor design of loom, working time, repetitive work and seat type .[9] In another study done by How-Ran Guo, workers complained of musculoskeletal disorders of mainly neck, back, shoulders, hands, and wrists.[10]

Musculoskeletal problems were the commonest health problem detected in this study population. This may be explained by the fact that their work required them to remain in a bent position for many hours at a stretch, often in an overcrowded, ill-ventilated, and poorly illuminated room. The neck was the commonest anatomical area to be affected. In machine manufacturing plant and textile weavers high physical demands, poor postures and insufficient recovery time are the contributing factors to develop low back pain. In spite of apparently similar occupational pattern of work, gender differences do exist in the prevalence and severity of MSDs and perception of work as stressors.[11]

In recent times, the contribution of poor environmental conditions at the workplace, poor perception of work conditions, and presence of adverse health conditions in workers has received much attention. The nature of workplaces varies and therefore the determinants of occupational injury and morbidity also varies; identification of the responsible factors in any specific work environment would help in clarifying the etiology and would also be useful for prevention and containment of occupation-related ill health.[12]

In this cross sectional study, the associations presented are observed relations. Reports from Thailand and India confirm the prevalence of MSDs among weavers but the back pain observed in the study. Forced back bent sitting work posture due to positioning of loom, workspace constraints, high muscle exertion and repetitive movement of limbs to operate the looms might be attributed to high prevalence of MSDs among handloom weavers in the present study. [13,14]

High prevalence of back and knee pain among the female weavers in handloom (fixed work station) might be due to the fact that either they had to stretch their legs maximally or had to sit with minimal hip support in a constrained posture to operate the pedals. Non-adjustability of workstations of the looms had distinct constraints on workers due to anthropometrics and physiologic characteristics and contributed to the MSDs. Standing for long hours influences centre of pressure points of the body and lumbar extensor muscle fatigue suggesting that the occurrence of pain in knees among workers might attribute to their standing work for long hours. To these poor workers, mitigation of pain is not their priority. Often they take it for granted as the part of their life process and avoid spending money for medication for themselves in the face of other family priorities. This indifferent attitude often makes the situation aggravated in terms of overuse of muscle and tendons without being recovered. The workers' chosen perception, like constrained work posture, work equipment/tools/method and work load, as the causes of pain and discomfort signify the necessity of involving workers' representation while taking into account the intervention measures to minimize the MSDs among weavers in handloom and powerloom sector. A study reports and substantiates the risk of developing MSDs among weavers who had poor job satisfaction and poor job autonomy. Psychosocial characteristics might also influence biomechanical strain, through changes in posture, movement and exerted forces.[15] Association may well be confounded by the effect of physical factors at work.[16]

In this study the other morbidities that we detected were respiratory illness 32(15.53%), In a study by Parimalam P et al. reported high rate of prevalence of breathing difficulty (82%) and 22% of the workers in the cutting section suffered from asthma. [17]Respiratory problems were the commonest health problem detected in this study population. This may be explained by the fact that they were working in an ill ventilated, overcrowded and poorly illuminated room. Periods of rest in between their long hours of work and seats with adjustable backrest that provide support for the lumber region would go a long way to reduce postural strain and low back pain. Mismatch between man and machine is one of the major factors contributing to musculoskeletal problems. This may be mainly due to the attempts made by the workers to fit the man to the job rather than to fit the job to the man. The variety of morbidities detected among weaving workers, especially the high prevalence of musculoskeletal problems, is alarming. It is high time that steps are taken for revising their wages and the other conditions related to their jobs so that they can improve their socioeconomic condition. Counseling for alcohol and tobacco addiction is necessary and they must be educated regarding the prevention of common diseases and the importance of personal hygiene. Periods of rest in between their long hours of work and seats with adjustable backrests that provide support for the lumbar region would go a long way to reduce postural strain and low back pain. The responsibility for improving the health and safety conditions of garment workers lies with the government and nongovernmental agencies as well as the employers. We recommend that studies with larger sample size should be undertaken to confirm the findings of this study. Textile workers were mainly suffering from respiratory, musculo-skeletal, physical injuries, mental stress, GIT and skin disorders. Immediate intervention programmes are warranted to reduce the future burden of tobacco use related morbidities among the textile workers. Counseling for tobacco addiction is necessary and they must be educated regarding the prevention of common diseases and the importance of personal hygiene. Exhaust systems should be provided for textile workers which ensure proper ventilation and regular supply of fresh air in group work spaces.In textile industry, several hazardous conditions exist, which synergistically affects the health and comfort of the workers ultimately decreasing the work efficiency and hence productivity. It is necessary to monitor the occupational environment and health status of the workers periodically. It is also necessary to create awareness regarding the ill effects of industrial hazards. Awareness generation and updated information regarding the traditional medicines should be undertaken for workers. Periods of rest in between their long hours of work and seats with adjustable backrests that provide support for the lumbar region would go a long way to reduce postural strain and low back pain. The responsibility for improving the health and safety conditions of textile workers lies with the government and nongovernmental agencies as well as the employers. We recommend that studies with larger sample

size should be undertaken to confirm the findings of this study.Lack of general safety measures like absence of first aid kits and lack of safety devices like fire extinguishers, alarms and emergency exits were other serious deficiencies in the workplace. Lack of these safety devices results in the workers getting trapped inside the units under emergency situations. Every work place should have at least the minimum first aid facilities and access to trained personnel to provide emergency medical care. First aid facilities and trained personnel are important components of health and safety arrangements. Safety measures should be checked periodically for ensuring their utility during emergency situations. Use of personnel protective equipments (PPE) like masks or respirators with mechanical filters or with oxygen or air supply, ear plugs, earmuffs should be made mandatory wherever threat to workers health and safety is anticipated. All workers using PPE should be trained in their use and maintenance. All workers must be given periodic medical examination.[18]

CONCLUSION

This study found work related musculoskeletal disorders and respiratory problems due to addictions among small scale textile industries workers. Their socio economic status should be improved and counseling should be provided for addictions and education related occupational health . Regular breaks in between work hours and rotation of jobs so that exposed workers are able to reduce the duration and intensity of their exposure. Regular medical check-ups at periodic intervals at the workplace with increased emphasis on preventing health problems rather than curing them.

ACKNOWLEDGMENTS

The authors thank Mr Mashrul Ahmad , Mr Anas, Mr Yaad Mohd, for their help during the field visits for contacting the textile workers. Authors are also thankful to Mr. Praveen Kumar (Data operator) for his support and to all the workers for their cooperation.

REFERENCES

1. Anjali NAG1, H VYAS1, PK NAG1Industrial Health Original Article Gender Differences, Work Stressors and Musculoskeletal Disorders in Weaving Industries 2010, 48, 339348
2. Goel Kapil, Ahmad Sartaj, ParasharP, Bansal R, Pant B, Goel P. Health Status and treatment seeking behaviour among power loom workers in an urban slum of Meerut city in U.P, journal of Advance Researches in Biological Sciences (2013)Vol.5(1) 302-305
3. Occupational Health: The workplace health and Environment in sustainable development. Geneva WHO; 1997.
4. Zaki AA, Bano SN, Zulkifle M. Prevalence of tobacco use among power loom workers: A cross sectional study. Indian J Community Med. 2010 January; 35(1):3439.
5. Occupational Health and Safety. 4 th ed. 1998. ILO Encyclopedia; pp. 8990.
6. Putz-Anderson V, Bernard B, Burt S, Cole L, Fair Field Estill C, Grant K, Gjessing C, Jenkins L, Hurrell J,Nelson N, Pfirman D, Roberts R, Stetson D, Haring- Sweeney M, Tanaka S (1997) Musculoskeletal disorders and workplace factors. National Institute for Occupational Safety and Health (NIOSH), Cincinnati
7. Westgaard RH, Winkel J (1997) Ergonomic intervention research for improved musculoskeletal health: a critical review. Int J Ind Ergon 20, 463500.
8. Tushar KS, Dasgupta A, Butt A, Chattopadhyay O: Health Status of workers engaged in the small-scale garment industry: How healthy are they? Indian J Community Med. 2010 Jan; 35(1):179-182
9. Choobineh A, Lahimi M, Hosseini M, Shahnavaz H, Jazani K (2007) Musculo-skeletal problems in Iranian hand woven carpet industry. Appl Ergon 38, 61724.
10. Guo HR, Chang YC, Yeh WY, Chen CW, Guo YL. Prevalence of musculoskeletal disorder among workers in Taiwan: A nationwide study. J Occup Health. 2004;46:2636.
11. Xiao G, Dempsey P, Lei L, Ma B, Liang Y (2004) Study on musculo-skeletal disorders in a machinery manufacturing plant. J Occup Environ Med 46, 2416.
12. Saha A, Nag A, Nag PK. Occupational injury proneness in Indian women: A survey in fish processing industries. J Occup Med Toxicol. 2006;1:23.
13. Chavalitsakulchai P, Shahnavaz H Musuloskeletal disorders of female workers and ergonomic problems in five different industries of a developing country. J Hum Ergol (1993) 22, 2943.
14. Singh M, Fotedar R, Lakshminarayan J Occupational morbidities and their association with nutrition and environmental factors among textile workers of desert areas of Rajasthan. Ind J Occup Health(2005) 47, 3717.
15. Bongers P, Winter C, Kompier M, Hildebrandt V Psychosocial factors at work and musculoskeletal disease.Scand J Work Environ Health (1993) 19, 297312.
16. Theorell T (1996) Possible mechanisms behind the relationship between the demand-control support model and disorders from the loco motor system. In: Beyond biomechanics: psychosocial aspects of musculoskeletal disorders in office work, Moon SD and Sauter SL (Eds.),Taylor & Francis, London.
17. Parimalam P, Kamalamma N, Ganguli AK. Ergonomic interventions to improve work environment in garment manufacturing units. Ind Jour of Occup and Environ Med. 2006 Aug;10(2):74-77.
18. Park K, Occupational Health.. Parks Textbook of Preventive and Social Medicine, M/S Banarsidas Bhanot Publishers, 21st edition, 2011, 748-749.