



Impact of work zone environment on knitting industry workers

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Abstract: The study was conducted in 30 knitting industry of Kanpur. Pretested interview schedule was prepared for studying, work environment of the knitting industry. The data was collected from the respective industry administrators/workers of the knitting industry and by personal observation. The study revealed that the knitting industry is a unique and distinct part of the textile industry and is one of the oldest industries in India and knitwear constitutes major proportion of the total garments exports from India. Analysis of data reveals that majority of knitting industry workers were belonging to age group 30-35 years, illiterate, Muslim and OBC category with poor economic status. They were performing industry work about 7-8 hours all the seven days in week. They earn about Rs. 10,000/- month and majority were having 15-20 years of experience. Most of respondents reported that the working environment was unsafe and unhealthy and also found occurrence of various health problems due to poor ergonomic conditions. The study reported that Industry temperature, low light, humid industry environment and machinery noise was also higher than recommended value. Workers also exposed to various biological hazards due to unhygienic condition at workplace. Knowledge regarding work posture, pattern, environment, safe work methods and proper postures can help reduce risk of many health hazards. It can be a very effective way of empowering the industry to mitigate occupational health hazards in knitting industry.

Key words: Work environment, Knitting industry, Health hazards, Work environment etc.

Introduction

There is always an environmental impact the textile production. The impact starts with the use of pesticides during the cultivation of plants for the natural fibres, the erosion caused by the sheep farming or the emissions during the production of synthetic fibre. So there is the environmental effect in the process of production, where thousands of different chemicals are used to reach the final stage of textile products. The work place like industry is an important part of man's environment (Jaiswal, 2011). The health and efficiency of workers working in industries get influenced in large measures by conditions prevailing in their work environment (Bedi, 2006). The industrial workers today are placed in a highly complicated environment which is getting more complicated as man is becoming more ingenious. Due to Technological change, the emergence of new products and production process as well as industrialization of the developing countries and the role of multinational companies in process has brought the question of occupational safety and health into focus. These developments are reflected in the emphasis (in previous years) on international labor organization, standard setting in these fields and on the related provision of information on safety and health. Safety and health of workers is important for smooth and effective functioning of any organization (Sunita, 2011). Changing business environment and globalization of trade is another factor because of which the industry is forced to plan for managing risk and enhancing health and safety at work place (Bal, 2004). Hence the study was planned to study and analyze work environment of knitting industry.

Materials and Methods

Study area: The study was conducted on knitting industry workers of Kanpur district (U.P.) as it is the second largest place of knitting industry of the India. Kanpur is very old cluster of hosiery.

Selection of sample: The sample for the present study was selected by the random sampling method, to obtain a suitable sample. A preliminary survey of various knitting industry in Kanpur was carried out and among those suitable industry having all units i.e. spinning, knitting, dyeing and printing were selected for the study. A list of workers, working in the selected unit i.e. spinning, knitting, dyeing and printing was taken from the administrative department. Further unit wise list of workers having at least 10-15 years experience and range between age group of 30-35 years was prepared. From this list 75 samples were selected from each unit on random basis to form total sample of 300 workers.

Work environment hazards proneness: The incidence of hazards among knitting industry workers was determined according to the scores obtained by the respondents on the scale. A scale was administered on a sample of 160 respondents' to get information regarding impact of environment on their health and efficiency. Responses of respondents were sought in five degree i. e. Strongly Agree-4, Agree-3, Undecided-2, and Disagree-1, strongly disagree-0, so the incidence of hazards among knitting industry workers was determined according to the scores obtained by the respondents on the scale. The proneness of the respondents to hazards was determined as low, moderate, high and severe according to the scores.

Measurement of environmental parameters: There are number of factors involved in ensuring that work environment is ergonomically sound. It included temperature, ventilation, humidity, lighting, noise and other general things to create an ideal environment, which enhance comfort and productivity. Tools and instruments used to measure the physiological parameters of the environment are as follow: 1) Temperature and relative humidity, 2) Light Intensity, 3) Noise

Results and Discussion

Work environment of knitting industry: Work environment is one of the main components of industry which influence human health and behavior. To find out the existing status of work environment experiments were conducted in all the units of industry and levels of parameters were recorded. The working condition provided to the worker is a major issue as it has direct impact on job quality and health of respondents. While assessing the working

Hazard proneness

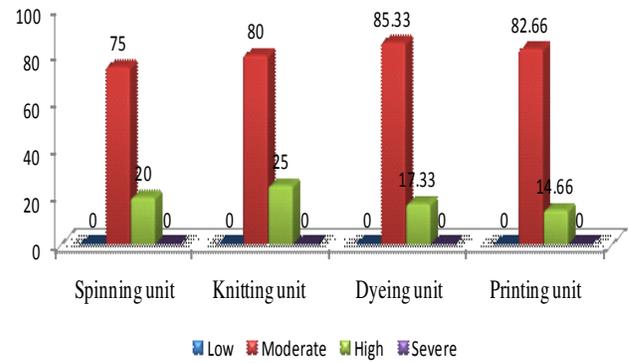


Fig.1: Hazards proneness to knitting industry respondents



Plate-1: Work environment of knitting industry

Table-1: Work environment of knitting industry

Environmental Conditions	Spinning				Knitting unit				Recomm- ended value	Dyeing unit				Printing unit				Recomm- ended value
	Morning	Afternoon	Evening	Average	Morning	Afternoon	Evening	Average		Morning	Afternoon	Evening	Average	Morning	Afternoon	Evening	Average	
Temperature (°C)	34.8	34.5	32	33.36	36.6	40	37	37.65	20-23	33	34.3	33.2	35.50	34.1	34.5	32	33.53	20-23
Noise (dB)	77.2	78.3	77.3	77.6	89.1	89.5	89.4	89.33	90	70.5	75.5	73.00	73.0	69.1	67.2	68.1	68.13	90
Humidity (%)	37	37	37	37	32	34	33	33	40-60	35.6	35.5	35.4	35.5	32	31	32	31.66	40-60
Light (LUX)	130	113	270	171	140	120	280	180	1000-2000	120	115	190	141.66	140	118	250	169.33	1000-2000

Table-2: Hazards proneness to knitting industry respondents N=300

Scores	Hazard Proneness	Spinning unit (n=75)	Knitting unit (n=75)	Dyeing unit (n=75)	Printing unit (n=75)
0-25	Low incidence	-	-	-	-
26-50	Moderate incidence	75.00	80.00	85.33	82.66
51-75	High incidence	20.00	25.00	17.33	14.66
76-100	Severe incidence	-	-	-	-

Table-3: Significant difference between industry work environment N=300

Units	Mean± SD	F	df	Result
Spinning unit	3.2±0.4	2.76	3,29	*
Knitting unit	3.3±0.3			
Dyeing unit	3.3±0.4			
Printing unit	3.2±0.4m®			

*Significant at 5%

conditions, major emphasis was given on light, temperature, humidity and noise. Similar study was done by Ashraf *et al.* (2009) Excessive noise exposure is a high risk for the hearing of workers. It has been noted that the weaving section has a very high sound level. In our study mean sound levels in the weaving sections were 95.3 dB (A) with a range of 88.5-104 dB (A). The similar situation were found in Jhalandar, India which showed a range between 80 -102 dB equal to the noise in the two textile plants included in the study. Most of the studies conducted worldwide show that the weaving departments have the highest noise levels. [http:// www. Environment gov .Pk / PRO_ PDF / Paper GEN. PDF](http://www.Environment.gov.Pk/PRO_PDF/Paper_GEN.PDF)

Impact of work environment on health and efficiency of respondents: A scale was developed by (Singh and Sinwal, 2004) to measure the impact of work environment on health and efficiency of respondents. The scale had 25 items in all. Maximum and minimum score of an individual in scale were 100 and 0 respectively. To find out the prevalence of health hazards, scores were categorized below-

Scores	Categories
0-20	Low incidence
26-50	Moderate incidence
51-75	High incidence
75-100	Severe incidence

The analysis revealed that majority of industry workers (83%) were in the category of 'Moderate' incidence of hazards and (17%) were found in high incidence of health hazards. Low and severe incidence of health hazards was nil in various units of knitting industry. Further most of the respondents were exposed to moderate incidence of hazard proneness which indicates that some remedial measures must be taken to improve work condition of industry workers. Thus it

can be interpreted that work environment affected the health of the respondents. Similar findings were reported by Saha *et al.* (2010) Work provides income and thus contributes to a better socioeconomic condition which, in turn, is related to good health. However, the work environment exposes many workers to health hazards that may result in injuries, respiratory diseases, cancers, musculoskeletal disorders, reproductive disorders, cardiovascular diseases, mental and neurological illnesses, eye damage, and hearing loss, as well as communicable diseases often in an overcrowded, ill-ventilated, and poorly illuminated room. Statistical analysis of work environment has shown significant result between work environment of knitting industry in various unit (F=2.76, df-3,29, p<0.005).

The present study showed that average temperature of knitting, dyeing, spinning, and printing was higher than permissible limit .Highest noise level was measured in knitting unit. On the basis of above findings Majority of industry workers were in the category of 'Moderate' incidence of hazards and few were found in high incidence of health hazards. Low and severe incidence of health hazards was nil in various units of knitting industry. So study concluded that work environment was unsafe and unhealthy and noisy environment is not good for health and will not give quality of work (Bala, 2006).

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