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ORIGINAL RESEARCH ARTICLE

Assessment of working Conditions and Physical Fitness of Female Tobacco Workers in Different Tobacco Units at Jaysingpur City of Kolhapur District, Maharashtra

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ABSTRACT

In most of the developing countries industrialization is growing in vast conditions. India is one of the leading country in the world in all aspects. Tobacco is one of the principal commercial crop in India. This processing industry in Maharashtra providing employment to the rural population including women in more number.Jaysingpur Tal- Shirol,Dist- Kolhapur, Maharashtra is famous for its tobacco and tobacco products. This industry is providing employment to local and outside women. Women workers working in these industries are illiterate and from low socio economic status. The present research investigation pointed out the occupational stressesand hazards caused due to tobacco dust, indoor environmental factors like noise, vibration, poor ventilation, inadequate illuminated heat etc. Shift work accidents, ergonomic hazards are noticed among Female Tobacco Workers. Faulty workplace design can create various health problems like movement of body in wrong postures. Females of different age group and work exposure periods were observed for their health conditions. Standard questionnaire was used to investigate workers health problems. Paper discusses various hazardous due to unhealthy practices and workplace of female tobacco workers in the tobacco industry.

Keywords: workplace, occupational hazards, body postures, stresses.

INTRODUCTION

The Indian economy is predominantly based on agricultural and industrial development.Occupational hazards among the tobacco workers has been well documented by several investigations, Ramazzini (1964) write about diseases of tobacco workers. The significance of health and safety on productivity cannot be properly discussed without considering the concept of ergonomics. Physical fitness of the workers and external forces involved in any industrial operation can be measured, but the relation of these forces to the physiological task and input to investigate the effects of occupational exposure to tobacco dust on health status of female tobacco workers in tobacco leaf processing units.

The tobacco factory of Jaysingpur receives leaves of tobacco mainly from Karnataka and border region of Maharashtra. Female workers (n=100) were approached from a tobacco factory processing tobacco leaves. A standard questionnaire was administered to all subjects. The questionnaire contained questions about their occupational health related problems at the workplace. Primary and secondary risks factors related to accident at workplace, stress factors, age, smoking habits, alcohol intake, menstrual status, physical activity, eating habits, family history, socio economic status and living conditions.

MATERIALS AND METHODS

The present work was carried out at Jaysingpur Tal. ShirolDist-Kolhapur 100 female workers were randomly selected from the processing units. They are grouped according to their work exposure In years and cumulative exposure. Subjectsare compared with controlled values. The women living near to the processing units are considered as controls. The information was gathered through standard questionnaire. Using standard techniques of occupational physiology, physical characters like height and weight weremeasured using measuring tape and weighing machine. The body temperature was recorded by clinical thermometer. Radial pulse was used to record pulse rate Sphygmomanometer was used to

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measure blood pressure. Harvard modified step text was used for physical fitness test. Wright's peak flow meter was used to measure lung capacity. Grip Dynamometer was used to test grip strength. Female Tobacco Workers are categorized into 6 groups based upon their period of work exposure. Group I represents work exposure period from 1 week to 5 years. Group II represents work exposure period from 6 years to 10 years. Group III represents work exposure period from 11 years to 15 years. Group IV represents work exposure period from 16 years to 25 years. GroupV represents work exposure period from 26 years to 35 years. GroupVI represents workplace period from 36 years to 55 years.

RESULTS AND DISCUSSIONS

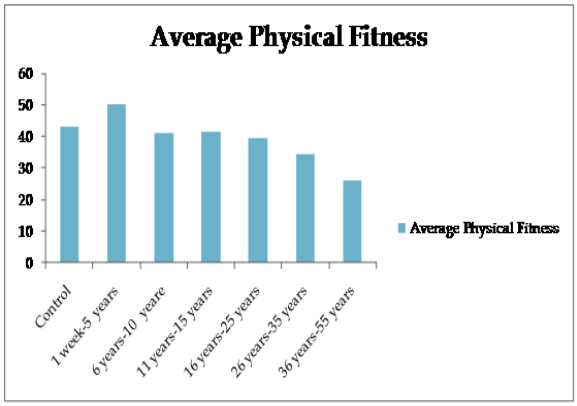
Female Tobacco workers are considered for the present study everyday they are exposing to different types of health hazards and stresses at the workplace. The questionnaire study shows that maximum females are illiterate andleading low socio-economic life. Most of them are addicted to tobacco eating and tobacco chewing. Apart from their personal and domestic poor conditions the workplace is also affecting workers health adversely.Hundred (n=100) Female Tobacco workers were considered for the present study. Every day they are exposing to different types of health hazards and stresses at workplace. Female Tobacco workers in the Tobacco Processing units were of the age ranging between 17 years to 75 years. Height of the subjects ranged between 135cms to 170cms.Weight of the subjects ranged between 32kgs to 75kgs.

Blood pressure, Pulse rate, body temperature were recorded and compared with the control values and are presented in a graphical forms. Ergonomic hazards at the workplace are affecting working conditions. Female workers have to lift and carry heavy loaded tobacco bales from processing room to godown everyday frequently. During the processing of tobacco leaves workers have to perform all the jobs in awkward positions like bending, walking and sitting. For Tobacco processing three types of machines are used namely cutter hopper and fan. Cutter cuts tobacco into smaller pieces. Hopper separates tobacco into different sizes 4 to 5 sizes of tobacco comes out from the hopper machine. Fan separates mud and stones from the tobacco and gives tobacco in the pure form. Pouring the tobacco into the hopper machine workers have to carry heavy tobacco bales above their head and climb the machine. Climbing with heavy load is a difficult task and worker may have the chance to fall from the height and lead to accident. Repetitive body movements' awkward body postures through the shift work can cause musculoskeletal disorders. Back pain, pain in hands andlegs are the common symptoms noticed among Female tobacco Workers.

Most of the Female Tobacco Workers are addicted to tobacco eating and tobacco chewing. Workplace stress may lead to loose alertness of the body,affecting normal physiological functions.Eating raw tobacco at the workplace releases nicotine in the tobacco workers body. Nicotine Toxicity is prevalent among tobacco workers.Sinha and Gupta et al (2003) reported on tobacco use in the rural area of Bihar. Haq,(2003) reported "Life begins with tobacco and ends with diseases." Workplace environment is fully loaded with occupational stresses like extreme heat, tobacco dust inadequate illumination, noise vibration. Workplace stresses alters physical and mental health of the workers. Shift work also has detrimental effect on the workers body. (Knott's 1996) showed workplace stresses does not have to kill you. The hazards of the workplace stress are coupled with poor living conditions, poor socio-economic conditions, malnutrition, lack of medical facilities, and violence at domestic level can affect physical and mental health of the body.

Physical fitness of the female tobacco workers shows significant reduction as compared to the controls. This significant decrease in the fitness score shows the effect of heavy tasking at the workplace and frequently undergoing repetitive injuries. Human under stress will not acquire steady state normally. After step test it was observed that their body is taking more time to recover than normal individuals. Average physical fitness score shows reduced capacity and severity of the occupational stress effects.

Figure 1: Average Physical fitness Score of the female tobacco workers in tobacco processing industry

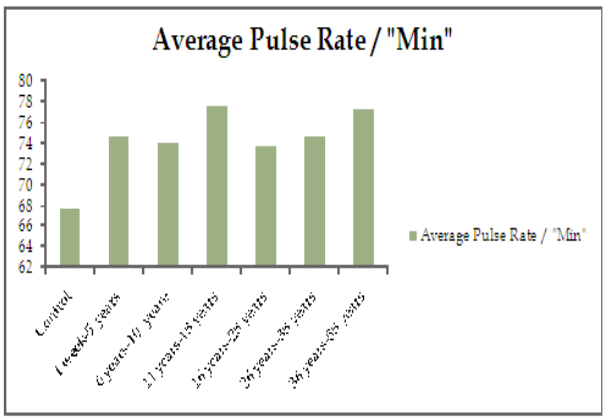


Grip strength test were applied to both hands in horizontal and vertical positions. The grip strength values for both right and left hand show significant decrease as compared to controls. Poor physical fitness invites many health consequences like immune system, cardiovascular system and respiratory system. . The work exposure group 1 week to 5 years shows highest physical fitness score and from the group 36 years to 55 years shows lowest average physical fitness score .Lifting, carrying, standing for prolonged period, pushing, pulling, shows less physical fitness among Female Tobacco Workers. The Female Tobacco workers get tired very quickly. They take more time to recover from the effects. This clearly indicates workers less ability to fight against occupational hazards andstresses. Maximum average grip strength for right horizontal is from the group of work exposure period from 1 week to 5 years. Lowest average grip strength value for right horizontal is from group 36 years to 55 years.

Maximum average grip strength for left horizontal is from the group of work exposure period from 11 week to 15 years. Lowest average grip strength value for left horizontal is from group 36 years to 55 years. Maximum average grip strength for right vertical isfrom the group of work exposure period from 11 week to 15 years. Lowest average grip strength value for right vertical is from group 36 years to 55 years.

Maximum average grip strength for left vertical is from the group of work exposure period from 11 week to 15 years. Lowest average grip strength value for left vertical is from group 36 years to 55 years.

Figure 2: Average Pulse Rate of the Female Tobacco Workers, in tobacco processing industry



Increase in B.P and Pulse rates also shows effect of stresses at the workplace. Fluctuations in the blood pressure, reduction in the pulmonary functions are the result of the occupational hazards and stresses.The workers from the work exposure period 11 years to 15 years shows highest average S.B.P.Lowest average S.B.P. is from the work exposure period 16 years to 25 years. Average highest D.B.P. is from the work exposure period group 6 to 10 years. Lowest D.B.P. is from the work exposure period group 11 years to 15 years.

During heavy muscular task blood flow increases rapidly and fallowing increase in heat beat rates. Bjanorntor,(1997) studied stresses and cardiovascular diseases.Matthews*etal.*, (1987) reported that stressful work conditions and DBP among blue collar factory workers. Pulse rates decrease with increasing age. It shows effect of hazardous work exposure on their body. Both Systolic and diastolic B.P's are affected. The body temperature was increased with the increase in duration of work exposure. Controlled subjects shows significantly lower pulse rate. It is clear that rise and fall in BP and pulse rate is the effect of work load, work stress and hypertension. According to Theorell *et al.*, (1988) working people are increased risk of a repeated work strain if they return to work with a job characterized by having a Job Strain.

Figure 3: Average Grip strength horizontal Right and left of the female tobacco workers in tobacco processing industry

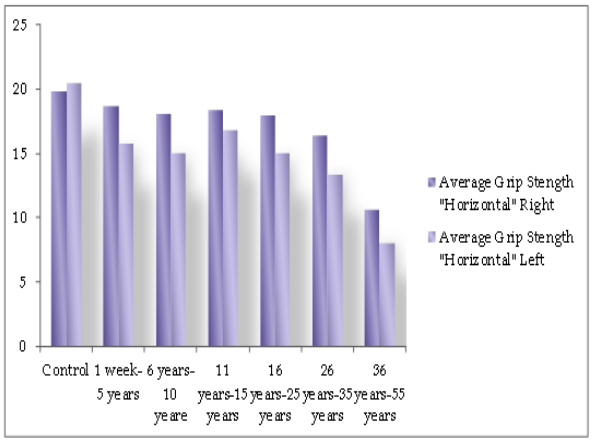


Figure 4: Average Grip strength vertical Right and left of the female tobacco workers in tobacco processing industry

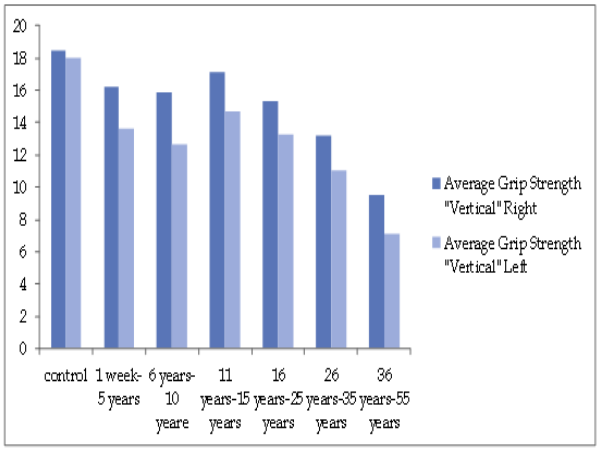
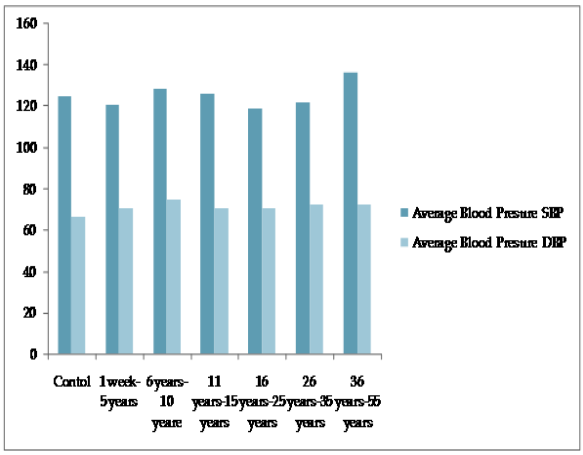


Figure 5: Average Blood Pressure of the female tobacco workers in tobacco processing industry



Workplace stresses and hazards along with heavy muscular activity cause alteration in heart rates. Work exposure period group 11 years to 15 years workers are having maximum pulse rate. The lowest pulse rate value is from the group IV. Rise in blood flow and pulse rates is the indication of physical strain. Stressful conditions of the workplace and poor physical fitness. Hann, (1985) described strain and cardiovascular diseases.

Working conditions at the Tobacco processing Unit are extremely unfavorable. Lifting and Carrying heavy loaded tobacco bags.Providing tobacco into the cutter and hopper machine cause muscle fatigue. Standing for a longer period, awkward body postures, twisting, bending can cause musculoskeletal disorders. Climbing the machines and Pouring tobacco into the cutter and hopper machine will invite accidents and workers may slip from the height and can lead to probable fall. All tobacco processing methods fine tobacco dust is released and it is respirable and directly inhaled by the workers. Tobacco dust size ranges between 0.1µ to 2.0µ microns particles less 10 microns are freely respirable. Ivan Yanav and Stefan Costianav, (1987) studied tobacco dust under electronic microscope and they described tobacco dust as isometric form and size ranges between 0.005µ to 1.6µ. Triangular and polygonal in shape. These dust particles enters into the alveoli and cause debilitating lung diseases and irritate the respiratory tract. Respirable dust deposits in the gaseous exchange region and infecting lungs. Tobacco dusts particles less than 10 microns are easily enter the alveolar sacs in the lungs. Respiratory illness may occur slowly after some years of exposure. In the tobacco processing units dust size is less than 10 microns directly inhaled by the workers. Dust cause various lung diseases like Pneumoconiosis andCOPD that means diseases caused by inhalation of dust by breathing. Silicosis and black lung diseases are the two forms of Pneumoconiosis. Prolonged exposure to tobacco dust reduce the efficiency of mucociliary activities and muscles in the airway walls The Female Tobacco Workers exposed to tobacco dust show lower PEFR values and show the symptoms like dry nose, difficulty in breathing, Asthma, vomiting and many more infections.

It is necessary to recommend preventive measures to overcome from the occupational health hazards. Workplace layout must fulfill the workers needs according to ergonomics. Before handling the machines instructions must be provided. Well sophisticated tools must be used creating awareness among workers is the vital program. Research at the occupations will help to reduce and minimize the hazards and stress in a scientific way. Masks and goggles must be provided while working in dusty areas. Lung function testing before starting employment should be carried out. Good housekeeping, introducing dust emitting machines, exhaust fans and proper ventilations will reduce dust concentration. These preventive measures will helps worker to work in hazard free, safe environment and to lead healthy life.

CONCLUSION

In the present study it is noticed that, health problems related to adverse work place environment are high among Female Tobacco Workers. Primarily occupation is being hazardous and women lack protective equipment's. Diseases arise mainly due to hazardous working conditions and lots of dust. Physical fitness performances are very poor as the duration of work exposure increases. Awkward body postures leading to musculoskeletaldisorders. Workplace stresses may cause cardiovascular diseases.

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