



OCCUPATIONAL STRESS AND IMPACT ON HEALTH STATUS OF DAIRY INDUSTRY WORKERS

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Abstract:

Environment of organization influences the productivity and efficiency of the workers. The work environment should have comfortable temperature, must be free from dust, noise, fumes, undesirable odour. One should protect the workers against any health hazards and maintain a highest possible degree of physical and mental well being of workers. Stress at work place can be caused by chemical, physical, biological and social factors. It is interesting to study the work place environment and occupational stress in dairy industry. It has been observed that the dairy plant workers are exposed to various occupational stresses.

Keywords: Occupational, Stresses, Dairy, Milk reception.

Introduction:

Industrial occupational hazards, stress, lack of safety measures, lack of healthy work place environment and welfare schemes are affecting the safety and health of the industrial workers. Dairy industry is one of the oldest and largest industries in the world. It is the backbone of the nation's economy. In India large numbers of people are engaged in the dairy industry. Maharashtra is one of the leading states in dairy industry and has provided employment to large number of people.

Kolhapur Dudh Utpadak Sangh Ltd. operates dairy plant at Gokul Shirgaon Industrial estate. It is famous as Gokul Dairy and the plant consists of various sections i. e. milk Reception section/ Doc, milk processing section, milk pouching section, production and packing section, cold storage and Engineering and maintenance section. Engineering and maintenance section consists of boiler section, mechanical section, refrigeration and effluent treatment plant. The study carried out at this dairy plant showed the occupational hazards and stress caused due to noise, vibration, inadequate illumination, heat, cold, dust, chemical hazards like exposure to ammonia gas, shift work, freak accidents and ergonomic hazards caused due to wrong body postures during work, faulty work place design. A healthy and scientifically designed work place and work conditions increase the efficiency of workers and productivity of the industry. The present research intends to evaluate the occupational stresses and hazards in dairy plant workers of Gokul dairy. A systematic, scientific methodological study was carried out to achieve

perfection and authenticity in the research work.

Materials and Methods:

The examination of workers in various sections of dairy was performed using a specially developed questionnaire that included group of questions related to the characteristics of the interrogated employee. Such as (Name, age, sex, employment time, weekly working days, working hours, cumulative exposures, working area in sq. mt., habitual practices like tobacco chewing, cigarette smoking). The other set of examinations were carried to assess the physical and physiological status of the workers which included blood pressure, lung function test, haematological profile, step test etc. 100 workers were administered the tests. The analysis of data was done using statistical tools of methods. As per the sample size student's t - test was applied to assess and analyze the data which would help in authentic interpretation and conclusion. The calculations of student t - statistic have been done by the statistical software systat.

Observations:

The various statistical analysis have been interpreted taking the office workers as standard and comparing the workers from various sections with the office section workers.

$$H_0 : \mu_1 = \mu_2$$

V / S

$$H_1 : \mu_1 > \mu_2$$

H_0 = There is no significant difference between average PEFR L/min of office workers and other section workers.

H_1 = The average PEFR L/min of office workers is greater than other section workers.

Since, $t_{cal} > t_{table}$ for all section workers except Mechanical and Godown, hence H_0 is rejected for these groups. Thus average PEFR is

- 1) Significantly lesser for all the section workers than that of Office section workers.
- 2) For Mechanical and Godown Section workers PEFR is almost equal to the office section workers. Refer table number 1.

$$H_0 : \mu_1 = \mu_2$$

V / S

$$H_1 : \mu_1 < \mu_2$$

H_0 = There is no significant difference between average Neutrophil % of office workers and other section workers.

H_1 = The average Neutrophil % of office workers is less than other section workers.

Since, $t_{cal} < t_{table}$ for Doc. Processing, Product A, Product B, Coldstore and Boiler group. Hence we reject H_0 at 5% L.S. i.e. the average % of Neutrophil for all these groups is more than that of office group and for Packing, Mechanical, Refrigeration and Godown section it is nearly equal to office section workers (Refer table number 1).

The Bar diagram given in Figure 1 represents the average Physical fitness score of the workers working in different sections of the dairy. Figures shown are the average Physical fitness score of the workers. The workers in office section have the highest average Physical fitness score which is 72.56 and the workers in boiler section have the lowest average Physical fitness score is 38.

The product A section represents Butter, Ghee and Powder sections and Product B section represents Shrikhand, Paneer, Lassi and Curd sections (Refer figure 1).

Discussion:

Work place environment and physiological profile of Dairy industry workers has been worked out and expressed in the graphical and tabular form. Work place environment and working conditions have a very vital impact on efficiency, morale and industrial condition. Environment of the organization has considerable influence on the efficiency of the workers. A healthy work place is an environment where health risks are recognized and controlled if they cannot be removed. In

healthy work place, the work is designated to be compatible with people's health needs and limitations. The work area should have ample space for free movement and vision. There should be comfort in temperature, humidity, ventilation, clean air and free from dust, fumes and undesirable odours. The illumination should be without glare. Noise and vibration should be reduced.

The constitution has made special references to working conditions in the Directive principles of state policy. The relevant provisions in the constitution are "the state shall in particular direct in policy towards securing the health and strength of workers, men and strength of workers, men and women and the tender age children are not abused and that citizens are forced by economic necessity to enter vocations unsuited to their age or strength". (Indian constitution Article 39)

"The State shall make provision for securing just and human conditions of work and for maternity relief". (Indian Constitution Article 42)

The occupational health consists of measures for

- 1) Protecting the workers against any health hazards, arising out of their work place.
- 2) To take care of workers physical and mental adjustments.
- 3) Maintenance of highest possible degree of physical and mental wellbeing of workers.

Dairy industry is one of the oldest occupations of the world. It is interesting to study the work place environment, work place hazards and stresses in dairy plant workers. It has been observed that the Dairy plant workers are exposed to various occupational hazards. The work place hazards vary from section to section. The workers suffer from physiological stress factors like heat, cold, humidity dust and chemical factors like gases particularly the effect of ammonia gas. Etiological agents like fungi and bacterial pressure. Shift work and the probable accidents are the risk factors which could be traced in the dairy industry. The awkward position while carrying out the work have potential to cause musculoskeletal disorders.

The study concentrates on the various work place hazards and stresses in dairy plant workers of Gokul Dairy plant at Gokul Shirgaon in Kolhapur. Ten workers from each section were randomly selected and administered various tests to evaluate the stress factors. Ergonomic survey of the various sections have revealed the physical, chemical and biological, musculoskeletal related problems causing potential hazards and stress factors.

Working in Dairy plant presents a variety of ergonomic hazards. The generic risk factors for musculoskeletal disorders are grouped in an operational way that is useful in explaining the work relatedness of musculoskeletal disorders that has biological possibility and has a strong connection with work place environment. Four key physical risk factors associated with ergonomic hazards in the work place are identified by the Ergonomic and medical experts. They are awkward postures, biomechanical stresses, repetition and force. Repetitive forceful or prolonged exertions of the hands, frequent or heavy lifting, pushing, pulling or carrying heavy objects, prolonged awkward postures and vibration contribute to the musculoskeletal disorders. Working conditions that combine risk factors will increase the risk of musculoskeletal disorders. Lifting of heavy objects without regard to ergonomic rules leads to weakness in the elasticity of the deep veins resulting in varicose veins. Awkward postures, unnatural postures, sudden and unexpected motions cause lower back pain. Working in static position for a long time adversely affects the spinal segments and shoulders and occupational fatigue.

Dust was another occupational hazard faced by the dairy plant workers. In the investigation carried out it was observed that the workers working in milk powder production section were exposed to milk powder dust. The Aggarwal S. P. and Agarwal M. K. (7994) have studied the **upfact** of dust pollution. The studies have shown that the workers showed significantly lower peak expiratory flow rate 470 lit/min. They showed the symptoms of wheezing, breathlessness. The workers working in Product A section showed the erythrocyte sedimentation rate at 14.1mm/hrs. Which was the highest among all the sections? The normal values of ESR by Westergren's method in males are 3 to 7 mm in one hour. Increase in erythrocyte sedimentation rate suggests the chronicity of respiratory impairment. When there is tissue break down or entry of foreign protein into the blood erythrocyte sedimentation rate increases neutrophil % is also increased which leads to respiratory impairment.

The statistical analysis of the physical fitness of the dairy plant workers from the various sections shows that the workers working in the office section have the highest average of physical fitness indicate the prevalence of hazards and stress free working environment.

Boiler workers have the lowest average of physical fitness. Doc, Cold storage workers show an average physical fitness nearer to that of the workers working in cold storage section. The workers working in processing section have the lower average of physical fitness. The occupational hazards like cold, in cold storage section and heat in boiler section have the telling effect on the physical fitness of the workers from these sections. The workers from Doc are exposed to the occupational hazards like noise, dust and ergonomic hazards like lifting, bending, pulling, resulting in the musculoskeletal disorders like lower backache, shoulder pain, neck pain, causing poor physical fitness.

Table 1: Testing the equality of average PEFR L/min of Office section workers and other sections workers

Groups	Calculated 't' value	Table 't' value
Office v/s Doc	2.713	
Office v/s Processing	3.034	
Office v/s Milk pouching/packing	2.482	
Office v/s Product A	2.16	
Office v/s Product B	2.913	T (0.05,18) = 1.734
Office v/s Cold store	2.482	
Office v/s Mechanical	1.242	
Office v/s Boiler	3.487	
Office v/s Refrigeration	2.928	
Office v/s Godown	0.063	

Table 2 : Testing the equality of average Neutrophil % of Office section workers and other sections workers

Groups	Calculated 't' value	Table 't' value
Office v/s Doc	-2.80	
Office v/s Processing	-3.68	
Office v/s Milk pouching/packing	-1.67	
Office v/s Product A	-2.25	
Office v/s Product B	-2.18	t (0.05,18) = -1.734
Office v/s Cold store	-2.737	
Office v/s Mechanical	-1.418	
Office v/s Boiler	-3.48	
Office v/s Refrigeration	0.089	
Office v/s Godown	-0.768	

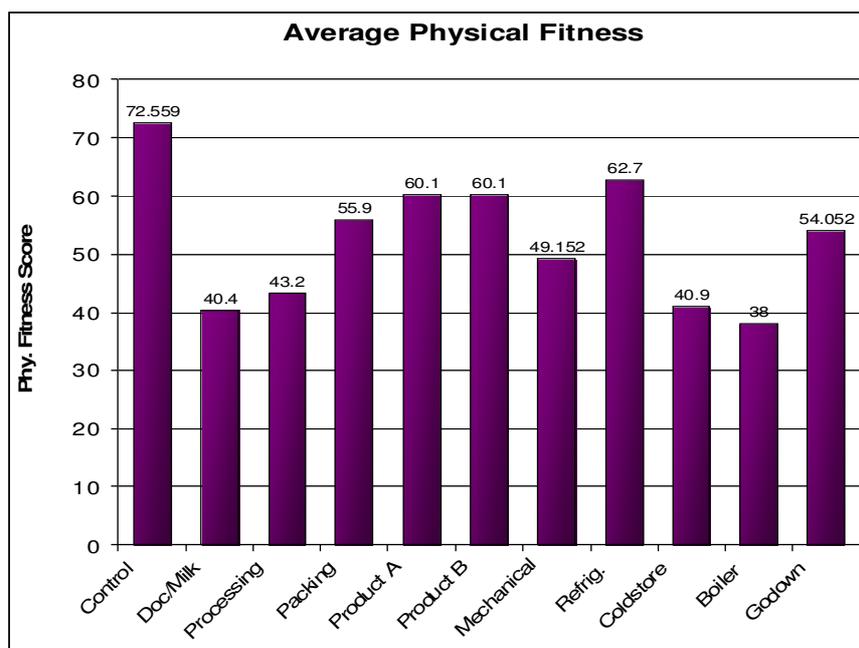


Figure 1. Average physical Fitness of Workers in Gokul Dairy

Conclusion:

Good house keeping, training, effective maintenance of the machinery and safety devices are the vital factors in improving the working environment in the dairy plant. It would have telling effect on the safety and productivity. Prevention and elimination of the hazards is of paramount importance. Awareness among the work force and the occupational health development should ensure the availability, accessibility and affordability of primary occupational health service will ensure the safety, welfare and well-being of the dairy worker. While working the worker interacts with colleagues, the work, work place, environment, which is physical, chemical and biological. Research is an important tool for the development of occupational health, providing scientific basis for policy making, priority setting, problem solving, professional training and evaluation. The study carried out and its finding would help the dairy management to become aware of the working condition and occupational hazards and stress faced by the dairy plant workers of Kolhapur Dudh Utpadak Sangh Ltd. and implement the programmes that would work for the hazard free work environment, safety and welfare of dairy workers.

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