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Working Environment and Occupational hazards in class IV employees in tertiary care hospital, Mumbai

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ABSTRACT

Background: Hospital is an institution meant to ensure community health. Hospitals that are considered a very safe place are not really safe. Aims: To assess the working conditions, health problems and occupational hazards of class IV employees Setting: Tertiary care teaching hospital Mumbai, India, Designs: Cross-sectional study Methods and materials: Stratified random sampling ttchnique was used. Detail history and medical examination was carried out at their respective work place for their convenience. Statistical analysis: Percentage and Chi square test used. Results: Out of 1518 total 320 class IV employees were included in the study. Out of 320 employees 86(26.9%) were addicted to alcohol, 58(18.1%) for smoking and 121(37.8%) for tobacco in other form. Only 15-20% class IV employees had facilities for sitting, bathing and taking food. Out of 201 class IV employees who had needle prick/sharp injury, 28(13.9%) had done HIV testing and only 5(2.4%) taken antiretroviral treatment. Only 21(6.5%) employees received complete hepatitis B vaccination. Out of 320 employees 128(40%) had breathlessness, 86(27%) had eye irritation, 15–20% had blackening of skin, diarrhoea, nausea due to handling chemical and solid wastes. Two new pulmonary TB and 1 new diabetic were diagnosed during investigation. Sixty four employees died before retirement from 2003 to 2006. conclusions: Very few employees had basic work facilities in hospital. Occupational hazards were more; but reporting is very less in hospitals.

KEYWORDS: Hospital Class IV employees, Morbidity profile, Occupational Hazards

Introduction:

Hospital is an institution meant to ensure community health. Hospitals that are considered a very safe place are not really safe. Hospital does not work in isolation. It is itself a community within the community. Health care professionals consists of mainly doctors, nurses, paramedical staff and Class IV employees consisting of hospital maintenance staff, laundry staff, ambulance staff and waste-handling staff.

Health care professionals are the most negligent as far as their own health is concerned. They are exposed to high risk of various infections and also become victims of lifestyle diseases due to their stressful schedules and high degree of professional responsibility. They are exposed to variety of dangers like infections, sharps and needle stick injuries, exposure to anesthetic gases, radiations, dermatitis causing substances, vaccines, serums and experiences severe stress while treating high risk VIP patients. Heavy musculoskeletal load, shift work, physical violence from relatives of patients poses various forms of mental and psychological stress. The situation calls for a serious move to have some standards for the healthcare worker to minimize exposure and ensure follow up of all needle stick injuries or any other form of exposure to infectious waste contaminated with patients body fluids etc. can cause serious health effects to the healthcare workers constantly in contact with these.1

India had legislation on occupational health and safety for over 50 years. The principal health and safety law i.e. Factories Act 1948 does not cover hospitals. Bio-Medical Waste (Management and Handling) Rules 1998 have a provision of "Accident Reporting" concerned witwaste management and handling; but reporting of accidents are very less because the clauses are very ambiguous.2

There are limited studies on Class IV hospital employee in India. We therefore conducted this study with the objective of assessing the working conditions of class IV employees at their workplace. Another objective was to assess the health problems and occupational hazards if any in this highly vulnerable group.

Subjects and methods

This cross–sectional study was carried out in tertiary health care teaching hospital Mumbai in 2008. Prior permission and ethical clearance was taken from appropriate authorities. The purpose of the study was explained to the study subjects and their consent was taken. As per the hospital record, there were total 1815 class IV employees. Inclusion criteria were all permanent class IV employees having a minimum five years service and who consented for the study. After exclusion total 1518 employees constituted the sampling frame. Stratified random sampling technique was used for selection of the study subject from the sampling frame. Seven strata such as Emergency medical services (EMS), Operation theatres (OT), Intensive care units (ICU), Hospital wards, Outpatient department (OPD), diagnostic services and supportive services were taken for study. Twenty percent of each strata were selected randomly. To check non responsive study subjects and subjects lost to follow up a sample size of 320 was deter-

mined. Representation of the various strata were as follows, EMS 14 (4.3%), OT 44(13.7%), ICU 16 (5.0%), ward 131(40.9%), OPD 18(5.0%), diagnostic services 13(4.0) and supportive services 84(26.2%).

All the selected subjects were interviewed by pre structured, pretested questionnaire by the investigator. Detail history and medical examination was carried out at their respective work place for their convenience and to study their work environment. Subjects requiring further expert opinion/investigations were referred to appropriate departments and followed up later. Analysis was done by SPSS-15 software. Chi squire test was used to find any statistically significant association. P value less than 0.05 was considered as statistically significant.

Results

In the present study, out of 320 employees 108 (33.7%) were female and 212 (66.3%) were male. Out of 320 class IV employees maximum 150 (46.9%) were in 41- 50 year age group and 4 (1.3%) employees were in 21-30 year age group of which all were female.

In the present study, Majority of employees 147(45.9%) were sweeper, 73(22.9%) were ward boy and remaining were ayah, servant etc. Majority of employees 284(88.8%) were Hindu, 27 (8.4%) were Buddhist and 7 (2.2%) were Muslims. Out of 320 employees, 238(74.4%) employees were primary educated, 53 (16.6%) were illiterate and only 4(1.3%) were higher secondary educated. Majority of employees 173 (54.0%) had completed 15 years of the service. According to Modified Method of Kuppuswamy's for Social classification of Family (urban), majority of class IV employees 219(68.4%) were in class II and 93(29.1%) were in class III.

Out of 320 employees 86(26.9%) employees were addicted to alcohol, 58(18.1%) to smoking and 121(37.8%) to tobacco in other form i.e. gutka, pan etc.

Out of 320 employees 63(19.3%) employees had sitting facilities, 57(17.8%) employees had bathing facilities, 55(17.2%) employees had facilities for taking food and rest, 57(17.8%) employees had facilities for changing and drying of cloths and 52(16.3%) employees had knowledge about availability of crèche facility at work place.

Out 320 employees 245(76.5%) employees were using soap or antiseptic solution for washing hands after work in hospital. Out of 245 employees using soap or antiseptic solution for hand washing after work in hospital, 40(16.4%) employees had recurrent gastrointestinal problems while out of 75 employees not using soap or antiseptic solution for hand washing, 34 (45.6%) employees had gastrointestinal problem. This difference is statistically significant.($x2 = 25.570$, $df = 1$, $p<0.001$).

Out 320 employees 267 (83.4%) employees were using gloves. Employees which were using gloves during working in hospital had less gastrointestinal problems as compare to those who were not using gloves. This difference is statistically significant. ($x2 = 81.05$, $df = 1$, $p<0.001$).

Out of 320 employees 257 (80.3%) employees were using cap and mask. Only 30(9.4%) employees were using shoes for waste handling or working in hospital. As compare to 83% of male employees, 92.5% female employees were using gloves during work. This difference is statistically significant. ($X2 = 5.096$, $df = 1$, $p< 0.05$). Majority of educated employees 86.1% use gloves during working in hospital as compare to 69.85% illiterate employees. This difference is statistically significant. ($X2 = 8.534$, $df= 1$, $p<0.01$Table 1: Needle prick or sharp injury at work place (n=320)

Needle prick or Sharp injury	Frequency	%
Single needle prick or sharp injury	106	33.1
Repeated needle prick or sharp injury	95	29.7
No	119	37.2
Total	320	100.0

Table 2: Action taken after injury (n=201)*

Action		Frequency	%
Action taken after injury	Injection Tetanus Toxiod (T.T.)	77	38.3
	HIV testing done	28	13.9
	(post exposure prophylaxis) PEP	5	2.4
	No action	124	61.6

*Frequencies are not mutually exclusive. (106+95=201) i.e Total of employees which had Single or repeated needle prick/sharp injury No one reported seropositive for HIV, Hepatitis B and Hepatitis C infections. Only 21(6.5%) employees received complete hepatitis B vaccination and only 45(14.06%) employees took injection tetanus toxoid booster doses. However there were 4 already diagnosed cases of HIV, out of which 2 were taking anti retroviral treatment.

Table no 3: Health problems due to handling chemicals and solid wastes(n=320)**

Health Problems	Frequency	%
Breathlessness	128	40.0
Eye irritation	86	26.8
Nausea	68	21.2
Headache	63	19.6
Blackening of skin	61	19.0
Backache, neck and shoulder pain	56	17.5
Diarrhoea	46	14.3
Decreased appetite due to dirty work	38	11.8
Weakness	23	7.1
Itching	19	5.9

** Frequencies are not mutually exclusive

Morbidity pattern in hospital class IV employees

Out of 320 class IV employees 163 (50.9%) had some or other health problem. Maximum 112 (68.7%) employees had musculoskeletal disorder, 74 (45.3%) had gastrointestinal problem, 63(38.6%) had skin diseases, 46(28.2%) had injuries, 39(23.9%) had respiratory diseases, 31 (20.2%) had ophthalmic diseases. Fourty one (25%) females had gynecological problems and all female were anemic (Hb% less than 11gm%). Twenty one (12.8) were hypertensive, 17(10.4) had ENT problem, 16(9.2%) had Diabetes mellitus, 15(9.2%) had Cardiovascular diseases, 15(9.2%) had Hepatitis, 7(4.2%) had Tuberculosis, 7(4.2%) had dental problem and 4(2.45%) were HIV positive out of which 2 were taking treatment from tertiary care hospital.

Out of 320 employees 27(8.4%) were underweight, 76(23.8%) were preobese and 78(24.4%) were obese. Out of 154 obese employees 13(8.4%) had diabetes mellitus while out of 166 normal Body Mass Index employees only 3(1.8%) employees had diabetes mellitus. Obese employees had higher prevalence of DM. This difference is statistically significant. ($X2 = 7.403$, $df = 1$, $p< 0.01$). Obese employees had higher prevalence of hypertension. This difference was statistically significant. ($X2 = 7.091$, $df = 1$, $p < 0.01$).

Three new cases of hypertension were diagnosed during examination. Out of 145 class IV employees referred for investigation, only 51(35%) actually did. Out of 18 chests x ray, 2 showed new pulmonary TB, 3 showed old pulmonary TB and 3 chronic bronchitis. Out of 8 blood sugar 1 was detected for diabetes mellitus. Out of the 11 USG for abdomen, 2 showed enlarged liver. Out of 4 ECG, 1 had T wave inversion (old infarct). Out of 23 Hemoglobin recommended in females, all were anemic (Hb<11gm). All the 10 sputum for AFB recommended were negative.

Mortality: sixty four (64) employees died before retirement from 2003 to 2006. Average 16 employees died every year before retirement.

Discussion:

In the present study, age group of class IV employees ranged from 20 to 60 year which is similar to other study.3 Majority of class IV employees were Hindu and primary educated. Majority of females were illiterate may be due to preferential treatment (PT) cases i.e. job after death of husband. However it is found that educational status of employees of our study is not matching with other study. 3

In the present study, out of 320 employees 58(18.1%) were tobacco smokers and 121(37.8%) were tobacco chewers only. Thus use of tobacco in all forms was found to be 56%. This is clearly in excess than the general population which is 30%.4 This excess could be because of occupational stress and working condition in the study hospital. Further research is required to prove this. There is definite need to undertake Tobacco control programme in this hospital. It is possible to decrease addiction in employees by improving working condition, health education and awareness campaign for worker to understand the adverse effect of tobacco. Similar finding were also reported by other unpublished work done by investigators in Mumbai, India.5,6

In the present study, out of 320 employees 86(26.9%) employees were addicted to alcohol. In the general population 13% of males and females were addicted alcohol.7 Different unpublished studies in Mumbai found that alcohol addiction ranges from 12% to 64%.5,6,8

In the present study, facilities for sitting, bathing, taking food and changing cloth at work place ranged from 15-20%. Employees used to sit on floor in one of the room of ward for taking food. This clearly denotes the lack of basic facilities at workplace and needs to be corrected immediately. Similar finding were also reported by other unpublished work done by investigators in Mumbai, India.9

In the present study, 267 (83.4%) employees were using gloves. However, study conducted in Goa by Salelkar S found that gloves usages is 58% at the time of injury.10

In the present study, 106(33.3%) employees had needle prick or sharp injury at least once while working in hospital during life time. Similar results were also observed by study conducted in Goa by Salelkar S. 10

In the present study only 21(6.5%) employees had received complete hepatitis B vaccination and only 28(13.9%) had done HIV Testing with 5(2.4%) actually taken antiretroviral treatment for post exposure prophylaxis; although this hospital had facilities available for reporting of accidental needle stick injury and post exposure prophylaxis (PEP) for HIV.

In the present study 77(38.3%) believed that only injection tetanus toxoid was required after any needle prick or sharps injury. They were not aware of the other diseases transmitted through needle prick or sharp injury. There is need of training on Universal precautions and PEP for HIV. Mass immunization against tetanus and Hepatitis B for class IV employees should be planned as early as possible. Due to under reporting of needle prick injury in hospitals the exact magnitude of this problem is not known, hence reporting system needs to be strengthened.

Occupational hazards due to handling chemicals and heavy weight in hospital is a major issue but not focused much in research as in other industries. In the present study, majority of employees suffered from muscular pain due to handling heavy weights. Employees reported breathlessness, itching, blackening of skin and decreased appetite due handling of chemicals in hospital while cleaning. They reported of not receiving any training regarding handling of chemicals and heavy weights at work place.

In the present study, musculoskeletal disorder, gastrointestinal problems, skin diseases and injury were common morbidity in class IV employees. There were 154(48.2%) obese employees. Obesity is an important risk factor for Hypertension, Diabetes mellitus, Ischemic heart diseases and other musculoskeletal disorders. In the present study, 21(12.8%) were hypertensive. Similar finding were also reported by investigators in India. 11,12

In the present study 16(9.2%) had diabetes mellitus. However it is found that prevalence of diabetes mellitus in employees of our study is higher than other studies conducted in general population. This may be due to stressful life style, dietary habits, shift duties and lack of exercise 14, 15 Awareness needs to be generated regarding this aspect. Also there is a need of periodic examination for early diagnosis. In the present study, majority of employees were staying away from their family because of lack of residential facility. This reason was perceived by majority of employees who addicted to alcohol and resulted in poor attendance at duty. In the present study, it was found that an average of 16 deaths prior to retirement was found as per hospital records. These deaths can be reduced by health education, deaddiction, training at work place and compulsory periodic health examination.

On examination all female employees were found to be anemic. Employees requiring expert opinion were referred for further management under the respective medical experts.

One of the important features of this study was that it diagnosed one new case of each Hypertension, Pulmonary Tuberculosis and Diabetes Mellitus. These patients were referred for further management under the respective medical experts. Screening is a important tool for health promotion

To conclude, Hospital community is still a neglected industry. This is especially true with class IV employees. Thus the persons who are at the highe st risk are the most neglected one. It is recommended to enhance the quality of life at work place by provision basic sanitary facilities, recreational activities, on the job training and compulsory periodic health examination

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