



STUDY ON OCCUPATIONAL SAFETY AND HAZARDS AND HEALTH PROBLEMS OF HEALTHCARE WORKERS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background- Healthcare workers are considered to be the most important workforce in the world where they operate in an environment which is considered to be the most hazardous. They encounter various occupational hazards like biological, chemical, physical, ergonomic and psychological while providing services to the patients. **Objectives:** This review aims at identifying the Health problems, assessing the Occupational safety and Hazards and analyse the Healthcare workers according to the hazards faced by them. **Material and Methods:** The research carried out is a descriptive study. It was carried out among 360 healthcare workers who include Doctors, Nurses, Paramedics and House-keeping staff using stratified sampling method. Data was collected using Self-administered questionnaire and interview. The study was conducted for the month of May to June. **Results:** The study illustrates that Ergonomic Hazards was the most frequent occupational hazards, that the healthcare workers experienced. Healthcare workers were more exposed to Biological hazards like blood borne pathogens and body fluids (31.6%), Exposure to chemical hazards like disinfectants was 42.3%. The common and the highest Physical hazards experienced was slips/trips/falls, 48.5% of the healthcare workers had work related stress. House-keeping staff was the highest to experience Ergonomic (52.5%) and Chemical Hazards (25.4%), Biological hazards were more experienced by nurses (34.4%) and paramedics (33.3%), doctors were the highest to experience psychological hazards (19.7%). Healthcare workers also suffered from health problems like indigestion (40.2%), 16.5% PCOS. **Conclusion:** Healthcare workers had experienced various occupational hazards like biological, chemical, physical, and psychological and while working in the hospital. There is a need to take necessary actions and precautions to protect the healthcare workers. Organization should make mandatory that all the healthcare workers should receive Hepatitis B vaccination take immediate actions for workplace violence

INTRODUCTION

Occupational hazards are the accidents, illness that occur in the workplace and are experienced by many healthcare workers. These are the conditions that might increase the risk of illness, disability and even death to the workers. Occupational hazards are classified into categories like physical, chemical, biological, ergonomic,

Psychological hazards. The scope and diversity of these dangers are underappreciated. It was found that at least one out of ten healthcare workers in hospital settings experience sharp related injuries. The national audit office in 2003 stated that needle stick injuries were placed along with exposure to hazardous substances. The

majority of the incidents happen in the healthcare facility while treating the patients, and they are exposed to blood-borne pathogens and body fluids as a result of sharp, percutaneous injuries. As a result of these mishaps the healthcare workers are exposed to blood borne illness like hepatitis B, hepatitis C virus and also Human Immune Deficiency virus (HIV) infections. Occupational illness and accidents have become a major source of worry on a national and international scale. Despite the fact that a number of preventative measures have been devised and applied to reduce or eliminate workplace accidents, they nevertheless happen on a regular basis. According to global health workers, nurses are the ones that suffer the most needle stick injuries, followed by laboratory technicians and physicians. Healthcare workers are exposed to many occupational hazards like infections, exposure to radiation and noxious chemicals, psychological problems, ergonomic hazards and have very adverse effects on their health. Healthcare workers are at high risk for mortality and morbidity due to the occupational hazards they face in the hospital*[1]. Also these hazards increase the risk for job related health problems, diseases, incapable employees thus creating new problems like reducing the job performance which in turn results in great economic loss for the organization*[8]. Due to this the healthcare services which are already poor in developing countries like India are affected as there is a substantial loss of healthcare personnel who are skilled. Physical and economic loss, psychological problems like depression and stress are all multiple impacts of occupational illness and injuries among all the healthcare workers working in the hospital. These all result on negative impact on healthcare workers, their families and even the country as a whole*[1]. The world health Organization defines a healthy workplace as an environment in which the organizations management collaborates and works to maintain employee safety and also should ensure good working climate, culture, safe physical circumstances as well as improve the employee's health *[6].

A study which was conducted in community health centers, reported that out of 10 healthcare workers, at least 9 of them were exposed to at least one of the occupational risk and the community services like rehabilitation, nursing, social welfare were stated to be more stressful and these work related stress turns out to be a risk factor for many diseases like cardiovascular diseases, psychological disorders *[8]. Healthcare workers experience many healthcare problems and occupational accidents while working in the hospital. Despite of taking various measures for occupational health and safety of Healthcare workers, occupational accidents and diseases are more frequent in healthcare workers. Keeping into account all these hazards, the healthcare workers should be protected and that these hazards should be identified and necessary precautions should be taken to minimize these hazards*[10].

Materials and Methods

Study Setting: The study was carried out in a 1000 bedded multispecialty hospital in Hyderabad

Study Design: The research carried out is a descriptive study. It is carried out among Healthcare workers (Doctors, Nurses, Technicians, House-keeping staff) using stratified sampling method. It was conducted for the month of May to June.

Study Tool: Face to face interview was conducted to identify the occupational Health problems of healthcare workers. A structured self-Administered questionnaire is used to assess the occupational hazards experienced by Healthcare workers which consists of 3 sections. The first section consists of socio demographic information of the healthcare workers. The second section consists of multiple choice questions about occupational hazards. The third sections consists of questions assessing the Occupational safety of Healthcare workers. Data was analyzed using SPSS software and MS Excel

Sample Size: Sample size of 360 healthcare workers were taken from the population size of 6000. Out of 360 Healthcare workers only 291 responded for interview and questionnaire. 90 were nurses,

61 were doctors, 81 were paramedics and 59 were house-keeping staff.

Results

Health Problems of healthcare workers

Healthcare workers had various health problems like gastric problems among which indigestion was the highest (40.2%), 56.0% had dry skin for using latex gloves, among musculoskeletal problems shoulder and neck pain were more predominant and 65.6% reported they did not had any lifestyle diseases while 16.5% had PCOS.

Occupational Hazards Experienced by Healthcare workers: Healthcare workers were exposed to various biological hazards among which exposure to Blood borne pathogens and body fluids were highest (31.6%), and 25.1% were exposed to Human waste products such as faeces and urine. 45.4% of the healthcare workers experienced needle prick injuries while 40.2% suffered from wounds while working in the hospital. 44.7% of the healthcare workers reported that the reason for their needle stick injuries was due to improper disposal of the needles and 30.6% reported that they had self-inflicted. Disinfectants was the highest chemical hazards that the healthcare workers were exposed to (42.3%), 32.6% of them were exposed to Sterilizing agents and 8.9% of them were least exposed to Anaesthetic gases. The common and the highest physical hazards experienced by the healthcare workers was falling/Tripping/Slipping (39.9)

and 24.7% of them had visual disturbances, 18.2% of them were exposed to radiation and 17.2% of them experienced electrical shock due to faulty electrical sockets. 50.5% of the healthcare workers reported that they had work related stress and 30.4% of them experienced verbal abuse from the patients and their authorities and 12.0% of them had depression while working in the hospital.

Occupational Safety measures for Healthcare workers: 50.2% of the healthcare workers reported that they were completely provided with all the personal protective Equipment's and only 7.2% of them reported that they were partially provided with all the PPE kits. 69.4% of the healthcare workers reported that no proper training sessions were conducted and 11.3% reported every 3 months and only 19.2% reported that monthly once they conduct training sessions to use medical Equipment's and devices related to their work. 68.4% of the healthcare workers reported that when a work place violence occurs the committee takes action within a day, 20.6% reported no proper action was taken and only 10.3% reported immediately. 42.3% of the healthcare workers reported that they had taken covid-19 vaccination and 36.8% reported they had taken both Covid-19 and Hepatitis B vaccination.

Table 1. Socio Demographic Characteristics of Healthcare workers in a Tertiary care Hospital

S.No	Variables	Characteristics	Number	Percentage
1	Age	20-25 years	52	17.9
		26-30 years	132	45.4
		31-35 years	73	25.1
		36-40 years	21	7.2
		41-45 years	7	2.4
		>45 years	6	2.1
2	Gender	Male	101	34.7
		Female	190	65.3
3	Designation	Doctors	61	21.0
		Nurse	90	30.9
		Paramedics	81	27.8
		House-keeping staff	59	20.3

4	Years of experience	One year	29	10.0
		1-3 years	83	28.5
		3-5 years	99	34.0
		More than 5 years	80	27.5

Out of 291 respondents, more than half of them were female healthcare workers (65.3%), majority of the respondents were between the age group of 26-30 (45.4%). Pertaining to designation nurses were the highest (30.9%) and housekeeping staff were (20.3%)

Table.2 Health Problems experienced by Healthcare workers

S.No	Health problems	Number	Percentage
1.	Gastric problems		
	Chronic acid reflux	93	32.0%
	Indigestion	117	40.2%
	Ulcer	68	23.4%
	Flatulence	13	4.5%
2.	Skin Problems		
	Dry skin	163	56.0%
	Rashes	43	14.8%
	None	85	29.2%
3	Musculoskeletal Problems		
	Shoulder and neck pain	115	39.5%
	Low back pain	91	31.3%
	Wrist pain	33	11.3%
	Leg pain	52	17.9%
4	Life style Diseases		
	PCOS	48	16.5%
	Hypertension	24	8.2%
	Diabetes	28	9.6%
	No	191	65.6%

Table.3 Occupational Hazards experienced by Healthcare workers

S.No	Types of Hazards	Number	Frequency
1.	Biological Hazards		
	Exposure to Blood borne Pathogens and Body Fluids	92	31.6%
	Exposure to Human waste products like faeces and Urine	73	25.1%
	Direct contact with contaminated material	59	20.3%
	All the above		
	Needle prick injuries	67	23.0%
	Wounds	117	45.4%
	Reason for Needle prick injury	132	40.2%
	Improper disposal of needles		
	Self-inflicted	130	44.7%
	Recapping a needle	89	30.6%
Non co-operation of the patient	45	15.5%	
	27	9.3%	

2.	Chemical Hazards Disinfectants Sterilizing Agents Cytotoxic drugs Anaesthetic gases	123 95 47 26	42.3% 32.6% 16.2% 8.9%
3.	Physical Hazards Falling/Slipping/Tripping Visual disturbances Exposure to radiation Electrical shock due to faulty electrical sockets	116 72 53 50	39.9% 24.7% 18.2% 17.2%
4.	Psychological and Psycho-social hazards Verbal abuse Work related stress Loss of confidence Depression	74 141 17 35	30.4% 50.5% 5.8% 12.3%

Frequent occupational Hazards experienced by Healthcare workers

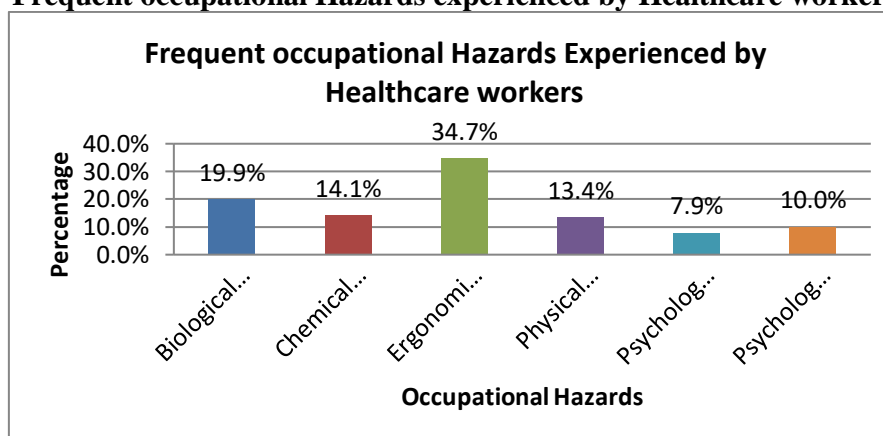


Figure: 1

The highest frequent Occupational Hazards faced by Healthcare workers was Ergonomic Hazards (34.7%), 19.9% of them had Biological Hazards and both psychological and psycho-social hazards (10.0%) was the least experienced by the healthcare workers in their Organization

Analyzing the Healthcare workers according to the Hazards experienced by them

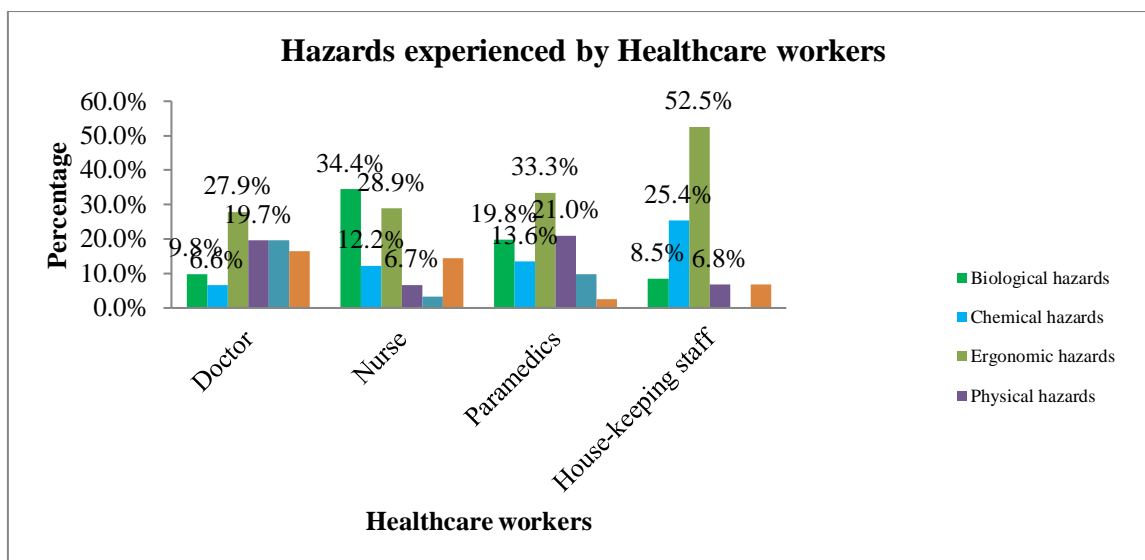


Figure:2

House-keeping staff was the highest to experience Ergonomic (52.5%) and Chemical Hazards (25.4%), while biological hazards were more experienced by nurses (34.4%) and paramedics (33.3%), doctors were the highest to experience psychological hazards (19.7%).

DISCUSSION

The study reveals that exposure to blood borne pathogens was the highest biological hazards faced by healthcare workers (31.6%) followed by exposure to human waste products such as faeces and urine (25.1%). A recent study conducted on occupational hazards in Mukalla city hospitals among healthcare workers showed that the prevalence of biological hazards was around 76% among which needle prick injury was the most prevalent biological hazard which is 80% and exposure to contaminated material was 75%*[2]. A study conducted in Jugol hospital on occupational hazards and safety measures among healthcare workers, revealed that 15.5% of the healthcare workers were exposed to chemical hazards like disinfectants and exposure to sterilizing agents was the least which is similar to Current study *[7], Whereas in this current study Disinfectants was the highest chemical hazards that the healthcare workers were exposed to (42.3%), 32.6% of them were exposed to Sterilizing agents and 8.9% of them were least exposed to Anaesthetic gases. 29.6% of the healthcare workers suffered from eye irritation and 27.1% of them had dermatitis when exposed to chemical hazards. The common and the

highest physical hazards experienced by the healthcare workers was falling/Tripping/Slipping (39.9) and 24.7% of them had visual disturbances, 18.2% of them were exposed to radiation and 17.2% of them experienced electrical shock due to faulty electrical sockets, while studies conducted in tertiary care hospital in turkey showed that slips/falls were 20.8%, electrical shocks were around 1.7% *[6]. In the current study out of 291 participants 36.1% of the Healthcare Workers reported that the reason for their Ergonomic Hazards was due to long standing hours and being sprain and strain, while 14.4% of them reported due to lifting heavy objects like patients and equipment and 13.4% of them had ergonomic hazards due to sitting in awkward position while performing a procedure. Most of the healthcare workers experienced psychological and psychosocial hazards among which 48.5% of the healthcare workers reported that they had work related stress and 25.4% of them experienced verbal abuse from the patients and their authorities and 12.0% of them had depression while working in the hospital. A similar study conducted in jugol hospital revealed that out of 148 participants 38.5% of the healthcare workers reported that the reason for their ergonomic hazards was due to sprain and strain. A study conducted on

occupational hazards at Quena University hospital, 27.4% of the nurses reported that, loss of self-confidence and feeling of defeat was highly present in them *[14]. In the current study, occupational safety measures for healthcare professionals were assessed which showed 50.2% of the healthcare workers reported that they were completely provided with all necessary personal protective equipment's and 36.8% of them had taken vaccination for both COVID-19 and Hepatitis B. These findings were comparable to a study conducted in Uganda where the health facilities provided healthcare workers with PPE (53.5%) and 78% of them had received Hepatitis B vaccination *[4]. In the current study, biological hazards like exposure to blood borne pathogens and body fluids were more experienced by nurses (47.6%) and housekeeping staff were the highest to experience chemical hazards whereas study conducted in University hospital of West Indies reported that medical doctors (96%) and porters (94%) had more splashes from bodily fluids and medical Technologist were the highest to report exposure to hazardous chemicals *[3].

In the current study healthcare workers had various health problems while working in the hospital, 40.2% of the healthcare workers had gastric problems like indigestion for not taking the food at correct time due to the work pressure. 50.6% of the healthcare workers stated that they had skin problems like dry skin because of using latex gloves and 29.2% had skin rashes as they need to wear for a longer time. In this study, among all the musculoskeletal problems shoulder and neck pain were prominent and was highest experienced by the healthcare workers (39.5%). When comes to lifestyle diseases, 16.5% of the female healthcare workers had suffered from PCOS due to sedentary work and working for a long time. Whereas the study conducted in tertiary care hospital in turkey among the nurses, 29.2% of them had gastrointestinal problems like constipation, ulcer and colitis. 36.7% had skin diseases like dermatitis, eczema which is less when compared to our study. Herniated disc and

carpel tunnel (34.2%) were the musculoskeletal diseases experienced by the nurses. According to this study, 26.7% had cardiovascular diseases like hypertension and varicosis*[6]

CONCLUSION

Majority of the healthcare workers had experienced various occupational hazards like biological, chemical, physical, psychological and ergonomic hazards while working in the hospital. The most frequent occupational Hazard experienced by healthcare workers was Ergonomic Hazards. Among all the healthcare workers, doctors were the highest to experience psychological hazards and biological hazards were more experienced by nurses and paramedics. Most of the healthcare workers also suffered from health problems like indigestion, PCOS, shoulder and neck pain. There is a need to take necessary actions and precautions to protect the healthcare workers from occupational hazards. Furthermore the Organization should make mandatory that all the healthcare workers should receive Hepatitis B vaccination as they are exposed to various biological hazards and should take immediate actions whenever there is workplace violence.

Recommendations:

1. Keep floors clean and dry, provide warning signs and caution boards for wet floor areas and provide plugs for equipment's, so power cords need not run across pathways to avoid slips/trips and falls
2. Ensure that sufficient number of employees are available to move heavy patients, large and heavy equipment's
3. Maintain proper posture while performing scanning, use chairs that are height adjustable to avoid too much bending and stretching
4. Use green chemicals which have low toxicity levels for floor cleaning to avoid eye irritation
5. Make sure that the needles of the syringe are cut preferably with needle cutter and then dispose into the container. Flush splashes to the nose, mouth with water and irrigate eyes with clean water or sterile irrigates when

exposed to blood borne pathogens and body fluids. Use safer medical devices like shielded needle devices and plastic capillary tubes to minimize exposure to biological hazards

LIMITATIONS OF THE STUDY

- Since the study was carried out in 1000 bedded hospital, the results cannot be generalized to other small and other rural facilities
- Restricted sample size

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