









## Assessing the Risk of Occupational Hazard Using the FMEA Tool Among Hospital Staff at Multispecialty Hospital



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**Abstract:** Considering the importance of occupational hazard assessment, this study has been performed to identify the risks for employees who especially undergo a major occupational hazard that affects their efficiency and productivity. The study aimed to assess the risk of occupational hazard using Failure Mode and Effect Analysis (FMEA) and strategy to modify the healthcare packages provided by the hospital to the staff. A survey and personal interviews were done at a private multispecialty hospital in Chennai using a descriptive study methodology. The survey included 150 hospital employees from four departments: CSSD (6 participants, covering all available samples), Maintenance (41 participants, chosen at random), Nursing (60 participants, chosen at random), and Housekeeping (43 participants, chosen at random). To collect data, a standardized questionnaire aligned with the Occupational Safety and Health Administration (OSHA) was used (<https://www.osha.gov/laws-regs/standardinterpretations/1987-08-06>). In addition, unstructured personal interviews with key workers were undertaken. The data revealed that CSSD workers encountered most of the stated dangers, with 100% admitting to workplace risks such as needle sticks, chemical allergies, the risk of burns, and awkward ergonomic postures. Maintenance workers reported a 54% risk of pain and discomfort, 32% of sleep loss following night shifts, and 37% of chemical risks. Nursing personnel cited poor ergonomic posture (68%) as a key concern, followed by sleep loss (62%), and the risk of cuts (52%). Housekeeping personnel cited hazards of falls (69%), poor ergonomic postures (40%), and infectious disease exposure (31%). The study emphasizes the need to address occupational health risks in healthcare settings by thoroughly reviewing the many occupational health hazards that impact healthcare professionals. However, it is important to remember that the study relied on data from the previous six months, potentially leaving out undetected risks. Furthermore, the study emphasized the impact of these dangers on healthcare personnel, emphasizing the problem of events being underreported inside the institution. Notably, the study emphasized the importance of paying close attention to occupational dangers such as needle sticks, chemical exposure, burns and ergonomic concerns in healthcare professionals' daily health management.

## 1. Introduction

The rising number of hazards in the healthcare sector has various impacts on the health and productivity of healthcare workers. Healthcare professionals deal with

the health and most importantly life of the people in the society, because of the nature of their work, they are at risk of so many hazards. Healthcare workers are exposed to several health hazards in the workplace. Therefore, it is



important to conduct a study on occupational health hazards. Understanding and assessing all the possible occupational hazards at various hospital workplaces is also important. The health and well-being of the employees in the workplace are essential elements to focus on in any organization. The employees' health is directly related to the performance, productivity, and care they deliver to the patients.

Most healthcare professionals are challenged with various hazards such as Biological, physical, chemical, ergonomic, and psychological hazards. The employees who are more prone to occupational hazards include CSSD staff, nursing staff, maintenance staff and housekeeping staff. The study ultimately intends to improve health and safety performance and to reduce costs associated with accidents and incidents in MGM Healthcare.

Occupational hazard assessment is a method of identification of hazards that the healthcare-workers experience in the workplace. This helps identify and assess the risks occurring on a day-to-day basis. With the initial evaluation of the risks and the implementation of the control strategies, it becomes easier for the hospital to prevent and reduce the incidents. The hazard assessment technique looks out for the root causes of the incident. The major root cause of workplace hazards is the deficiency in identifying the possible hazards that occur in the workplace. The employees face most of the health-related problems because of the lack of health management instruments. The level of healthcare can be improved by formulating and promoting health check-up packages among healthcare workers.

There are numerous studies that have been done by researchers on occupational Health and safety (OHS). In order to determine the relative distribution of occupational injury risks in Victoria, Larsson and Field (2002) examined the frequency and severity of occupational injuries. A comparison of OHS risk prevention methods in Sweden and Spain was presented by Morillas et al. (2013). In their 2018 study, Gul and Ak quantified risk ratings in OHS risk assessment using fuzzy TOPSIS and Pythagorean fuzzy AHP. Liu et al. (2020) assessed the OHS risk using an integrated SWARA-MABAC model in a bipolar, fuzzy environment. Abad et al. (2019) developed a Bayesian model for monitoring the occupational health of silica-exposed workers.

There have been only a few studies to assess the linkage between occupational hazards and the healthcare packages provided by the hospital. Gul et al. (2016) found that hospitals in Turkey are facing major occupational

hazards and that occupational health and safety practices are not being fully implemented in the health industry. In order to evaluate full-time employees' awareness, attitudes, and compliance levels with universal precautions and biosafety procedures across a range of hospital job areas, Chital et al. (2018) conducted surveys. In a cross-sectional study carried out in 2015, 200 respondents who worked in eight significant Kampala health institutions had their occupational risks assessed. The study identified various predictors contributing to hazard experiences, and control measures were implemented to mitigate these hazards. Potential risks at hospitals can negatively impact medical staff's health, according to Sarma (2019). A risk assessment framework consisting of a risk assessment model, risk assessment explanation cards, and a risk assessment form was created by Kaya et al. (2018). This project aimed to create a semi-quantitative risk assessment tool that healthcare facilities may use to determine their occupational health risk levels. According to Gestal (1987), the primary occupational risks that impact health workers include radiation, drug addiction, accidents, and exposure to toxic substances. Therefore, our goals were to evaluate the efficacy of the hospital's healthcare packages and to poll healthcare workers from a variety of job areas, including CSSD, nursing, cleaning, and maintenance, about occupational dangers.

The literature on occupational hazards in healthcare settings reveals a comprehensive understanding of the multifaceted risks faced by healthcare professionals. Chital Naresh et al. (2018) conducted a survey among healthcare staff in various departments, revealing a generally high awareness of occupational hazards but limited clarification opportunities due to the questionnaire-based approach. Sarah Mossburg et al. (2019) focused on sub-Saharan Africa, emphasizing higher rates of infectious disease exposure among healthcare workers, and advocating for preventative policies based on limited available data.

Rawlance Ndejjo et al. (2015) identified predictors for hazards among health facility workers in Kampala, emphasizing the importance of personal protective equipment and mitigation measures. Rajni Rai et al. (2021) conducted a scoping review, highlighting prevalent exposure to various hazards among healthcare workers in low- and middle-income countries (LMICs) and emphasizing the need for policy informed by research. Philip Apraku Tawiah et al. (2022) identified inconsistencies in practicing universal safety precautions as contributing to occupational health hazards among healthcare professionals in developing countries.

Abhinav Sarma (2019) highlighted diverse hazards faced by healthcare personnel and proposed measures to mitigate their effects. Gulsum Kubra Kaya et al. (2018) introduced a risk assessment framework with the potential to improve decision-making and enhance the quality and safety of healthcare. Chalak et al. (2021) applied a semi-quantitative risk assessment method to calculate occupational health risk levels in healthcare institutions, identifying higher risks in specific hospital units. Gestal JJ comprehensively reviewed occupational hazards affecting health workers, encompassing accidents, radiation, chemical exposure, drug addiction, and assault. Damodar Vishnu Lele emphasized the importance of risk assessment in health, safety, and environment management, aiming to prevent harm and ensure employee well-being. Collectively, these studies contribute to a nuanced understanding of occupational hazards in healthcare settings, informing policymakers and practitioners on the need for targeted interventions to ensure the safety and well-being of healthcare professionals.

## 2. Methodology

### 2.1 Study design and selection of subjects

This study used a descriptive study design to assess the risk of occupational hazards among healthcare workers in a private multispecialty hospital in Chennai, India. Simple random sampling was used to select 150 participants from four different departments of the hospital: Central Sterile Supply Department (CSSD), Maintenance, Nursing, and Housekeeping. A well-structured questionnaire was developed based on the Occupational Safety and Health Administration (OSHA) standards and previous surveys used in healthcare settings. The questionnaire was administered to participants to collect data on their demographics, work-related injuries, work safety compliance, and safety perception and awareness. The research proposal was submitted to the Institutional Ethics Committee for clearance. All the stated queries were addressed and ethical clearance approval was obtained from the Institutional Ethics Committee with reference number CSP/22/JUL/113/371.

### 2.2 Measures

Demographic data, work-related injuries, adherence to workplace safety procedures and employee attitudes and awareness of safety were the four main components of the survey that were evaluated. Demographic questions were created, including questions on age, gender, job title, location, and years of hospital work experience. Demographic information was collected using multiple-

choice response options. In order to evaluate the work-related injuries that the staff members had experienced, the questionnaire included well-structured risk parameters. These parameters included heat stress, sleep deprivation, chemical burns, needle stick injuries, risks of hearing loss, electric shocks, and uncomfortable ergonomic posture. It also has a column for the number of times it has occurred and an option to list the measures the management takes to overcome the risk. The questionnaire also contained compliance-related questions that were used to measure employees' awareness about safety. Five-point Likert scale was used to measure their satisfaction level on the measures taken by the management to eliminate the risks. The questionnaire also included a few questions about the training program, health check-ups and the free health check-ups for the staff.

The data was entered into Microsoft Excel and analyzed using descriptive statistics, such as percentages and frequencies.

## 3. Results

Ensuring the well-being and safety of healthcare staff is paramount for maintaining a healthy and efficient healthcare system. The demanding and often high-pressure nature of healthcare work, combined with exposure to numerous occupational hazards, necessitates a comprehensive understanding of the risks faced by healthcare professionals across various departments. To address this critical need, we conducted a survey to assess the occupational hazards encountered by healthcare staff in key work areas, including Central Sterile Supply Department (CSSD), Nursing, Housekeeping, and Maintenance.

**Table 1. CSSD staff response**

Risk Parameters	Yes	No
Needle Stick	100%	0%
Risk of getting Infected	50%	50%
Allergies after Chemical Exposure	100%	0%
Risk of Falls	83%	17%
Risk of Burns	100%	0%
Risk of Hearing Loss	67%	33%
Heat Stress	67%	33%
Uncomfortable Ergonomic Posture	100%	0%
Free Medical Check-up	100%	0%
Training Programs	100%	0%

Source: Primary data

Table 1 depicts that the majority (100%) of the staff have accepted that they are exposed to most of the occupational hazards. 100% of injuries were caused by

organizational dangers such as needle sticks, allergic reactions after being exposed to chemicals, risk of burns, and uncomfortable ergonomic positions. Among the respondents, 67% of the staff falls under the category of 1-10 years of job experience and 33% of staff fall under the category of 11-20 years of job experience. 83% of the staff strongly agree that the measures taken by the management to mitigate risk are satisfactory.

**Table 2. Maintenance department staff response.**

Risk Parameters	Yes	No	NA
Electric Shock	29%	68%	2%
Risk of Falls	29%	68%	2%
Risk of Eye Burns	37%	54%	10%
Risk of Pain	54%	46%	0%
Risk of Infection	10%	39%	51%
Problem of Loud Noise	27%	49%	24%
Sleep deprivation	32%	63%	5%
Free Medical Check-up	44%	56%	0%
Training Programs	54%	46%	0%
Fear of OH	39%	10%	0%
Source: Primary data			

From Table 2, it is identified that 54% of the staff have responded that they experience a risk of pain and discomfort during their work time, 32% of them have suffered sleep deprivation after so many night shifts, 37% of them have experienced risk of eye injuries/ hand injuries or burns while handling potentially hazardous chemicals and around 29% of the staffs have experienced the risk of falls caused by slippery/wet floors, trailing cables and electric shocks.

The majority (17%) of the respondents are from Air Handling Unit (AHU) and plumbing area, 15% of the respondents are from Electric Panel Room and Multi-level car parking (MLCP), 12% of the respondents were BMS staff and 10% of the respondents are MGPS staff and the remaining 7% of the respondents are from Reverse Osmosis (RO) plant system and Sewage Treatment Plant (STP).

Among the respondents, 29% fall under the category of <1 year of experience and 68% of the staff fall under the category of 1-10 years of experience. The remaining 2% of the respondents fall under the category of 11-20 years of experience. It is found that 77% of the staff have not been affected psychologically during their work time whereas 37% have other unlisted issues in their working area.

Further, it is identified from the survey that 3% of the staff have strongly disagreed with the statement measures taken by management to mitigate risk are satisfactory, 14% of the staff have disagreed with the statement, 17% have agreed to the statement, 17% have responded strongly agree to the statement. Hence, most of the respondents have given neutral to the statement (43%).

**Table 3. Nursing staff response.**

Risk Parameters	Yes	No
Needle Stick	20%	80%
Risk of Infection	15%	85%
Poor Lightening	15%	85%
Risk of Falls	28%	72%
Risk of Cuts	52%	48%
Problem of Loud Noise	35%	65%
Sleep Deprivation	62%	38%
Uncomfortable Ergonomics Posture	68%	32%
Free Medical Check-Up	52%	48%
Training Program	78%	22%
Fear of OH	57%	43%
Afraid to Care for HIV/AIDS Patients	40%	60%
Source: Primary data		

Table 3 shows that the majority of the staff (68%) responded that uncomfortable ergonomic posture is one of the major occupational hazards. 62% of the staff have experienced sleep deprivation, 52% of them have experienced the risk of cuts and 40% of the staff are afraid to care for HIV/AIDS patients.

The survey found that the majority (80%) of the respondents are aged between 25 and 35 years, and 18% of the staff are below 24 years. 2% of the staff are aged between 36-45 years. Around 33% of the respondents fall under the category of <1 year of experience and 63% of the staff fall under the category of 1-10 years of experience. The remaining 3% of the respondents fall under the category of 11-20 years of experience.

Further, it was found that 43% of the staff responded that the major reason for the fear of occupational hazards is the "Risk of infection," and 42% do not fall into the category of 'Not afraid of occupational hazards.' Lastly, 15% of them responded that the major reason for the fear of Occupational hazards is the fear that the patient may be affected.

**Table 4. Housekeeping Staff Response**

Risk Parameters	Yes	No
Needle Stick	23%	77%
Risk of Falls	51%	49%
Risk of Burns	40%	60%
Risk of Pain	72%	28%
Risk of Shocks	12%	88%
Risk of Infection	30%	70%
Problem due to Loud Noise	12%	88%
Sleep deprivation	42%	40%
Free Medical Check-Up	21%	79%
Training Program	77%	23%
Fear of OH	30%	70%
Source: Primary data		

Table 4 depicts that the majority of the staff (51%) have responded that they have experienced the risk of falls. 72% of the staff have experienced pain and discomfort during their work, which is one of the major occupational hazards. The remaining 30% have experienced the risk of exposure to biological infectious diseases from soiled linens.

From the survey, it is understood that 16% of the respondents are male and 84% of the respondents are female staff. Among the respondents, 47% belong to the age group above 25-35 years, 44% belong to the age group between 36-45 years and the remaining 9% lie between the age group of 46 and 55.

It is identified that 3% of the staff have strongly disagreed with the statement 'Measures taken by management to mitigate risk is satisfactory', 9% of the staff have disagreed with the statement, 17% have agreed with the statement, and 49% have strongly agreed to the statement. Hence, the majority of the respondents have given neutral (23%) to the statement.

Table 5 shows that the majority of the incidents that have been reported are needle stick injuries. The remaining incidents like employee injury, falls, cuts, blood splash

and exposure to blood fluids have a frequency of 1, which is less when compared to needle stick injury.

**Table 5. Incident report**

Incident Type	Sum of No. of Staffs
Blood and Body fluid exposure	1
Blood splash	1
Cut with a surgical blade	2
Employee Fall	1
Employee Injury	1
Needle Stick Injury (NSI)	5
Source: Secondary data	

From the incident report, it is found that the most common type of incident that has been reported is needle stick injury. Altogether, only 11 workplace incidents were reported for the past 6 months.

### 3.1 Un-reported Incidents

According to the survey results, it was found that most of the employees have experienced at least one of the organizational risks during their work. Therefore, it indicates that the incidents are not being reported properly. The unreported incidents lead to poor employee's safety results. The staff might be hesitant to report an incident for fear of negative repercussions; the staff might be unaware of the process of how to report an incident and near misses. The reporting barriers like these could be reduced by proper training and by creating staff awareness.

OSHA has published a proposed rule book to improve the tracking of workplace injuries and illnesses (<https://safetyculture.com/topics/osha-standards/>). OSHA has clearly mentioned keeping a record of all work-related injuries and illnesses. Therefore, the staff in all the hazard-prone areas are to be guided and advised to report all incidents and injuries without fear. The above result indicates that the number of reported incidents is very low, and it is a threat to the hospital and its employees. The health of the employees will be affected and the productivity (care of patients) will be affected.

**Table 6. Risk assessment of occupational hazard using FMEA (Failure Mode Effect Analysis) Tool**

<b>Resp. &amp; Target Date</b>	Who's Responsible for the recommended action? What date?	Nurses and Management (Quality team)	Management (Quality team)
<b>Actions Recommended</b>	What are the actions for reducing the Occurrence of the cause or improving Detection? Should have actions on high RPN's or EASY FIXES	Safe work practices for handling needles, using devices with safety features and providing needle stick injury prevention training to Nurses.	Develop standard protocols for disposing of the sharps and conduct surprise audits to ensure safe disposal
<b>R P N</b>	Risk Priority to rank order concerns	144	144
<b>DET</b>	How probable is Detection of cause?	4	4
<b>Current Process Controls</b>	What are the Existing Controls & Procedures (Fail-Safe, Tests, Mathemat. Calcs) that prevent either the cause or the failure mode	Wash with soap and water, Report to NS and Get tested immediately for HIV, hepatitis B and C	Wash with soap and water, Report to NS and Get tested immediately for HIV, hepatitis B and C
<b>OCC</b>	How frequent is cause likely to Occur?	4	4
<b>Potential Causes</b>	List every conceivable failure and/or failure mechanism for each failure mode.	Incorrect disposal/use by Nurse, Non-cooperative Patients.	when used needles are not disposed of properly, needles can hide in linen or garbage, causing accidental mixing of sharp wastes in other wastes.
<b>SEV</b>	How Severe is effect to the customer?	9	9
<b>Potential Effect on Customer Because of Defect</b>	What is the impact on the Key Output Variables (customer requirements) or internal requirements?	These injuries transmit infectious diseases (especially blood-borne viruses) like HIV, Hepatitis B and C	These injuries transmit infectious diseases (especially blood-borne viruses) like HIV, Hepatitis B and C
<b>Potential Failure Mode</b>	In what ways can the Component, Subsystem, or System potentially fail to meet the Design Intent?	Needle Stick Injury- Nurses	Needle Stick Injury for housekeeping staff while discarding the waste/ collecting linen
<b>Item Function</b>	What is the process step?	Occupational Hazards	

Item Function	Occupational Hazards				
Potential Failure Mode	Risk of falls	Risk of Shocks	Risk of hearing loss	Risk of Burns/allergies	Body pain and discomfort
Potential Effect on Customer Because of Defect	Falls may cause broken bones, head injuries and disruption to daily work, and employee productivity decreases.	It affects the nerves and the consequences include pain, tingling, and numbness and may cause serious injury.	Affects them physically and psychologically	Adverse skin reaction, eye irritation and severe burns	Body pain affects the performance of the employees and their health.
SEV	7	8	5	8	7
Potential Causes	Slippery/wet floor, changes in levels, falls while climbing stairs in a hurry etc.	Faulty electrical equipment, Incorrect, damaged wiring	Constant exposure to loud noise	Chemical-related contact and Exposure to extreme heat	Continuous standing and long working hours without taking a break
OCC	6	5	5	5	7
Current Process Controls	Anti-slip strips are stuck on the stairs	Providing PPE and using well-insulated cables	Earplugs are provided	PPE for handling chemicals	Providing breaks in-between
DET	2	2	7	5	7
RPN	168	80	175	200	343
Actions Recommended	Use moisture-absorbent mats in the wet areas and mandatory signage after mopping.	Train employees on electric safety (OHS standards) and use appropriate signage as a warning.	Installing quieter equipment/ machinery in the working area. Reducing the staff's time in noisy areas.	Educate staff to wear PPE and encourage employees who work under the sun to take frequent breaks.	Placing chairs in the working areas for the staff to take an immediate break if required
Resp. & Target Date	Housekeeping Department	Training and development	Management	Management	Management

Source: primary data

The Failure Mode Effect Analysis is a tool used to evaluate a certain process to identify the root cause of any incidents and where and how it might affect the current process and its impact on the different failures. The above FMEA diagram shows that the risk priority Numbers for burns (200) and body pain and discomfort of the staff (343) have scored more than 100. Therefore, it has to be given first priority and prompt actions must be taken to mitigate the incident.

Hearing loss (175) and falls (168) are the next incidents that must be given importance because they have a risk priority score of more than 100 and less than 200. Needle stick injury scored more than 100, and it is necessary to focus on this incident and take proper actions to prevent those incidents soon.

The risk of shocks has a lesser score of 80 when compared to other incidents, therefore, it indicates that such incident is of control and can be dealt with later.

### 3.2 Control strategies for major categories of hazards in the hospital

As per the survey, it is identified that the risks fall under 5 major divisions-

#### 3.2.1 Control strategies for Biological hazards:

Immunizing the healthcare staff against infectious pathogens. Use needled devices with safety features (safety-engineered needles) and practice safe work practices.

**3.2.1.a Administrative controls:** Effective Infection Control Audits can be performed. Written and documented infection control plans. Training and orienting plan shall help all the hospital staff by considering occupational health and safety measures. Periodic health check-ups and Immunization programs for affected employees with follow-up care can be conducted free of cost. Requiring the reporting of any incident should be mandatory. Designing all work systems with the aim of minimizing the risk of exposure.

**3.2.1.b Personal protective equipment (PPE):** includes devices for the protection of the staff (e.g., face shields, goggles, masks, latex gloves, protective aprons, gowns and full hand covering gloves for the CSSD staff especially.

#### 3.2.2 Chemical hazard:

Swapping out potentially dangerous substances for less dangerous ones may be possible. Following safety procedures when handling and disposing of chemical items is crucial. In addition, it is critical to teach medical staff members working in hospitals or other healthcare institutions about the inherent dangers of chemicals. This involves teaching people how to correctly use equipment,

facilities, and personal safety equipment (including face shields, gowns or other protective clothes, gloves, and eye protection). Immediate treatment should be given to the affected staff and to provide free follow-up treatments. Periodic Medical check-ups are required to ensure and sustain the health and safety of all employees.

#### 3.2.3. Physical hazard:

It is required to wear protective clothing, gloves, eye and nose shields, and appropriate footwear. When removing sterilized objects from the autoclave, staff members of the Central Sterile Supply Department (CSSD) must be fully trained in using personal protection equipment (PPEs) and given woollen gloves. It is recommended that workers, especially those in the Medical Laboratory and Central Processing (MLCP), take regular breaks and have a dedicated shaded space for rest periods. It is highly recommended that safe work practices be developed and followed, especially while using electrical equipment. Moreover, it is considered imperative that people receive thorough education and training on prudent work practices when handling electrical components. Anti-slippery mats can be placed in the washing area at CSSD. Signage can be placed without fail after mopping the floor. It is necessary to educate the nursing staff on showing special precautions while breaking ampoules and teach them the perfect technique to break the ampoule.

#### 3.2.4. Ergonomic hazard:

Providing the staff chairs to sit for a while and then resume working to avoid pain and discomfort. Staff in CSSD can be provided with the proper ergonomic chairs to reduce pain.

#### 3.2.5 Psychological hazard:

Conflict and stress management training sessions can be arranged for the staff to prevent violence. Gradual shift changes can be made in the work schedule to ensure staff sleep adequately. Counseling services can be provided to the staff to help them deal with the problems and to identify work-related problems.

### 3.3. Health check-up packages

The staff go through rigorous work routines and experience more workplace occupational hazards. There is a proven direct connection between health and workplace productivity. Therefore, it is mandated to conduct health check-ups for the employees. The employee who has experienced a hazard once in his workplace would lose his productivity due to absenteeism, lack of concentration and low energy level at work if he is exposed to the risk frequently.

Therefore, it is suggested that regular health screening



for the employees be conducted within a period of six months. Regular health screening for employees is the key to good employee health management and is one of the wise investments the hospital makes.

The health check-up packages can be tailor-made, offered free of cost to the affected employees, and offered with a discount to the other hospital employees.

Customized health check-up packages that suit the profile of the employees of different working areas like CSSD, Nursing, Maintenance and housekeeping are devised as per the findings, the highest occurred incidents can be taken into consideration and health check-up packages can be designed to tackle the commonly reported health issues. For example, the sample package is shown in Table 7.

**Table 7. Health check-up package**

Incident	Health Check-Up Package
Needle stick Injury	<ul style="list-style-type: none"> <li>• Blood tests to test their HIV (Rapid Test), HBV, and HCV status.</li> <li>• Testing should be repeated at 3 and 6-month intervals.</li> <li>• Counseling services are to be provided before the tests are done and even after the tests are performed. Counseling services can be provided whenever required.</li> </ul>
Source: Primary data	

### 3.4. Effectiveness of Health Check-Up Packages

Most of the healthcare staff would have experienced occupational hazards in their workplace. An employee affected by any of the occupational hazards is prone to having various health issues that need to be diagnosed early. Therefore, the organization can invest in conducting health check-ups periodically. The health check-ups are conducted annually for the staff however it is not being done on a regular basis. As per OSHA (Occupational Safety and Health Association) standards, regular health check-ups for employees are a mandatory requirement.

Multiple OSHA standards require routine medical tests in order to monitor the health of the staff that is reasonably anticipated to experience exposure to potential hazards at the workplace. The health check-up package provided by the hospital is more generalized; it can be customized as per the staff's profile and as per their exposure to any of the potential hazards.

The staff affected by any occupational hazards can be given free health check-ups and the health check-up packages can be customized according to the staff's work profile. Since the mandatory requirements of OSHA standards are not met by the hospital, therefore it is

identified that the health check-ups and packages provided are ineffective.

There is a lack of follow-up reminders by the management to the employees regarding their medical check-ups. Conducting periodic health check-ups for employees and by providing packages that favour the employees are the keys to effective staff health management. Timely notifications can be sent to the employees regarding their medical check-ups.

## 4. Discussion

- From the survey, it is found that CSSD Staff have experienced most of the listed hazards. Most (100%) of the staff have accepted that they are exposed to most occupational hazards. Organizational hazards like Needle stick, Allergies after chemical exposure, risk of burns and uncomfortable ergonomic posture.
- It is identified that 54% of the staff have responded that they experience a risk of pain and discomfort during their work time. 32% of them have suffered sleep deprivation after so many night shifts. 37% of them have experienced the risk of eye injuries/ hand injuries or burns while handling potentially hazardous chemicals. 29% of the staff have experienced the risk of falls caused by slippery/wet floors, trailing cables, and electric shocks.
- The majority of the staff in Nursing (68%) have responded that uncomfortable ergonomic posture is one of the major occupational hazards. 62% of the staff have experienced sleep deprivation and 52% of them have experienced the risk of cuts.
- The majority of the Housekeeping staff (69%) have responded that they have experienced the risk of falls. 40% of the staff have responded that uncomfortable ergonomic posture is one of the major occupational hazards. 31% of the staff have experienced the risk of exposure to biological infectious diseases from soiled linens.
- Most of the staff are hesitant and are afraid to report the incident that has happened to them. Unreported cases are very high when compared to reported cases.

### 4.1. Suggestions

The hospital's control strategies can be redesigned to prevent and mitigate the incidents in the near future. The staff can be provided with effective training on daily activities to make them more effective and reduce undesirable events.

Since most of the staff are unaware of the reporting process, it is essential to make the staff aware of the importance of incident reporting. This can help in

analyzing the incidents properly and it aids in creating a safer environment for the staff.

A separate team can be formed to deal with employee's medical check-ups and follow-up notifications and encourage employees to participate in regular health check-up programs to detect changes in the employee's health status and the individual's exposure conditions can be corrected before it becomes severe. The team must ensure that mandatory periodic medical check-ups and requisite follow-up evaluations are completed in a timely manner. Immediate treatment must be provided to the affected staff and free follow-up treatments must be provided for them, or there can be a considerable reduction in the fees charged for the treatment to sustain the health and safety of all the employees.

## 5. Conclusion

This study evaluated occupational risks among hospital workers at a private multispecialty hospital in Chennai using the Failure Mode and Effect Analysis (FMEA) technique. The results highlight the range of occupational dangers present in the hospital, as demonstrated by a discrepancy with the guidelines established by the Occupational Safety and Health Administration (OSHA).

Various elements, including human resources, techniques, systems, and environmental issues, were shown to be the root causes of occurrences. The examination of survey data revealed a noteworthy underreporting of occurrences, a condition that has important consequences for worker health and productivity. The research emphasized how important it is for the hospital to handle non-reporting occurrences as a top priority and how strict adherence to OSHA-mandated health and safety regulations is required. Additionally, the study clarified the work-related risks that personnel in various divisions face, including chemical exposures, needle sticking, ergonomic issues, and lack of sleep. The information highlighted how all employees acknowledged that they were exposed to work-related risks, especially at the Central Sterile Supply Department (CSSD), where all respondents (100%) said they had experienced a variety of organizational risks. Important discoveries from certain departments showed that a number of dangers were common, including discomfort and pain, lack of sleep, damage to the hands and eyes, falls, and contact with infectious illnesses. One common problem that was found to be present was the staff's unwillingness to report problems, with many cases being undetected. The hospital must take proactive measures to address these occupational health concerns, keeping in mind the unique

difficulties that each department faces. The report suggests a thorough examination and adjustment of the healthcare plans provided to employees, with an emphasis on reducing hazards that have been identified. In order to ensure the health and safety of hospital employees as well as the upkeep of a robust and effective healthcare system, the study highlights the significance of continuously evaluating and addressing occupational health concerns in healthcare settings.

## 6. Conflict of Interest

There were no disclosed conflicts of interest by the authors.

## 7. References

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