



## **Assessment of Awareness about Occupational Safety among Laboratory Staff in Healthcare Settings: A Study Protocol**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Study Protocol**

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## **ABSTRACT**

**Background:** Occupational health and safety is very important factor in the health care industries. The health care professionals are very important part of the hospital that provides number of services to the population. To provide better services to the community the health care professionals have to take care of themselves very well at their workplace. In this health care industries the health care professionals who are working in the diagnostic laboratories are the major factors. Health and safety of the health care professionals is very important aspect to reduce the risk factors. Medical diagnostic laboratories pose a lot of risks to the healthcare staff and awareness generation among the health care professionals to mitigate the hazards is important. This study aims to assess the awareness about occupational health safety measures among the laboratory staff and instil awareness about safety measures.

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**Methodology:** This will be a cross-sectional study. Investigator will administer a structured questionnaire among selected study participants from Central laboratory at AVBRH . The data will be analysed with appropriate analytical software and statistical tests.

**Expected Result:** The expected outcome could reflect that the health care professionals are well aware of occupational hazards and health and safety issues at their work place.

**Conclusion:** The level of awareness about the health safety at the workplace among health care workers working in the central laboratory is the vital parameter to ensure occupational safety and security.

*Keywords: Biological hazards; laboratories health workers; infections; occupational safety; health care professionals.*

## 1. INTRODUCTION

Occupational health and safety is very important factor in the health care industries. The health care professionals are very important part of the hospital that provides number of services to the population. To provide better services to the community the health care professionals have to take care of themselves very well at their workplace. In this health care industries the health care professionals who are working in the diagnostic laboratories are the major factors. And to aware them about their work is very important because they regularly get exposed to the various terms related to patients care. They get exposed to various risk factors, number of chemicals, specimens at their workplace daily. And by getting exposed to all these risky factors they suffer a lot and due to this they may go through life threatening conditions [1].

There are various types of hazards exists in the central laboratory. These are as following, the biological hazards which includes the blood and the body fluids related to the patients. The chemical hazards which includes the all The chemicals which are used while performing the various procedures. The physical hazards which the radiations which are coming from the machines to which the of the health care workers get exposed and which affects their skin and the noises that are lead by the heavy machines used in laboratory. The physiological hazards which includes the violence and the stress related to the work, work place and the working environment which us faced by the health care professionals working in the central laboratory. The health care environment exposes workers to various occupational health and safety hazards, including carcinogenic agents, needle stick injuries, latex allergies, violence and stress [1].

Health care institutions are the facilities that provide the health care services to all which

includes the counselling, clinical, surgical, consultation and treatment services to the healthy, sick and to the injured individuals in need for treatment and the central laboratory is one of the facilities among them which provides the diagnostic services. The hazards that exists in the laboratories has the ability of causing the unwanted effects while the risk is the prospect that damage to life, health of the health care professionals working in the laboratory and the environment of the laboratory. The earlier inspections have shown that the occupational injuries and the illness among the health care professionals working in laboratory ranked the highest [2].

Awareness of safety and health among health care professionals play an major part in the prevention of injuries and infection. The central laboratories of the health care industries are one of the most hazardous place for the health care workers where most of the occupational accidents happens on regular basis. Health institutions are the place where major amount of exposure to clinical biohazards happens. There are various types and numbers of hazards that are found in the central laboratories. Central Medical laboratories includes the numerous numbers of occupational hazards to the laboratories health care professionals as they are regularly being in contact with these hazardous biological substances and are considered at high risk of the laboratory associated infections. Medical laboratories, universal precautions and the quality laboratory practices includes the use of protective fencing such as gloves, gowns, aprons, masks which can reduces the risk of the infections due to the hazards exists in the laboratory [3].

More numbers of accidents are happens in the diagnostic laboratories due to improper the knowledge about the laboratory safety measures, indifferent attitudes, improper techniques,

improper handling of laboratory instruments or equipment and lack of proper implementation of the safe laboratory practices. There are the various factors which leads to the occupational injuries and accidents which are mostly due to the lack of awareness and general level of the knowledge among the health care professionals working in central laboratory. There is also need for the basic safety and hygiene guidelines provided by the institutions for the well protection of the their workers working in the laboratory [4].

Most of the incidences happens are due to the health care workers working in the central laboratory are not that much of aware about the potential hazards at their work places which results in the injuries, incidences and accidents that leads to the increasing the risk of their lives and disabilities. Protecting the occupational health of the health care professionals working in the laboratory is very important to having the adequate amount of the well trained and healthy health care workers for the efficient performance. Effective knowledge and awareness among the health care workers working in the central laboratory and the practice of the universal precautions which are available is necessary to prevent the infections and the incidences happens in the laboratory which affects the health of the workers working over their for the better protection of the health care workers. And it also spoils the working environment of the laboratory which makes it more difficult to work for the health care workers in such an environment and it has the drastic impact on the organizations growth [4].

Among all the above various factors, the health care professionals are at a peak of chances to needle stick injuries and blood borne plague or pathogens as they carry out their diagnostic procedures in a hospital. And being exposed to such blood borne plague or pathogens which occurs in many course of action. Although needle stick injuries due to unclean needles sometimes or the unscreened blood it is the most common means of exposure for the health care workers. Blood borne plague or pathogens are also pass on through the contact with the eyes, nose and mouth or through the cracked skin [5].

The factors that come up with the occupational injuries and illness in health care facilities includes the lack of awareness by the health care workers, due to insufficient or unavailability of protective equipments, lesser number of staff, huge amount of workload most of the times. If

these factors are blocked then the number of the occupational hazards and illness will also drastically reduced to lesser amount. The high rates of the morbidity and the mortality of the workers who get exposed to these hazardous substances have been attributed to the occupational injuries and illness.

The right to work in safe and healthy environment is the fundamental right of the every worker works in health care institutions facilities Or other. So there is the urgent need of the protection for the health care professionals working in laboratory and to reduce risk factors that has been increasing by their exposure to many of the highly infectious diseases. They are exposed to the various infections like blood-borne infections such as Human Immunodeficiency Virus, Tuberculosis, Hepatitis etc. and there is possibility of mostly to be infected with these diseases. There are about 20 or more than 20 blood borne pathogens have been classified that has the exchangeable property through the unclean needles or unscreened blood or sharps injuries which contains these following diseases which transfers to the body of health care workers from which they get infected while doing their work as they are being in continuous contacts with the patients. According to World Health Organization, around 66000 HBV, 16000 HCV and about a range of 500-5000 HIV accidental infections takes place each in the laboratories which affects the health of the health care workers working over their [6,7].

The health care professionals working in the laboratories are being constantly come in proximity with the patients which them more prone to their infection and thus there is requirement of proper safety measures to minimize the risk of diseases or injuries among the workers.

## 2. METHODOLOGY

**Study design:** Cross-sectional study design is used to complete the aim of the research study and it also involved quantitative data collection.

### Setting:

- This study will be conducted on the healthcare professionals working in clinical laboratory. The survey will be conducted among the workers working in laboratories

who are exposed to chemicals and other substances during their work.

- After that I will gathered the people with proper recruitment along with their ideas and innovative skills to share their opinion and views on subject matter.
- A necessary follow up and small survey is conducted among the laboratory workers about their Working pattern, working environment, techniques for the collection of data.
- The subject completed to a structured questionnaire exploring their knowledge, attitudes and behaviours towards their work and chemical hazards involved in laboratory activities.

**Participants:** Research study includes all the health care professionals working in the central laboratory of Acharya Vinoba Bhave Rural Hospital. They are included in the study as per their age, work history, reliability of particular individual who can become a part of such study research and the compatibility of such information and the results of the previous studies.

**Location:** It is carried out at the central laboratory of Acharya Vinoba Bhave Rural Hospital.

**Study population:** The study population comprises a range of health care workers working in diagnostic laboratory at AVBRH.

**Inclusion criteria:**

- All laboratory staff

**Exclusion criteria:**

- Trainee
- Volunteers
- Interns

**Source of data:** Data will be collected by the survey, observation, pre and post study.

**Data collection:** Structured questionnaire is used for the collection of data. The questionnaire collected or based data is on the sociodemographic characteristics of the health care professionals who are included in the study or the respondents including their age, marital status, qualification level, and their work records or history in that particular part of health care institution. In addition to this the data was also

collected on the basis of occupational health and safety practices of the health care workers, the hazards that they are experiencing at their work places, and the control measures to those occupational hazards.

**Variables:** There are various types of hazards e are biological, non-biological, physical, chemical etc. but the most common amongst them are biological and non-biological. The Biological hazards includes cuts, wounds, sharp related injuries, direct contact with contaminated specimens, use of the unclean needles etc. The Non-biological biological hazards includes slips, burns, fracture etc. The hazards face by the participants or the health care workers working in the central laboratory are highly variable because there are various types. Some health care workers faced biological hazards, some workers face physical hazards while the other health care workers face physiological hazards and it depends on their knowledge and general level of awareness. And at what extent they are aware about their work, their work place and also the working environment plays the major role.

### 3. EXPECTED OUTCOMES

From the following study we will get to know the proper level of the awareness and the knowledge among the health care professionals working in the laboratory. We also conclude their level of concern about their work and their attitudes towards their work place. The expected outcome could be that the health care professionals are well aware of occupational hazards and health and safety issues at their work place.

### 4. DISCUSSION

For the protection and to reduce accidents risk awareness generation of the importance of safety practices need to be well executed and improve every year. Normally these incidences occurs due to lack of knowledge, improper use of instruments and chemicals used in testing. There is need to give proper training to the workers between the gap. A number of evidences are available from GBD studies [8-12]. Few studies were reported on Awareness about different health aspects [13-21].

### 5. LIMITATIONS

- As it is a questionnaire based study there may be less chances to get the clarification on the specific or exact issues that are

experiencing by the health care professionals working in the laboratory.

- From this study we could not examine the occupational hazards or diseases or injuries faced by the health care professionals working in the laboratory.

## 6. CONCLUSION

Health care professionals continuously face number of occupational hazards at their workplaces. The factors that are analogous with experiencing these hazards may comprises of not wear out all the necessary defensive equipment, overtime work, working in the multispeciality service institutions and work related stress which increase the risk of diseases and injuries. And as a result of this it has a major impact on the working environment of the diagnostic laboratory.

## 7. SCOPE

- Awareness generation
- Minimizes the risk of accidents or injuries
- Better laboratory environment

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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