

Inadequate Awareness on Use of Gloves and Other Personal Protective Equipment (PPE)

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Abstract: Use of Personal Protective Equipment (PPE) is very essential as safety precautions. It is a routine safety measure but inconsistent use and unnecessary use can contaminate the work space and commonly accessed articles. This causes exposure of hazardous elements to other people in and around the work space. To survey the awareness of contamination caused by the PPE in medical professionals in laboratory, we collected questionnaire responses from 100 medical professionals working in laboratories. The data were processed in a spreadsheet and results were generated. From the data collected, it was found that 30% of the medical professionals, comprising of lab technicians who handle large number of samples, are in constant use of gloves and other PPE, and they frequently come in contact with articles which are commonly accessed by others with bare hands. Few use gloves beyond the area of work space contaminating the surroundings. Uniform use of gloves and other PPE should be made mandatory to avoid exposure in the workspace area. Lab coat harbors microorganisms and toxic compounds are usually carried home and such harmful substances are exposed to others. About 40% of respondents carry their apron/lab coat to their home. Lab coats should be confined to laboratory premises or disposable lab coats to be recommended. Proper education, counselling and motivation were given related to contamination caused by gloves and other PPE.

Keywords: Personal Protective Equipment (PPE), work space, spreadsheet

INTRODUCTION

Use of Personal Protective Equipment (PPE) is very essential as safety measures. Particularly, gloves are routinely used to reduce risk of contamination of health care personnel hands with chemicals, blood and other body fluids, and also to reduce risk of germ dissemination to the environment and transmission from the health care worker to the patient and vice versa [1]. Similarly, apron or lab coat protects the health care personnel from harmful and toxic substances. Unfortunately, such PPEs harbor many germs and other harmful particles. And inconsistent and unnecessary use of such PPEs can contaminate the workspace and commonly accessed articles. A study shows contaminated gloves increase risks of cross-transmission of healthcare-associated pathogens among healthcare workers and in the environment [2]. Numerous studies have shown that hospital surfaces and frequently used medical equipment become contaminated by a variety of pathogenic and nonpathogenic organisms [3]. This carries a potential risk of exposure of hazardous elements to other people in and around the workspace.

Proper glove use may decrease the risk of healthcare-associated infections and gloves should be carefully used and removed after use depending on the types of bacteria [2]. Many guidelines and protocols are laid for proper use of PPEs for the safety and precautions of the health care personnel, as well as others in direct and indirect contact.

Aim

To survey the awareness of contamination caused by the PPEs among the medical professionals in laboratory.

MATERIALS AND METHODS

A questionnaire based study was conducted in Sree Balaji Medical College and Hospital, Chennai during the month of July and August of year 2016. The questionnaire was distributed in both printed material as well as Google form. Google form link were sent to the respondents through email, and their responses were automatically updated in the Google spreadsheet. Responses were collected from 100 health personnel comprised of doctors, lab technicians and lab attendants. Double entries and incompletely filled forms were omitted from the study table. The collected data

was entered on the Google spreadsheet and results were compiled.

RESULTS

In my study, half of the health care personnel claim that they have restricted the use of gloves to a confined working area and do not come in contact with items other than the instruments or samples concerned. In the remaining half, 30% of them often use the gloves outside the zone thus, contaminating the workplace, while 21% of them admit that they rarely or occasionally contaminate their workspace.

We also learnt that 21% of the respondents have frequently seen some of their colleagues contaminating the workplace by touching articles like doorknobs, table, paper, pen etc. with the gloves which were already soiled, while 44% of respondents have observed on few occasions.

The use of gloves is routinely done in laboratories to handle samples, chemicals and specimens. Here in our study we found that about 42% of respondents always use gloves in the laboratory, followed by 23% of those who often use it. Some of

them, about 21%, use the gloves occasionally and the remaining 14% of the respondents rarely use the gloves.

The use of apron in laboratory is mandatory and it is one of the essential PPE. Many a time it has been reported that apron can harbor a plethora of hazardous elements such as microorganisms and toxic chemicals. Despite of the potential hazard, 40% of respondents carry their apron to their residence.

In the questionnaire form we surveyed the awareness of hazard signs which are commonly used in the laboratories, where it was evident that majority (64%) of the respondents were familiar with few common hazard signs. Since the hazards signs dictate the use of PPEs, it is essential to understand the potential risk following an exposure and the necessity of PPEs to minimize the same. Interestingly, only 31% of the respondents are adequately aware of the important hazards signs and 5% of the respondents have little knowledge about the hazard signs.

Regarding the biomedical waste management awareness, the responses were satisfactory with 98% of them compliant to the guidelines.

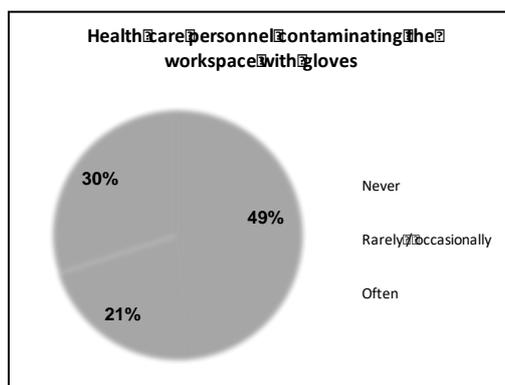


Fig-1: Pie chart showing health care personnel contaminating the workspace with gloves.

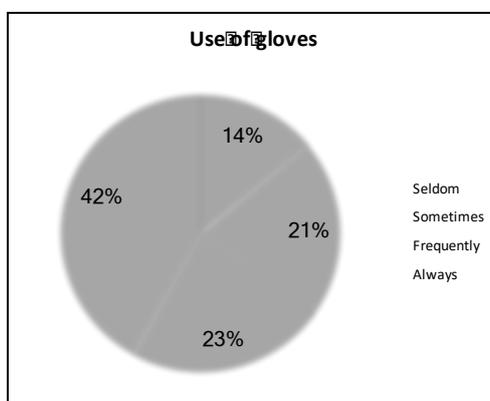


Fig-2: Pie chart showing frequency of use of gloves.

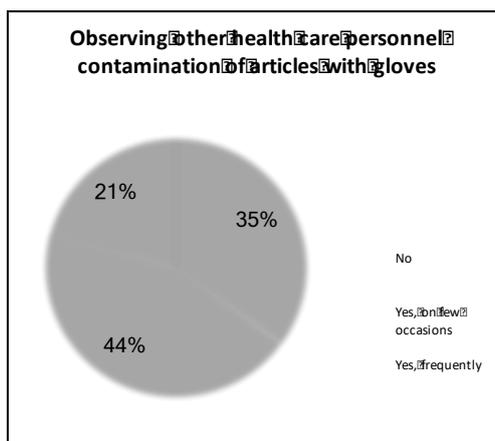


Fig-3: Pie diagram showing health care personnel contaminating surrounding articles with gloves as observed by other health care personnel.

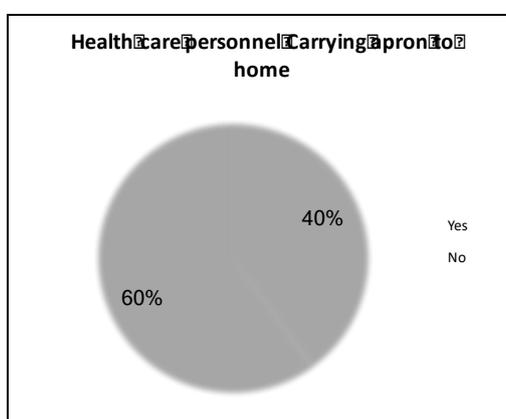


Fig-4: Pie diagram showing health care personnel carrying apron to home.

DISCUSSION

From the data collected, it was found that most of the medical professionals are in constant use of gloves and other PPEs. Some of them frequently come in contact with articles (eg. door knobs, pen, phone, keyboard, mouse etc.) which are commonly accessed by others with their bare hands. Many studies have shown that apron / lab coat can harbor pathogenic microorganisms and potential contaminants [4, 5]. Further, in the study conducted by Wong D *et al.* some of the lab coats were found to be contaminated with pathogenic drug resistant bacteria [4]. It has been demonstrated that microorganisms can survive between 10 and 98 days on fabrics which are used to make white coats, which include cotton, cotton and polyester, or polyester materials [6]. Some of the health personnel carry their apron / lab coat home and they risk exposing the harmful substances to others.

In a study, carried out by Sae Otani and Kazue Fujita, showed that contaminated gloves increase risks of cross-transmission of healthcare-associated pathogens among healthcare personnel and in the environment [2]. Such incidents occur due to

inadequate awareness on use of PPE and lack of regular monitoring. If such contamination is ignored, it may cause health problems to working medical professionals and people in contact.

CONCLUSION

- It is important that health care personnel are able to differentiate between specific clinical situation when gloves should be worn and changed and those where their use is not required.
- Health care workers should be accurately informed on the moment of donning and removing gloves.
- Lab coats should be confined to laboratory premises or disposable lab coats to be recommended.
- Proper education, counselling and motivation should be given related to contamination caused by gloves and other PPE.

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