

A Study On Knowledge, Attitude And Practice Of Laboratory Safety Measures Among Health Care Workers In 2023

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ABSTRACT:

Purpose: A lot of accidents occur in the laboratory due to lack of proper knowledge regarding laboratory safety measures, indifferent attitude & improper implementation of safe laboratory practices. In view of this, the present study on knowledge, Attitude & Practice (KAP) of laboratory safety measures was carried out among health care workers in Makkah, Saudi Arabia **Method:** This was a comparative study which used a standardized, structured self-administered questionnaire to survey knowledge, attitude and practice of paramedical staff. The KAP study enrolled 81 respondents. **Results:** Regarding knowledge- the majority knew the very important issues related with laboratory safety like Post Exposure Prophylaxis (96.55%) & discarding of blood samples (93.10%) etc. In regard to attitude towards the scientific process, all are very much aware about importance of protective devices (i.e. Wearing Gloves) and Biomedical waste management. In regard to the practice in laboratory, the entire study subject group (100%) replied "YES" in each question that shows the good quality work of the laboratory. **Conclusion:** The induction training on Laboratory safety is very important and motivating exercise for improving the laboratory safety measures.

Key words: KAP Study, Laboratory safety.

INTRODUCTION:

The technological advances of the past 150 years have transformed medicine from an art to a modern science. A growing number of clinical investigations are available to the physician and there is an increasing need for technicians to perform these laboratory tests. Current knowledge of safe working practice in laboratories leaves much to be desired and there are an urgent need for both nationally & internationally agreed codes of safe practice and the development of guidelines for the medical surveillance of laboratory

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workers¹. The World Health Organization is developing such guidelines in an attempt to protect the health of workers employed in the investigation of ill health in others. Laboratory hazards are something which may cause injury or damage. These hazards fall generally into one of five categories- Biological, Chemical, Physical, Electrical/Mechanical, high voltage apparatus, machinery with moving parts, Psychological. Every Laboratory worker should be aware of the potential hazards in their workplace. It is important for them to ensure safety in their practice. Personnel must be trained in safe working, provided with appropriate protective clothing, and subjected to agree monitoring procedures to ensure that they are healthy when they start work and remain so during the course of their employment. Due to lack of knowledge of safety precautions, injuries can happen.

Safety in laboratory is responsibility all the employees and employer. This study was undertaken to evaluate the knowledge, attitudes and practices of health care workers regarding the laboratory safety measures (Goswami et al., 2011; El-Gilany et al., 2017; Bakry et al., 2012; Almutairi et al., 2020).

METHODS:

Study Design: This was a comparative study which used a standardized, structured self-administered questionnaire to survey knowledge, attitude and practice of health care workers of Laboratory services of Makkah hospitals, Saudi Arabia.

Study Setting & Study Population: of health care workers of Laboratory services of Makkah hospitals, Saudi Arabia were involved in the study . The questionnaire was self generated and adapted from the literature. It was self-administered, and consisted of twenty standardized questions. Before questionnaires were handed out to participants, the aims and objectives of the study was explained to them. Questionnaires were handed out to a group of health care workers of Laboratory services under the supervision of the laboratory Incharge so that they don't consult each other and go through the literature. A post education (after training on Laboratory safety) Questionnaires that one is same as Pre Education Questionnaires was administered to all enroll Paramedical staff after Induction training on Laboratory safety.

Study Sample: Sampling was not feasible in such a small target population, as this would have limited the generalizability of the findings. Upon completion of data collection, data were coded, captured on Excel and then imported into the EpiInfo software for analysis.

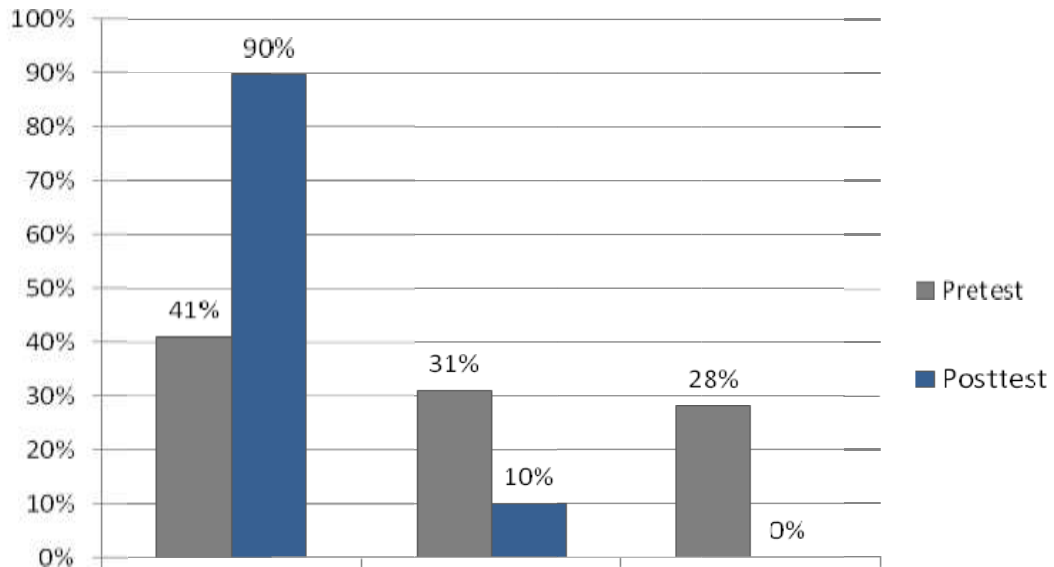
RESULTS

Out of 81 respondents 44(54.32%) were females and 37 (45.68%) were males. Regarding age 50 respondents were in the age group 21- 35 years. The first part of the questionnaire for this study was to assess knowledge of health care workers regarding laboratory safety. Correct response to the questions differs in before and after training of laboratory safety. The knowledge increased after training. The vast majority knew the very important issues related with laboratory safety like Post Exposure Prophylaxis (96.55%) & discarding of blood samples (93.10%) etc. (**Table -1**)

Question	Correct Response (%)	
	Before Training	After Training
Laboratory Safety starts before entering and starting the	82.76	89.66

laboratory work		
Mentions the name the various Barrier protection equipments	79.31	82.76
Protective clothing should be decontaminated in sodium hypochlorite for 10 minutes before washing	0.1% 37.93	72.41
Write two physical/mechanical hazards of laboratory	62.07	79.31
Write the full form of MSDS	48.28	82.76
Mention the three common causes of Fire	48.28	65.52
First Aid kits are available for the emergency conditions in laboratory	82.76	89.66
Mention the equipment of Face protection	68.97	72.41
What is PEP	86.21	96.55
How blood samples discarded after serum separation?	68.97	93.10
Ergonomics concerned with how the workplace “fits” the worker.	68.97	68.97

The graph shows the correct response from the participants in Pre-test and Post-test period. In Pre-test, 41% of participants gets score more than 8 (i.e. $\geq 70\%$ correct responses). In Post-test, score more than 8 was achieved by 90% of Participants which suggest Induction Training on Laboratory Safety is Benefited for the Participants.



In regard to attitude towards the scientific process, all are very much aware about importance of protective devices (i.e. Wearing Gloves) and Biomedical waste management. Attitude about the blood borne infections and importance of Primary Prevention through Vaccines (I.e. Hepatitis B Vaccines) were observed change after training follow up. (Table-2)

	Agree	Disagree	Agree	Disagree
I am not at risk of getting Blood borne infections	34.48	65.52	27.59	72.41
Hepatitis B Vaccine is essential for me	75.86	24.14	89.66	10.34
Wearing Gloves at the time of Phlebotomy is just wasting time	00.00	100	00.00	100
Biomedical waste management is very important	100	00.00	100	00.00

DISCUSSION:

In above study, there was not much more difference in the percentage of female and male subjects (54.32% were females and 45.68% males) & 50 respondents were in the age group 21- 35 years. Gupta et al (2006) in their similar knowledge, attitude and practice (KAP) study. In the questions related to the practice in laboratory, the entire study subject group (100%) replied “YES” in each question that shows the good quality work of the laboratory amongst HCWs in teaching hospital found that the mean age of participants was 33+/- 6 years. In the study Kormed et al (2005) amongst the NGO run clinics of Rural South India found that the mean age of respondents were 30.5 +/- 10.3 years.

The comparison of Knowledge, with Attitude and Practice of health care workers in pre and post education shows that the induction training on Laboratory safety is very important and motivating exercise for the improving the laboratory safety measures. We find that health care persons had good knowledge, almost similar in many aspects therefore; attitude and practice percentage is also very high. Study by Gurubacharya DL (2003) revealed that 46% of the nurses and Lab Technicians had correct knowledge regarding universal precautions. The result in this study has been mainly attributed to the instruction manual and the responsibility given to the paramedical staff for implementation of rules by the authorities. In above study, subjects has a knowledge of PEP is very satisfactory. In the study by Rao & Konanur (2004), 81 % of the Doctors had knowledge about PEP⁶. None of the Doctors had knowledge regarding PEP in the study by J. Parra-Ruiz et al (2004)⁷.

Health care workers though had very poor knowledge about the BMW Act and rules before training, but a good percentage of this category has positive attitude and practice habits. Maqbool Alam (2002) in his study found that 27 % of the respondents (Nurses, Technicians & Health workers) were using gloves regularly. Thus, a safety-conscious staff, well informed about the recognition and control of laboratory hazards, is key to the prevention of laboratory acquired infections, incidents and accidents. For this reason, continuous in-service training in safety measures is essential.

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