pISSN: 0976 3325 eISSN: 2229 6816

ORIGINAL ARTICLE

A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF LABORATORY SAFETY MEASURES AMONG PARAMEDICAL STAFF OF LABORATORY SERVICES

Hansa M Goswami[1], Sumeeta T Soni[2], Sachin M Patel[3], Mitesh K Patel[4]

[1]Professor, Dept of Pathology [2]Assistant Professor, Dept of Microbiology, B.J. Medical College, Ahmedabad [3]Assistant Professor, Dept of Microbiology, GMERS. Medical College, Sola, Ahmedabad, Gujarat, India [4]Assistant Professor , Department of Preventive & Social Medicine, B.J. Medical College, Ahmedabad, Gujarat, India

Correspondence:
Dr Sumeeta T Soni,
J/4, Vikram Apartments, Nr Shreyas Crossing ,
Ambawadi, Ahmedabad-380015
Email.- drsumeetasoni@gmail.com Mob- +91-9428043531

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 paramedical staff of laboratory services of tertiary care teaching hospital, western India.
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, Training

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 workers[1]. 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 paramedical staff regarding the laboratory safety measures.

METHODS:

Study Design: This was a comparative study which used a standardized, structured self-administered questionnaire to survey knowledge, attitude and practice of paramedical staff of Laboratory services of tertiary care teaching hospital, western India.

Study Setting & Study Population: Paramedical staff of Laboratory Services, Laboratory services of tertiary care teaching hospital, western India, for the Laboratory Safety measures. 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 Paramedical staff 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 generelizability 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.

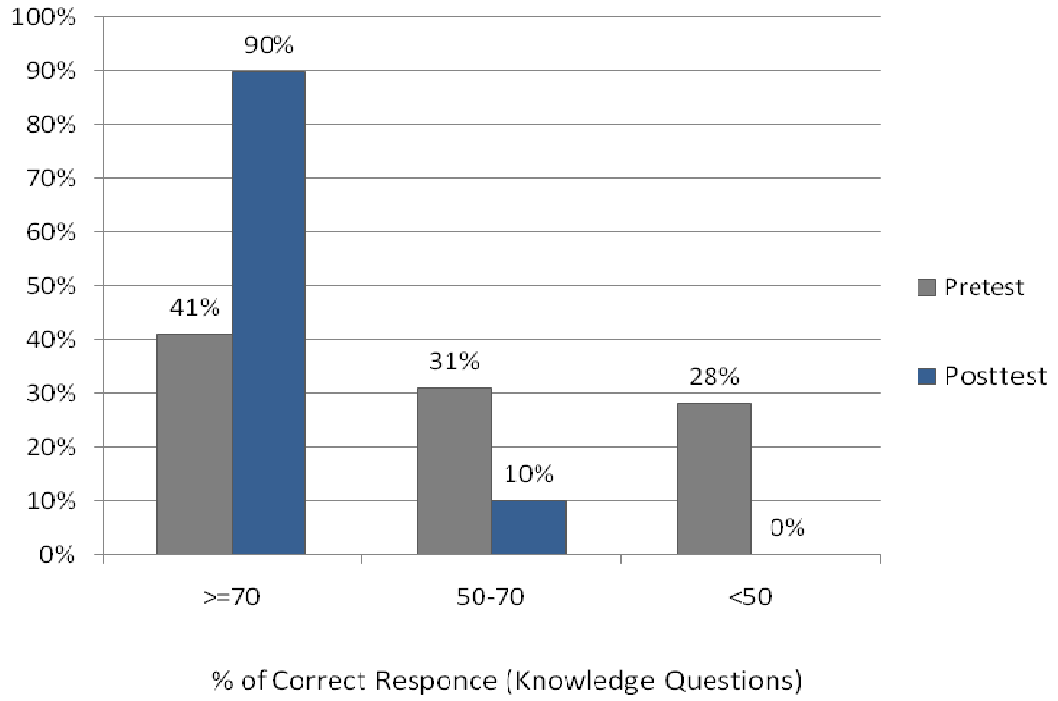
The first part of the questionnaire for this study was to assess knowledge of paramedical workers regarding laboratory safety. Correct response to the questions differs in before and after training of laboratory safety. The knowledge increased after training. The vast majority knew the very important issues related with laboratory safety like Post Exposure Prophylaxis[2] (96.55%) & discarding of blood samples (93.10%) etc. **(Table -1)**

Table 1: Knowledge about Laboratory safety

Question	Correct Response (%)	
	Before Training	After Training
Laboratory Safety starts before entering and starting the laboratory work	82.76	89.66
Mentions the name the various Barrier protection equipments	79.31	82.76
Protective clothing should be decontaminated in 0.1% sodium hypochlorite for 10 minutes before washing	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. >=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)**

Table 2: Attitude about Laboratory Safety

Question	Before Training (%)		After training (%)	
	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

Table 3: Practice about laboratory safety

I wear a gloves at the time of blood collection
I always wash my hand before invasive procedure
I report needle stick injury
I always follow the biomedical waste management rules
I always categorize the biomedical waste before disposal

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. **(Table 3)**

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 amongst HCWs in teaching hospital found that the mean age of participants was 33+/- 6 years[3]. 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[4].

The comparison of Knowledge, with Attitude and Practice of Paramedical 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 paramedical 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[5]. 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 PEP[6]. None of the Doctors had knowledge regarding PEP in the study by J. Parra-Ruiz et al (2004) [7].

Paramedical staff 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[8].

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.

REFERENCES

1. NACO guideline (revised) March 2007 (based on CDC. Public Health Service guidelines for management of health-care worker exposures to HIV and recommendations for post exposure prophylaxis. MMWR. September 30, 2005-54(RR09); p1-17.
2. NACO guidelines. Post Exposure Prophylaxis Guidelines for Occupational Exposure available at http://www.nacoonline.org/guidelines/guideline_7.pdf. Accessed October 15th, 2010.
3. Gupta V, Bhoi S, Goel A, Agarwal P. Universal precautions: knowledge, attitude and practice of healthcare workers regarding HIV, hepatitis B and C European Society of Clinical Microbiology and Infectious Diseases 16th European Congress of Clinical Microbiology and Infectious Diseases Nice, France, 2006,April 1-4 .
4. Kermode M, Holmes W, Langkham B, Thomas MS, Gifford S. HIV- related knowledge, attitudes and risk perception amongst nurses, doctors and other healthcare workers in rural India. Indian J Med Res. 2005 Sep; 122(3):258-64.
5. Gurubacharya DL, Mathura KC, Karki DB. Knowledge, attitude and practices among health care workers on needle stick injuries in Health Care Settings. Kathmandu University Medical Journal. 2003; 1(2)91-94.
6. Rao AS, Konanur HS. Knowledge about Occupational risk of HIV infection and Post-exposure Prophylaxis among Physicians. Electronic Journal of the International AIDS Society. 2004.
7. Parra-Ruiz J et al. Knowledge of post-exposure prophylaxis inadequate despite published guidelines views on http://www.springerlink.com/content/nhekx6lv4j5vaqg6/. Accessed October 18th, 2010.
8. Maqbool Alam et al. Knowledge, attitude and practices among health care workers on needle-stick injuries. Annals of Saudi Medicine. 2002; Vol 22, No 5-6: 396-99.