

## Research Article

### Quality of Preventive Measures Adopted By Health Care Workers To Prevent Communicable Diseases

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#### Abstract:

**Background:** Healthcare workers are exposed to higher chances of exposure to pathogenic organisms; hence have a high prevalence rate of communicable diseases. This study was planned to assess and evaluate the quality of prevention practices adopted by healthcare workers in a large public hospital in Lahore, Pakistan, to understand and highlight the role of healthcare workers in the spread of healthcare-associated infections.

**Methodology:** This cross-sectional analytical study was conducted in a large public hospital in Lahore from March to November 2022. A sample size of 234 healthcare workers comprising 5th-year medical students, House Officers, Doctors, Nurses, Medical officers, Residents, etc. was selected by convenient sampling. A questionnaire was circulated amongst the sample subjects and filled out after voluntary consent. Data collected was analyzed using SPSS-22. The chi-Square test was used for inferential analysis. Alpha was kept at 0.05.

**Results:** A total of 234 responses were analyzed with 33% from males and 66% from females. Among the healthcare workers, 131 (55.9%) had good infection practices and 90 (38.4%) had bad infection practices. Those healthcare workers who underwent training on infection prevention were more likely to have better infection prevention practices than those who had not taken any. 138 healthcare workers underwent training, among which 90 had good prevention practices while 48 had bad prevention practices.

**Conclusion:** More than half of the study group had good infection practices. While this might seem to be a good enough number, however, the percentage of healthcare workers with bad infection practices was still large and couldn't be ignored.

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## **INTRODUCTION:**

**A** communicable disease is a great problem which is faced by healthcare workers (1). It exposes healthcare workers to many blood-borne diseases like Acquired Immunodeficiency Syndrome, Hepatitis B, and air-borne diseases like COVID-19 and influenza. (2) These infections affect the quality of life and even decrease life expectancy as has been seen in the recent COVID-19 pandemic declared by whom many health workers lost their lives during the pandemic. (3) The widespread exposure of healthcare workers to these diseases has led to the development of preventive measures. Various studies have been conducted in the past to study the quality of methods used to prevent communicable infectious diseases among healthcare workers, (4). Methods that have been proven effective to minimize infection among healthcare workers are vaccine prevention, hand hygiene, post-exposure prophylaxis, and adherence to isolation precautions (5). There are more cases of communicable disease outbreaks in third-world countries with low resources leading to fewer preventive measures. (6) An exploration in 2006 was done as a partnership developed between occupational health and infection control experts in Canada and institutions in South Africa which showed that integrated occupational health-infection control training is needed in the workforce and patients alike and it can help in preventing the disease. (7) This article focuses on the quality of preventive measures implemented in healthcare facilities for healthcare workers and the

impact of such measures on the incidence and prevalence of communicable diseases like Hepatitis, COVID-19, and Acquired Immunodeficiency Syndrome in healthcare workers. While events of these outbreaks were recorded and organized to extract information for the general masses, no special effort was done for healthcare workers despite them being exposed at higher rates to these infectious diseases. Preventive measures like the Islamabad Compulsory Vaccination and Protection of Health Workers Act, 2019 have been implemented from time to time however such measures are highly localized and there is still a lack of a nationwide prevention program for healthcare workers in Pakistan. There are a few research articles available for the measurement of the quality of preventive measures for communicable diseases in healthcare settings. According to a quantitative study conducted in Sindh, needle stick injury has been implicated as a major healthcare problem. Further research tried to make an evaluation of the amount of Needle Stick Injuries and their associated factors among healthcare workers. (8)

In conclusion, preventive protocols are being revised and reinstated but the results of these measures remain rather unclear. This has led to an unsupervised spread of communicable diseases among healthcare workers which in the future may lead to a complete healthcare crisis. For this reason, there is an absolute need for further research to assess the quality and benefits of preventive measures for communicable diseases in healthcare workers to find out areas where special effort might

be directed to ensure the uninterrupted provision of healthcare facilities while prioritizing the health of healthcare workers. (9)

### **OBJECTIVES:**

To determine the quality of preventive measures adopted by healthcare workers in a large public hospital.

### **OPERATIONAL DEFINITION:**

**Quality:** Quality can be defined as good quality (if above the mean) and poor quality (equal to or below the mean).

### **Preventive Measures:**

Preventive measures are reasonable steps like the use of gloves, antiseptic rub, PPE, waste disposal practices, and disinfecting methods that are adopted by healthcare workers.

### **Healthcare worker:**

Healthcare workers will include 5th-year medical students of MBBS and House officers working in Mayo hospital, Lahore.

### **Communicable disease:**

Communicable diseases are defined as diseases caused by microorganisms that can be spread directly or indirectly from one person to another (WHO).

### **METHODS AND METHOD:**

It is a cross-sectional study. The study was conducted at a public hospital in Lahore, Pakistan. This study was conducted from March to November 2022. The sample size was calculated by using the single population proportion formula. The sample size was 234 to get a confidence interval (CI) of 95%

and a margin of error of 5% through RAOSOFT.

(10) The sampling technique used was convenient sampling.

The sample included healthcare workers including medical students in year 5 having clinical exposure of at least 2 months and House officers, medical officers, Post Graduates, Senior Residents, and Nurses working in Mayo hospital. The sample excluded medical students from years 1 to 4 and all students of BDS and Allied Sciences, are excluded.

### **DATA COLLECTION:**

A pre-tested data collection tool was used after acquiring permission from the main researcher via email on June 16, 2022. The data collection tool was already tested for reliability in the previous research (11) The tool used was suited to the conditions and intricacies of Pakistan's Healthcare system.

It consisted of two parts; the first part included demographic features of healthcare workers and the second part consisted of 25 questions with a Likert-type scale ranging from "Always" to "Never" about infection prevention practices.

### **Data processing and analysis:**

Data were analyzed using the software SPSS-22. Numerical variables were expressed by mean and standard deviation and Categorical variables by frequency and percentage. The chi-Square test was used for inferential analysis. Alpha was kept at 0.05.

### **RESULTS:**

There were 234 healthcare workers with a mean age of 26, with 33% Male and 66% female. There are 42% of healthcare workers in OPD, 13% in the Gynecology and obstetrics unit, 12% in the inpatient

clinic, 68% in the medical and surgical ward, 29% in the pediatric, ward, and 8% in OR. (TABLE 1)

Among the healthcare workers, 131 (55.9%) had good infection practices and 90 (38.4%) had bad infection practices. 138 healthcare workers underwent training, among them, 90 had good

prevention practices while 48 had bad prevention practices. Those healthcare workers who underwent training on infection prevention were more inclined to have good infection prevention practices than those who did not take any. (TABLE 2 and CHART 1 and 2).

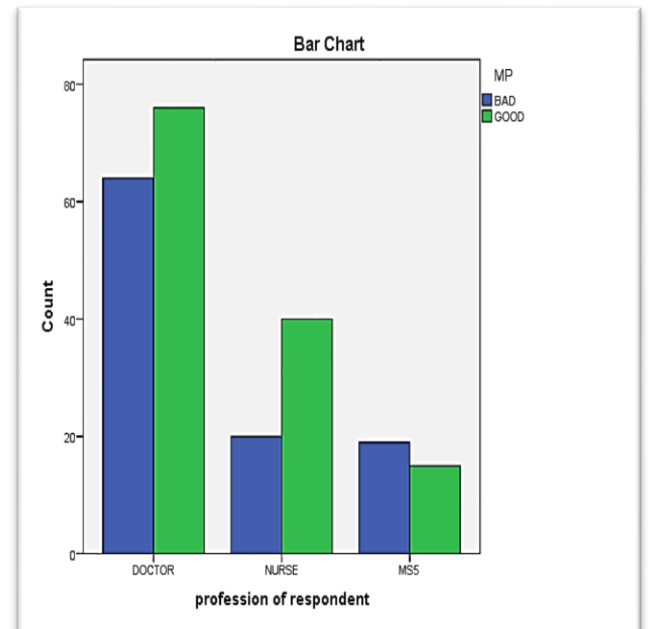
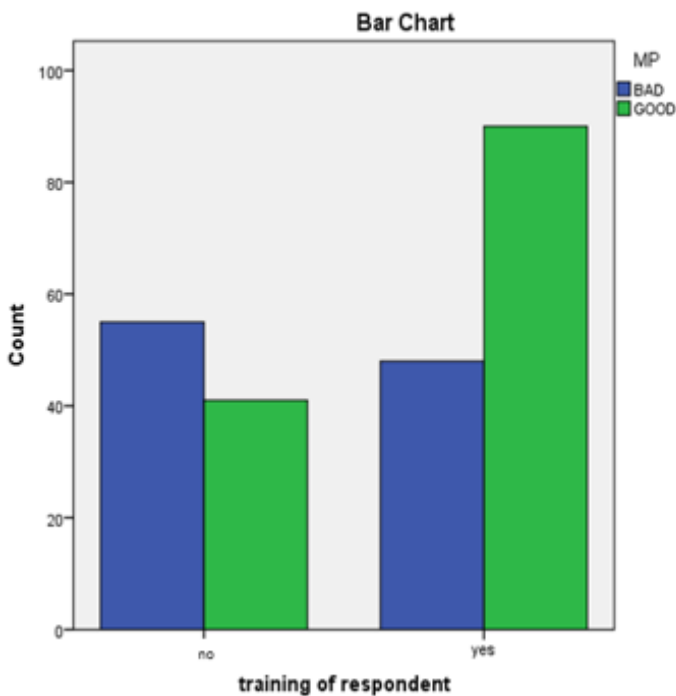
**Table 1: Socio-demographic characteristics of healthcare workers, King Edward Medical College, Lahore, March to November 2022 (N=234).**

Variables		Frequency (N=234)	Percent
Age(years)	17-21	58	24.8
	22-26	135	57.7
	27-31	34	14.5
	Above	7	3.0
Sex	Male	78	33.3
	Female	156	66.7
Marital status	Married	78	33.3
	Single	156	66.7
Profession	Doctor	140	59.8
	Nurse	60	25.6
	MS 5	34	14.5
Currently working department or unit	OPD	42	17.9
	Gynecology and Obstetrics unit	13	5.6
	Medical and Surgical Ward	68	29.1
	Inpatient clinic	12	5.1
	Pediatric ward	29	12.4
	OR and Minor-OR	8	3.4
	Other **	62	26.5

OPD=Outpatient department, OR= Operating theater, \* Anesthesiologist, Dentist, and Ophthalmologist; \*\*EPI, FP, ENT unit, ophthalmology unit, TB-clinic, neonatal ICU, adult ICU, Orthopedic unit, Dressing and injection room.

**Table 2: Factors associated with infection prevention practices, King Edward Medical College, Lahore, March to November 2022 (N=234).**

Variables	Infection Prevention practice status		p-value
	Good n=131	Bad n= 90	
<b>PROFESSION</b>			
Doctor	76(54.2%)	64(45.7%)	0.087
Nurse/Midwife	40(66.6%)	20(33.3%)	
MS5	15(44.1%)	19(55.8%)	
<b>TRAINING ON INFECTION PREVENTION</b>			
Yes	90(65.2%)	48(34.7%)	0.001* significant
No	41(42.7%)	55(57.2%)	



**Bar Chart 1: Profession of the respondent and quality of preventive measure, King Edward Medical College, Lahore, March to November 2022 (N=234). MS5 5<sup>th</sup>-year medical students**

**Bar Chart 2: Training of respondent and quality of preventive measure, King Edward Medical College, Lahore, March to November 2022 (N=234).**

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## **DISCUSSION:**

Healthcare workers, being at the frontline of diagnostic and preventive services, are exposed to a lot of infectious pathogens responsible for healthcare-associated infections (HCAIS). Healthcare-associated infections are a raging problem in developing countries like Pakistan where communicable diseases compose the major portion of the disease load. Prevention practices still are the most promising option for to control of such diseases, especially for healthcare workers who occupy a central position in the spread of such infections.

In this study, more than half (55.9%) of Healthcare workers had good prevention practices. This result was lower than the study conducted in Ethiopia (two by third, 66.6%) (11) There was a reported gap in the quality of prevention practices between doctors and nurses as opposed to the results of a similar study conducted in Pak-Emirates Military Hospital, Rawalpindi, Pakistan in 2019 which although pointed out a gap in knowledge of prevention practices but implied no gap in their practice. The results of our study suggested that nurses had a better quality of prevention as compared to doctors (12). This could be a result of better training programs and curriculum differences for nursing staff. This result is more favorable as nurses are an essential component of the healthcare structure and at an increased risk of needle stick injuries among many other mishaps like splashing of body fluids and secretions. It was the opposite of the one done in Italy showing poor knowledge (13)

Our study showed more satisfactory results as

compared to previous studies. However, there was a significant difference between the practices of doctors and nurses. Doctors had worse quality prevention practices as compared to nurses which may be due to their less rigorous participation in waste management, sterilization, and disinfection. Furthermore, 5TH Year medical students had poor quality of prevention. This is an area of concern since medical students in their final year are more involved in clinical practices and learning in more vulnerable settings. Our study does not agree with the previous results in Nigeria, Ethiopia, and Pakistan. This may be due to training programs and seminars held on the prevention of communicable diseases as is indicated in our study which shows that Healthcare Workers who attended such programs were more likely to have a better quality practice (14)

Although our study showed better results compared to previous studies, it is important to keep in mind that this quality is way below what has been recorded in developed countries. Hence, there is still much to work on as infectious diseases like hepatitis still run large in our populations and provide a risk of an epidemic of more severe diseases like Hepatocellular Carcinoma, etc.

## **CONCLUSION:**

There is a need for better training programs, especially for medical students in their clinical years. There is also space for improvement in prevention practices more so for doctors than nurses. Awareness programs, symposiums, and training programs may provide better results in the prevention of communicable diseases.

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