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Abstract:

Purpose: This study examined healthcare workers' perceptions influencing the utilization of infection prevention and control (IPC) protocols at Moi County Referral Hospital in Taita Taveta County. The objective was to assess health system factors, particularly provider attitudes, associated with adherence to IPC standards aimed at reducing hospital-acquired infections.

Methodology: A descriptive analytical cross-sectional design was employed. The study sampled 127 healthcare workers, stratified by professional cadre and selected through simple random sampling. Data were collected using structured questionnaires and an observational checklist. Statistical analysis was conducted using SPSS version 27. Associations were tested using Cochran's and Mantel-Haenszel common odds ratio estimates, with adjusted odds ratios (AORs) and 95% confidence intervals reported.

Findings: Most respondents were female (67.7%) and predominantly nurses (77.9%), with 75.6% having 1–3 years of work experience. Overall IPC protocol utilization was low at 44.1% (n=56). Although 51.2% of participants demonstrated a positive attitude toward IPC practices, positive perception was significantly associated with higher utilization (AOR = 2.607; 95% CI: 1.26–5.37; p = .012). Healthcare workers with favorable attitudes were over twice as likely to adhere to IPC protocols compared to those with negative perceptions.

Unique Contribution to Theory, Practice and Policy: The study reinforces behavioral theory linking provider attitudes to compliance behavior in clinical settings. Practically, it highlights the need for targeted capacity-building interventions to shift perceptions and improve IPC adherence. From a policy perspective, institutional strategies should integrate continuous professional development and supportive supervision to strengthen IPC implementation frameworks.

Keywords: Infection prevention measures; Perceptions; Infection prevention and control protocols; Hospital-acquired infections; Healthcare workers.

JEL Codes: *I12; I18; C12; C83*.

Introduction

Among the major problems in healthcare systems and organizations are healthcare-associated infections (HAIs), which are a major threat to patients' and healthcare workers' safety. Therefore, Infection Prevention (IP) is the approach designed in order to prevent these hospital infections which can affect both the patient and health care personnel (Storr et al., 2025). This prevention is achieved through adherence to protocols of IP such as hand cleanliness, utilization of PPEs and implementation of IP standard precautions (SPs). Prevention and control of infection in hospital set up involves use of standard precautions and additional (transmission-based) precaution. Standard precautions in infection control are used to prevent transmission of microorganisms specifically through blood and other infectious agents which can be from either recognized or unrecognized sources (CDC, 2024). These standard measures are used while caring for patients in hospitals and other hospital settings regardless of what they have been diagnosed with or status of their infection.

Globally, there has been an overall rise of HAIs both in industrialized and emerging nations with a prevalence of approximately 15% of these HAIs among admitted patients per year, with approximately 2 million patients suffering from hospital acquired infection per year (Raoofi et al., 2023). World Health Organization (WHO) reports that patients from developing countries have higher (25%) risk of getting hospital acquired infections than those patients from industrialized countries (WHO, 2024). In Africa, adherence to IPC protocols remain a challenge due to inadequate supplies in the hospital set up (CDC, 2020). Observing IPC protocols with guidance of health care personnel (HCP) is of great importance towards practicing IP and control measures (Igwe, 2024). Similarly, proper disposal of needles and other waste accumulated clinically is recommended to prevent injuries and transmission of hospital related infections. In addition, CDC recommend that infection prevention protocols and standard precautions are utilized on all patients even when their infection status is known (CDC, 2020). Studies have shown that in Kenya, despite the MOH laying guidelines on IPC approximately 69% of HCW do not observe IPC practices which has contributed to 25% of hospital admissions, increased mortality rates, prolonged hospital stay and increased hospital costs (MEDBOX, 2021).

The actual burden of hospital acquired infections and community acquired infections has not been accurately quantified and documented. Another study in a Kenyan hospital suggest that most health care workers do not adhere to IP practices and negative attitude of HCP towards adhering to IP protocols which can be demonstrated by poor hand wash practices, poor use of PPEs and unsafe handling of sharps (Brown et al., 2025). In Moi County referral Voi there are guidelines on infection control and prevention as set out by the ministry of health which include use of PPEs, adherence to IPC protocols, and regular continuous medical education seminars and updates on infection prevention (KIPPRA, 2021). However, there are incidences of HAIs reported in the hospital despite measures in place to lower these infections. The current study therefore, aimed to

assess healthcare workers' perceptions on utilization of IPC protocols to lower the HAIs in the hospital.

Materials and Methods

This research used descriptive analytical cross-sectional study design. This study design involved collection of data from study respondents at their natural environment and provides data by describing status of the phenomena at one point in time (Capili, 2021). The study was conducted at the Moi County Referral Voi. This is a government owned facility located in Taita Taveta County, Voi constituency, Voi sub-county in Kaloleni ward among 127 healthcare workers. The healthcare workers were first stratified according to their cadres and later sampled using simple random sampling to attain the sample size which was calculated using Yamane (1967) formula. The sampled healthcare workers included 99 nurses, 20 clinical officers and 8 medical doctors. Data was collected using self-administered questionnaire and observational check list. The observational checklist was adopted from World Health Organizational checklist for compliance in utilization of IPC protocols.

Healthcare workers' perceptions were measured using 15 items based on a likert scale with strongly disagree (1), disagree (2), agree (3) and strongly agree (4). However, the negative statement 14 was reverse coded during analysis. A composite variable, level of healthcare workers' perception, was then computed. Data was analyzed using SPSS (Statistical Package for Social Sciences) Version 27 software. Afterwards, results were presented using descriptive statistics: frequency tables and charts as appropriate. Chi-square was used to identify the association healthcare workers' perceptions and utilization of IPC protocols. A p value of $p < 0.05$ was set to be significant. All ethical principles were followed during the study: the permit to conduct the study was obtained from *National Commission for Science, Technology & Innovation, NACOSTI (Ref: 993415)*, following ethical approval from *KeMU (Ref: KeMU/ISERC/PHT/02/2025)* which was presented to medical superintendent at Moi County Referral Voi who approved the data collection process. Departmental heads were notified. Informed consent was sought from health care workers before they took part in the study. Confidentiality was ensured by not revealing of information obtained during data collection and assuring the respondents that information given will be used only for the reasons of carrying out the study. Anonymity was guaranteed by use of unique codes to identity participants on the questionnaire during the duration of data collection.

Results and discussion

The study included 127 participants who filled the questionnaires distributed by research assistants therefore response rate of 100% was obtained which is statistically acceptable representation of the target population.

Among the participants, majority of the health workers were female 86(67.7%), similarly nurses predominated the participants 99(78%). Those who had worked for 1-3 years 96(75.6%) were the majority. The summary of the results is indicated in table 1.

Table 4.1: Socioeconomic and demographic characteristics of the participants

Variable	Frequency (N=281)	Percentage
Gender		
Female	86	67.7
Male	41	32.3
Designation		
Nurse	99	78
Clinical officer	20	15.7
Medical officer	8	6.3

Level of utilization of infection prevention control protocols

The level of utilization was assessed using nine practices that were rated as occasionally, most of the time and always. Those who practiced the infection prevention and control measures always were considered to be having good practice while those who reported otherwise were considered having poor infection prevention practices. On waste segregation, majority always practiced waste segregation 52(40.9%), with 62(48.8%) sometimes ensuring injections safety and 58(44.1%) always used personal protective equipment. Hand hygiene was always done among 66(52%), disinfection and sterilization of equipment was always practiced among 54(42.55). Use of aseptic technique and safe management of blood and other body fluids was always used among 58(45.7%) respectively. It was also found that 55(43.3) of the participants observed cough etiquette and 53(41.7%) observed environmental cleaning and disinfection. The summary of the practices and level of utilization of infection prevention and control protocols is shown in table 2.

Table 2: Level of infection prevention and control protocol

Practice	**Rarely (1)**	**Occasionally (2)**	**Sometimes (3)**	**Always (4)**
Waste segregation	0%	28(22%)	47(37%)	52(40.9%)
Ensures injections safety	0%	9(7.1%)	62(48.8%)	56(44.1%)
Use of personal protective equipment	0%	23(18.1%)	46(36.2%)	58(44.1%)

Practices hand hygiene	0%	16(12.6%)	45(35.4%)	66(52%)
Disinfection and sterilization of equipment	0%	23(18.1%)	50(39.4%)	54(42.5%)
Use of aseptic technique	0%	20(15.7%)	49(38.6%)	58(45.7%)
Safe management of blood and other body fluids	0%	19(15%)	50(39.4%)	58(45.7%)
Observe cough etiquette or respiratory hygiene	0%	24(18.9%)	48(37.8%)	55(43.3%)
Environmental cleaning and disinfection	0%	26(20.5%)	48(37.8%)	53(41.7%)

In general, the utilization level was found to be at 44.1% (n=56) as shown in figure 1. This meant that majority had low utilization of the infection prevention control protocols.

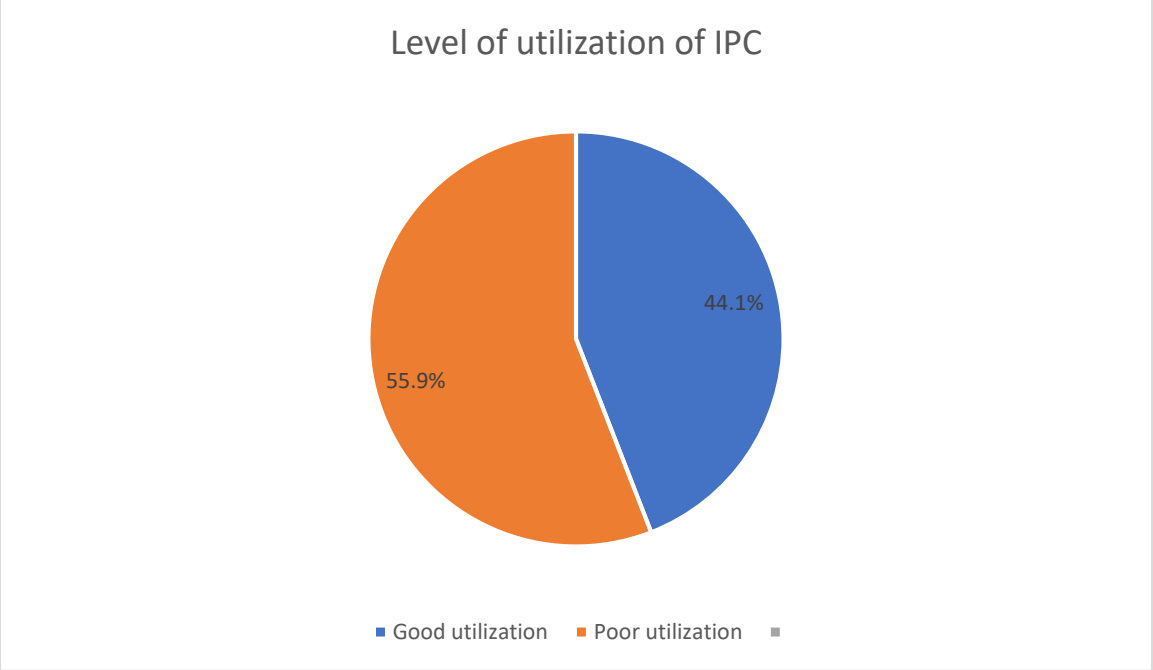

Figure 1: Level of utilization of IPC

During this study, eight items were included in a checklist to evaluate utilization level of IPC among the health care workers. These items included; hand hygiene, environmental hygiene, cough etiquette, waste segregation and safe management of blood and other body fluids. Similar parameters were used in a previous study aimed at assessing utilization of IPC protocols. In

general, the utilization level was found to be at 44.1% (n=56). This meant that majority had low utilization of the infection prevention control protocols. These results are almost similar to those reported in a study in Ethiopia that found compliance level of 36.5% while in Cameroon the utilization level was at 64.5% higher than that reported in the current study (Tolera et al., 2024). The difference may be attributed to data collection from different hospitals that were pooled together. Utilization of masks, hand hygiene and gloves were used to evaluate utilization of infection prevention and control guidelines. The study found the utilization level to be at 19.2% lower than that reported in the current study. The difference may be attributed to the fact that the study involved many government health facilities at different levels of health care provision.

The current study calculated the overall utilization level of IPC protocols, however, in other studies individual parameters of infection prevention were assessed. According to Haifete et al. (2020) proper segregation of waste can be achieved through training of both health care workers and subordinate staffs, and having guidelines with outlined standards to be adhered to by clinical staffs on waste generated in the facility. Adequate isolation of waste consists of sorting wastes based on their danger in the environment. Speth (2025) reported that to decrease the risk of sharp injuries, sharps should be disposed of carefully while at the place of work. According to Carmagnola et al. (2022), use of PPEs can help in reducing spreading of infection. These PPEs include; use of gloves, gowns, protective eye shield, face shield, mask and boots. Use of these protective gears help in preventing infections and is part of standard precautions and occupation safety (Verbeek et al., 2020).

Perceptions of health workers on infection prevention and control protocols

The perceptions were assessed using 15 items based on a likert scale with strongly disagree (1), disagree (2), agree (3) and strongly agree (4). However, the negative statement 14 was reverse coded during analysis. The summary of the results is represented in table 3. Self-compliance with IPC bundles was reported to be high among 93(73.2%) while that of hand hygiene 63(49.6%). Isolation of patients was perceived good among 55(43.3%), availability of resources for implementation was perceived not available among 48(37.9%), team work was perceived among 67(52.85), the hospital supported implementation of infection prevention measures as perceived among 70(55.1%). Hospital leadership was perceived not to support IPC among 44(34.6%), with almost half of the participants 49(38.6%) disagreeing that the hospital trains patient and families are educated on how to prevent health care associated infections. However, training workers on IPC was perceived to reduce infections among 72(56.7%) with 37(29.1%) reporting that they need to be supervised to practice infection prevention and control. Adhering to IPC guidelines was found among 51(40.2%) but the other cadres handling the patients had not been trained as perceived by 55(43.3%).

Table 3: Perceptions of healthcare workers on utilization of infection prevention control protocols

Statement	Strongly disagree	Disagree	Agree	Strongly agree
Self-compliance with IPC bundles	0(0%)	34(28.8%)	93(73.2%)	0(0%)
Self-compliance with hand hygiene	0%	20(15.7%)	63(49.6%)	44(34.6%)
It is easy to implement isolation precautions in their hospital	6(4.7%)	25(19.7%)	55(43.3%)	41(32.3%)
Necessary resources to perform IPC practices are available	5(3.9%)	48(37.9%)	37(29.1%)	37(29.1%)
Work as a team to implement quality improvement initiatives	4(3.1%)	16(12.6%)	67(52.8%)	40(31.5%)
Have the support to implement/practice infection prevention measures	5(3.9%)	12(9.4%)	70(55.1%)	40(31.5%)
Hospital leadership supports IPC activities	6(4.7%)	44(34.6%)	36(28.3%)	41(32.3%)
Work climate is good at their hospital	6(4.7%)	25(19.7%)	55(43.3%)	41(32.3%)
Patient and families are educated on how to prevent health care-associated infections	8(6.3%)	49(38.6%)	34(26.8%)	36(28.3%)
Training in IPC reduces hospital acquired infections	4(3.1%)	10(7.9%)	72(56.7%)	41(32.3%)
Needs to be supervised to follow IPC guidelines	6(4.7%)	53(41.7%)	31(24.4%)	37(29.1%)
Health care workers should use infection control measures at all times	2(1.6%)	14(11%)	73(57.3%)	38(29.9%)
HCW should adhere to IPC guidelines	6(4.7%)	25(19.7%)	55(43.3%)	41(32.3%)
Adhering to IPC guidelines is time consuming	4(3.1%)	34(26.8%)	51(40.2%)	38(29.9%)
All those handling patients including support staff should be trained on infection prevention	6(4.7%)	25(19.7%)	55(43.3%)	41(32.3%)

On analysis of the above perceptions, 65(51.2%) participants had positive attitude towards use of infection prevention and control protocols as shown in figure 2.

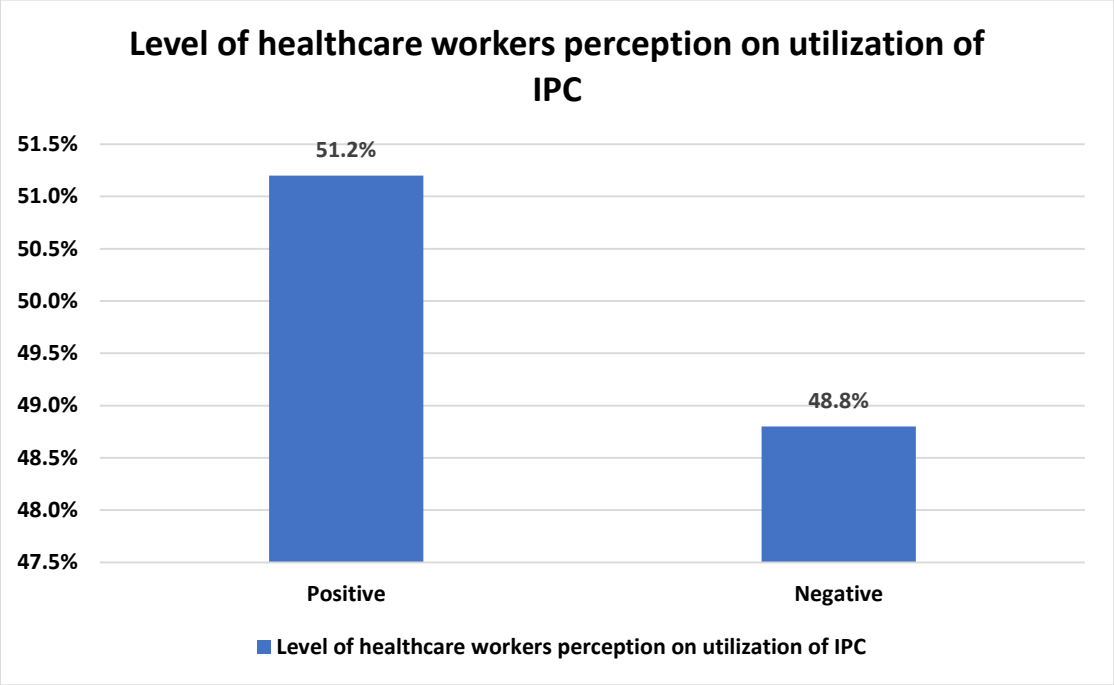

Figure 2: Workers perception on utilization of IPC protocols

Association between healthcare workers´ perception and utilization of IPC protocols

During analysis, it was found that the healthcare worker's perception was statistically significant in influencing their utilization of IPC protocols.

	Utilized IPC protocols		Chi square, p value and df
Variable	No	Yes	
Perception level of health workers on IPC protocols			
Negative	42	20	χ^2 =6.88 **p =.012** df= 1
Positive	29	36	

On analysis of the health care providers' perceptions, 65(51.2%) participants had positive attitude towards use of infection prevention and control protocols. This was significantly associated with utilization of IPC protocols. A study by Alhumaid et al. (2021), lack of use of IPC protocols and guidelines were attributed to negative attitude among HCWs which contributed to increased incidences of HAIs in the hospital. According to Ranoto et al. (2025), attitude towards utilization of IPC guidelines in IPC and control involved several measures which aimed at preventing HAIs. Abolfotouh et al. (2020) while conducting a study in the Saudi Arabia among HCWs on perceptions towards training on occupational health and safety, the researcher found out that majority of HCWs did not regard the training because they regarded it as not beneficial in IPC. In another study, Mutsonziwa et al. (2024) which assessed barriers affecting adherence to IPC measures among HCWs, findings revealed that different HCWs had different opinions towards the importance of benefits of occupational safety training towards IPC. This however was attributed to negative perception among HCWs towards seminars and trainings for HCWs on IPC which led to poor use of IPC protocols and measures.

Conclusion

The study concluded that healthcare workers' perceptions significantly influence utilization of infection prevention and control protocols in Moi County Referral hospital, Voi.

Recommendation

The study recommends healthcare workers capacity building to increase their positive perception on infection prevention practices which will increase their utilization of infection prevention and control protocols. This will lower hospital acquired infections and reduce hospital stay costs and burden to the patients.

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