
Factors Influencing Compliance with Infection Prevention and Control Practices at Katavi Regional Referral Hospital: Healthcare Workers' Perspectives

[Cesilia Charles](#)*, Lutengano Mkonongo, David Masanja, Damian Maruba, Philipo Mwita, Edward Bucheye, Abel Nyika, Elly Daudi, Emmanuel Amsi, Frank Elisha, Ecka Mafwimbo, Bernard Njau, Nathanael Sirili, Radenta Bahegwa, Deogratias Banuba

Posted Date: 4 December 2025

doi: 10.20944/preprints202512.0513.v1

Keywords: compliance; infection prevention and control; healthcare worker; Katavi; Tanzania



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a [Creative Commons CC BY 4.0 license](#), which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Factors Influencing Compliance with Infection Prevention and Control Practices at Katavi Regional Referral Hospital: Healthcare Workers' Perspectives

Cesilia Charles ^{1,*}, Lutengano Mkonongo ¹, David Masanja ², Damian Maruba ³, Philipo Mwita ⁴, Edward Bucheye ⁵, Abel Nyika ⁶, Elly Daudi ⁷, Emmanuel Amsi ², Frank Elisha ⁴, Ecka Mafwimbo ⁸, Bernard Njau ⁹, Nathanael Sirili ¹⁰, Radenta Bahegwa ¹¹ and Deogratias Banuba ⁴

¹ Research and Publication Unit, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

² Health Quality Improvement unit, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

³ Obstetrics and Gynecology Department, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

⁴ Surgical Department, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

⁵ Internal Medicine Department, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

⁶ Emergence Department, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

⁷ Laboratory department, Katavi Regional Referral Hospital, Katavi P.O. Box 449, Tanzania

⁸ Catholic University of Health and Allied Sciences, Mwanza P.O.Box 1464, Tanzania

⁹ School of Public Health, KCMC University, Moshi P.O. Box 2240, Tanzania

¹⁰ Department of Development Studies, Muhimbili University of Health and Allied Sciences, Dar es Salaam, P.O. Box 65001, Tanzania

¹¹ Health Quality Assurance Unit, Ministry of Health, Dodoma P.O. Box 743, Tanzania

* Correspondence: cecycharle7@gmail.com

Abstract

Infection Prevention and Control (IPC) forms the backbone of effective healthcare delivery and disease prevention. This study aimed to explore healthcare workers' perspectives on factors influencing compliance with infection prevention and control practices in Katavi Regional Referral Hospital, Tanzania. With a qualitative approach, we aimed to enable a broader narrative; to gain a more detailed understanding of IPC practices and identify experiences that may be overlooked in a forced-choice questionnaire. A phenomenological study design was employed, using an interview guide to collect data from 19 professionals (five doctors, four nurses, four laboratory practitioners, and six from other subspecialties) between July 24, 2025, and August 23, 2025. Among participants, nine were the key informants, and 10 were involved in in-depth interviews. Thematic analysis revealed that the availability of IPC supplies, awareness of IPC protocols, supportive supervision, institutional support, and desire for personal and patient safety were factors influencing compliance, while HCWs' negative attitudes towards IPC and the high volume of patients were factors hindering compliance. To enhance compliance, the health system should strengthen supervision, ensure a constant supply of IPC materials, and promote positive attitudes among healthcare workers.

Keywords: compliance; infection prevention and control; healthcare worker; Katavi; Tanzania

1. Introduction

Global initiatives by the United Nations (U.N.) to promote healthy lives and well-being for all populations emphasize a range of health targets, including universal health coverage (UHC), which focuses on the right to health, financial risk protection, and access to quality health services [1]. According to the World Health Organization (WHO), quality healthcare is regarded as patient-

centered, safe, effective, timely, efficient, and equitable [2]. Within this framework, infection prevention and control (IPC) is recognized as a fundamental element in delivering high-quality care by addressing hospital-associated infections (HAIs), antimicrobial resistance (AMR), and pathogen containment [3–5]. IPC practices are designed to protect patients, staff, and visitors from exposure to disease-causing agents (germs) that may be present in the healthcare environment or HAIs [6]. It includes hand hygiene, PPE use, handling of sharp devices, immunization, post-exposure prophylaxis, and isolation enacted for the prevention of HAIs [7].

Hospital-acquired infection (HAI) is the most common adverse event in healthcare delivery systems worldwide, threatening the health of patients and healthcare workers [8–10]. A global report on infection prevention and control in healthcare settings shows that HAIs kill 7 patients in high-income countries and 15 patients in lower and middle-income countries (LMICs) annually [7]. In Sub-Saharan African countries, the HAI rate is 12.9% of which the highest burden (19.7%) was observed in East Africa [11–15]. Likely in Tanzania, the rate of HAI is 14.8% higher than in the developed world [16]. The main cause for the high HAI rate is non-compliance with IPC practices among HCWs. Additionally, the lack of an IPC committee, IPC training, and IPC policies/guidelines impedes their compliance [17–19].

Fortunately, 55–70% of HAIs can be prevented using available evidence-based IPC strategies. [20]. Regrettably, only 34% of WHO member states in 2021 had a fully implemented IPC program across their countries; among them, only 19% reported having a system in place to monitor the effectiveness and compliance with the implemented prevention and control activities [15]. Bridging the IPC compliance poses a significant risk for mental health disorders, such as anxiety, depression, adjustment disorder, panic attacks, post-traumatic stress disorder, and economic burden to the health systems and family as a result of HAI and AMR [21].

In Tanzania, the IPC of healthcare workers in healthcare facilities has been addressed since 2004, and a new version of the national IPC documents was published in July 2018, corresponding with WHO recommendations [22]. These guidelines have been reformulated to improve the compliance of HCWs with IPC precautions and to interrupt the circulation of infection, consequently protecting the HCWs, patients, and the community from HAIs and their consequences. Despite the interventions, the implementation of the IPC recommendation is still far from satisfactory in most hospital settings, with a direct impact on the safety of patients and healthcare workers. Therefore, this study aimed to explore healthcare workers' perspectives on factors influencing compliance with IPC practices to generate evidence-based strategies that strengthen the resilient health system at healthcare facilities by enhancing preparedness and response to future unexpected infectious epidemics.

2. Materials and Methods

The guidelines for conducting qualitative studies established by the Consolidated Criteria for Reporting Qualitative Research (COREQ) and the Standard for Reporting Qualitative Research were followed [1,2]

2.1. Design

A phenomenological study design was employed to explore HCWs' perspectives on factors influencing the IPC compliance among healthcare workers at Katavi Regional Referral Hospital in Tanzania. In this type of qualitative research design, 5 to 25 people are interviewed to collect data on common experiences about a particular phenomenon [23]. All participants who participated in this study had lived experiences of being involved in providing health services and obligated to practice the IPC cautions during service delivery. As such, the most appropriate design that we deemed fit to help elicit and describe the meanings the healthcare workers gave to their lived experiences concerning IPC compliance was a phenomenological design, as we sought to explore the HCWs' perspectives on factors influencing IPC compliance among healthcare workers. In this study, in-depth interviews from the participants and key informants were used, this being a form of structured

discussion performed in a non-threatening environment, which encourages in-depth discussion through one-to-one interaction

2.2. Study Setting and Period

Data for the current study were collected from 24th July to 23rd August 2025 at Katavi Regional Referral Hospital (KRRH), one of 28 Tanzanian government regional referral hospitals located in Mpanda Municipality. According to the 2022 Census, the hospital serves a catchment population of 1,152,958 [27]. The hospital offers a range of inpatient and outpatient services, including medical, surgical, obstetrics and gynecology, child health, investigation, and medication services. It receives patients from Katavi's councils, neighboring regions, and the Democratic Republic of Congo and makes referrals to the zonal hospitals in Mbeya (550 km), Bugando Hospital in Mwanza 745 km, KCMC Hospital in Kilimanjaro (1265 km), Muhimbili National Hospital (1500 km), and Benjamin Mkapa Hospital (712 km). KRRH has 445 employees of various cadres, which is below the minimum range of recommended staffing requirements for a Regional Referral Hospital according to the Tanzania's MoH guidelines [28]. Out of 445 employees, 366 (82.2%) are HCWs (i.e., 83 doctors, 252 nurses, and 31 laboratory practitioners).

2.3. Study Population

HCWs who were permanently employed at KRRH for at least six months, directly involved in patient care, and provided informed consent were included in the study. HCWs not present at the time of data collection were excluded.

2.4. Sampling of Participants

A purposive sampling was used to select 10 IDIs (three doctors, four nurses, and three laboratory practitioners) due to their knowledge about IPC measures implemented in a study area, to gain their perspectives and lived experiences regarding factors associated with compliance with IPC practices. Additionally, purposive sampling was used to select nine Key Informants (KIs) (three administrative officers, three ward in-charges, and three quality improvement team members) to engage in data collection. These key informants, who were not part of the study population, were engaged for their expertise and supervisory roles in infection prevention and control in the hospital. Their perspectives provided valuable contextual and managerial insights into system-level factors influencing compliance. The 19 participants were sufficient to achieve thematic saturation for the study, as also established elsewhere [29].

2.5. Data Collection

Data collection was conducted between July and August 2025. The research team (C.C., L.M., D.M., E.B., F.M., A.N., E.D., E.A., F.E., D.B., E.M., B.N., R.B., and N.S.) was appointed and trained by C.C., L.M., B.N., D.B., R.B., and N.S. An interview guide (in English) was developed by C.C., L.M., and B.N. and piloted to two medical interns employed at KRRH, then translated into Kiswahili by D.M., F.M., A.N., E.D., and F.M. In Kiswahili, the English term "Infection Prevention and Control (IPC)" has been adopted into the language; therefore, the term IPC was also used in a translated interview guide. A suitable day for conducting the IDI and KI interviews was agreed upon between the research team, ward in-charges, and the heads of the department. The individual face-to-face interviews were conducted in the clinician's private workplaces and lasted for about 20 minutes. Each interview was conducted by two members of the research team, one being the main interviewer while the other handled audio recording and took notes for backup. All interviews were held in the Swahili language, and the interview started with the main interviewer giving verbal information about the study, followed by some standard questions on demographic characteristics. Saturation was reached when no new information emerged.

2.6. Data Analysis

The recorded audios from IDIs and KI were transcribed and translated separately by team members who had been present at the interviews to maintain the authenticity and context of each participant group. In the interview, the audio recording failed; in this case, the notes from the observing team members served as the basis for analysis. Translations were undertaken by clinicians at KRRH who were fluent in both Kiswahili and English. Part of the translated materials from each translator was back-translated by C.C. to ensure quality and conformity of the translations. NVIVO 12 Software was used for data management to analyze. However, during the analysis phase, data were analyzed thematically in a combined manner as both approaches explored similar themes and research questions from different perspectives, which allowed comparison, triangulation, and a richer understanding of the issues. Codes were identified, categorized, and themes were developed both inductively and deductively by co-authors L.M., D.M., F.M., E.M., A.N., E.D., E.A., F.E., D.B., R.B., and N.S. at regular seminars. Responses relating to high-level codes and direct quotes were reported. Some verbatim reporting was done in instances where the actual words of the participants were needed to convey meaning or emphasize an important issue. Simple descriptive analysis was conducted on the respondents' demographics, including age, sex, profession, and position.

2.7. Triangulation

Triangulation is a qualitative research strategy that enhances validity and reliability by incorporating multiple data sources, methods, perspectives, or researchers to examine a phenomenon [3]. This study applied data source triangulation by including participants with varied professional experiences, qualifications, ages, and genders. Such diversity enabled comparison across contexts, reducing the influence of any single demographic or professional viewpoint. By capturing both common and contrasting experiences, triangulation strengthened the credibility and transferability of the findings. Additionally, themes were developed through an iterative and reflexive process and refined until data saturation was reached, defined as the point at which no new ideas emerged. Saturation occurred after approximately 10 interviews. This approach ensured that the final themes authentically reflected the lived experiences of HCWs on IPC practices, consistent with the phenomenological aim of capturing the essence of experience across diverse contexts.

2.8. Ethical Consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of the Medical Research and Ethics Committee (MMREC) in Mbeya, Tanzania (SZEC-2439/R. A/25/11), and permission to conduct the study was granted by the Research and Publication department of Katavi Regional Referral Hospital (KRRH). Study participants provided written informed consent to participate voluntarily. The authors declare that the information presented in this research article is original work that has not been previously published elsewhere.

3. Results

3.1. Socio-Demographic Characteristics

Of the 19 participants who were interviewed, the average age of the participants was 32 years, and the highest age was 55 years. Ten participants were male, five were doctors, four were laboratory practitioners, and four were nurses who held the designation of ward in charge in addition to their other job profiles at the health facility, as illustrated in Table 1.

Table 1. Characteristics of study participants.

S/N	Participants Characteristics	Engagement Category	
		In-depth interview, N=10	Key informant, N=19
1	Age (18 – 55 years)	10	9
2	Sex		
	Male	6	4
	Female	4	5
4	Profession		
	Doctors	4	1
	Nurses	3	1
	Laboratory practitioners	3	1
	Others	0	6
6	Position		
	Administrative officers	0	3
	Quality Improvement officers	0	3
	Ward in-charges	0	3
	Others (nurses, doctors, laboratory practitioners)	10	0

3.2. Perspective of Healthcare Workers on Factors Influencing IPC Compliance

Healthcare workers' perspectives towards factors influencing compliance with IPC practices in their working areas were divided into seven subthemes: availability of IPC supplies, desire for personal safety and patient protection, attitude towards the IPC activities, high patient volumes, institutional support, awareness of IPC protocols, and supportive supervision.

Table 2. Predefined themes and subthemes.

Main theme	Subthemes
Factors influencing IPC compliance	Availability of IPC supplies
	Desire for Personal Safety and Patient Protection
	High volume of patients
	Awareness of IPC protocols
	Institutional Support
	Supportive supervision
	HCWs' Attitude Towards IPC Activities

3.2.1. Availability of IPC Supplies

In Katavi Regional Referral Hospital, most key informants mentioned that IPC supplies were one of the factors influencing compliance with IPC practices. The majority of the KIs reported that IPC supplies are readily available at nearly all points of healthcare delivery, enabling HCWs to perform different IPC practices like waste segregation, hand washing, and disinfection, as one of the key informants reported that:

"As an administrative unit, we ensure that all requirements for IPC practices are present. For example, we have purchased bin liner machines and ensure that all bin liners are available in different colors as per IPC guidelines. Even the safety boxes are always available. When it comes to waste disposal, we have a high-tech incinerator that functions very well. So far, we have not had any issues concerning this machine." (KI 5, 41years, M, June 2025)

Another key informant added:

"IPC practices have been performed in nearly all departments. Issues like waste segregation are also being done, as the buckets are also available, and also the SOPs are available..." (KI2, 37yrs, F, June 2025).

On the other hand, some key informants reported the existence of occasional shortages of PPEs at least once a month and inadequate waste containers in some departments; however, this crisis is reported to be not critical, as portrayed in this quote:

“Almost every month, we have at least one week of shortage.....Some containers are only emptied once a day. By the time it’s 2 p.m., they are already full.” (K11, 29yrs, M, June, 2025)

3.2.2. Desire for Personal Safety and Patient Protection

The majority of HCWs at Katavi Regional Referral Hospital emphasized that personal safety and patient protection are the core components of the non-maleficence principle in medical ethics. This component is a key motivator for IPC compliance, as illustrated in the quote below;

“I feel proud when a patient comes to my department and leaves safely without acquiring nosocomial infections... following IPC guidelines puts me and my patients on the safe side.” (R8, 30yrs, M, June 2025).

However, some participants argued that the difference in shift duration and teamwork influences the healthcare habits of adhering to the IPC practices, as explained by one of the participants:

“You can’t manage it alone as we work in different shifts, and honestly, IPC conditions during night shifts are so scary. If you saw it, you’d laugh; the dustbins are there, but they’ve placed a box where all types of waste are dumped together. Everyone knows about them...Almost everyone you try to talk to tells you they’re tired, which is very disappointing.” (R7, 29years, F, June 2025)

3.2.3. High Volume of Patients

A high volume of patients was a factor pointed out by many HCWs to increase the likelihood of not complying with IPC practices, and this was related to understaffing and congested patient wards that create environments for inadequate IPC practices. The problem of high patient volume was mentioned by the majority of the participants, as revealed in this quote:

“The high number of patients... sometimes there’s overcrowding, and following the guidelines strictly becomes a challenge. If you are to remove gloves and wash hands after each patient, it becomes hard because of the long queue.” (R2, 29yrs, M, June,2025).

3.2.4. HCWs' Attitude Towards the IPC Activities

Attitudes towards the IPC practices accelerate one's intention to action, as explained by the majority of HCWs, who explained that the existence of negative attitudes towards the IPC practices among healthcare workers may be the reason preventing HCWs from complying with IPC practices, as one participant explained:

“Changing people’s mindset is the biggest challenge... Some HCWs think that IPC activities are for a few trained staff and therefore they fail to perform IPC, thinking that there is a special person for such activity; ideally, it’s incorrect, IPC is for us all.” (IDI 10, 30yrs, M, June, 2025).

3.2.5. Institutional Support

The majority of the study participants acknowledged that institutional supports play a major role in ensuring HCWs comply with IPC practices. Despite consistent IPC supplies in an institution, HCWs feel energized to perform the IPC activities by being motivated and recognized publicly after performing well, as explained by one of the participants:

“Surely, on this, an institution tries on its part to provide all the equipment for IPC Practices, which I am now speaking about in my ward. Though I think it is important to find a way to motivate people... when people see their colleagues winning and receiving recognition, they too will be encouraged to follow IPC procedures.” (IDI 3, 30yrs, F, June 2024).

3.2.6. Awareness of the IPC Protocol

Most of the key informants agreed that for the HCWs to perform the IPC very well, awareness of the IPC protocols and guidelines is essential. The IPC knowledge sharing during the on-the-job training, training from the Ministry of Health, and seminars enables all HCWs to be aware of these IPC practices, regardless of their cadres. However, these trainings have been conducted for only a few HCWs, leaving a large proportion of HCWs untrained, as revealed in the quote below:

“As the hospital we usually do IPC training, for example, in the last quarter, the hospital facilitated training to 70 HCWs starting with the WIT members from each department, also whenever anything new arises, like modification or changing of the guidelines, few members are usually called by the Ministry of Health and trained, as they return, they share the knowledge to others.” (KI2, 37yrs, F, June 2025).

However, some key informants had different perspectives where they emphasized that it was individual responsibility to seek IPC knowledge and practice, as reported in this quote:

“At our level, and considering the kind of work we do, it shouldn't be an excuse not to know where to discard gloves. However, laziness could be a contributing factor. The solution is for everyone to understand their responsibilities and to stop such careless habits.” (KI1, 29 yrs., M, June 2025)

3.2.7. Supportive Supervision

Supportive supervision via peer-to-peer motivation and internal supervision enabled HCWs to learn IPC skills regardless of attending the IPC training. The majority of key informants insisted that for healthcare workers to comply with IPC practices, they need to be supported and supervised in IPC implementation, as described in the quote below:

“Even though some have not yet attended these IPC trainings, many continue to support one another while performing their activities. We persist by instructing one another on these IPC protocols through supportive supervision from the QI section and each other.” (KI2, 37yrs, F, June, 2025).

Additionally, the hospital has assigned the quality improvement team with various responsibilities, including overseeing the IPC activities to enable HCWs to comply well, as explained by one of the key informants:

“As part of the Quality Improvement team, I have come across staff who end up mixing different types of garbage. What I do is to speak with them, encourage them, and support them to engage more actively in IPC practices.” (KI1, 29yrs, M, June, 2025)

4. Discussion

4.1. General Discussion

This study explored healthcare workers' perspectives on factors influencing compliance with infection prevention and control (IPC) practices at Katavi Regional Referral Hospital. Although poor IPC has similar causes across countries, the factors affecting compliance may vary by country, depending on its specific conditions and healthcare system characteristics. The current study revealed that IPC compliance was influenced by the availability of IPC supplies, awareness of IPC protocols, supportive supervision, institutional support, motivation for personal and patient safety, HCWs' attitudes, and workload.

The availability of IPC supplies was identified as a key factor affecting IPC compliance, with most participants explaining that steady access to materials like PPE, waste bins, and disinfectants helps ensure adherence to standard IPC. These findings align with earlier studies in Ethiopia and Gambia, which reported that HCWs who had access to PPE were more likely to follow IPC standards than those without easy access to PPE [30,31]. This observation underscores the critical role of PPEs in enabling and sustaining IPC compliance. However, occasional shortages of PPEs and waste containers were observed in this study, demonstrating ongoing logistical challenges that may hinder consistent IPC practices. Recurrent unavailability of such essential IPC supplies could potentially demoralize previously compliant staff members, leading to a lapse in compliance.

The participants in our study generally expressed a belief that they have sufficient awareness and knowledge of IPC measures that influenced them to comply with IPC practices. This knowledge was acquired through on-the-job training, Ministry of Health-led sessions, and internal seminars. Previous studies supported and confirmed these findings [32]. Additionally, IPC misconceptions existed among HCWs, whereby IPC practices were only considered in some situations, like non-emergencies. Further analysis suggested that the existence of observed misconceptions in this study could be a result of the workload among healthcare workers. Fatigue and burnout resulting from excessive workload have an impact on the effectiveness of IPC measures like hand hygiene, particularly under emergencies, despite HCWs' familiarity with recommended hand washing procedures [32].

Right now, most Tanzanian health facilities face unique systemic challenges, such as understaffing and low salary scale levels [33,34]. As reported in our findings, the consequences of this situation are poor compliance with IPC, leading to increased risk of infection and potential spread of infections within the health facility and beyond. This corroborates a recent Cochrane review that identified a need for training of all HCWs and a need for adequate staff numbers in IPC practices [35]. Therefore, more proactive initiatives must be put in place to foster a genuine commitment to adhering to IPC standards. Health systems need to ensure that HCWs receive a refresher training program that imparts IPC knowledge, but most importantly, a sense of responsibility and a culture of compliance with IPC standards within healthcare delivery [31].

The current results also confirmed the findings of many previous studies on the positive effects of IPC training on HCWs' compliance with IPC standards. For instance, the majority of the participants in this study considered the IPC training they received from peer learning, internal and external mentorship from the Ministry of Health, and the hospital quality improvement team as beneficial in that it helped increase their knowledge about IPC issues. The benefits of IPC training for improving knowledge of IPC standards among HCWs in a hospital setting were highlighted in previous studies [36–39]. However, some participants in the current study regarded IPC practices as the responsibility of a few trained individuals rather than all HCWs. Additionally, a recent study identified that lack of training by experts in the field, lack of use of technological tools such as multimedia or digital simulation during training, and lack of effective feedback after training are situations that prevent the development of training [40]. Thus, more engaging and innovative training methodologies, like including bedside teaching, mandatory sessions during paid work hours, and drama, could further enhance IPC compliance among HCWs [41]. However, more in-depth research is needed to tailor training programs to the specific needs of staff, the clinic, and the overall context.

Motivation for personal safety and patient protection was a strong driver of IPC compliance observed in the current study. Our findings confirmed the association between IPC practices and perceived risk among HCWs [42]. Most participants were of the view that since they (HCWs) were most vulnerable to infections, it was necessary not to neglect their protection and engage in preventive practices, including IPC. This reflects a sense of professional responsibility and ethical duty among HCWs. Similar sentiments were reported in a Ghanaian study, where HCWs perceived IPC compliance as an ethical obligation to prevent HAI [43]. Similarly, Houghton et al reported that self-motivation by perceiving IPC value of protecting themselves, their families, or their patients is a behavioral change motive towards IPC compliance [44].

On the other hand, some HCWs in this study emphasized the role of supportive workplace culture and institutional support in terms of encouragement and public recognition after performing IPC well as an important factor for sustaining compliance. During supportive supervision, IPC activities are monitored, implementation gaps are identified, and easily addressed. Such observed initiatives have been acknowledged by previous researchers in the rapid qualitative evidence synthesis and some studies in Gambia [31,44]. Rewards and penalties encourage HCWs to adhere to the IPC practices and encourage others to follow suit [45]. The WHO also recommends that hospitals should institutionalize IPC leadership and recognition mechanisms to strengthen

ownership and accountability [46]. Thus, intervention involving self-motivation, including incentives, non-monetary, and recognition, should be prioritized for significant improvement of IPC compliance among HCWs at KRRH and similar settings.

Conversely, the current study revealed that a negative attitude towards IPC was the major barrier to compliance, as some HCWs believed that IPC practices were the responsibility of a few trained personnel. Some HCWs admitted that one's positive attitude toward IPC practice is a critical component for achieving change, even when other factors are addressed. This observation aligns with Darboe et al, who found that a positive attitude towards the IPC practices was a strong determinant of IPC compliance among HCWs [31]. Also, Appiah et al found that a non-concerned attitude of some HCWs in Ghana contributed to the spread of HAI and prolonged patients' hospital stay [43]. Therefore, the significance of fostering a positive attitude toward IPC compliance cannot be overstated in the context of preventing HAI. The health management team must implement systematic and effective measures that prioritize understanding and modifying healthcare workers' negative attitudes towards IPC standards.

4.2. Strengths and Limitations of the Study

The strength of this study lies in its findings, which are based on the perspectives of individuals with first-hand experience. The direct insights from those actively engaged in clinical practices add authenticity and relevance to the findings, making them highly applicable to real-world settings. By gathering data from HCWs who encounter IPC challenges daily, the study ensures that the results reflect the actual factors influencing the IPC practices at the healthcare delivery points. Additionally, the study employed a qualitative methods approach, providing in-depth insights into the underlying causes of the problem.

Despite the strength, this study has several limitations. Firstly, being a qualitative study conducted in a single tertiary hospital, it limits the transferability of the findings to other hospitals or levels of care. Secondly, although we included nurses, doctors, and laboratory practitioners who work directly in patient care and play a critical role in the measurement of IPC compliance, the inclusion of other stakeholders could have further broadened the results and scope of the study. These limitations may have introduced some bias or reduced the generalizability of the findings; however, their overall impact on the study's conclusions is considered minimal.

5. Conclusions

Compliance with IPC practices are vital for patients and healthcare workers who were the focus of this study. This research found that the availability of IPC supplies, awareness of IPC protocols, supportive supervision, institutional backing, and the desire for personal and patient safety encouraged high IPC compliance, while negative attitudes and heavy workloads hampered adherence. The findings from this study could improve our understanding of IPC practices and serve as the basis for developing future strategies and assessment methods to boost compliance with IPC standards in healthcare. To improve compliance, the study suggests that the health systems should strengthen supervision, ensure a consistent supply of IPC materials, and foster positive attitudes among healthcare workers. Further research is needed to explore the relationship between the identified factors, uncover additional drivers, and extend the findings to a wider context, considering that the nature of the qualitative study

Author Contributions: Conceptualization, C.C., L.M., N.S., B.N., and R.B.; Methodology, C.C., L.M., F.E.; Software, A.N., E.M., E.B., F.M., E.D.; Validation, L.M., D.M., F.M., and E.D.; Formal analysis, C.C., L.M., B.N., N.S.; Investigation, F.E., D.B. and D.M.; Resources, F.E. and D.B., Writing -original draft preparation, C.C. and L.M.; Writing -Reviewing and editing, C.C., B.N., N.S., and R.B.; Visualization, B.N., N.S., D.B. and R.B.; Supervision, B.N., N.S., F.E.; Project administration, F.E. and D.B.; Funding Acquisition, D.B.

Funding: This research received no external funding

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (IRB) of the Medical Research and Ethics Committee (MMREC) in Mbeya, Tanzania (SZEC-2439/ R.A/25/11). Permission to conduct the study was also secured from the Research and Publication department of Katavi Regional Referral Hospital (KRRH).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Acknowledgments: The authors would like to extend their heartfelt gratitude to the study participants for their time and for sharing their experiences without any reservations, volunteering for this study, and showing remarkable patience throughout the process.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

The following abbreviations are used in this manuscript:

AMR	Antimicrobial Resistance
HAIs	Hospital Acquired Infections
HBV	Hepatitis B Virus
IPC	Infection Prevention and Control
KRRH	Katavi Regional Referral Hospital
PPEs	Personal Protective Equipment

References

1. WHO. Political Declaration of the High-level Meeting on Universal Health Coverage “Universal health coverage: moving together to build a healthier world.” *Estuar Coast Shelf Sci.* 2019;2020(1):473–84.
2. Markus RZ, Haruna JJ, Samuel G, Abdullahi MI. *Infection Prevention And Control : Implications on Quality Health Care Delivery.* 2024;(August).
3. Tomczyk S, Twyman A, de Kraker MEA, Coutinho Rehse AP, Tartari E, Toledo JP, et al. The first WHO global survey on infection prevention and control in health-care facilities. *Lancet Infect Dis.* 2022;22(6):845–56.
4. Aika IN, Enato E. Health care systems administrators' perspectives on antimicrobial stewardship and infection prevention and control programs across three healthcare levels: a qualitative study. *Antimicrob Resist Infect Control* [Internet]. 2022;11(1):1–9. Available from: <https://doi.org/10.1186/s13756-022-01196-7>
5. Tomczyk S, Storr J, Kilpatrick C, Allegranzi B. Infection prevention and control (IPC) implementation in low-resource settings: a qualitative analysis. *Antimicrob Resist Infect Control* [Internet]. 2021;10(1):1–11. Available from: <https://doi.org/10.1186/s13756-021-00962-3>
6. national-infection-prevention-and-control-guidelines-2016.
7. WHO. Global report on infection prevention and control. Who. 2022. 1–182 p.
8. Voidazan S, Albu S, Toth R, Grigorescu B, Rachita A, Moldovan I. Healthcare-associated infections—a new pathology in medical practice? *Int J Environ Res Public Health.* 2020;17(3).
9. Haque M, Sartelli M, McKimm J, Bakar MA. Health care-associated infections – An overview. *Infect Drug Resist.* 2018;11:2321–33.
10. Haque M, McKimm J, Sartelli M, Dhingra S, Labricciosa FM, Islam S, et al. Strategies to prevent healthcare-associated infections: A narrative overview. *Risk Manag Healthc Policy.* 2020;13:1765–80.
11. Silva MT, Galvao TF, Chapman E, da Silva EN, Barreto JOM. Dissemination interventions to improve healthcare workers' adherence with infection prevention and control guidelines: a systematic review and

- meta-analysis. *Implement Sci* [Internet]. 2021;16(1):1–15. Available from: <https://doi.org/10.1186/s13012-021-01164-6>
12. Mohamad N, Pahrol MA, Shaharudin R, Md Yazin NKR, Osman Y, Toha HR, et al. Compliance with Infection Prevention and Control Practices Among Healthcare Workers During the COVID-19 Pandemic in Malaysia. *Front public Heal*. 2022;10(July):878396.
 13. Ashinyo ME, Dubik SD, Duti V, Amegah KE, Ashinyo A, Asare BA, et al. Infection prevention and control compliance among exposed healthcare workers in COVID-19 treatment centers in Ghana: A descriptive cross-sectional study. *PLoS One* [Internet]. 2021;16(3 March):1–13. Available from: <http://dx.doi.org/10.1371/journal.pone.0248282>
 14. Shah N, Castro-Sánchez E, Charani E, Drumright LN, Holmes AH. Towards changing healthcare workers' behaviour: A qualitative study exploring non-compliance through appraisals of infection prevention and control practices. *J Hosp Infect*. 2015;90(2):126–34.
 15. Aloush SM, Al-Sayaghi K, Tubaishat A, Dolansky M, Abdelkader FA, Suliman M, et al. Compliance of Middle Eastern hospitals with the central line-associated bloodstream infection prevention guidelines. *Appl Nurs Res*. 2018;43:56–60.
 16. Chuwa AH. Healthcare-Associated Infections in a Tertiary Care Hospital: Significance of Patient Referral Practices. *EA Heal Res J* [Internet]. 2024;8(1):111–5. Available from: <https://eahrj.eahealth.org/eah/article/view/759>
 17. Khamsa CA, Isunju JB, Babibako HM, Nuwuha F. Adherence to standard infection prevention and control practices and factors associated among healthcare workers at Juba Teaching Hospital, Juba-South Sudan: a cross-sectional study. *J Heal Popul Nutr*. 2025;44(1).
 18. Kassa A, Tadesse SE, Walelign F, Kebede N. Compliance with standard precaution of infection prevention practice and associated factors among health care workers in Ethiopia: Mixed method study. *Heal Sci Reports*. 2022;5(5).
 19. Senbato FR, Wolde D, Belina M, Kotiso KS, Medhin G, Amogne W, et al. Compliance with infection prevention and control standard precautions and factors associated with noncompliance among healthcare workers working in public hospitals in Addis Ababa, Ethiopia. *Antimicrob Resist Infect Control*. 2024;13(1):1–12.
 20. Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the Proportion of Healthcare-Associated Infections That Are Reasonably Preventable and the Related Mortality and Costs. *Infect Control Hosp Epidemiol*. 2011;32(2):101–14.
 21. Aljamali NM. REVIEW IN HOSPITAL-ACQUIRED INFECTION 2020;(October).
 22. Checklists S. Evaluation of Infection Prevention and Control Compliance in Six Referral Hospitals in Tanzania using National and World Health Organization Standard Checklists. *Prev Med Epidemiol Public Heal*. 2021;2(3).
 23. Marton F. Phenomenography - describing the world around us conceptio. 1981;10:177–200.
 24. Borg MA, Rosales-klintz S, Id EAS Gustafsson, Ro M. General practitioners' perceptions of delayed antibiotic prescription for respiratory tract infections: A phenomenographic study, Cecilia Stålsby Lundborg. 2019;(C):1–20.
 25. Han C yen, Lin C chih, Goopy S, Hsiao Y chu, Barnard A, Wang L hsiang. Waiting and hoping: a phenomenographic study of the experiences of boarded patients in the emergency department. 2016;(261):1–9.
 26. Kroenke CH, Michael YL, Shu Xou, Poole EM, Kwan ML, Nechuta S, et al. Post-diagnosis social networks, and lifestyle and treatment factors in the After Breast Cancer Pooling Project. 2017;552(January 2016):544–

- 52.
27. THE UNITED REPUBLIC OF TANZANIA MINISTRY OF HEALTH ANNUAL HEALTH STATISTICAL TABLES AND FIGURES 2023. 2024;
 28. MoHCDGEC. Guideline for the Regional Referral Hospital Advisory Board (RRHAB). 2016. 1–48 p.
 29. Id MJ marie L, Isunju JB, Musoke D. Barriers and facilitators of compliance with infection prevention and control measures during the COVID-19 pandemic in health facilities in Kampala city , Uganda. 2024;1–13. Available from: <http://dx.doi.org/10.1371/journal.pgph.0004021>
 30. Rashdi MM, Saud A, Alnomasy R, Sultan AM, Ahmed A, Alkhalawi A, et al. The Role of Corresponding Health Workers in Strengthening Infection Control Practices : A Comprehensive Review. 2024;3576:1092–105.
 31. Darboe SMK, Darfour-Oduro SA, Kpene GE, Kebbeh A, Fofana N, Ndow M, et al. Factors influencing healthcare workers' perceived compliance with infection prevention and control standards, North Bank East region, The Gambia, a cross-sectional study. *BMC Res Notes*. 2025 Dec;18(1):43.
 32. Alshagrawi S. Determinants of hand hygiene compliance among healthcare workers in intensive care units : a qualitative study. 2024;2.
 33. Sirili N, Simba D, Zulu JM, Frumence G, Tetui M. Original Article Accommodate or Reject : The Role of Local Communities in the Retention of Health Workers in Rural Tanzania. *Kerman Univ Med Sci [Internet]*. 2022;11(1):59–66. Available from: <https://doi.org/10.34172/ijhpm.2021.77>
 34. Sirili N. Understanding the Rural–Rural Migration of Health Workers in Two Selected Districts of Tanzania. 2020;2020.
 35. Houghton C MPDHSMGCBACXHSDD, Biesty LM. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane Database Syst Rev [Internet]*. 2020;(4). Available from: <https://doi.org/10.1002/14651858.CD013582>
 36. Ampadu H. Infection prevention and control practices among nurses in selected health facilities in Greater Accra Region of Ghana. University of Ghana; 2019.
 37. Salwa M, Haque MA, Islam SS, Islam MT, Sultana S, Khan MMH, et al. Compliance of healthcare workers with the infection prevention and control guidance in tertiary care hospitals: quantitative findings from an explanatory sequential mixed-methods study in Bangladesh. *BMJ Open*. 2022 Jun;12(6):e054837.
 38. Babore GO, Eyesu Y, Mengistu D, Foga S, Heliso AZ. Adherence to Infection Prevention Practice Standard Protocol and Associated Factors Among Healthcare Workers. 2024;7(2):50–8.
 39. Katembo BS, Hussein HI, Chandika AB, Masika GM, Njau FJ, Nzagamba BL, et al. Practice and Determinants of Infection Prevention and Control Measures among Health Care Workers at Benjamin Mkapa Hospital, Dodoma-Tanzania. *Health (Irvine Calif)*. 2024;16(11):1027–41.
 40. Eriksen MN, Stojiljkovic M, Lillekroken D, Lindeflaten K, Hessevaagbakke E, Flølo TN, et al. Game - thinking ; utilizing serious games and gamification in nursing education – a systematic review and meta - analysis [Internet]. *BMC Medical Education*. BioMed Central; 2025. Available from: <https://doi.org/10.1186/s12909-024-06531-7>
 41. Madran B, Demir ZI, Yalcin B, Ayaz OT, Iyikosker K, Keskin A, et al. Reasons for insufficient compliance with infection prevention and control measures in the intensive care unit : a qualitative study conducted in Türkiye in 2024. 2025;3.
 42. Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C guo, Ma W, et al. Articles Risk of COVID-19 among front-line health-care workers and the general community : a prospective cohort study.
 43. Appiah EO, Appiah S, Menlah A, Baidoo M, Awuah DB, Isaac NB. Experiences of infection prevention and

- control in clinical practice of nursing students in the Greater Accra Region, Ghana: An exploratory qualitative study. 2021;
44. Houghton C, Meskell P, Delaney H, Smalle M, Glenton C, Booth A, et al. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: A rapid qualitative evidence synthesis. *Cochrane Database Syst Rev.* 2020;4:1–55.
 45. Sihite M, Soegiarto I, Ilmi M, Ilham I. The Impact of Leadership Style, Employee Motivation, and Organizational Culture on Job Performance of Start-Up Employees. *Int J Business, Law, Educ.* 2024;5(2):1736–49.
 46. Unit WHOG. *Advanced Infection Prevention and Control Training.* 2018;

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.