

Article

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

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

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

² Health Quality Improvement Unit, Katavi Regional Referral Hospital, Mpanda P.O. Box 449, Tanzania; emanuelmarco816@gmail.com (E.A.)

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

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

⁵ Internal Medicine Department, Katavi Regional Referral Hospital, Mpanda P.O. Box 449, Tanzania; ebucheye@gmail.com

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

⁷ Faculty of Medicine, Catholic University of Health and Allied Science, Mwanza P.O. Box 1464, Tanzania

⁸ School of Public Health, KCMC University, Moshi P.O. Box 2240, Tanzania

⁹ Department of Development Studies, Muhimbili University of Health and Allied Sciences, Dar es Salaam P.O. Box 65001, Tanzania

¹⁰ Health Quality Assurance Unit, Ministry of Health, Dodoma P.O. Box 743, Tanzania

* Correspondence: cecycharle7@gmail.com

Abstract

Infection prevention and control remains an essential component 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, gain a more detailed understanding of IPC practices, and identify experiences that may be overlooked in a forced-choice questionnaire. A cross-sectional design using a phenomenological approach was employed. An interview guide was used to collect data from 19 participants (five doctors, four nurses, four laboratory practitioners, and six from administration positions; ward in-charges, quality improvement officers and administrative officers) between 24 July 2025, and 23 August 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, desire for personal and patient protection, high patient volume, awareness of IPC protocols, institutional support, supportive supervision, and HCWs' attitudes towards IPC activities were factors influencing IPC compliance. Strengthening structured supervision, ensuring a constant supply of IPC materials, and investing in continuous IPC capacity building may be an important approach in enhancing compliance with IPC practices and reducing hospital-associated infection risk in Katavi Regional Referral Hospital and similar resource-limited healthcare settings.

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



Academic Editor: Fernando Pérez-Rodríguez

Received: 28 February 2026

Accepted: 13 March 2026

Published: 19 March 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

Infection prevention and control (IPC) is a fundamental component of safe, effective, and high-quality healthcare delivery [1]. It includes hand hygiene, personal Protective Equipment Use (PPEs), handling of sharp devices, immunization, post-exposure prophylaxis, and isolation enacted for the prevention of hospital-acquired infections (HAIs) [2]. Effective IPC practices reduce the occurrence of hospital-associated infections (HAIs), limit the spread of antimicrobial resistance (AMR), and protect both patients and healthcare workers (HCWs) from preventable harm [3,4]. Although nearly 70% of HAIs are preventable using available evidence-based IPC strategies, the global implementation gaps remain substantial, with only 34% of WHO member states reporting fully operational national IPC programs in 2021 [5,6]. Consequently, compliance with recommended IPC practices remains inconsistent across health systems globally, particularly in low- and middle-income countries (LMICs), where limited surveillance capacity frequently hinders sustained adherence to IPC standards [7,8].

Globally, HAIs are among the most frequent adverse events in healthcare settings and are associated with increased morbidity and mortality, prolonged hospitalization, and increased hospital costs [9]. On the other hand, HAI as a result of poor 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 health systems and families. [10]. This burden is disproportionately higher in LMICs, where health systems often operate under conditions of limited resources, high patient volumes, and workforce shortages [11–13]. Previous studies show that HAIs kill 7 patients in high-income countries and 15 patients in lower- and middle-income countries (LMICs) annually [7]. In Sub-Saharan Africa, reported HAI prevalence ranges from 12.9% to 20%, with East Africa consistently reporting the highest burden (19.7%) [14–16]. While in Tanzania, HAI remains a persistent public health concern, accounting for 14.8%, higher than in the developed world [17].

In response to the HAI burden, IPC activities have been formally integrated into the Tanzanian health system since 2004, with revised national IPC guidelines issued in July 2018 aligning with the WHO recommendations [18]. Empirical studies from Tanzania and comparable settings have identified multiple factors associated with poor compliance with IPC practices, including inadequate availability of personal protective equipment, insufficient training, high workload, weak supervision, and limited institutional support [11,13,18,19]. However, much of the existing evidence is derived from quantitative survey designs that focus on measuring knowledge levels and self-reported IPC compliance rates [18,20–23]. The limited qualitative literature has often focused on healthcare workers within specific units, such as intensive or critical care, or on single professional groups like nurses and physiotherapists [20,22]. While valuable, such approaches may not have adequately captured the complex interactions between individual attitudes, workplace culture, institutional norms, and structural constraints that shape IPC practices in routine clinical settings.

Qualitative research offers a critical lens for understanding how healthcare workers interpret IPC guidelines, negotiate competing clinical demands, and make decisions in resource-limited environments [24]. Exploring HCWs' lived experiences provides insights into the behavioral and contextual dimensions of IPC compliance that are often overlooked in quantitative studies [25]. This approach is important in regional referral hospitals where evidence on IPC compliance remains scarce, patient loads are high, services are diverse, and systemic pressure differ substantially from those in tertiary and primary healthcare facilities [26].

Katavi Regional Referral Hospital (KRRH) serves a large and geographically dispersed population in the western zone of Tanzania and operates within a context of staffing

shortages and resource limitations, typical of many regional referral hospitals in LMICs. This study aimed to explore HCWs perspectives on factors influencing compliance with infection prevention and control practices at Katavi Regional Referral Hospital using a qualitative cross-sectional design. Understanding the perspectives of HCWs on IPC compliance will provide an opportunity to generate context-specific evidence that can inform IPC strengthening efforts at both facility and policy levels, as well as attainment of universal health coverage (UHC), which focuses on the right to health, financial risk protection, and access to quality health services [27].

2. Materials and Methods

This research followed the guidelines for conducting qualitative studies established by the Consolidated Criteria for Reporting Qualitative Research (COREQ) and the Standard for Reporting Qualitative Research [28].

2.1. Design

The study employed a hospital-based qualitative cross-sectional design using a phenomenological approach to explore healthcare workers' perspectives on factors influencing compliance with infection prevention and control practices at Katavi Regional Referral Hospital. Data were collected at a single point in time through in-depth interviews and key informant interviews to capture participants' experiences and perceptions of IPC compliance, allowing comparison of perspectives across professional cadres and roles within the same institutional context. The phenomenological approach was selected because IPC compliance is not solely procedural but experiential, shaped by perceptions of risk, workload, norms, and institutional culture. This approach enabled exploration of meaning structures underlying behavior rather than frequency estimation.

2.2. Study Setting and Period

This study was conducted between 24 July and 23 August 2025 at Katavi Regional Referral Hospital, one of 28 government regional referral hospitals in Tanzania, located in Mpanda Municipality. According to the 2022 census, the hospital serves 1,152,958 people in the catchment area [29]. It offers various inpatient and outpatient services, including medical, surgical, obstetrics, gynecology, child health, physiotherapy, and rehabilitation services. The hospital receives patients from the Mpanda Municipal Council, the Mpanda District Council, Nsimbo District Council, the Mlele District Council, the Mpimbwe District Council, and the neighboring region of Tabora. There were 479 healthcare workers at KRRH, which is below the required staffing level for a regional referral hospital, as recommended by the Tanzania Ministry of Health guidelines [30].

2.3. Study Population

The study involved healthcare workers who were permanently employed at Katavi Regional Referral Hospital in Tanzania.

2.4. Sampling and Recruitment

A purposive sampling method was used to select 19 participants to engage in qualitative data collection. Among them, 10 participants (three doctors, four nurses, and three laboratory practitioners) engaged in in-depth interviews, while (three administrative officers, three ward in-charges, and three quality improvement team members) were the key informants. This method enabled the deliberate selection of information-rich cases that provided in-depth insight into the behavioral, clinical, and organizational factors of IPC compliance in the study setting. Usually, with a phenomenological approach, 5 to 25 people are interviewed to collect data on common experiences related to a particular

phenomenon [31]. Although 19 participants were interviewed in the current study, data collection and analysis were conducted iteratively, allowing themes to emerge progressively. Thematic saturation was reached around the 10th interview, indicating that the sample size was sufficient to ensure analytical rigor.

2.5. Eligibility Criteria

The eligibility criteria included participants who were:

- Permanently employed at Katavi Regional Referral Hospital for at least six months to ensure familiarity with institutional IPC procedures.
- Directly involved in patient care activities or formal responsibility for IPC oversight and supervision.
- Representative with supervisory and managerial roles to capture system-level perspectives.
- Those who provided informed consent.

2.6. Data Collection

Data were collected using an interview guide developed in English based on the existing IPC compliance literature and aligned with previously identified factors [25]. The interview guide had eight open-ended questions designed to elicit information regarding the IPC compliance within the institution. This guided the development of probes to ensure comprehensive coverage of all predefined subthemes. The interview guide was reviewed by qualitative research experts and piloted on one HCW to assess its usability and clarity. No changes were made to the interview guide, and responses from the pilot were included in the findings of this study. This guide was 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. Participant interviews were conducted in person by 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.), who had previous experience in IPC research. Each interview lasted for about 30–70 min. Repeat interviews were not carried out. All interviews were conducted in Swahili, and the interview started with the interviewer giving verbal information about the study, followed by some standard questions on demographic characteristics and topics as highlighted by the interview guide. The thematic saturation was reached when no new information emerged.

2.7. Data Analysis

The recorded audios and accompanying field notes from IDIs and KIs were transcribed and translated separately by the research team members (C.C., L.M., D.M., F.M., E.M., A.N., E.D., E.A., F.E., D.B., B.N., R.B., and N.S.) who had been present at the interviews to maintain the authenticity and context of each participant group. Translations were undertaken by four clinicians who were fluent in both English and the Swahili language (L.M., F.E., F.M., and E.B.). Some of the translated materials from every translator were translated back by C.C. to ensure the quality and conformity of translations. Data were analyzed using thematic analysis, where familiarization, coding, interpretation of the findings, and summarization of the major themes from study findings were done, as per Braun and Clarke’s framework [32]. Data from IDIs and KIs were analyzed in a combined manner as both approaches explored similar themes and research questions from different perspectives, allowing comparison, triangulation, and a richer understanding of the issues. Manual coding of the data was done by identifying meaningful segments and assigning appropriate code labels. Codes were categorized to develop and articulate emerging themes

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 where the actual words of participants were needed to convey meanings or emphasize important issues. Descriptive analysis was conducted on participants’ sociodemographic characteristics, such as age, profession, and position.

2.8. Triangulation

Triangulation was used to enhance methodological rigor by incorporating participants with diverse professional roles, qualifications, ages, and genders, thereby enabling cross-contextual comparisons and reducing bias from a single perspective. Triangulation is a qualitative research method that enhances validity and reliability by incorporating multiple data sources, methods, perspectives, or researchers to examine a phenomenon [33]. Themes were developed through an iterative, flexible process with data saturation reached after approximately nine and ten interviews for KI and IDI, respectively. This approach strengthened the credibility and transferability of the findings and ensured that the results accurately reflected healthcare workers’ lived experiences on IPC practices within a phenomenological framework.

2.9. Ethical Consideration

Ethical clearance was granted on 24 July 2025 by the Mbeya Medical Research and Ethics Committee (MMREC; Ref: SZEC-2439/R. A/25/11), and the Research and Publication Unit of Katavi Regional Referral Hospital granted permission to conduct the study. The study participants were provided with written informed consent to participate voluntarily. Data collection was carried out between 24 July and 23 August 2025 after ethical approval.

3. Results

3.1. Sociodemographic Characteristics

Among the 19 participants interviewed, 10 were engaged in in-depth interviews, while 9 were key informants. In both groups, the average age of the participants was 32 years, with the highest age being 55 years. Ten participants were male, and nine were female. The majority of participants (five) were doctors, four were laboratory practitioners, and four were nurses, while six members were from hospital administration (ward in charge, administrative officers, and quality improvement officers), 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 = 9
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 (3 Administrative officers, 2 Quality improvement officers, and 1 Ward in charge)	0	6

Table 1. Cont.

S/N	Participants Characteristics	Engagement Category	
		In-Depth Interview, N = 10	Key Informant, N = 9
6	Position		
	Administrative officers	0	3
	Quality improvement officers	0	3
	Ward in-charges	0	3
	Others (4 nurses, 3 doctors, and 3 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, as illustrated in Table 2.

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

At Katavi Regional Referral Hospital, most participants reported that IPC supplies were one of the factors influencing IPC compliance. The majority of the KIs confirmed 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 reported in this quote:

“As an administrative unit, we ensure that all requirements for IPC practices are present. For example, the hospital has recently purchased bin liner machines and ensures 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.” (KI5, 41 years, 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, 37 yrs., F, June 2025)

On the other hand, some HCWs 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, 29 yrs., M, June 2025)

3.2.2. Desire for Personal Safety and Patient Protection

The majority of HCWs portrayed IPC compliance as HCWs’ obligation for individual safety and patient protection, which are the core components of the non-maleficence principle in medical ethics. This motive has become a strong inner driver 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, 30 yrs., M, June 2025)

However, some participants argued that the difference in shift duration and teamwork influences the healthcare habit 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, 29 years, F, June 2025)

3.3. High Volume of Patients

A high volume of patients was a factor pointed out to affect the IPC compliance. Most of the participants explained that HCWs fail to adhere to the IPC practices due to the high volume of patients, accompanied by other conditions like understaffing and congested patient wards, creating environments for inadequate IPC practices, 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, 29 yrs., M, June 2025)

3.3.1. HCWs’ Attitude Towards the IPC Activities

Attitudes towards the IPC practices accelerate one’s intention to action; as explained by the majority of HCWs, the existence of negative attitudes towards the IPC practices among healthcare workers may be the reason for not 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, 30 yrs., M, June 2025)

3.3.2. 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, 30 yrs., F, June 2024)

3.3.3. 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, 37 yrs., F, June 2025)

Additionally, other participants had different perspectives on IPC knowledge-seeking behavior as they emphasized that it was an individual professional duty 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)

3.3.4. Supportive Supervision

Supportive supervision via peer-to-peer motivation and internal supervision enabled HCWs to learn IPC skills regardless of attending the IPC training. Most HCWs insisted that complying with IPC practices requires support and supervision 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, 37 yrs., F, June 2025)

Additionally, the hospital 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, 29 yrs., M, June 2025)

4. Discussion

4.1. General Discussion

This study explored healthcare workers’ perspectives on factors influencing compliance with IPC practices at Katavi Regional Referral Hospital in Tanzania. 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.

Most participants in the current study reported that the constant availability of IPC supplies such as PPE, waste bins, and disinfectants, is an important factor enabling healthcare workers to comply with IPC practices. This finding concurs with previous studies conducted in Southern Sudan and Kailahun Government Hospital in Sierra Leone, which documented that out-of-stock and limited supply of IPC resources hinder HCWs from fully adhering to the IPC protocols [11,34,35]. Contrary to the current study's findings, Charles et al. found that even when the supply of some IPC items (hand hygiene and PPE) was available at 100% in a similar study area, the compliance rate was still inadequate [36]. The difference in study findings could be due to the difference in study approach and design. However, a few participants in the current study reported recurrent occasional shortages of PPEs and waste containers, resulting in inconsistent IPC practices. This suggests that supply-related barriers, such as inadequate storage and distribution chains beyond availability, significantly affect IPC compliance. The finding emphasizes the need for healthcare facilities to implement comprehensive IPC supply management systems that ensure not only adequate procurement but also reliable distribution, appropriate storage, and continuous monitoring of supply quality and accessibility at the point of care.

The current study found that most healthcare workers perceived themselves as having adequate knowledge about IPC measures, acquired through on-the-job training, the Ministry of Health-led session, and internal seminars. Similarly, a systematic review reported sufficient IPC knowledge among HCWs across multiple countries [37]. In addition, Mohammed et al. found that prior training improved adherence to IPC standards among HCWs in both public and private hospitals in Ethiopia [38]. Despite this perceived adequacy of IPC knowledge, a broader qualitative evidence synthesis indicates persistent knowledge-practice gaps among HCWs in limited resource settings [25]. This reflects that possessing IPC knowledge alone does not guarantee sustained behavioral adherence. The substantial barriers, such as structural, resource, and workforce culture factors, may have prevented the translation of IPC knowledge into sustained practices [25,39,40]. These findings suggest that while baseline IPC awareness among HCWs may be adequate, translating knowledge into consistent practice requires structured reinforcement, behavior-oriented training approaches, and supportive institutional systems.

Participants emphasized that the high volume of patients resulted from understaffing and congested patient wards, increased workload, and fatigue among healthcare workers, which ultimately led to poor adherence to IPC practices. However, there are instances, such as during emergencies, where HCWs rely on subjective risk assessment for PPE use and hand washing rather than following the IPC guidelines. As stated by study participants, the intention of HCWs was not to harm subsequent patients but rather resulted from the long queue of patients who needed emergency care with a limited number of staff available to serve. The consequences of this situation are poor compliance with IPC, leading to increased risk of infections and potential spread of infections within the health facility and beyond [25]. This finding aligns with previous studies in high- and low-income countries [34,41,42]. Therefore, the healthcare system needs to focus on the patient-to-healthcare worker ratio in healthcare facilities and enforce IPC measures accordingly.

From the study findings, participants reported that the desire for personal safety and patient protection was a strong driver for IPC compliance. 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 practices. This reflects a sense of professional responsibility and ethical duty among HCWs. In line with the current study's findings, the study conducted in Ghana reported that HCWs perceived IPC compliance as an ethical obligation to prevent HAI [43]. Similarly, Houghton et al. reported that self-motivation by perceiving the IPC value of protecting themselves, their

families, or their patients is a behavioral change motive towards IPC compliance among HCWs [44]. Collectively, these findings reinforce the crucial role of intrinsic motivation and ethical, patient-centered, and self-protective attitudes in fostering adherence to IPC practices among HCWs.

Participants in the current study advocated for supportive supervision, expressing the important role played by the IPC team at the facility level. During supportive supervision, IPC activities are monitored, and implementation gaps are identified and addressed. This finding aligns with previous studies conducted in other parts of Tanzania [22]. Similarly, a Ugandan study found that supportive supervision on IPC activities significantly increased the availability of the WHO IPC core components across health facilities [45]. This reflects that regular supervisory engagement contributes to strengthening IPC infrastructures and activities at KRRH and other similar resource-limited settings. Contrary to current study findings, the national quality assessment data using star rating assessment demonstrated ongoing gaps in compliance despite gains following supervision-linked quality interventions [46]. Therefore, there is a critical need to strengthen IPC supportive supervision in a broader context from the ministry level to the facility level, while promoting a sense of IPC ownership and accountability among healthcare workers.

Participants reported that, despite there being institutional support in providing the IPC equipment, gaps still persist in motivating HCWs to perform the IPC activities well. Rewards and penalties are proven modalities used to encourage HCWs to adhere to IPC practices and encourage others to follow suit [47]. The WHO also recommends that hospitals should institutionalize IPC leadership and recognition mechanisms to strengthen a sense of responsibility and a culture of compliance with IPC standards within healthcare delivery [48]. Therefore, interventions that involve self-motivation, including incentives and non-monetary recognition, should be prioritized for significant improvement of IPC compliance among HCWs at KRRH and similar settings.

Participants in the current study emphasized that one's positive attitude towards IPC practices 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 [49]. Also, Appiah et al. found that a non-concerned attitude towards IPC practices expressed by some HCWs in Ghana contributed to the spread of HAI and prolonged patients' hospital stay [50]. Therefore, the significance of fostering a positive attitude towards IPC compliance cannot be overstated in the context of preventing HAI. The health management team at the facility level should implement more proactive initiatives that foster a genuine individual commitment to IPC practices and modify HCWs' negative attitudes towards IPC. Conversely, some participants in the current study reported the existence of a negative attitude towards IPC practices as some HCWs believed that IPC practices were the responsibility of a few trained HCWs. This attitude was considered inappropriate and closely linked to high patient volumes, understaffing, fatigue, and time pressure, particularly on night shifts. Despite previous studies highlighting the benefits of training for improving IPC knowledge [51], an established training scheme and a fully functional IPC program, regardless of shift variation, is crucial to achieve IPC compliance. This has been documented in the past as an important factor for IPC compliance [52].

4.2. Strengths and Limitations of the Study

The strength of this study lies in its methodological findings, which are based on the perspectives of individuals with firsthand 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 healthcare delivery points. Despite this strength, this study has some limitations. Firstly, being a qualitative study conducted in a single regional referral hospital, the results may not explain the phenomenon in other areas or represent the whole of Tanzania as a whole. Secondly, although multiple cadres were included, perspectives from other stakeholders, such as patients, cleaners, and attendants, were not explored and may have provided additional insights into IPC implementations. Third, designing the study and discussing the findings using an established model, such as the COM-B model, would have facilitated comparison with other studies and provided a clear framework for guiding interventions. Lastly, as some researchers were clinicians within the study setting, there is potential for interpretive bias; this was mitigated by reflexivity, triangulation, and peer debriefing.

5. Conclusions

Compliance with IPC practices is crucial 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 support, desire for personal and patient safety, HCWs' attitude towards IPC activities, and high volume of patients were factors influencing IPC compliance. Addressing these factors holistically may enhance IPC compliance. Future research should incorporate mixed-method or longitudinal designs to quantify the relative influence of identified factors on IPC compliance and assess changes over time following targeted interventions. Expanding research to multiple hospitals and including non-clinical staff and patients would further strengthen the evidence base and inform scalable IPC improvement strategies.

Author Contributions: Conceptualization, C.C., L.M., N.S., B.N. and R.B.; Methodology, C.C., L.M. and F.E.; Software, E.A., E.M., E.B., P.M. and E.D.; Validation, L.M., D.M. (David Masanja), P.M. and E.D.; Formal analysis, C.C., L.M., D.M. (Damian Maruba), P.M. and E.D.; Investigation, F.E., D.B. and D.M. (David Masanja); 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. and F.E.; Project administration, F.E. and D.B.; Funding Acquisition D.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (IRB) of the Mbeya Medical Research and Ethics Committee (MMREC), Tanzania. (SZEC-2439/RA/25/11, approved on 24 July 2025). Permission to conduct the study was also secured from the Research and Publication department of Katavi Regional Referral Hospital, Tanzania.

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 reservation, volunteering for this study, and showing remarkable patience throughout the process.

Conflicts of Interest: The authors declare no conflicts 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

- Markus, R.Z.; Haruna, J.J.; Samuel, G.; Abdullahi, M.I. Infection Prevention and Control: Implication on Quality Health Care Delivery. *Int. J. Creat. Res. Thoughts* **2024**, *12*, 2320–2882.
- Tomczyk, S.; Twyman, A.; de Kraker, M.E.A.; Coutinho Rehse, A.P.; Tartari, E.; Toledo, J.P.; Cassini, A.; Pittet, D.; Allegranzi, B. The first WHO global survey on infection prevention and control in health-care facilities. *Lancet Infect. Dis.* **2022**, *22*, 845–856. [\[CrossRef\]](#)
- Aika, I.N.; 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* **2022**, *11*, 157. [\[CrossRef\]](#)
- 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* **2021**, *10*, 113. [\[CrossRef\]](#) [\[PubMed\]](#)
- Umscheid, C.A.; Mitchell, M.D.; Doshi, J.A.; Agarwal, R.; Williams, K.; Brennan, P.J. Estimating the Proportion of Healthcare-Associated Infections That Are Reasonably Preventable and the Related Mortality and Costs. *Infect. Control Hosp. Epidemiol.* **2011**, *32*, 101–114. [\[CrossRef\]](#)
- Aloush, S.M.; Al-Sayaghi, K.; Tubaishat, A.; Dolansky, M.; Abdelkader, F.A.; Suliman, M.; Al Bashtawy, M.; Alzaidi, A.; Twalbeh, L.; Sumaqa, Y.A.; et al. Compliance of Middle Eastern hospitals with the central line associated bloodstream infection prevention guidelines. *Appl. Nurs. Res.* **2018**, *43*, 56–60. [\[CrossRef\]](#)
- Ministry of Health. *National Infection Prevention and Control Guideline for Health Care Services in Tanzania*; Ministry of Health: Dodoma, Tanzania, 2018.
- National Infection Prevention and Control Guidelines 2016*; The Ministry of Health and Sanitation (MoHS): Freetown, Sierra Leone, 2016.
- Wang, T.; Tan, Y.B.; Liu, L.; Zhao, I. Barriers and enablers to implementing clinical practice guidelines in primary care: An overview of systematic reviews. *BMJ Open* **2023**, *13*, e062158. [\[CrossRef\]](#)
- Aljamali, N.M. Review in hospital-acquired infection. *Int. J. Adv. Eng. Res.* **2020**, *20*, 7–20.
- Khamsa, C.A.; Isunju, J.B.; Babibako, H.M.; Nuwuh, 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. Health Popul. Nutr.* **2025**, *44*, 66. [\[CrossRef\]](#) [\[PubMed\]](#)
- Kassa, A.; Tadesse, S.E.; Walelign, F.; Kebede, N. Compliance with standard precaution of infection prevention practice and associated factors among health care workers in Ethiopia: Mixed method study. *Health Sci. Rep.* **2022**, *5*, e830. [\[CrossRef\]](#)
- Senbato, F.R.; Wolde, D.; Belina, M.; Kotiso, K.S.; Medhin, G.; Amogne, W.; Egual, T. 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*, 32. [\[CrossRef\]](#) [\[PubMed\]](#)
- Silva, M.T.; Galvao, T.F.; Chapman, E.; da Silva, E.N.; Barreto, J.O.M. Dissemination interventions to improve healthcare workers' adherence with infection prevention and control guidelines: A systematic review and meta-analysis. *Implement. Sci.* **2021**, *16*, 92. [\[CrossRef\]](#)
- Mohamad, N.; Pahrol, M.A.; Shaharudin, R.; Md Yazin, N.K.R.; Osman, Y.; Toha, H.R.; Mustapa, N.; Mohamed, Z.; Mohammad, A.; Ismail, R. Compliance to Infection Prevention and Control Practices Among Healthcare Workers During COVID-19 Pandemic in Malaysia. *Front. Public Health* **2022**, *10*, 878396. [\[CrossRef\]](#)
- Ashinyo, M.E.; Dubik, S.D.; Duti, V.; Amegah, K.E.; Ashinyo, A.; Asare, B.A.; Ackon, A.A.; Akoriyea, S.K.; Kuma-Aboagye, P. Infection prevention and control compliance among exposed healthcare workers in COVID-19 treatment centers in Ghana: A descriptive cross-sectional study. *PLoS ONE* **2021**, *16*, e0248282. [\[CrossRef\]](#)
- Chuwa, A.H. Healthcare-Associated Infections in a Tertiary Care Hospital: Significance of Patient Referral Practices. *EA Health Res. J.* **2024**, *8*, 111–115.
- 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 Health* **2021**, *2*, 1–9. [\[CrossRef\]](#)

19. Katembo, B.S.; Hussein, H.I.; Chandika, A.B.; Masika, G.M.; Njau, F.J.; Nzagamba, B.L.; Kisangija, J.P. Practice and Determinants of Infection Prevention and Control Measures among Health Care Workers at Benjamin Mkapa Hospital, Dodoma-Tanzania. *Health* **2024**, *16*, 1027–1041. [[CrossRef](#)]
20. Africa, E.; Wibonela, S.A.; Mwanga, A.; Palangyo, P. Adherence to Universal Precautions and Associated Factors among Nurses Caring For Critically Ill Patients in Dar es Salaam Tanzania Adherence to Universal Precautions and Associated Factors among Nurses Caring For Critically Ill Patients in Dar es Salaam. *Saudi J. Nurs. Health Care* **2020**, *3*, 106–113. [[CrossRef](#)]
21. Bahegwa, R.P.; Hussein, A.K.; Kishimba, R.; Hokororo, J.; German, C.; Ngowi, R.; Eliakimu, E.; Ngasala, B. Infection Prevention in Practice Factors affecting compliance with infection prevention and control standard precautions among healthcare workers in Songwe region, Tanzania. *Infect. Prev. Pract.* **2022**, *4*, 100236. [[CrossRef](#)] [[PubMed](#)]
22. Alexander, A.P.; John, W.; Sakwari, G. Hand Hygiene Compliance among Health Professionals at Kilimanjaro Christian Medical Centre- Tanzania, A Hospital based Study. *J. Surg. Anesth. Res.* **2025**, *6*, 1–7. [[CrossRef](#)]
23. Edward, M.; John, W.; Mahulu, E.; Nkumba, O.; Basaya, D.; Kibanda, Z.; Gwanafyo, G.; Kitenga, H.; Daniel, I. Challenges of Compliance with Infection Prevention and Control (IPC) Standard Procedures among Healthcare Workers: A Hospital-Based Cross-Sectional Study. *Int. J. Health Policy Plan.* **2024**, *3*, 1–7. [[CrossRef](#)]
24. Madran, B.; Demir, Z.I.; Yalcin, B.; Ayaz, O.T.; Iyikosker, K.; Keskin, A.; Gorel, A. Reasons for insufficient compliance with infection prevention and control measures in the intensive care unit: A qualitative study conducted in Türkiye in 2024. *Antimicrob. Resist. Infect. Control* **2025**, *3*, 71. [[CrossRef](#)]
25. Houghton, C.; Meskell, P.; Delaney, H.; Smalle, M.; Glenton, C.; Booth, A.; Chan, X.H.S.; Devane, D.; Biesty, L.M. 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*, CD013582. [[CrossRef](#)]
26. Bahegwa, R.P.; Hokororo, J.C.; Msigwa, Y.S.; Ngowi, R.R.; German, C.J.; Marandu, L.; Nasoro, O.A.; Kinyenje, E.S.; Degeh, M.M.; Masuma, J.S.; et al. Infection prevention and control compliance during COVID-19 pandemic era: Assessment of 26 regional referral hospitals in Tanzania. *Discov. Health Syst.* **2024**, *3*, 21. [[CrossRef](#)]
27. 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*, 473–484.
28. Tong, A.; Sainsbury, P.; Craig, J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *Int. J. Qual. Health Care* **2007**, *19*, 349–357. [[CrossRef](#)] [[PubMed](#)]
29. Rugeiyamu, R.; Ackim, J.; Shayo, A. The Tanzania Housing and Population Census 2022: A Panacea for Local Service Delivery and Development Drawbacks. *Local Adm. J.* **2022**, *15*, 1–13.
30. MoHCDGEC. *Guideline for Regional Referral Hospital Advisory Board (RRHAB)*; MoHCDGEC: Dodoma, Tanzania, 2016; pp. 1–48.
31. Marton, F. Phenomenography—Describing worldarounds conceptio. *Instr. Sci.* **1981**, *10*, 177–200. [[CrossRef](#)]
32. Ahmed, S.K. Sample size for saturation in qualitative research: Debates, definitions, and strategies. *J. Med. Surg. Public Health* **2025**, *5*, 100171. [[CrossRef](#)]
33. Santos, S.; Ribeiro, M.C.; Ulisses, D.E.; Pereira, I.A.; Maria, S.; Ferreira, S. The use of multiple triangulations as a validation strategy in a qualitative study. *Cienc. Saude Coletiva* **2020**, *25*, 655–664. [[CrossRef](#)]
34. Elbehiry, A.; Abalkhail, A. Barriers and Facilitators of Health Care Workers' Compliance with Infection Prevention and Control Practices in Health-care Facilities: A Systematic Literature Review. *Indian J. Public Health* **2025**, *69*, 74–81. [[CrossRef](#)]
35. Sesay, M. Factors Affecting Compliance to Infection Prevention Control among Frontline Health Workers at the Kailahun Government Hospital, Sierra Leone: A Cross-Sectional Study. *J. Infect. Dis. Epidemiol.* **2025**, *11*, 1–10. [[CrossRef](#)]
36. Charles, C.; Mkonongo, L.; Masanja, D.; Edward, P.; Maruba, D.; Mwita, P.F.; Nkondo, B.; Elisha, F.; Bucheye, E.; Nyika, A.; et al. Compliance with infection prevention and control practices and associated factors among healthcare workers in Tanzania: Experience from Katavi Regional Referral Hospital in Katavi. *medRxiv* **2025**. [[CrossRef](#)]
37. Alhumaid, S.; Al Mutair, A.; Al Alawi, Z.; Alsuliman, M.; Ahmed, G.Y.; Rabaan, A.A.; Al-Tawfiq, J.A.; Al-Omari, A. Knowledge of infection prevention and control among healthcare workers and factors influencing compliance: A systematic review. *Antimicrob. Resist. Infect. Control* **2021**, *10*, 86. [[CrossRef](#)] [[PubMed](#)]
38. Mohammed, Y.; Tamir, T.T.; Geberu, D.M.; Destaw, B.; Kebede, N. Adherence to Standard Precautions and Associated Factors Among Healthcare Workers at Public and Private Hospitals in Northeast Ethiopia. *Risk Manag. Healthc. Policy* **2024**, *17*, 1599–1618. [[CrossRef](#)]
39. Ranoto, L.Q.; Ntimana, C.B.; Mamogobo, P. Knowledge, Attitudes, and Practices of Infection Prevention and Control Nurses in Public Hospitals in the Limpopo Province: A Qualitative Study. *Int. J. Environ. Res. Public Health* **2025**, *22*, 116. [[CrossRef](#)]
40. Tu, R.; Elling, H.; Behnke, N.; Mmodzi, J.; Kafanikhale, H. Uncorrected Proof A qualitative study of barriers and facilitators to adequate environmental health conditions and infection control for healthcare workers in Malawi. *H2Open J.* **2022**, *5*, 11–15. [[CrossRef](#)]
41. Manomenidis, G.; Panagopoulou, E.; Montgomery, A. Resilience in nursing: The role of internal and external factors. *J. Nurs. Manag.* **2019**, *27*, 172–178. [[CrossRef](#)] [[PubMed](#)]

42. Knoll, M.; Lautenschlaeger, C.; Borneff-Lipp, M. The impact of workload on hygiene compliance in nursing. *Br. J. Nurs.* **2010**, *19*, S18–S22. [[CrossRef](#)] [[PubMed](#)]
43. Sunkwa-Mills, G.; Senah, K.; Breinholdt, M.; Aberese Ako, M.; Tersbøl, B. A qualitative study of infection prevention and control practices in the maternal units of two Ghanaian hospitals. *Antimicrob. Resist. Infect. Control* **2023**, *12*, 125. [[CrossRef](#)]
44. Kc, D.; Smith, J.; Currie, K.; Ness, V. Theoretical models applied to understand infection prevention and control practices of healthcare workers during the COVID-19 pandemic: A systematic review. *J. Infect. Prev.* **2025**, *26*, 33–43. [[CrossRef](#)]
45. Gwaikolo, C.; Bodo, B.; Nabawanuka, D.; Mukiibi, M.; Seremba, E.; Muyinda, P.; Bakainaga, A.; Woldemariam, Y.T.; Moore, C.C.; Ssekitoleko, R. Impact of supportive supervision visits on the availability of World Health Organization infection prevention and control core components in health facilities in Southwestern Uganda. *Infect. Prev. Pract.* **2024**, *6*, 100355. [[CrossRef](#)]
46. Kinyenje, E.; Hokororo, J.; Eliakimu, E.; Yahya, T.; Mbwele, B.; Mohamed, M.; Kwesigabo, G. Status of Infection Prevention and Control in Tanzanian Primary Health Care Facilities: Learning From Star Rating Assessment. *Infect. Prev. Pract.* **2020**, *2*, 100071. [[CrossRef](#)] [[PubMed](#)]
47. Allegranzi, B.; Tartari, E.; Pittet, D. “Seconds save lives—Clean your hands”: The 5 May 2021 World Health Organization SAVE LIVES: Clean Your Hands campaign. *J. Hosp. Infect.* **2021**, *111*, 1–3. [[CrossRef](#)]
48. *Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level*; World Health Organization: Geneva, Switzerland, 2016.
49. Darboe, S.M.K.; Darfour-Oduro, S.A.; Kpene, G.E.; Kebbeh, A.; Fofana, N.; Ndow, M.; Sanyang, K.; Duah, D.; Yawson, A.E.; Kenu, E.; 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**, *18*, 43. [[CrossRef](#)] [[PubMed](#)]
50. Appiah, E.O.; Appiah, S.; Menlah, A.; Baidoo, M.; Awuah, D.B.; Isaac, N.B. Experiences of infection prevention and control in clinical practice of nursing students in the Greater Accra Region, Ghana: An exploratory qualitative study. *SAGE Open Med.* **2021**, *9*, 20503121211054588. [[CrossRef](#)] [[PubMed](#)]
51. Mukona, D.M.; Mathew, R.; Khalaf, A.; Palatty, J.; Joseph, S.; Abdulla, S.; Burnett, E. Preparedness for infection prevention and control practice among undergraduate students: A systematic review. *J. Infect. Prev.* **2025**, *online ahead of print*. [[CrossRef](#)]
52. Id, M.J.L.; Isunju, J.B.; 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. *PLoS Glob. Public Health* **2024**, *4*, e0004021. [[CrossRef](#)]

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.