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Knowledge of health workers towards the prevention of healthcare associated infections at Kajjansi Health center IV. A cross-sectional study.

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Abstract

Background

Healthcare-associated infections (HCAIs) are largely preventable but remain a major public health concern, especially in resource-limited settings. This study aims to assess the knowledge of health workers towards the prevention of healthcare-associated infections at Kajjansi Health Centre IV.

Methodology

A descriptive cross-sectional study design was employed. Data were collected using self-administered questionnaires from health workers who were present and consented during the data collection period, selected through purposive sampling. Data were analyzed manually using Microsoft Excel and presented using pie charts and bar graphs.

Results

Most respondents, 20 (41.7%), were aged 26–35 years, while only 3 (6.2%) were aged 51–65 years. Females constituted 28 (58.3%) of the participants. A similar proportion, 15 (31.3%), had either 1–5 years or 6–10 years of work experience, whereas only 3 (6.3%) had more than 15 years of experience. 18 (37.5%) held certificates, and only 1 (2.1%) belonged to other categories. Respondents demonstrated adequate awareness of infection prevention protocols, modes of transmission, and common causative organisms. They expressed concern about acquiring infections and acknowledged the importance of guidelines and training.

Conclusion

Health workers at Kajjansi Health Centre IV demonstrated generally good knowledge of infection prevention and control measures.

Recommendations

Kajjansi Health Centre IV should strengthen and regularly conduct in-service training programs focused on infection prevention and control to enhance health workers' knowledge.

Keywords: Knowledge, Infection prevention, Healthcare-associated infections (HCAIs), Kajjansi Health Centre IV.

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Background

Healthcare-associated infections (HCAIs), also known as nosocomial infections, are infections acquired in healthcare facilities that were neither present nor incubating at the time of admission (Tobin & Zahra, 2025a). These infections are largely preventable through effective infection prevention and control (IPC) measures (Razzaque, 2023). However, evidence indicates that most nosocomial infections are transmitted by healthcare personnel who fail to practice proper hand hygiene or change gloves between patient contacts (Tobin & Zahra, 2025b). This suggests that adequate knowledge of standard precautions, hand hygiene protocols, and proper use of personal protective equipment (PPE) is critical in preventing HCAIs.

Globally, HCAIs affect approximately 100 million patients annually, with 10% of hospitalized patients in developed countries and 25% in developing countries acquiring infections (WHO, 2019). Higher rates in developing countries highlight potential gaps in

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knowledge and implementation of infection prevention. In sub-Saharan Africa, the overall prevalence of HCAIs is estimated at 12.9%, with East Africa recording the highest prevalence at 16.5% (Yosef, 2023a). The high burden of infection in the region underscores the importance of ensuring that healthcare workers are knowledgeable about risk factors, including prolonged hospital stays, contaminated wounds, urinary catheterization, and endotracheal intubation.

In Uganda, nosocomial infections have a prevalence of 17% and are associated with significant morbidity and mortality (Bayiyana & Namutebi, 2024). The common causative organisms include Staphylococcus aureus, Pseudomonas aeruginosa, and enterococci. Additionally, limited access to reliable water supply (31%) and electricity (24%) in healthcare facilities (Immaculate, 2024) poses challenges to maintaining adequate hygiene standards. In 2022, Uganda recorded an estimated 422,000 HCAI cases and 43,600 excess deaths, with an economic burden of US$580 million (Tettje van Daalen, 2024).

Given that healthcare workers play a central role in infection transmission and prevention, assessing their knowledge regarding infection prevention measures, including hand hygiene, sterilization, use of PPE, environmental sanitation, and antimicrobial stewardship, is essential in reducing HCAIs at Kajjansi Health Centre IV. Therefore, this study aims to assess the knowledge of health workers towards the prevention of healthcare-associated infections at Kajjansi Health Centre IV

Methodology

Study design

This study employed a descriptive cross-sectional study design. This design was suitable for this study because data were collected at a point in time, and facts are immediately discovered and available.

Study setting

The research was conducted at Kajjansi Health Centre IV, which is located in Kajjansi Town, along Entebbe Road in Wakiso District, Central Region of Uganda. It is approximately 16 kilometers from Kampala city and serves as one of the key health facilities in the sub-county. The facility is equipped with several departments, including outpatient, inpatient, maternity, pediatric, laboratory, pharmacy, antenatal care (ANC), HIV/AIDS care (ART), and minor surgery units. On average, the health Centre receives over 200 patients daily.

Study population

The study involved all health workers serving in Kajjansi Health Center IV, including doctors, clinical officers, midwives, nurses, nursing assistants, and laboratory attendants present at the time of data collection.

Sample size determination

The sample size for the respondents was calculated using the Krejcie and Morgan formula with a precision of +/- 5% at a confidence level of 95%.

The total number of health workers at Kajjansi Health Center Four is 52. Therefore, using the Morgan tables,
n= 48 respondents participated in the study

Sampling procedure

After approval of the topic, the purposive sampling technique was employed to collect data from the health workers at the health center.

Selection criteria

Inclusion Criteria

All health workers working in the various departments/wards of Kajjansi Health Center IV who were available at the time of data collection and agreed to consent.

Exclusion Criteria

All health workers who were not available at the time of data collection, who had agreed to consent.

Study variables

Independent variables

Knowledge about infection prevention among health workers towards infection prevention of nosocomial infections.

Dependent variable

Health care-associated infections

Data collection tool

Data was collected using a semi-structured questionnaire tool written in the English language to collect primary data from the health workers. Only those who were present during data collection and willing to participate in the study were provided with the questionnaires.

Data collection method

Data was collected using semi-structured questionnaires with closed-ended questions that were designed to meet specific objectives.

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Data analysis and presentation

Quantitative data collected were first coded, organized, and then tallied, after which they were entered into the computer for analysis using Statistical Package for Social Sciences (SPSS) version 20, and then transferred to Excel to be presented in tables, graphs, pie charts, and narrations for easy interpretation and discussion to make conclusions.

Sampling technique

A purposive sampling technique was used to select participants for the study at Kajjansi Health Centre IV. During data collection, only health care workers currently available at the health center were included in the study.

Data collection procedure

The questionnaires were distributed in person to the participants who agreed and had consented to be part of the research study. Clear guidelines and instructions were given to them on how to fill out the questionnaires. After filling out the questionnaires, the responses were collected to monitor them.

Quality control

Piloting the study in Kajjansi health center IV, visiting the study area one week before the actual study, I sought and obtained permission from the person in charge. This visit ensured that the conditions at the health center premises are favorable.

The questionnaire was pre-tested at Ndejje Health Center IV before the actual data collection process to allow proper reconstruction of the questions, as well as correcting any errors and mistakes. This ensures that the information collected was reliable and valid.

During the time of data collection, study participants were given 20 minutes to fill out the questionnaires. This involved social distancing, hand hygiene, so as to avoid cross-infection, and to make sure not to break the health center operating procedures, and avoid hindering the normal running of the health center activities because of research.

Ethical considerations

On approval by the Mildmay Institute of Health Sciences research committee, written permission to conduct the research study was obtained from the principal school of clinical officers, introducing me to be in charge of Kajjansi Health Center IV. The consent of the participants was sought with informed written consent before the study was conducted. Respondents received an explanation of the study before enrollment, and only those who were willing to participate were considered. Respondents were free to withdraw from the study at any time, and strict confidentiality was observed. Initials were used to identify the respondents instead of full names.

Results

Social demographics and professional characteristics

Table 1 shows demographics and professional characteristics (n=48)

Variables	Category	Frequency (n)	Percentage (%)
Age group	18-25 years 26- 35 years 36- 50 years 51- 65 years	15 20 10 3	31.3 41.7 20.8 6.2
Total		**48**	**100**
Gender	Male Female	20 28	41.7 58.3
Total		**48**	**100**

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Highest level of education	Certificate Diploma Bachelor's degree Master's degree Other	18 16 10 3 1	37.5 33.3 20.8 6.3 2.1
Total		**48**	**100**
Professional qualification	Medical Doctor Clinical Officer Nurse Midwife Laboratory Technician Other	4 6 12 12 6 8	8.3 12.5 25 25 12.5 16.7
Total		**48**	**100**
Years of work experience in Healthcare	Less than 1 year 1-5 years 6-10 years 11-15 years More than 15 year	5 15 15 10 3	10.4 31.3 31.3 20.8 6.3
Total		**48**	**100**
Current department/ward	Out-patient department Maternity ward Laboratory Pharmacy Minor surgery Other	6 10 6 4 8 14	12.5 20.8 12.5 8.3 16.7 29.2
Total		**48**	**100**

Table 1, regarding respondents' age group, most 20(41.7%) of the respondents were between 26 and 35 years. In contrast, at least 3(6.2%) of them were between 51 and 65 years. Most 28(58.3%) were females, whereas the least were 20(41.7%) males. Regarding their level of education, most 18(37.5%) of the respondents were at certificate level, whereas the least 1(2.1%) of them had other levels of education. From their year of experience in health care, 15(31.3%) of the respondents were aged 1-5 years and 6-10 years, whereas the least of them, 3(6.3%), had experience of more than 15 years. Regarding their current department/ ward, most of the respondents, 14(29.2%), were working from other departments, whereas the least of them, 4(8.3%), were working in the pharmacy department.

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Table 2 shows the knowledge of health workers towards the prevention of healthcare-associated infections

Variables	category	Frequency (n)	Percentage (%)
Have you ever heard about infection prevention protocols in your healthcare facility?	a) Yes b) No	48 0	100 0
Total		**48**	**100**
If yes, which source did u learn about them from?	Seminars Health care providers Self –study Journals	25 10 10 3	52.1 20.8 20.8 6.3
Total		**48**	**100**
Received formal training on infection prevention protocols.	a) Yes b) No	40 8	83.3 16.7
Total		**48**	**100**
Are you aware of the different modes of transmission of nosocomial infections?	a) Yes b) No	48 0	100 0
Total		**48**	**100**
If yes, what are the primary modes of transmission of nosocomial infections in your health center?	a) Direct contact b) Indirect contact.	30 18	62.5 37.5
Total		**48**	**100**
Did you receive the guidelines for the prevention of healthcare-associated infections (HAIs) at your facility?	a) Yes b) No	48 0	100 0
Total		**48**	**100**
Are you aware of the major bacteria that cause healthcare-associated infections (HCAIs)?	a) Yes b) No	43 5	89.6 10.4
Total		**48**	**100**

Table 2 shows that all 48(100%) of the respondents had ever heard about infection prevention protocols in their healthcare facility. Of all the respondents, most of them, 25(52.1%), reported having ever heard about them from seminars, whereas the least, 3(6.3%), reported having ever heard about them from journals. The majority, 40(83.3%) of the respondents reported that they had ever received formal training on infection prevention protocols, whereas the minority, 8(16.7%) of the m had never received any training on the infection prevention protocols. All the respondents 48(100%) were aware of the different modes of transmission of nosocomial infections and of them, most 30(62.5%) of them reported that the primary mode of transmission at their health center was direct contact with infected patients and infected health workers whereas the least of them 18(37.5%) reported that the primary mode of

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transmission was indirect contact with contaminated surfaces. All respondents 48(100%) reported that they received the guidelines for the prevention of healthcare-associated infections (HAIs) at their facility. The majority, 43(89.3%) of the respondents reported that they were aware of the major sources of bacteria that cause healthcare-associated infections, whereas the minority, 5(10.4%) reported that they were not aware.

Discussion

Knowledge of health workers towards the prevention of healthcare-associated infections

From the study findings about responses on whether respondents had ever heard about infection prevention protocols in your healthcare facility, all (100%) respondents had ever heard about the infection prevention protocols, and of these, most 52.1% had heard about them from seminars. This implies that all the respondents were aware and had ever heard about infection prevention protocols due to the implemented in-service training sessions, and competency assessments to ensure that staff remain up to date with current Infection prevention protocols. These results are in line with the study findings according to (Amali & van Wyk, 2023) about Infection prevention knowledge and practices among healthcare workers at a health facility in Makurdi, Benue State, Nigeria, which found that the majority, 98.1% of the respondents, had knowledge about infection prevention protocols. High knowledge levels are important but not sufficient for effective infection prevention; therefore, consistent availability of personal protective equipment (PPE), hygiene supplies, and infrastructure is necessary to improve infection prevention. Regarding their responses on whether they had ever received formal training on infection prevention protocols, the majority, 83.3% of them, had received the training. This indicates that a vast majority of the respondents got training on the infection prevention protocols. This is because training enhances their practical skills, reinforces knowledge of best practices like hand hygiene and use of personal protective equipment, and ensures compliance with regulatory standards, such as those set by organizations like the CDC and WHO. These results are not in line with the study findings by Mondol et al. (2025) about Knowledge, Attitudes, and Practices on Infection Prevention and Control among Healthcare Workers in Rohingya Refugee Camp, which revealed that approximately 43% of healthcare workers in this high-risk setting had received IPC training. The relatively low percentage trained suggests that a significant portion of healthcare workers may lack the critical awareness, perceived skills, and self-efficacy to consistently apply infection prevention protocols. Therefore, there is a need expand IPC training to cover all healthcare workers, including non-clinical staff such as cleaners and volunteers. From the findings about awareness of the different modes of transmission of nosocomial infections, all 100% the respondents were aware of them, and of these, most 62.5% reported that the primary modes of transmission of nosocomial infections in their health center were direct contact with infected patients and infected health workers. This implies that all the respondents were aware of the different modes of transmission, and the direct contact with patients and health workers was the primary mode due to poor hand hygiene and contaminated surfaces. These results are not in agreement with the study findings by Phiona and Naggulu (Phiona & Naggulu, 2023) about knowledge, attitudes, and practices of health workers towards nosocomial infection prevention done at Nsambya Police Health Centre IV, which found that most 72% of the healthcare workers were aware of the modes of transmission of healthcare-associated infections. This indicates a moderate level of awareness among staff regarding how these infections spread. Therefore, continuous education and health care support are essential to bridge the gap in knowledge, thus reducing the risk of nosocomial infections effectively. Regarding their respondents, who are aware of the major bacteria that cause healthcare-associated infections, the majority 89.6% reported that they were aware of them. This indicates that a vast majority were well versed with the examples of bacteria that cause nosocomial infections due to the various training sessions about infections and their prevention protocol seminars in the health facility. These results are in agreement with the study findings according to (Wang et al., 2023) about Do Knowledge, Attitudes, and Barrier Perception Affect the Prevention and Control of Healthcare- Associated Infections, which found that the majority, 78.8% of the healthcare workers, were aware of the various bacteria that cause nosocomial infections. This indicates that most health workers have foundational microbiological knowledge. Therefore, training programs must include detailed microbiology education relating to the roles of different healthcare staff, alongside practical infection prevention skills.

Conclusion

Health workers at Kajjansi Health Centre IV demonstrated generally good knowledge of infection prevention measures, including standard protocols, modes of

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transmission, and common causative organisms. However, gaps remain in certain areas, indicating the need for continuous updates and reinforcement of guidelines.

Recommendation

Kajjansi Health Centre IV should implement regular in-service training and refresher courses focused on infection prevention and control. These programs should cover standard precautions, hand hygiene, PPE use, and identification of causative organisms. Continuous education and dissemination of updated guidelines will ensure that health workers maintain comprehensive knowledge of HCAI prevention.

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Conflict interest

The author did not declare any conflict of interest.

Author contributions

Juliet Nakafeero was the principal investigator
Ronald Mbidde supervised the research project
Immaculate Prosperia Naggulu supervised the research project
Hasifa Nansereko supervised the research project
Jane Frank Nalubega supervised the research project
Francisco Ssemuwemba supervised the research project

Abbreviations

AIDS	:	Acquired Immune Deficiency Syndrome
HCWs	:	Health Care Workers
WHO	:	World Health Organization
HIV	:	Human Immunodeficiency Virus
HBV	:	Hepatitis B Virus
HCAIs	:	Health Care-Associated Infections
PPE	:	Personal Protective Equipment
PNFP	:	Private Not For Profit
UCMB	:	Uganda Catholic Medical Bureau

Data availability

The data is available upon request.

Informed consent

All the respondents consented to this study.

Author Biography

Juliet Nakafeero holds a Diploma in Clinical Medicine and Community Health from Mildmay Institute of Health Sciences.
Francisco Ssemuwemba is the dean of the School of Allied Health
Hasifah Nansereko is the chairperson Institutional Review Council (IRC)
Ronald Mbidde, Immaculate Prosperia Naggulu, and Jane Frank Nalubega are tutors at Mildmay Institute of Health Sciences.

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