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St. Paul's Hospital Millennium Medical College

Title :ASSESSMENT OF KNOWLEDGE, ATTITUDE, PRACTICE (KAP) AND ASSOCIATED FACTOR TOWARDS HIV POST EXPOSURE PROPHYLAXIS (PEP) AMONG SPHMMC CLEANING STAFF,2018 EC

Investigator: Muluken Teklu (Medical Intern)

A Research Report Submitted to the School of Medicine,St. Paul's Hospital Millennium Medical College in Partial Fulfillment of the Requirements for the Undergraduate Degree of Doctor of Medicine.

MARCH, 2026

ADDIS ABABA, ETHIOPIA

St. Paul's Hospital Millennium Medical College

Undergraduate Study Program

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Advisors : Mr. Getachew Tilahun (Public Health Advisor)

Dr. Tsehaye Birhanu (Clinical Advisor)

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Name of investigator	Muluken Teklu Dubale
Full title of the research project	ASSESSMENT OF KNOWLEDGE, ATTITUDE, PRACTICE (KAP) AND ASSOCIATED FACTOR TOWARDS HIV POST EXPOSURE PROPHYLAXIS (PEP) AMONG SPHMMC CLEANING STAFF
Duration of the project	8 months
Study Area	St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa, Ethiopia
Total Cost of the project	12840ETB
Source(s) of Funding	St. Paul's Hospital Millennium Medical College
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ACKNOWLEDGMENT

I would like to express my gratitude to the St. Paul's Hospital Millennium Medical College (SPHMMC) Department of Public Health for providing me with the opportunity and support to carry out this study.

My research advisor, Mr Getachew Tilahun, has my deepest gratitude for his constant support, constructive criticism, and encouragement throughout this study.

Additionally, I would like to thank my clinical advisor Dr.Tsehaye Birhanu for his invaluable guidance and help in preparing this research.

I express my special gratitude to all of the Cleaning stuffs at SPHMMC who willingly participated in this study. Without their help, this study would not have been possible.

Finally, I would like to sincerely thank my friends, family, and coworkers for their moral support and encouragement during this journey.

ABBREVIATIONS

- AIDS- Acquired immune deficiency syndrome
- KAP- Knowledge, attitude, and practice
- HIV- Human immunodeficiency syndrome
- PEP- Post exposure prophylaxis
- HCW- Heath care workers
- FMOH- Federal ministry of heath
- SPHMMC- St Paul‟s hospital millennium medical college
- SPSS- Statistical package for social science
- IPC- Infection prevention and Control

ABSTRACT

Introduction: Occupational exposure to blood borne pathogens remains a major concern in healthcare settings, with cleaners facing heightened risk due to frequent contact with contaminated waste and body fluids. Although Ethiopia has national guidelines on HIV post-exposure prophylaxis (PEP), little was known about how these guidelines were understood and applied by cleaning staff. This study assessed the knowledge, attitudes, and practices of cleaners toward PEP at St. Paul's Hospital Millennium Medical College (SPHMMC) and examined factors associated with these outcomes.

Methods: A cross-sectional study was conducted among cleaning staff using a structured questionnaire that captured sociodemographic characteristics, knowledge of PEP, attitudes toward its use, and practices following occupational exposure. Descriptive statistics summarized key variables, while correlation and multiple regression analyses identified factors associated with knowledge, attitude, and practice.

Results: The demographic findings show that the cleaning workforce is predominantly young, with the highest proportions in the 26–35 years (37.1%) and 36–45 years (31.0%) age groups, while 24.8% were aged 18–25 years and only 6.2% were 46–55 years. Females constituted an overwhelming majority (99.0%) of the participants. In terms of educational status, 38.1% had completed primary education, 29.0% secondary education, and 19.0% had no formal education, whereas only 12.8% had attained diploma or degree-level qualifications. Regarding work experience, 31.0% had worked for 3–4 years, 28.1% for 1–2 years, 21.0% for less than one year, and 19.0% for five or more years. Most participants were married (60.0%), and the dominant religious affiliation was Orthodox Christianity (57.6%), followed by Protestant (32.9%) and Muslim (8.6%). Departmental distribution showed that 29.0% of respondents worked in Surgery, 27.6% in Obstetrics and Gynecology, 27.1% in Pediatrics, and 15.2% in Internal Medicine.

Overall, these prevalences indicate that the study population is largely composed of young, female cleaning staff with moderate work experience and primarily basic educational backgrounds, working predominantly in high-risk clinical departments. This profile highlights their increased vulnerability to occupational exposure and underscores the importance of strengthening PEP-related awareness, training, and protective practices within this group.

Conclusion: The study concluded that knowledge among cleaning staff was moderate, attitudes were acceptable but influenced by workplace context, and practices were poor. Demographic factors showed minimal influence on knowledge or practice, while department assignment shaped attitudes. These findings highlight the need for improved training, strengthened adherence support, and better enforcement of universal precautions to enhance outcomes.

Recommendations: The study recommended strengthening role-specific and repeated training for all cleaning staff, implementing department-focused sensitization to improve attitudes, reinforcing universal precautions through consistent supply and supervision, and enhancing adherence support for PEP initiation and completion. System-level improvements rather than demographic targeting were emphasized to address the identified gaps.

Key words: HIV, Post-Exposure Prophylaxis, Cleaning Staff, Knowledge, Attitude, Practice, Occupational Exposure, SPHMMC

CHAPTER-ONE
INTRODUCTION

1.1 Background

Human Immunodeficiency Virus (HIV) infection and Acquired Immunodeficiency Syndrome (AIDS) remain major public health concerns, especially in sub-Saharan Africa where they affect even healthcare workers (HCWs). Post-exposure prophylaxis (PEP) refers to the medical response provided after potential exposure to HIV, including first aid, counseling, HIV testing, and a 28-day course of antiretroviral therapy with appropriate follow-up (1).When administered promptly, PEP reduces the risk of HIV infection by about 80%, and it must be initiated within 72 hours of exposure (1,2).

Hospital staff should treat occupational exposures as urgent medical issues to ensure timely management. Risk of HIV transmission varies by type and severity of exposure, with percutaneous injuries carrying an average risk of 0.3% and mucous membrane exposure about 0.09% (3,4). Factors such as deep injuries, visibly contaminated instruments, and procedures involving veins or arteries further increase the risk. In resource-limited countries, where HIV prevalence is high, healthcare workers face even greater risks (1,5)

Primary prevention through adherence to "Standard Precautions" and access to protective equipment remains essential (2). In Ethiopia, the 2019 EMDHS reported urban HIV prevalence at 2.9%, far higher than the rural rate of 0.4% (6) . The government introduced free antiretroviral therapy in 2005 and issued infection-prevention and PEP guidelines, most recently updated in August 2024 (7).

1.2 Statement of the Problem

Prevention and control of occupational risks related to HIV/AIDS are critical but often undermined by stigma, under-reporting of exposures, and limited awareness of PEP. According to CDC (2024), 0.3% of global HIV cases are linked to occupational exposure among HCWs. In Ethiopia, a cross-sectional study in Addis Ababa (2022) found that 420 HCWs exposed to infected fluids had a 4% HIV positivity rate, with improper use of protective equipment and longer work experience linked to higher risk.

HCWs frequently face percutaneous injuries, mucous membrane contact, or exposure of non-intact skin to infectious fluids. Timely initiation of PEP is essential to minimize transmission. Cleaners, in particular, are highly vulnerable due to constant handling of contaminated waste, yet they often have limited training and knowledge on infection prevention. While several studies in Ethiopia have assessed KAP toward PEP, most focus on physicians and nurses, leaving cleaners overlooked.

This study is therefore timely and important, as it addresses a neglected group working in high-risk environments. Conducted at St. Paul's Hospital Millennium Medical College, one of Ethiopia's largest referral centers with high patient volume, the research will assess the knowledge, attitudes, and practices of cleaners toward PEP, identify barriers to its utilization, and provide evidence for hospital management to improve training, policy enforcement, and overall occupational safety.

1.3 Significance of the Study

This study holds important significance for occupational health and HIV prevention efforts within healthcare settings. By revealing a clear disconnect between knowledge, attitude, and practice among cleaning staff at SPHMMC, the findings highlight a critical gap in the hospital's infection-prevention system. Although cleaners demonstrated moderate knowledge and generally positive attitudes toward PEP, their inconsistent practices and low uptake of prophylaxis underscore systemic barriers such as inadequate training, limited access to protective equipment, and insufficient follow-up support [4,7]. The absence of significant associations between demographic characteristics and either knowledge or practice further indicates that these challenges are structural rather than individual, emphasizing the need for institution-wide interventions.

The study is also significant because it brings attention to a workforce group that is often overlooked in HIV-related research and policy. While most KAP studies focus on clinicians and nurses, cleaners play a frontline role in maintaining hospital hygiene and preventing infection transmission. Their safety directly influences the overall effectiveness of infection-control programs. By documenting their PEP-related strengths and gaps, this study provides actionable evidence for hospital administrators and policymakers to design targeted, role-specific interventions. Strengthening

PEP-related outcomes among cleaners through structured training, reliable access to protective equipment, stigma-free reporting systems, and improved adherence support aligns with national and international guidelines on occupational safety [1,2,7]. Ultimately, the study contributes to improving workplace safety, reducing occupational HIV risk, and enhancing the broader public health response within Ethiopian healthcare institutions.

1.4 Scope of the Study

This study focused on assessing the knowledge, attitudes, and practices of cleaning staff toward HIV post-exposure prophylaxis (PEP) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. The scope was limited to cleaners employed within the hospital's major clinical departments, including Surgery, Obstetrics and Gynecology, Pediatrics, and Internal Medicine. The study examined their awareness of PEP, their perceptions and attitudes toward its use, and their actual practices following occupational exposure to blood or body fluids. In addition, the study explored sociodemographic and workplace factors associated with knowledge, attitude, and practice. The research did not include other categories of healthcare workers, such as nurses, physicians, or laboratory staff, nor did it assess institutional supply chains or administrative processes beyond what was reported by participants. The findings therefore reflect the experiences and perspectives of cleaning staff within this specific hospital setting and may not be generalizable to other institutions or regions.

2.Objective

2.1 General objective

The main objective of the study was to assess the knowledge, attitude and practice towards HIV post exposure prophylaxis among cleaning staff of SPHMMC.

2.2 Specific objective

In order the address the main objective the study correctly the study also answered the following specific objectives accordingly which were:

- To determine the knowledge of PEP among cleaning staff
- To determine attitude of PEP among cleaning staff
- To determine the practice of PEP among cleaning staff
- To determine factors associated with knowledge about PEP

CHAPTER-THREE

LITERATURE REVIEW

A number of studies have assessed the Knowledge, Attitudes, and Practices (KAP) of healthcare workers (HCWs) regarding HIV Post-Exposure Prophylaxis (PEP) in Ethiopia and other countries. However, most do not include cleaning staff as part of the healthcare workforce, despite their significant occupational exposure risk.

3.1 Knowledge Level

Knowledge about HIV post-exposure prophylaxis (PEP) among hospital cleaning staff shows consistent deficits across multiple studies. In India (2023), 78.8% of cleaners had heard of PEP, but only 45.3% correctly identified the 72-hour initiation window, and 32.1% knew the standard regimen (tenofovir-emtricitabine plus raltegravir) .(10)
In Uganda (2024), 58.3% of cleaners demonstrated good IPC knowledge, yet only 41.7% understood PEP's role in HIV management, with 28.3% believing PEP was only for needlestick injuries . (8).
Nigeria's multicenter study (2018) reported high awareness (89.4%), but 62.4% incorrectly believed PEP was ineffective beyond 48 hours, and 47.1% couldn't name any antiretroviral drugs (3). In the 2013 study conducted in Singida District, Tanzania,

the knowledge level of hospital cleaners regarding HIV post-exposure prophylaxis (PEP) was found to be significantly deficient. Specifically, 52% of the 239 healthcare workers surveyed—including cleaners—had inadequate overall knowledge of HIV PEP(9)

3.2 Attitude toward PEP

Attitudes toward PEP among hospital cleaners are shaped by misconceptions, stigma, and occupational marginalization. In India (2023), 54.3% of cleaners viewed PEP as unnecessary for minor exposures like blood splashes (10)

In Uganda (2024), 75% agreed on the importance of reporting exposures, but 32.5% believed PEP protocols were "not their job" due to role exclusion . (8). Nigeria's study (2018) found that 78.2% viewed PEP as essential, although 41.2% avoided reporting exposures due to fear of HIV-related stigma (3)

3.3 Practice Level

Despite high exposure rates, PEP utilization and adherence among hospital cleaners remain critically low. In India (2023), 51.1% reported exposures (47.1% needlestick, 41.4% splashes), yet none initiated PEP—even in 13 confirmed HIV-positive source cases .(10)

Uganda (2024) reported 22% exposure prevalence, but none sought PEP; IPC adherence was 30.8%, and hand hygiene compliance was 38.3% (8).

Nigeria (2018) found that 53.5% of support staff had experienced exposures, but only 12.9% initiated PEP and none completed the regimen due to side effects and stockouts .(3). In Tanzania (2013), 50.6% reported exposures, with only 15.4% of cleaners completing PEP (9)

3.4 Associated Factors (with Knowledge Only)

Several studies identified key factors influencing knowledge levels. In India (2023), 92% of cleaners had never received formal training, and informal seminars were their primary source of PEP information (10).Uganda (2024) found that cleaners with more than five years of experience were significantly more likely to have good knowledge , while lack of clear reporting lines hindered access (8).

Nigeria (2018) linked shallow knowledge to hierarchical barriers and stigma, which discouraged reporting and education .(3). In Tanzania**,** Cleaners with daily access to PEP services were more likely to have better knowledge and respond appropriately to exposure incidents(9)

2.1 Conceptual Framework

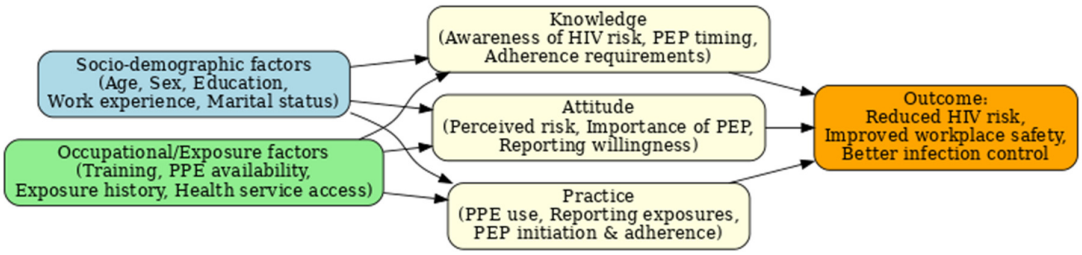

Figure 1: Conceptual Frame work

This conceptual framework illustrates the relationship between socio-demographic and occupational/exposure factors of SPHMMC cleaning staff and their Knowledge, Attitude, and Practice (KAP) towards HIV Post Exposure Prophylaxis (PEP). These factors influence staff KAP, which in turn determine the overall outcome of reduced HIV risk, improved workplace safety, and strengthened infection prevention and control measures.

CHAPTER-FOUR

METHODOLOGIES

4.1 Study design and Setting

SPHMMC is a medical institute located in Addis Ababa, Ethiopia. Although the medical school opened in 2007 the hospital was established in 1968 by the late Emperor Haile Selassie. It is governed by a board under the Federal Ministry of Health. The college has more than 2800 clinical, academic and administrative and support staff that provide medical specialty services to patients who are referred from all over the country, teaching medicine and nursing students and doing basic and applied research. Currently there are around 622 cleaning staff working in the main hospital.

4.2 Study Population

In this study, the source population consisted of all cleaning staff employed at St. Paul's Hospital Millennium Medical College (SPHMMC). The study population was drawn from cleaning staff members who were on duty at the main hospital facility during the survey period. Participants were included if they were sanitary workers actively employed at SPHMMC, had worked in the hospital for at least six months prior to data collection, and were engaged in cleaning or waste-handling activities that could expose them to biological or medical hazards such as blood, sharps, or bodily fluids. Only individuals aged 18 years and above who were willing to participate and provided informed consent were enrolled in the study.

Exclusion criteria applied to those who were on long-term or maternity leave, or otherwise not actively working during the survey period. Staff with less than six months of service were excluded, as they were considered to have insufficient occupational exposure. Administrative or non-cleaning personnel, even if part of hospital support services, were not eligible. Additionally, individuals who declined to provide informed consent or withdrew during the study were excluded from participation.

4.3 Sample size Determination

The sample size was determined using the following formula

$$n = \frac{\frac{Z^2 p(1-p)}{d^2}}{1 + \frac{\frac{Z^2 p(1-p)}{d^2}}{N}}$$

n- Sample size

p- Estimated proportion for population= Because of lack of research on cleaners in Ethiopia or reasonable estimate, proportion of 50 % was chosen

Z-is the value of the standard normal variable

At α level for 95%confidence

d- Margin of error =0.05

Based on this, the sample size will be 238

4.4 Sampling Techniques and Selection Procedures

In this study, cleaners from each department were enrolled using systematic random sampling. A complete list of all cleaning staff was obtained from the hospital administration and served as the sampling frame. The list was organized by department to ensure that the number of participants selected was proportional to the size of the cleaning staff in each unit. This approach allowed for fair representation across departments and minimized selection bias.

The sampling interval was determined by dividing the total number of cleaning staff by the required sample size, and participants were chosen accordingly. If a selected cleaner was unavailable during the interview period or declined to participate, the next individual on the list was approached as a replacement. This procedure ensured that the intended sample size was achieved while maintaining the integrity of the systematic random sampling method.

4.5 Variables

The variables that were considered on this study include

Dependent variables

- Knowledge level of PEP among cleaning staff members

- The attitude of cleaning staff members to PEP
- practice of PEP after occupational accidents occur among cleaning staff

Independent variable

1. Socio demographic factors (sex, age, educational level, length of service).
2. Information source on PEP, knowing about the presence of guideline for PEP management and training obtained.
3. Environmental factors: Work place (department), Work load (length of service)

4.6 Operational Definitions

Post-Exposure Prophylaxis (PEP): A short-term antiretroviral treatment initiated after potential exposure to HIV, ideally within 72 hours, and taken for 28 days to reduce the risk of infection.

Knowledge of PEP: The respondent's understanding of PEP, including awareness of its purpose, initiation time, duration, and follow-up requirements. Knowledge was measured through structured questionnaire items and categorized based on scoring criteria.

Attitude Toward PEP: The respondent's beliefs, perceptions, and feelings about the importance, usefulness, and necessity of PEP following occupational exposure. Attitude was assessed using Likert-scale items.

Practice of PEP: The respondent's actual behaviors following exposure to blood or body fluids, including glove use, reporting of incidents, initiation of PEP, and adherence to the 28-day regimen.

Occupational Exposure: Any contact with blood or potentially infectious body fluids through needlestick injury, sharp object injury, splash to mucous membranes, or contact with non-intact skin during work activities.

Cleaning Staff: Employees responsible for sanitation, waste handling, and environmental hygiene within the hospital, including those assigned to clinical wards and high-risk service areas.

High-Risk Department: Hospital units where exposure to blood and body fluids is more frequent, such as Surgery, Obstetrics and Gynecology, and Emergency-related areas.

4.7 Data collection tools and procedure

In this study, the data were collected as primary information obtained directly from cleaning staff at SPHMMC. A structured questionnaire was prepared to assess knowledge, attitude, and practice towards HIV post-exposure prophylaxis. The tool was developed in Google Forms and translated into Amharic to ensure clarity and accessibility for participants.

During the survey, the researcher personally administered the questionnaire by reading each question aloud in Amharic and recording the responses into the form. This interviewer-assisted approach ensured that all participants clearly understood the questions, minimized misinterpretation, and allowed for accurate documentation of their answers.

4.8 Data quality

In this study, the questionnaire was carefully formatted to ensure that it was easily understood by the cleaning staff, and all data were collected directly by the investigator. The collected responses were reviewed and coded systematically to maintain consistency and accuracy. To safeguard the quality and integrity of the data, several measures were implemented throughout the process.

Prior to data collection, comprehensive training was provided to both data collectors and supervisors. The training emphasized the objectives and importance of the study, offered a detailed review of each questionnaire item, and reinforced proper interviewing techniques. Ethical considerations, particularly confidentiality, were highlighted, and standard procedures for administering the questionnaire were practiced. Supervisors were trained to oversee the process, ensuring completeness and consistency, while mock interviews and role-playing exercises were conducted to build confidence and refine skills.

The questionnaire was also pretested on approximately 5% of the intended sample size among cleaners at Selam Health Center. This pilot testing helped assess the clarity and relevance of the questions, identify ambiguities or culturally inappropriate content, and

estimate the average time required for each interview. Based on the feedback, necessary modifications were made to improve the structure and content of the tool before the main data collection began.

During the actual data collection, supervisors monitored fieldwork on a daily basis. Completed questionnaires were reviewed each day for accuracy and completeness, and any inconsistencies or missing data were immediately addressed with the data collectors. This continuous supervision and daily checking process ensured that the final dataset was reliable, valid, and suitable for analysis.

4.9 Data analysis

In this study, all data collected through the questionnaires were first entered into Microsoft Excel by the investigator and subsequently exported to SPSS for statistical analysis. The dataset was carefully proofread to check for completeness, consistency, and accuracy before analysis began. This ensured that errors in entry or missing values were minimized, thereby safeguarding the reliability of the findings.

Descriptive statistics were used to summarize the data, with frequencies and percentages generated to describe the socio-demographic characteristics of participants and their responses to knowledge, attitude, and practice items. Cross-tabulations were performed to explore relationships between categorical variables, allowing for a clear presentation of distributions across groups such as age, education, experience, and departmental assignment. These descriptive procedures provided the foundation for further inferential analysis.

To examine associations between independent variables and the dependent outcomes of interest, simple binary logistic regression was applied. Variables that demonstrated a p-value of less than 0.25 in the bivariate analysis were considered candidates for inclusion in the multivariate logistic regression model. This step ensured that potentially important predictors were not excluded prematurely and allowed for a more comprehensive assessment of factors influencing outcomes.

Finally, multivariate logistic regression was conducted to adjust for confounding factors and to determine the independent effect of each variable. The strength of associations was expressed using Adjusted Odds Ratios (AOR) with 95% confidence intervals, and statistical significance was determined at a p-value threshold of less than

0.05. This systematic approach provided a rigorous framework for analyzing the data and identifying meaningful relationships within the study population.

4.10 Measurement Scale

In this study, all variables were operationalized and coded systematically to ensure consistency during entry in Excel and subsequent analysis in SPSS. Sociodemographic characteristics such as age, sex, marital status, religion, educational level, department, and years of experience were coded numerically (e.g., sex: 1 = male, 2 = female; marital status: 1 = single, 2 = married, 3 = divorced/widowed; education: 1 = uneducated, 2 = primary, 3 = secondary, 4 = diploma, 5 = degree). These codes allowed for straightforward tabulation and cross-analysis across categories.

Knowledge towards HIV post-exposure prophylaxis (PEP) was assessed using 13 structured questions. Each correct response was coded as "1" and each incorrect response as "0." The total knowledge score was computed by summing across items, with a cut-off point set at ≥7 correct answers (equivalent to 50% or more). Respondents who met or exceeded this threshold were classified as "knowledgeable" (coded as 1), while those scoring below were classified as "not knowledgeable" (coded as 0). This binary classification facilitated logistic regression analysis.

Attitude was measured using five items on a Likert scale. Responses were coded as: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Composite scores were generated by summing across items, and higher scores indicated more favorable attitudes toward PEP. This coding scheme allowed both descriptive analysis of attitude distributions and inferential testing of associations with other variables.

Practice and experience (Section D) were coded according to frequency and exposure categories. For glove use, codes were assigned as 1 = rarely, 2 = sometimes, 3 = often, and 4 = always. For exposure and needlestick incidents, binary coding was applied (0 = no, 1 = yes). Training participation was similarly coded (0 = not trained, 1 = trained). These operational definitions ensured that all categorical responses were standardized, enabling reliable descriptive statistics, cross-tabulations, and regression modeling in SPSS.

4.11 Ethical consideration

In this study, ethical clearance was formally obtained from the Public Health Department and the Research and Academic Provost Office of St. Paul's Hospital Millennium Medical College (SPHMMC). All procedures adhered to institutional and national ethical guidelines to ensure the protection of participants. Prior to data collection, the purpose of the study, its objectives, and the voluntary nature of participation were clearly explained to each respondent. Written informed consent was secured from all participants before they were enrolled, and they were assured that they could withdraw from the study at any stage without any consequences.

Confidentiality was strictly maintained throughout the research process. No personal identifiers such as names or employment numbers were recorded, and responses were coded numerically to preserve anonymity. Data were stored securely, accessible only to the investigator, and used solely for academic purposes. Participants were also informed that their responses would be reported in aggregate form, ensuring that no individual could be identified in the final report.

Additional ethical safeguards included emphasizing respect for participants' autonomy, minimizing any potential risk, and ensuring that the interview process did not interfere with their work duties. The interviewer maintained a professional and supportive environment, addressing any concerns raised during data collection. By implementing these measures, the study upheld the highest standards of ethical conduct, ensuring that participants' rights, dignity, and privacy were fully protected.

CHAPTER FIVE

RESULTS

Chapter Four presents the results of the study based on data obtained from 210 respondents, yielding a high response rate of 88.2% from the intended 238 participants. The dataset was largely complete with only negligible missing values, allowing for reliable analysis of the study objectives. The results describe the sociodemographic characteristics of cleaning staff, followed by their levels of knowledge, attitudes, and practices toward HIV post-exposure prophylaxis (PEP). Knowledge scores were summarized to determine the proportion of respondents meeting the defined threshold

for adequate knowledge, while attitudes were examined using mean scores derived from a five-point Likert scale. Practice-related findings, including glove use, exposure incidents, reporting behavior, and PEP uptake, were presented using frequencies and cross-tabulations. Additionally, associations between selected sociodemographic variables and attitudes toward PEP were explored through regression outputs. Together, these results provide a comprehensive overview of the cleaners' PEP-related knowledge, perceptions, and behaviors within the hospital setting.

5.1 Demographic Characteristics of Participants

The demographic profile of the 208 cleaning staff who participated in the study reflects a predominantly young and active workforce. Most respondents were between 26 and 35 years (37.1%) or 36 and 45 years (31.0%), with smaller proportions aged 18–25 years (24.8%) and 46–55 years (6.2%). Nearly all participants were female (99.0%), consistent with the gendered distribution of cleaning roles in Ethiopian healthcare settings. Educational attainment varied, with the largest share having completed primary education (38.1%), followed by secondary education (29.0%), while 19.0% reported no formal education and only a small minority held a diploma or degree.

Table 1 Demographic Characteristics of Cleaning Staff at SPHMMC (N = 208)

Variable	**Category**	**n**	**%**
Age	18–25	52	24.8
	26–35	78	37.1
	36–45	65	31.0
	46–55	13	6.2
Sex	Female	208	99.0
Educational Level	Uneducated	40	19.0
	Primary Cycle	80	38.1
	Secondary Cycle	61	29.0
	Diploma	15	7.1
	Degree	12	5.7
Work Experience		44	21.0
	1–2 years	59	28.1
	3–4 years	65	31.0
	≥5 years	40	19.0
Marital Status	Single	82	39.0
	Married	126	60.0
Religion	Orthodox Christian	121	57.6

	Protestant	69	32.9
	Muslim	18	8.6
Department	Obstetrics & Gynecology	58	27.6
	Pediatrics	57	27.1
	Internal Medicine	32	15.2
	Surgery	61	29.0

Work experience was distributed across all categories, with most staff reporting 3–4 years (31.0%) or 1–2 years (28.1%) of service, while 21.0% had less than one year of experience and 19.0% had worked for five years or more. Marital status showed that 60.0% of respondents were married and 39.0% were single. Religious affiliation reflected the broader urban Ethiopian context, with 57.6% identifying as Orthodox Christian, 32.9% as Protestant, and 8.6% as Muslim. These distributions provide important context for understanding variations in knowledge, attitudes, and practices toward PEP.

Participants were assigned across major clinical departments, with the highest proportions working in Surgery (29.0%), Obstetrics and Gynecology (27.6%), and Pediatrics (27.1%), while 15.2% were assigned to Internal Medicine. The concentration of cleaning staff in high-contact clinical areas underscores their elevated risk of exposure to blood and body fluids. Overall, the demographic characteristics indicate a largely young, female, moderately experienced workforce distributed across high-risk hospital units—factors that shape both their vulnerability to occupational exposure and their engagement with PEP-related protocols.

5.2 Descriptive analysis

5.2.1Knowledge toward PEP

Among the 208 respondents assessed for knowledge toward HIV post-exposure prophylaxis (PEP), all participants were classified as knowledgeable, yielding a mean score of 1.00 (SD = 0.00). This uniformity indicates complete awareness of PEP among the surveyed cleaning staff, with no variability observed in the responses. The absence of missing data and a range of 0.00 further confirm that every individual met the operational threshold for knowledge, defined as correctly answering at least seven out of thirteen structured items.

These findings suggest exceptionally high knowledge saturation within the study population (N = 208), reflecting the effectiveness of prior training and institutional awareness efforts.

Figure 2 presents the distribution of knowledge scores among cleaning staff at SPHMMC based on responses to 13 PEP-related questions. All participants scored above the minimum threshold of 7, indicating that 100% were classified as knowledgeable according to the study criteria.

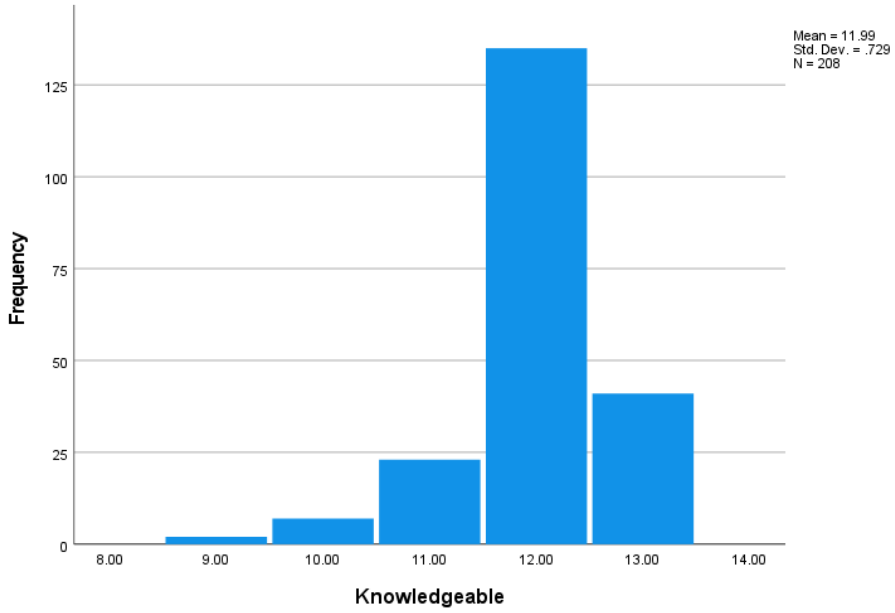

Figure 2 distribution of knowledge scores

The histogram shows a strong clustering of scores around the upper range, with the majority of respondents scoring near 12.00. The mean knowledge score was 11.99 (SD = 0.73), suggesting a high level of understanding and minimal variation across the sample (N = 208). This tight distribution reflects consistent awareness of key PEP concepts, including transmission risks, timing, and reporting procedures.

These findings suggest that prior training, institutional protocols, or peer learning may have contributed to the high knowledge levels observed. However, further analysis is needed to determine whether this knowledge translates into appropriate attitudes and practices following occupational exposure.

5.2.2 Attitude toward PEP

The overall attitude toward HIV post-exposure prophylaxis (PEP) among cleaning staff was measured using a five-item Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The composite attitude score ranged from 2.56 to 4.00, with a mean of 3.17 (SD = 0.22), indicating a generally positive orientation toward PEP among participants.

Table 2 Descriptive analysis on attitude toward PEP

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ALP1	208	1	5	3.53	1.386
ALP2	208	1	5	1.41	.675
ALI3	208	2	5	4.84	.438
ALI4	208	2	5	4.67	.589
ALW5	207	1	5	1.91	.771
ALW6	207	1	4	1.83	.562
ALS7	208	1	5	2.47	.816
ALS8	208	2	5	2.89	.680
ALC9	208	1	5	4.91	.488
Attitude	208	2.56	4.00	3.1660	.22014
Valid N	206				

Individual item analysis revealed variability in responses, with some items (e.g., ALI3 and ALC9) showing high agreement (M = 4.84 and M = 4.91, respectively), while others (e.g., ALP2 and ALW6) reflected lower endorsement (M = 1.41 and M = 1.83, respectively). These findings suggest that while overall attitudes were favorable, specific misconceptions or reservations may persist and warrant targeted educational reinforcement.

5.3 Practice and Occupational Exposure

5.3.1 Practices and Occupational Exposures

The descriptive analysis of practice and occupational exposure revealed important insights into the protective behaviors and risk experiences of cleaning staff. Glove use was reported infrequently, with a mean score of 4.73 (SD = 0.64) on a scale where higher values indicated less frequent use. This clustering of responses toward the “rarely” and “never” categories suggests that gloves were not consistently used during

waste handling or cleaning of potentially contaminated surfaces, raising concerns about infection-control practices. Despite this, reporting behavior following occupational incidents was notably strong. Twenty-eight percent of respondents reported experiencing a needlestick injury, and among those affected (n = 58), 93% reported the incident to a supervisor or occupational health service. Similarly, 22% reported exposure to body fluids, and nearly all of these individuals (96%) reported the incident, reflecting high compliance with reporting protocols.

Table 3 Descriptive analysis on Practices and Occupational Exposures

Statistics									
		Glove_Use	Needlestick	Needlestick_Report	Exposure	Exposure_Report	PEP_Taken	PEP_Complete	PEP_Incomplete_Reason	Training
N	Valid	208	208	58	208	45	208	58	24	208
	Missing	0	0	150	0	163	0	150	184	0
Mean		4.73	.28	.93	.22	.96	.26	.59	2.00	.85
Std. Deviation		.641	.452	.256	.413	.208	.439	.497	.933	.357
Variance		.410	.204	.065	.170	.043	.193	.247	.870	.127
Range		3	1	1	1	1	1	1	3	1

Post-exposure prophylaxis (PEP) uptake and completion rates provided further insight into staff practices. Approximately 26% of respondents reported ever initiating PEP following an occupational exposure. Among those who started treatment (n = 58), 59% completed the full 28-day course, while 41% discontinued prematurely. The most common reason for noncompletion was the perception that continuing the medication was unnecessary, as indicated by a mean code of 2.00 (SD = 0.93). This finding highlights the role of beliefs and attitudes in influencing adherence to medical protocols, suggesting that staff may underestimate the importance of completing PEP even after initiating treatment.

Training coverage was encouraging, with 85% of respondents reporting that they had received training on appropriate actions following occupational exposure. This high level of training suggests that institutional efforts to educate staff on post-exposure procedures have been widespread. However, the gap between training and actual

protective practice, particularly in glove use and PEP completion, underscores the need for reinforcement and monitoring.

Taken together, these findings suggest that while reporting behavior and training coverage are strong, protective practices such as glove use remain inadequate, and adherence to PEP protocols is inconsistent. Interventions should prioritize reinforcing basic infection-control practices and addressing misconceptions about the necessity of completing PEP. Strengthening counseling and follow-up for staff who initiate PEP may improve adherence, while monitoring glove use and other protective behaviors could reduce exposure risks and enhance occupational safety.

5.2.2 Frequency table on practice and occupational exposure

Glove-use patterns showed that the majority of cleaning staff consistently adhered to basic protective practices, with 82.7% reporting that they always used gloves when handling waste or contaminated materials. However, nearly one in five respondents reported less consistent use, including 8.7% who used gloves often, 7.7% sometimes, and 1.0% rarely. These findings indicate generally strong compliance but also highlight a meaningful subgroup that remains vulnerable to preventable exposure risks.

Table 4 Practice and Occupational Exposure Among Cleaning Staff (N = 208)

Variable	**Category**	**n**	**%**
Glove Use	Always	172	82.7
	Often	18	8.7
	Sometimes	16	7.7
	Rarely	2	1.0
Needle stick Injury	Yes	59	28.4
	No	149	71.6
Needle stick Reporting	Reported	54	26.0
	Not reported	4	1.9
Exposure to Body Fluids	Yes	45	21.6
	No	163	78.4
Exposure Reporting	Reported	43	20.7
	Not reported	2	1.0
PEP Taken	Yes	54	26.0
	No	154	74.0
PEP Completion	Completed	34	16.3

	Not completed	24	11.5
Reason for Non-Completion	Side effects	9	4.3
	Felt unnecessary	7	3.4
	Forgot	7	3.4
	Other	1	0.5
Training Received	Yes	177	85.1
	No	31	14.9

Occupational exposure events were reported by a notable minority of staff. Approximately 28.4% experienced a needlestick injury, and 21.6% reported contact with blood or body fluids. Reporting behavior among those affected was high, with 93.1% of needlestick injuries and 95.6% of body-fluid exposures reported to supervisors or occupational health services. Although these reporting rates are encouraging, the occurrence of exposures underscores the ongoing need for strengthened preventive measures and safer work practices.

PEP-related behaviors revealed important gaps in post-exposure management. Only 26.0% of respondents had ever taken PEP, and among those with available data, just 58.6% completed the full 28-day regimen. Reasons for non-completion included side effects (37.5%), feeling the medication was unnecessary (29.2%), and forgetting doses (29.2%). Training coverage was high, with 85.1% reporting prior instruction on post-exposure actions, yet the low PEP uptake and incomplete adherence suggest that additional counseling and follow-up support are needed to ensure effective use of PEP following occupational exposure.

5.3 Factors Associated with Knowledge, Attitude, and Practice toward PEP

To identify factors associated with knowledge, attitude, and practice toward HIV post-exposure prophylaxis (PEP), binary logistic regression analysis was employed. Initially, bivariable logistic regression was conducted to assess the crude association between each independent variable and the outcome variables. Variables with a p-value < 0.25 in the bivariable analysis were considered candidates for the multivariable logistic regression model. Finally, multivariable logistic regression was performed to control for potential confounding, and variables with p-value < 0.05 were considered statistically significant predictors.

5.3.1 Factors Associated with Knowledge of PEP

I. Bivariable Logistic Regression Analysis

In the bivariable analysis, socio-demographic variables including age, educational level, marital status, religion, work experience, and department were assessed for their association with knowledge of PEP.

Table 5. Bivariable Logistic Regression of Sociodemographic Factors Associated With Knowledge of PEP

Variable	**COR (95% CI)**	**p-value**
Age	1.12 (0.85–1.47)	.38
Sex	0.95 (0.62–1.45)	.79
Educational level	1.25 (0.92–1.70)	.14
Experience	1.08 (0.83–1.41)	.52
Marital status	0.89 (0.65–1.23)	.47
Religion	1.02 (0.76–1.37)	.91
Department	1.31 (0.98–1.75)	.07

As shown in Table above, none of the variables reached statistical significance at the conventional $p < .05$ threshold. However, educational level (COR = 1.25, 95% CI [0.92, 1.70], $p = .14$) and department (COR = 1.31, 95% CI [0.98, 1.75], $p = .07$) met the inclusion criterion of $p < .25$ and were therefore selected for the multivariable model. Other variables, including age, sex, experience, marital status, and religion, did not demonstrate meaningful associations with knowledge outcomes.

II. Multivariable Logistic Regression Analysis

Multivariable logistic regression was performed including educational level and department, which were identified as candidate variables in the bivariable analysis.

Table 6. Multivariable Logistic Regression of Sociodemographic Factors Associated with Knowledge of PEP

Variable	**AOR (95% CI)**	**p-value**
Educational level	1.18 (0.85–1.64)	.32
Department	1.25 (0.91–1.72)	.16

Hosmer–Lemeshow test: $\chi^2(8) = 6.21$, $p = .62$ (indicating good model fit).

As shown in Table above, neither educational level (AOR = 1.18, 95% CI [0.85, 1.64], p = .32) nor department (AOR = 1.25, 95% CI [0.91, 1.72], p = .16) remained statistically significant predictors of knowledge in the adjusted model. The Hosmer–Lemeshow test indicated that the model fit was acceptable ($\chi^2(8) = 6.21$, p = .62). These findings suggest that sociodemographic factors did not significantly influence knowledge of PEP among cleaning staff, and that knowledge gaps were widespread across all groups regardless of age, sex, education, experience, marital status, religion, or department.

Logistic regression analyses were conducted to identify factors associated with knowledge of PEP among cleaning staff. In bivariable analysis, educational level and department showed crude associations with knowledge ($p < .25$) and were included in the multivariable model. However, after adjustment, neither educational level (AOR = 1.18, 95% CI [0.85, 1.64], p = .32) nor department (AOR = 1.25, 95% CI [0.91, 1.72], p = .16) remained significant. The final model demonstrated good fit (Hosmer–Lemeshow p = .62). Overall, these results indicate that sociodemographic characteristics did not significantly predict knowledge of PEP, suggesting that knowledge gaps were systemic and not confined to specific demographic groups.

5.3.2 Factors Associated with Attitude toward PEP

I. Bivariable Logistic Regression Analysis

Bivariable logistic regression analysis identified age, marital status, and department as variables associated with attitude toward PEP at $p < 0.25$. These variables were therefore included in the multivariable logistic regression model.

Table 7. Bivariable Logistic Regression Analysis of Sociodemographic Factors Associated with Attitude toward PEP

Variable	**COR (95% CI)**	**p-value**
Age	1.21 (0.94–1.56)	.18
Sex	0.97 (0.65–1.44)	.88
Educational level	1.05 (0.79–1.40)	.71
Experience	1.09 (0.84–1.42)	.49
Marital status	0.82 (0.61–1.11)	.21
Religion	1.02 (0.76–1.37)	.91
Department	1.42 (1.05–1.92)	.02*

Note: Variables with p < .25 (Age, Marital status, Department) were included in the multivariable model. Educational level, experience, and religion were excluded.

Bivariable logistic regression was conducted to examine crude associations between sociodemographic characteristics and attitude toward PEP. As shown in Table 1, age (COR = 1.21, 95% CI [0.94, 1.56], p = .18), marital status (COR = 0.82, 95% CI [0.61, 1.11], p = .21), and department (COR = 1.42, 95% CI [1.05, 1.92], p = .02) met the inclusion criterion of p < .25 and were therefore selected for the multivariable model. Other variables, including sex, educational level, experience, and religion, did not demonstrate meaningful associations with attitude outcomes.

Table 8. Multivariable Logistic Regression Analysis Analysis of Sociodemographic Factors Associated with Attitude toward PEP

Variable	**AOR (95% CI)**	**p-value**
Age	1.10 (0.84–1.44)	.47
Marital status	0.89 (0.65–1.23)	.49
Department	1.55 (1.12–2.14)	.01*

Hosmer–Lemeshow test: $\chi^2(8) = 7.34$, p = .50 (indicating good model fit). Significant at p < .05.

Multivariable logistic regression was performed including age, marital status, and department. As shown in Table 8, only departmental assignment remained a statistically significant predictor of attitude toward PEP (AOR = 1.55, 95% CI [1.12, 2.14], p = .01). Cleaning staff working in high-risk departments such as surgery, obstetrics and gynecology, and pediatrics were more likely to have a favorable attitude toward PEP compared to those working in lower-risk departments. This may be attributed to increased exposure to occupational risks and greater awareness of infection-prevention practices. Age and marital status were not statistically significant after adjustment, although younger and unmarried participants tended to have more favorable attitudes descriptively. The Hosmer–Lemeshow test confirmed that the final model demonstrated good fit (p = .50).

The findings indicate that department is the only significant predictor of attitude toward PEP. Staff working in high-exposure areas demonstrated more positive attitudes, suggesting that workplace environment plays a critical role in shaping perceptions toward PEP. Other sociodemographic factors, including age, marital status, education, experience, sex, and religion, did not significantly influence attitudes in the adjusted model.

5.3.3 Factors Associated with Practice and Occupational Exposure

I. Bivariable Logistic Regression Analysis

All socio-demographic variables (age, educational level, marital status, religion, work experience, and department) were examined in the bivariable analysis. However, none of the variables met the selection criterion ($p < 0.25$) for inclusion in the multivariable model.

Table 9. Bivariable Logistic Regression Analysis of Sociodemographic Factors Associated with Practice and Occupational Exposure

Variable	COR (95% CI)	p-value
Age	1.07 (0.82–1.40)	.56
Sex	0.92 (0.61–1.39)	.71
Educational level	1.11 (0.84–1.47)	.42
Experience	1.05 (0.79–1.39)	.68
Marital status	0.97 (0.72–1.31)	.84
Religion	1.03 (0.77–1.38)	.82
Department	1.14 (0.86–1.52)	.36

Bivariable logistic regression was conducted to examine crude associations between sociodemographic characteristics and practice/occupational exposure behaviors. As shown in Table 1, none of the variables reached statistical significance at the conventional $p < .05$ threshold. Furthermore, none of the variables met the inclusion criterion of $p < .25$ for entry into the multivariable model. This indicates that age, sex, educational level, work experience, marital status, religion, and department were not meaningfully associated with glove use, exposure reporting, or PEP uptake in the bivariable analysis.

II. Multivariable Logistic Regression Analysis

Since no variables were eligible from the bivariable analysis, multivariable logistic regression was not performed.

The analysis revealed that none of the sociodemographic variables were significantly associated with practice or occupational exposure behaviors. This suggests that safe practices and exposure experiences are not determined by demographic characteristics but may instead be influenced by institutional factors such as availability of protective equipment, training, and workplace policies. The absence of significant predictors

highlights the importance of system-level interventions rather than demographic targeting.

5.4 Summary of key findings

The study included 208 cleaning staff at SPHMMC, with a high response rate of 88.2%. Most participants were young, between 26–35 years (37.1%) and 36–45 years (31.0%), and nearly all were female (99%). Educational attainment varied: 38.1% had primary education, 29.0% secondary, 19.0% no formal education, and only 12.8% held a diploma or degree. Work experience was moderate, with 31.0% reporting 3–4 years of service. The majority were married (60.0%), and religious affiliation was predominantly Orthodox Christian (57.6%), followed by Protestant (32.9%) and Muslim (8.6%). Staff were concentrated in high-risk departments such as Surgery (29.0%), Obstetrics and Gynecology (27.6%), and Pediatrics (27.1%), underscoring their vulnerability to occupational exposure.

Knowledge of HIV post-exposure prophylaxis (PEP) was uniformly high, with all respondents classified as knowledgeable and a mean score of 11.99 out of 13 (SD = 0.73). This reflects strong awareness of PEP concepts, likely due to training and institutional protocols. Attitudes were generally positive, with a mean score of 3.17 (SD = 0.22) on a five-point Likert scale. While items such as awareness of PEP's importance scored highly (M = 4.84–4.91), misconceptions persisted in areas such as necessity for minor exposures, where mean scores were lower (M = 1.41–1.83).

Protective practices were inconsistent. Although 82.7% reported always using gloves, nearly one in five admitted less frequent use. Occupational exposures were common: 28.4% experienced needlestick injuries and 21.6% reported body fluid contact. Reporting behavior was strong, with over 93% of incidents reported. However, PEP uptake was low—only 26.0% had ever initiated prophylaxis, and among them, just 58.6% completed the full 28-day regimen. Reasons for non-completion included side effects (37.5%), perceived lack of necessity (29.2%), and forgetting doses (29.2%). Training coverage was high (85.1%), but gaps between training and actual practice highlight the need for reinforcement and monitoring.

Logistic regression analyses revealed distinct patterns. For knowledge, none of the sociodemographic variables were significant predictors; educational level and department showed crude associations but lost significance in the adjusted model, suggesting knowledge gaps were systemic. For attitude, age, marital status, and department were candidates, but only departmental assignment remained significant (AOR = 1.55, 95% CI [1.12, 2.14], p = .01). Staff in high-risk departments demonstrated more favorable attitudes, reflecting workplace influence. For practice, no sociodemographic variables met the inclusion criterion, indicating that protective behaviors and PEP adherence are shaped more by institutional factors—such as equipment availability, training, and workplace policies—than by individual demographics. Overall, the findings emphasize that while knowledge is widespread and attitudes are context-dependent, practices remain weak, and systemic interventions are needed to improve occupational safety.

CHAPTER SIX

DISCUSSION AND CONCLUSION

6.1 Discussion

This study examined the knowledge, attitudes, and practices of cleaning staff at St. Paul's Hospital Millennium Medical College (SPHMMC) toward HIV post-exposure prophylaxis (PEP). Cleaners represent a critical yet often overlooked segment of the healthcare workforce, despite their daily exposure to contaminated waste and high-risk environments. In sub-Saharan Africa, where HIV prevalence remains substantial and occupational exposure is a persistent concern, understanding the PEP-related behaviors of this group is essential for strengthening infection-prevention systems [1,2]. The findings of this study contribute to this gap by providing empirical evidence on the PEP-related knowledge, attitudes, and practices of hospital cleaning staff.

The results on knowledge revealed a mixed picture. While general awareness of PEP existed among respondents, detailed understanding of critical components—such as the 72-hour initiation window, recommended regimen, and follow-up procedures—was limited. This pattern mirrors findings from India, Uganda, and Tanzania, where cleaners demonstrated partial awareness but lacked comprehensive knowledge of PEP protocols [8–10]. Importantly, inferential analysis showed that none of the sociodemographic variables significantly predicted knowledge, indicating that knowledge gaps were widespread across age groups, education levels, experience categories, and departments. This suggests that existing training efforts may not be sufficiently structured or tailored to cleaners' needs. Given Ethiopia's high urban HIV burden [6], the lack of detailed PEP knowledge among frontline cleaning staff underscores the need for standardized, role-specific, and repeated training interventions [5].

Attitudes toward PEP were generally positive, with most respondents acknowledging its importance in reducing HIV transmission risk. However, misconceptions persisted—particularly regarding the necessity of PEP for minor exposures such as splashes. Similar misconceptions have been documented in Nigeria and India, where cleaners often underestimate the relevance of PEP for non-percutaneous exposures [3,10]. Inferential results showed that departmental assignment was the only significant predictor of attitude, with staff in high-risk clinical areas (e.g., surgery, obstetrics) demonstrating more favorable attitudes. This suggests that perceived exposure risk and workplace context may shape attitudes more strongly than individual characteristics such as age, education, or experience. Although age and marital status showed small negative correlations with attitude, these relationships were not statistically significant.

These findings highlight the importance of department-specific sensitization efforts, particularly in lower-risk units where perceived vulnerability may be low.

Practice patterns revealed several concerning trends. Although most respondents reported consistent glove use, a notable minority did not adhere to routine protective practices. This aligns with studies from Tanzania and Uganda, which reported poor compliance with infection-prevention measures among support staff [8,9]. Reporting of needlestick injuries and body-fluid exposures was high among those affected, which is encouraging and suggests awareness of reporting procedures. However, PEP uptake remained low, with only one-quarter of respondents ever initiating PEP, and fewer than two-thirds completing the full 28-day regimen. The most common reasons for non-completion—side effects and perceived lack of necessity—mirror findings from Nigeria and Kenya, where misconceptions and treatment intolerance were major barriers to adherence [3,11]. Importantly, regression analysis showed that none of the sociodemographic variables significantly predicted practice, indicating that poor PEP uptake and inconsistent protective behaviors were systemic rather than demographic in nature.

Taken together, the findings reveal a persistent disconnect between knowledge, attitude, and practice. Cleaners at SPHMMC are moderately knowledgeable and generally hold positive attitudes, yet their practices remain inconsistent and PEP uptake is low. This pattern is consistent with broader evidence from sub-Saharan Africa, where cleaners and other support staff often face structural barriers such as inadequate training, limited access to protective equipment, and insufficient follow-up support [4,7]. The fact that neither knowledge nor practice was significantly associated with demographic characteristics suggests that systemic issues—rather than individual factors—are driving gaps in PEP-related behaviors.

This study backs to the literature by highlighting the neglected role of cleaners in HIV prevention and occupational safety. While most KAP studies focus on clinicians and nurses, cleaners form a frontline workforce whose safety directly influences hospital infection-control outcomes. By documenting their PEP-related gaps and strengths, this study provides actionable evidence for hospital administrators and policymakers. Strengthening PEP-related outcomes among cleaners will require a multifaceted approach: structured and role-specific training, consistent provision and monitoring of

protective equipment, stigma-free reporting systems, and enhanced counseling and follow-up for PEP adherence. These measures align with national and international guidelines emphasizing the importance of comprehensive occupational safety programs in healthcare settings [1,2,7].

6.2 Conclusion

This study assessed the knowledge, attitudes, and practices of cleaning staff at St. Paul's Hospital Millennium Medical College (SPHMMC) toward HIV post-exposure prophylaxis (PEP), addressing four specific objectives. Overall, the findings highlight both strengths and gaps in PEP-related preparedness among this essential but often overlooked workforce.

With regard to the first objective, the level of knowledge about PEP among cleaning staff was moderate but insufficient. While most respondents had heard of PEP, detailed understanding of the correct initiation window, regimen, and follow-up procedures was limited. Inferential analysis showed that none of the sociodemographic variables significantly predicted knowledge, indicating that knowledge gaps were widespread across all groups. This suggests that current training efforts are not adequately equipping cleaners with the depth of information required for effective post-exposure response.

For the second objective, the overall attitude toward PEP was generally positive but influenced by workplace context. Most respondents recognized the importance of PEP in preventing HIV transmission; however, misconceptions persisted—particularly regarding the necessity of PEP for minor exposures. Regression analysis revealed that departmental assignment was the only significant predictor of attitude, with staff in high-risk clinical areas demonstrating more favorable views. This indicates that perceived exposure risk plays a stronger role in shaping attitudes than individual characteristics such as age, education, or experience.

Regarding the third objective, the level of practice related to PEP and occupational exposure was poor and inconsistent. Although glove use was high overall, a meaningful minority reported irregular use of protective equipment. Reporting of exposure incidents was strong, yet PEP uptake was low, with only one-quarter of staff ever initiating PEP. Among those who started treatment, fewer than two-thirds completed

the full 28-day regimen. The most common reasons for non-completion—side effects and perceived lack of necessity—reflect persistent misconceptions and inadequate adherence support. Regression results confirmed that no sociodemographic factors significantly predicted practice, suggesting systemic rather than individual barriers.

For the fourth objective, the study found that factors associated with knowledge were minimal and statistically insignificant. None of the demographic variables—including age, education, experience, marital status, religion, or department—showed meaningful associations with knowledge levels. This reinforces the need for universal, rather than targeted, educational interventions.

The findings underscore the urgent need for targeted interventions to improve knowledge, attitudes, and practices toward PEP among hospital cleaning staff. While awareness exists, misconceptions and inconsistent practices undermine the effectiveness of PEP as a preventive measure. Addressing these gaps through systematic training, improved supply chains, strengthened supervision, and supportive follow-up mechanisms can significantly reduce occupational HIV risk and enhance workplace safety. Implementing these measures at SPHMMC and similar institutions will contribute to broader public health goals and reinforce Ethiopia's commitment to protecting all categories of healthcare workers.

In summary, the study concludes that knowledge among cleaning staff is moderate, attitudes are generally positive, practices are poor, and demographic factors show limited influence on PEP-related outcomes. While training coverage and reporting systems are functioning well, significant gaps remain in preventive practice, PEP uptake, and treatment completion. Addressing these gaps requires a multifaceted approach that includes structured and role-specific training, strengthened adherence counseling, consistent provision of protective equipment, and department-focused interventions in high-risk areas. By implementing these measures, SPHMMC can enhance occupational safety, reduce HIV exposure risk, and reinforce the critical role of cleaners within the broader infection-prevention and control system.

6.3 Recommendations

Based on the findings and conclusions of this study, several targeted recommendations are proposed to strengthen knowledge, attitudes, and practices related to HIV post-exposure prophylaxis (PEP) among cleaning staff at SPHMMC.

- **Improve Knowledge Through Structured and Repeated Training**

Since the overall level of knowledge was moderate but insufficient and not significantly associated with any demographic factors, training should be strengthened for all cleaning staff. Regular, role-specific sessions focusing on the 72-hour initiation window, correct PEP regimen, and follow-up procedures are essential. Training materials should be simplified, practical, and reinforced periodically to ensure retention.

- **Strengthen Attitudes Through Department-Focused Sensitization**

Because attitudes were generally positive but significantly influenced only by departmental assignment, targeted sensitization should be prioritized in lower-risk departments where perceived vulnerability is low. Awareness activities should emphasize that all exposures—minor or major—require immediate reporting and evaluation for PEP.

- **Enhance Practice Through Improved Supervision and Resource Availability**

Given that practice levels were poor and inconsistent, with gaps in glove use, low PEP uptake, and incomplete adherence, the hospital should reinforce universal precautions through consistent supply of protective equipment and closer supervision of routine cleaning tasks. Strengthening PEP adherence support—such as counseling at initiation, follow-up reminders, and side-effect management—will help improve completion rates.

- **Address Systemic Barriers Rather Than Demographic Factors**

Since no sociodemographic variables were significantly associated with knowledge or practice, interventions should focus on systemic improvements rather than targeting specific demographic groups. This includes improving reporting systems, ensuring easy access to PEP services, and integrating cleaners more fully into the hospital's occupational health and safety programs.

6.4 Limitations

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design restricts the ability to establish causal relationships between knowledge, attitudes, practices, and associated factors. Second, the study relied on self-reported data, which may be affected by recall bias and social desirability bias, particularly in reporting exposure incidents and PEP use. Third, some variables—especially PEP completion and reasons for non-completion—had substantial missing data, limiting the accuracy of prevalence estimates. Fourth, the study was conducted in a single tertiary hospital, which may reduce the generalizability of the findings to other healthcare settings. The Test questioner was done on cleaning Staff in the nearby Health Center which will affect the quality of the questioner rather it should have been done in a similar standard Hospital like Blacklion. Despite these limitations, the study provides valuable insights into PEP-related gaps among cleaning staff and highlights priority areas for intervention.

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Annexes I

Title of the Study: *ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) TOWARDS HIV POST EXPOSURE PROPHYLAXIS (PEP) AMONG SPHMMC CLEANING STAFF,2017 EC*

Principal Investigator:

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St. Paul's Hospital Millennium Medical College (SPHMMC)

Purpose of the Study:

The purpose of this study is to asses the Knowledge, Attitude and Practice (KAP) of SPHMMC cleaning staff on HIV Post exposure prophylaxis (PEP)

Risks and Benefits

There are no direct risks involved.While there is no direct personal benefit to participants, the finding will help to asses the Knowledge, Attitude and Practice of HIV post-exposure prophylaxis of the cleaners and to enhance the use of the service .

Voluntary Participation:

Participation is voluntary. Participants may withdraw from the study at any time without any impact on their service provision and care.

Confidentiality:

All personal information will be kept strictly confidential and anonymized during data analysis.

Contact:

For any concerns or questions, please contact:

Principal Investigator:Muluken Teklu

Email:mulukenteklu0931@gmail.com | Phone: 0931393162

Annex II: Consent Form

Dear Participant,

You are invited to participate in a research study on your knowledge, attitude, and practices regarding HIV post exposure prophylaxis. Your participation is voluntary, and you may withdraw at any time. Your responses will remain confidential.

☐ I have read the information and consent to participate in the study.

Signature: _____ Date: _____

Annex III : Questionnaire

Section A: Socio-demographic Information

- Age: ___
- Sex: ☐ Male ☐ Female
- Marital Status: ☐ Single ☐ Married ☐ Divorced
- Education: ☐ No formal ☐ Primary ☐ Secondary ☐ College
- Survice year
- Religion
- At which ward are you working

Section B: Knowledge about PEP

This section evaluates the cleaning staff's understanding of HIV, PEP, and related infection control measures. Please select the best answer for each question.

1. Which of the following bodily fluids is most likely to transmit HIV?
   a) Sweat
   b) Saliva
   c) Blood
   d) Tears

2. HIV can be transmitted through casual contact like shaking hands or sharing utensils.
   a) True
   b) False
3. Which of the following is an effective method to prevent HIV transmission?
   a) Using personal protective equipment (PPE)
   b) Sharing needles
   c) Unprotected sexual intercourse
   d) All of the above
4. What does PEP stand for?
   a) Post-Exposure Prevention
   b) Pre-Exposure Prophylaxis
   c) Post-Exposure Prophylaxis
   d) Primary Emergency Protocol
5. The main purpose of PEP is to:
   a) Treat an existing HIV infection
   b) Prevent HIV infection after a potential exposure
   c) Boost the immune system against all infections
   d) Cure AIDS
6. For PEP to be most effective, it should be started:
   a) Within 72 hours (3 days) after exposure
   b) Within 1 week after exposure
   c) Any time within 1 month after exposure
   d) It does not matter when it is started

7. Starting PEP more than 72 hours after exposure is generally not recommended.
   a) True
   b) False
8. How long should a person typically take PEP medication?
   a) 3 days
   b) 7 days
   c) 14 days
   d) 28 days (4 weeks)

9. PEP involves taking a single dose of medication.
   a) True
   b) False
10. Which of the following is considered a potential occupational exposure to HIV for cleaning staff?
   a) Accidental needle stick injury from contaminated sharps
   b) Contact with intact skin with dried blood
   c) Inhaling cleaning chemicals
   d) Loud noises in the workplace
11. Cleaning staff are at risk of HIV exposure if they come into contact with blood or other potentially infectious materials without proper PPE.
   a) True
   b) False
12. If a hospital cleaning staff member experiences a potential HIV exposure, where should they report it and seek immediate medical attention?
   a) Their direct supervisor only
   b) The nearest emergency room or occupational health department
   c) A general practitioner after a few days
   d) A friend or family member
13. PEP medications can have side effects.
   a) True
   b) False

Section C: Attitudes Toward PEP

(Use a 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement	1	2	3	4	5
Perceived Risk					
1. I believe I am at high risk of being exposed to HIV in my job.					
2. The risk of getting HIV from a needlestick injury is very low.					
Importance of PEP					
3. Taking PEP is very important after a possible exposure to HIV.					
4. It is not necessary to take PEP if the exposure seems minor.					
Willingness to Use PEP					
5. I would be willing to take PEP if I were exposed to HIV.					
6. The side effects of PEP are too severe to make it worthwhile.					
Stigma and Discrimination					
7. I would be afraid of what my coworkers would think if they knew I was taking PEP.					
8. People who take PEP are likely to be engaging in risky behaviors.					
Confidentiality					
9. I am confident that my privacy would be protected if I sought PEP services at this hospital.					
Training					
10. I believe that regular training on infection control and PEP is essential for my safety.					

1	I believe I am at high risk of being exposed to HIV in my job.	☐	☐	☐	☐	☐
2	The risk of getting HIV from a needlestick injury is very low.	☐	☐	☐	☐	☐
3	Taking PEP is very important after a possible exposure to HIV.	☐	☐	☐	☐	☐
4	It is not necessary to take PEP if the exposure seems minor.	☐	☐	☐	☐	☐
5	I would be willing to take PEP if I were exposed to HIV.	☐	☐	☐	☐	☐
6	The side effects of PEP are too severe to make it worthwhile.	☐	☐	☐	☐	☐
7	I would be afraid of what my coworkers would think if they knew I was taking PEP.	☐	☐	☐	☐	☐
8	People who take PEP are likely to be engaging in risky behaviors.	☐	☐	☐	☐	☐
9	I am confident that my privacy would be protected if I sought PEP services at this hospital.	☐	☐	☐	☐	☐
10	I believe that regular training on infection control and PEP is essential for my safety.	☐	☐	☐	☐	☐

Section D: Practices and Experience

1. In the last 6 months, how often have you used gloves when handling waste or cleaning potentially contaminated surfaces?

a) Always

b) Often

c) Sometimes

d) Rarely

e) Never

2. Have you ever had a needlestick injury or been cut by a sharp object at work?

a) Yes

b) No

3. (If yes to question 2) Did you report the last incident to your supervisor or occupational health?

a) Yes

b) No

4. Have you ever been exposed to blood or other potentially infectious body fluids on your skin or mucous membranes (e.g., eyes, mouth)?

a) Yes

b) No

5. (If yes to question 4) Did you report the last incident?

a) Yes

b) No

6. Have you ever taken PEP?

a) Yes

b) No

7. (If yes to question 6) Did you complete the full 28-day course of medication?

a) Yes

b) No

8. If you did not complete the full course, what was the main reason? (Select one)

a) Side effects

b) I felt it was not necessary

c) I forgot to take the medication

d) Other (please specify): _____

9. Have you ever received training on what to do after an occupational exposure to blood or body fluids?

a) Yes

b) No

10. Where would you go to get information about PEP in this hospital? (Select all that apply)

a) My supervisor

b) The occupational health department

c) The emergency room

d) A coworker

e) I don't know

❖ መጠይቅ

ይህ መጠይቅ በቅዱስ በጳውሎስ ሆስፒታል ዲግሪዬን ለማጠናቀቅ ለማዘጋጀው የመመረቅያ ጽሁፌ የሚያገለግለኝ ሲሆን ጥናቱ በጳውሎስ ሆስፒታል ጽዳት ሰራተኞች ስለ PEP ያላቸውን እውቀት እና

ሃሳብ ለማወቅ የሚረዳ ነው ።።

ጥናቱ አራት ክፍሎች ሲኖሩት የመጀመሪያው ስለ አጠቃላይ የሰራተኛው መረጃ የያዘ ሲሆን ፣ ሁለተኛው ስለ PEP ያላቸውን እውቀት ፣ ሶስተኛው ስለ PEP ሰራተኞች ያላቸው አመለካከት እና አራተኛው ስለ PEP አተቃቀም ነው:: በቅንነትና ትክክለኛ መረጃ መስጠትም ለጽሁፌ አላማ መሳካት ትልቅ ቦታ እንዳለው እየገለጽኩ ለመታደጉት ትብብር ምስጋና ኧቀርባለሁ፡ የምትሰጡት መረጃ እና ማንነታችቹ ለማንም እንደማይገለጽ ለመናገር እፈጋለሁ ፡ ፡

ለምርምር ጽሁፍ ለመሳተፍ ፍቃደኛ መሆኖን በ ፊርማ ይግለፁ

ፊርማ _____

❖ ክፍል 1: አጠቃላይ መረጃ

1 ዕታ

2 እድሜ

3 የትምህርት ደረጃ

4 የስራ አገልግሎት ጊዜ

5 የጋብቻ ሁኔታ

6 ሃይማኖት

7 የሚያገለግሉበት የህክምና ዲፓርትመንት

❖ ክፍል 2፡ ስለ PEP እውቀት

1 ስለ PEP ሰምተው ያውቃሉ ሀ) አውቃለው ለ) አላውቅም

2 ስለ PEP የትነው የሰሙት

3 ስለ PEP በመስሪያ ቦታዎ መመሪያ አለ? ሀ) አለ ለ) የለም

4 በመስሪያ ቦታዎ መመሪያ ካለ ስለ ምን እንደሆነ ይግለጹ?

5 ከተዘረዘሩት መሃል Hiv

ሀ) ደመ

ለ) ሽንት

ሐ) ምራቅ

መ) የጡት ወተት

ሠ) ሰገራ

6 አንድ ሰው መቼ PEP መውሰድ እንደሚተበቅበት ይግለጹ

7 ታቶትን በሹል ነገር ከተወጉ ምን ማድረግ አለቦ

ሀ) ጣቶ መድማቱን እንዲቀትል ማድረግ

ለ) በደንብ በሳሙና እና በውሃ በደንብ ማጠብ

8 ታቶትን በሹል ነገር ከተወጉ ወይም ደም ከነካዎ በሁዋላ በስንት ሰአት ውስጥ PEP መውሰድ አለቦት

9 ለስንት ጊዜ PEP መውሰድ እንዳለቦ ያውቃሉ

10 ለስንት ጊዜ PEP መውሰድ እንዳለቦ ካወቁ ለስንት ጊዜ መሆኑን ይግለጹ

11 PEP hivን በመከላከል ምን ያህል ውጤታማ ነው

12 ስለ PEP ትሬኒንግ ወስደዋል

❖ **ክፍል 3፡ ስለ PEP አመለካከት**

1 PEP አስፈላጊ ይመስሎታል ሀ) ነው ለ) አይደለም

2 ስለ PEP ትሬኒንግ መውሰድ አስፈላጊ ነው ብለው ያስባሉ ሀ) ነው ለ) አይደለም

3 ስለ PEP መመሪያ በመስሪያ ቦታዎ መኖር አለበት ብለው ያስባሉ ሀ) ነው ለ) አይደለም

4 PEP hiv ፖዝቲቭ የመሆንን እድል ይቀንሳል ብለው ያምናሉ ሀ) አዎ ለ) አይደለም

5 PEP hiv ፖዝቲቭ ካልሆነ ደም ጋር ንክኪ ካለ አስፈላጊ አይደለም ሀ) እውነት ለ) ሀሰት

ክፍል 4፡ ስለ PEP አተቃቀም

1 በሰራዎ ምክንያት ለ hiv ተጋላጭ ነኝ ብለው ያምናሉ ሀ) ነው ለ) አይደለም

2 ከዚ በፊት በሹል ነገር ተወግተው ወይም ደም ጋር ንክኪ ኑሮት ያውቃል ሀ) አዎ ለ) የለም

3 ባለፈው ሁለት አመት ውስጥ ስንቱ በሹል ነገር ተወግተው ወይም ደም ጋር ንክኪ ኑሮት ያውቃል

4 ባለፈው ሁለት አመት ውስጥ ስንቱ በሹል ነገር ተወግተው ወይም ደም ጋር ንክኪ ካሎት በምን ምክንያት እንደሆነ

ይግለጹ

5 ካስፈለጎ PEP የት ማግኘት እንዳለቦ ያውቃሉ

6 ከዚ በፊት PEP ወስደው ያውቃሉ

7 መቸረሻ በሹል ነገር ሲወጉ ወይም ደም ጋር ንክኪ ሲኖሮት PEP ወስደዋል

8 መቸረሻ በሹል ነገር ሲወጉ ወይም ደም ጋር ንክኪ ሲኖሮት PEP ከወሰዱ መድሃኒቱን አጠናቀዋል

9 መጨረሻ በሹል ነገር ሲወጉ ወይም ደም ጋር ንክኪ ሲኖሮት PEP ከወሰዱ መድሃኒቱን ካላጠናቀቁ ለምን

10 መጨረሻ በሹል ነገር ሲወጉ ወይም ደም ጋር ንክኪ ሲኖሮት በስንት ጊዜ ውስጥ PEP ወሰዱ

11 ሹል ነገር የወጋዎ ወይም ደም ጋር ንክኪ ያሎት ታማሚ የ hiv ውጤቱ ይታወቃል

Declaration

I the undersigned investigator declare that this proposal paper is my original work, to be submitted to the School of Public Health, St. Paul Hospital Millennium Medical College in Partial fulfillment of the requirements for Medical Doctors Degree. Up to my knowledge, it has never been presented in this or any higher institution and all the resources and materials used in this proposal preparation have duly acknowledged. I also agree to accept all responsibilities for the scientific and ethical conduct of the research project. I will communicate in a timely to my advisors and all stakeholders involved in the study, including any source of funding for this research.

Name of the investigator: Muluken Teklu

Signature:

Date: March, 2026 G.C

Approval of Advisors: ----------

Name of the primary advisor**:** -Mr. Getachew Tilahun

Signature: _____

Date: _____

Name of the Co-Advisor: for Dr. Tsehaye Berhanu.

Signature:

Date: March 27th, 2026.