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addition, it is recommended that Individuals exposed to HIV should be evaluated within two hours rather than days and no later than 72 hours, and the PEP should be initiated within 2 hours a er exposure and before testing the exposed person.

In Tanzania, few studies have been conducted to estimate the risk of HIV transmission through blood and body uids among healthcare workers and thus little is known about the exact magnitude of the problem and the use of HIV-PEP is largely undocumented [4,11,12]. e present study was conducted to explore the prevalence of occupational exposures and assess HCW's knowledge about HIV-PEP and its utilization following occupational exposure to such accidents.

De nition of concepts

Percutaneous injury: Refers to a needle stick injury, laceration injury, or any injury that leads to a break in the skin barrier resulting in an exposure to blood or body uid.

Mucocutaneous exposure: Refers to a splash that results in exposure through a break in intact skin or of mucous membranes of the eyes, nose, or mouth.

Occupational exposure: e exposure of body uids by health care personnel *via* percutaneous or mucocutaneous route while performing their work duties.

Post-Exposure Prophylaxis (PEP): Is a short-term antiretroviral treatment to reduce the likelihood of HIV infection a er potential occupational exposure through percutaneous injury or mucocutaneous exposure.

Material & Method

Study area

e study was conducted at St. Francis Referral Hospital (SFRH), which is located in Kilombero district, Morogoro region, south-eastern Tanzania. Ifakara is the headquarters of the Kilombero District administration [13]. According to 2012 census, the population of Kilombero District was 407,880 [14]. In this district, there is one referral hospital, i.e. St. Francis Referral Hospital, two public health centres and 38 private and public dispensaries scattered around the district. e SFRH is located in Ifakara town and is the largest health facility. It serves as the referral hospital for primary healthcare facilities (dispensaries and health centers) within Kilombero and Ulanga districts as well as outside the two districts. e hospital has a total number of 417 sta s and the admission average per month is about 682 patients. e SFRH has clinic for HIV patients which is a cohort of HIV patients from two districts i.e. Kilombero and Ulanga Antiretroviral Cohort (KIULARCO) where about 12,185 people living with HIV have been attending the hospital and receiving HIV care [15].

Study design and population

A cross sectional study was conducted from September 2018 to December 2018. e study involved healthcare workers who were at risk of being exposed to infectious materials like blood, tissue or speci c body uids potentially contaminated with HIV. is includes the clinicians, dental personnel, laboratory personnel, nurses (registered nurses, enrolled nurses and midwives) and medical attendants.

Data collection and sample size

Data was collected using a structured questionnaire that was designed to capture information on health workers' emographic characteristics, incidence of occupational exposure to d blood/body uid *via* percutaneous or mucocutaneous route within 12 months, their knowledge on HIV-PEP and the utilization of the PEP following occupational exposures. e questionnaire was anonymous and self-administered. To ensure the validity, the questionnaire was pretested among een percent of the total sample size (40 HCWs) which was not included in the study. Any ambiguous or unsuitable questions were modi ed. During data collection, HCWs were asked to complete the questionnaire and then return the lled in questionnaires to the researcher. A returned questionnaire was checked for accuracy and completeness and incase of incompleteness or errors the questionnaire was returned to the respondent to make the necessary corrections.

e sample size was estimated to be 270 HCWs, and this was calculated using Naing et al. formula (2006) using a 23% prevalence of HIV-PEP usage among the health workers [16,17].

Data management and analysis

Data cleaning of all returned questionnaires was done through recheck the completeness and consistencies of responses. Data were analyzed using SPSS program Version 20. e descriptive analysis of the data was performed and data are represented in the form of frequencies and percentage in tables as shown in the results section.

Ethical considerations

e permission to conduct this study in Kilombero district was obtained from the District Medical O cer and the Kilombero District Executive Director. A written informed consent was obtained from each HCW prior to participation into the study. To protect identi cation of the study participants, all personal information were used during the analysis and omitted from the nal reports. In addition, the participants were assured of anonymity in the presentation and publication of the data.

Results

Out of two hundred seventy questionnaires administered to HCWs and 254 questionnaires were completed, which is an overall response rate of 94%. e results show showed that most health care workers were females 131 (51.6%) and they aged between 25 to 35 years. Regarding professional rank, most participants were nurses (28.7%), followed by medical attendants (25.6%), medical doctors (18.5%) and laboratory technicians were 13.4% as indicated in Table 1.

Prevalence of occupational exposures and utilization of HIV-PEP

Among 254 HCWs in this study, the majority 181 (71.3%) had experienced occupational exposure to needle stick injury and/or blood/body uids in the past 12 months. In addition, almost half of these (48%) were exposed to both needle stick injuries and blood/body uid whereas 53 (29.3%) were exposed to blood or body uids and 41 (22.7%) had experienced needle prick or sharp objects injuries as shown in Table 2. e most exposed cadre was dentists (all 3 participants) followed by medical attendants (78.5%) and laboratory technicians (73.5%). Regarding the use of HIV-PEP a er occupational exposure, among 181 HCWs who had experienced occupational exposure the majority (75%) did not use HIV-PEP while only 25% received the PEP. Nurses (85%) and medical attendants (80%) were the least likely to use PEP (Table 2).

Health care worker's awareness and knowledge on HIV-PEP

Even though a good number of HCWs (87%) were aware about HIV-PEP, only 57% knew the importance of using HIV-PEP. When

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Almost half of the participants reported the lack of the protective equipment as a major reason for them to be exposed to blood/body fluid, followed by lack of knowledge on standard precautions and high work load. This finding is in accord to a study done in Ethiopia where inconsistent use of gloves and not complying with standard precautions were the main factors associated with occupational exposure. The absence of protective equipment at healthcare facilities puts HCWs at risk of acquiring blood borne infectious diseases.

Concerning the observed low utilization of HIV-PEP among HCWs, reasons such as knowledge on HIV status of the source patient was negative, assumption that HIV status of the source patient was negative, negligence, lack of information about the existence of post-exposure prophylaxis service, fear of confidentiality, fear of stigma and discrimination were chronologically reported by our study participants. These factors were reported previously in studies in Tanzania [22], USA [29] and Ethiopia [30].

Strength and Limitations

This study was conducted in referral hospital located in a rural setting in Tanzania and it serves more than 70% of the general population. The findings obtained from this study may assist health authorities in rural settings in improving utilization of HIV-PEP among HCWs and reducing or eliminating barriers that prevent the usage of HIV-PEP.

The limitation of this study is the fact that as information was self-reported and thus there is a possibility of over reporting or underreporting. Information on exposure was sought for the preceding 12 months and thus might have introduced recall bias among healthcare workers.

Conclusion

Despite high rates of needlestick and blood/body fluids exposures, the uptake of HIV-PEP among HCWs was low. This is a call for action by government and other stakeholders to decrease exposure risks among HCWs so as to minimize occupational hazards resulting to HIV infection and other blood-borne pathogens. Given the low awareness among lower cadres, trainings and awareness creating regarding HIV-PEP guidelines and safety measures, would bring positive changes on utilization of HIV-PEP upon occupational exposure, but also for the HCWs demand for provision of safety and personal protection equipment.

Conflict of Interest

The authors declare that they have no conflict of interest.

Author's Contributions

SMS and BC conceived the study; SMS collected and analyzed the data; BC reviewed the analytical approach and prepared the first draft. All authors revised the manuscript and approved the final manuscript.

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