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Practices towards prevention of tuberculosis among the inmates living with hiv in Kigo prison, Wakiso district. A cross-sectional study.

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ABSTRACT

Background:

The purpose of the study was to assess the practices towards the prevention of tuberculosis among inmates living with HIV in Kigo prison, Wakiso District.

Methodology:

The study was a descriptive cross-sectional study which utilised quantitative methods of data collection, carried out at Kigo prison, Wakiso District. The study population was Inmates living with HIV, and the sample was 30 participants determined using the Yamane formula. The analysis was done in Microsoft Excel and presented in tables and figures.

Results:

50.0% of the respondents were single. 93.3% of respondents cited hand washing as a form of hygiene as the key TB prevention measure. Isolation of TB patients was performed by 86.7% of respondents, 80% of respondents had sufficient ventilation. Adherence to the full treatment regimen was high at 90%, 73.3% of inmates had sputum examined on a regular basis. With regard to integrated health services, two-thirds (66.7%) contended that such services had helped them in a good way to use the TB prevention measures. In terms of other interventions, with respect to screening, it responded adequately with 76.67% responding "yes" to ever having TB screening services from the prison facility, with 23.3% of inmates stating they had not yet participated in TB screening services.

Conclusion:

Common preventive practices included covering coughs, frequent handwashing, avoiding contact with symptomatic inmates, and willingness to undergo repeat screening. TB survivors reported completing treatment. Overcrowding and poor ventilation were noted as major barriers to effective prevention.

Recommendations:

Inmates should take one step further to help in promoting health by keeping clean, part of this is unnecessary, covering mouths when coughing, attending health talks, and encouraging other inmates to present for medical attention when symptoms of TB present.

Keywords: *Preventive practices, Tuberculosis among inmates, TB screening services*
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Background

Various factors account for the high cases of TB among inmates include poor knowledge towards the prevention of different diseases, poor living conditions, and inadequate health care in prisons (Schwitters et al., 2014). Studies have shown that only 1.6% prisoners described the cause of TB as being bacterial, while a wind locally known as *nefas*‘ was frequently mentioned (36.1%), 75% of the prisoners correctly described breath as a mode of TB transmission; 116 (30.7%) did not know any measures for TB prevention and control; and half of the participants did not know that antituberculosis drugs were provided free of charge. Significant predictors of TB knowledge were (Abebe et al., 2019).

In Malaysia, around 93.7% of prison inmates applied good TB prevention practices, their disease preventive practices were at acceptable levels, which implied that existing prison standard operating procedures played an important on instilling these practices, and most inmates had a strong awareness of the importance of hand washing methods, with more than 80% in agreement with the practice. The pattern showed inmates supported the statement for isolating a patient if present with TB. Almost all the responses for sufficient ventilation were in strong agreement, ranging from 66.8% and agreement at 30%. The majority of inmates also supported regular sputum examination with strong agreement around 70%, though did not comply (Kuchewar et al., 2020).

Sub-Saharan Africa, studies showed that including routine voluntary testing for HIV and screening for tuberculosis upon entry to the prisons, reforming the pre-trial detention, Integration of health services into a health package in selected prisons, and task-sharing to include detainees in care provision through peer-educator programmes (Drobniewski et al., 2020). In Eastern Europe and Central Asia, Altice et al. (2016) showed that 6% of all incident

SJ Mircobiology Africa
Vol. 2 No. 11 (2025): November 2025 Issue
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Original Article

tuberculosis cases, and 75% of incident tuberculosis cases in inmates needed comprehensive interventions that reduce incarceration itself and effectively intervene with prisoners to screen, diagnose, and treat HIV and tuberculosis urgently to stem the multiple overlapping epidemics concentrated in prisons

Dianatinasab et al. (2018) carried out a study which showed that two-thirds of the prisoners 68.6% had received previous TB drug therapy (frequently multiple, interrupted courses) and were significantly more likely to adhere to the anti-TB regimens. It also showed that the majority of the prison inmates had received BCG vaccination as a prophylaxis.

In Nigeria, Adesokan et al. (2019) showed that 70% of the inmates had never used TB screening services, 74% had never used any drug to prevent TB infection among HIV. Most respondents, 70%, had never been screened for TB infection, and 50% had a total of 6–10 people residing in their household, which caused overcrowding and made them highly predisposed to TB infection. Although inmates were knowledgeable about some aspects of TB prevention, their practices remained poor and hence needed interventions to improve practices towards the prevention of TB infection. The purpose of the study was to assess the practices towards the prevention of tuberculosis among inmates living with HIV in Kigo prison, Wakiso District.

METHODOLOGY.

Study design and rationale.

A descriptive cross-sectional study design was utilised, which utilised quantitative methods of data collection. Data was analysed using Microsoft Excel.

Study setting and rationale.

The study took place in Kigo Prison, Wakiso District. This health facility is located in Ssabagabo- Makindye, Kyadondo, Wakiso District, Central Region, Uganda.

The prison has an elevation of 1,147 metres. Kigo-Prison is situated near the suburb Munyonyo and the town Kajjansi with geographical coordinates of Latitude 0.19792° or 0° 11' 53" north and Longitude 32.5988° or 32° 35' 56" east.

Kigo Prison houses 1400mates currently, but was meant to house 400 inmates (it is a small prison).

The study area is chosen because it is a small prison meant for a few prisoners, but is overcrowded with thrice the number meant for predisposing the HIV positive inmates to TB.

Study population.

The study targeted all inmates living with HIV in KIGO PRISON attending the prison clinic who were either on ART or not, and consented to participate in the study.

Sample size determination

The sample size was 30 respondents, determined using the Yamane formula.

$$n = \frac{N}{1 + N(e)_2}$$

$$n = \frac{33}{1 + 33(0.05)^2}$$

n=30 Participants Where: n is the sample size, N is the population, e is the margin of error (e=0.05)

Sampling Procedure

The convenience sampling technique was employed, where every inmate living with HIV that the study came across at the prison clinic was informed of the purpose of the study, and those who consented were selected to participate in the study. This sampling procedure was used because it was time and cost-effective to perform, whilst resulting in a range of responses. The study used this procedure until the required sample of 30 respondents was obtained.

Inclusion and Exclusion Criteria

Inclusion Criteria

All inmates living with HIV at Kigo prison who were accessible at the time of data collection, as well as those who consented to take part in the study.

Exclusion criteria

This includes inmates who are HIV negative and those living with HIV but did not consent.

Study variables

Independent variable

Practices towards prevention of tuberculosis among inmates living with HIV in Kigo prison, Wakiso District

Dependent variables

This was the prevention of tuberculosis among inmates living with HIV in Kigo prison, Wakiso District.

Research Instruments

A structured questionnaire consisting of both closed-ended and open-ended questions was used to obtain information because it was easy to fill out, saves time, and has a high chance of getting valid information. The study used an interpreter in case of a language barrier and inability to read and write among the respondents. Questions are formulated according to the specific objectives.

Data collection procedures.

An introduction letter was obtained from the principal of Mildmay Institute of Health Sciences; the letter was taken to the administrator of the prison, requesting to carry out a research study at the facility, who in turn referred the study to the warders in charge of the male inmates and wardress

SJ Mircobiology Africa
Vol. 2 No. 11 (2025): November 2025 Issue
https://doi.org/10.51168/bs809d19
Original Article

in-charge of the females, and sought permission to conduct the research at their
clinic.
The warder/wardress later introduced the study to the other staff and clients available at the prison. After the study approached the participants, greeted them, explained the purpose of the study to them, and had them consent to take part in the study, a questionnaire was given to the participants with the help of the research assistants to be completed.
Data collection was done in 5 days, with a maximum of 6 respondents each day until 30 respondents were obtained, and the study administered questionnaires to be used.

Data Management and Analysis

In the process of data collection, each questionnaire, after being filled out, was checked for completeness and accuracy before leaving the area of study. Filled questionnaires were kept properly in a locker for confidentiality and safety.
The data collected was analysed by entering it in the computer using Microsoft Word and Microsoft Excel, where the data were represented in tables, graphs, pie-charts, and figures.

Quality Assurance (Validity and Reliability)

The integrity of the study was maintained by following established research procedures and closely supervising all stages of data collection.

Validity

To enhance validity, the study utilised well-structured and clearly defined research tools, which were pretested in a comparable environment to verify that they accurately captured the intended information. Experts reviewed the instruments to confirm their appropriateness (face validity). Potential bias was reduced by selecting a sample that reflected the target population.

Reliability

Reliability was strengthened by using uniform data collection methods, checking for consistency between different data collectors, and carrying out a pilot test to improve both the tools and the data collection process.

Ethical considerations

The study obtained a formal letter from the principal Mild May Institute of Health Sciences, which was used to obtain permission and consent from the warders at the cells of the study area. Informed consent was taken by explaining to the participants the purpose of the study and informing them that the study is only for academic purposes, and by providing assurance to individuals that their private information was protected and kept secure. The respondents were reassured of the confidentiality of their information, and their names were not included on the questionnaires, as code numbers were used on the questionnaires.
Autonomy was ensured by informing the participants of their rights to withdraw from the study at any time without any consequences.

RESULT

Table 1: Socio-Demographic Factors of Respondents, n=30

Variable/questions	Options	Frequency	Percentage (%)
1. How old are you?	a) 18-24 years	3	10.0%
	b) 25-32 years	8	26.7%
	c) 33-40 years	13	43.3%
	d) Above 40 years	6	20.0%
2. What is your level of education?	a) Primary and below	10	33.3%
	b) Secondary level	9	30.0%
	c) Tertiary level	7	23.3%
	d) Graduate level	4	13.3%
3. What is your marital status?	a) Married	12	40.0%
	b) Single	15	50.0%

SJ Mircobiology Africa
Vol. 2 No. 11 (2025): November 2025 Issue
https://doi.org/10.51168/bs809d19
Original Article

	c) Divorced	3	10.0%
4. What is your occupation?	a) Teaching	5	16.7%
	b) Health care	6	20.0%
	c) Business	9	30.0%
	d) Farming	10	33.3%

Table 1, the most frequent age range for respondents was (43.3%) between 33 and 40 years, indicating that the bulk of participants were in middle adulthood. The least frequent age category was (10.0%) between 18 and 24 years, indicating that there were few younger inmates in the sample. The highest proportion of respondents (33.3%) had education levels of primary and below; thus, the largest educational group. The average stated the lowest percentage of education level at graduate (13.3%). Half of the participants (50.0%) indicated they were single, which was the most common marital status of the respondents. A small proportion (10.0%) of the respondents are separated, resulting in the least common marital status.

The most frequently stated occupation (33.3%) of the respondents prior to incarceration was farming, indicating they come from an agrarian background. The least common occupation (16.7%) was teaching.

The practices towards the prevention of tuberculosis among inmates living with HIV in Kigo prison, Wakiso District.

Table 2: Showing some of the practices towards prevention of tuberculosis among inmates living with HIV, n=30

Variable/questions	Options	Frequency	Percentage (%)
Which practices are applied in prison?	Hand washing	28	93.30%
	Solation	26	86.70%
	Sufficient ventilation	24	80.00%
	Adherence to the TB regimen	27	90.00%
	Regular sputum examination	22	73.30%

Table 2: According to the data, TB prevention practices were adhered to at a high level among inmates at Kigo Prison. For example, 93.3% of respondents cited hand washing as a form of hygiene as the key TB prevention measure. Isolation of TB patients was performed by 86.7% of respondents, or those who are affected with the TB disease, while 80% of respondents had sufficient ventilation, which is imperative for reducing airborne transmission. Adherence to the full treatment regimen was high at 90%, whereas 73.3% of inmates had sputum examined on a regular basis, thus supporting active TB surveillance and management.

SJ Mircobiology Africa
Vol. 2 No. 11 (2025): November 2025 Issue
https://doi.org/10.51168/bs809d19
Original Article

Figure 1: Shows the distribution of respondents according to whether integration of health services helped, N=30

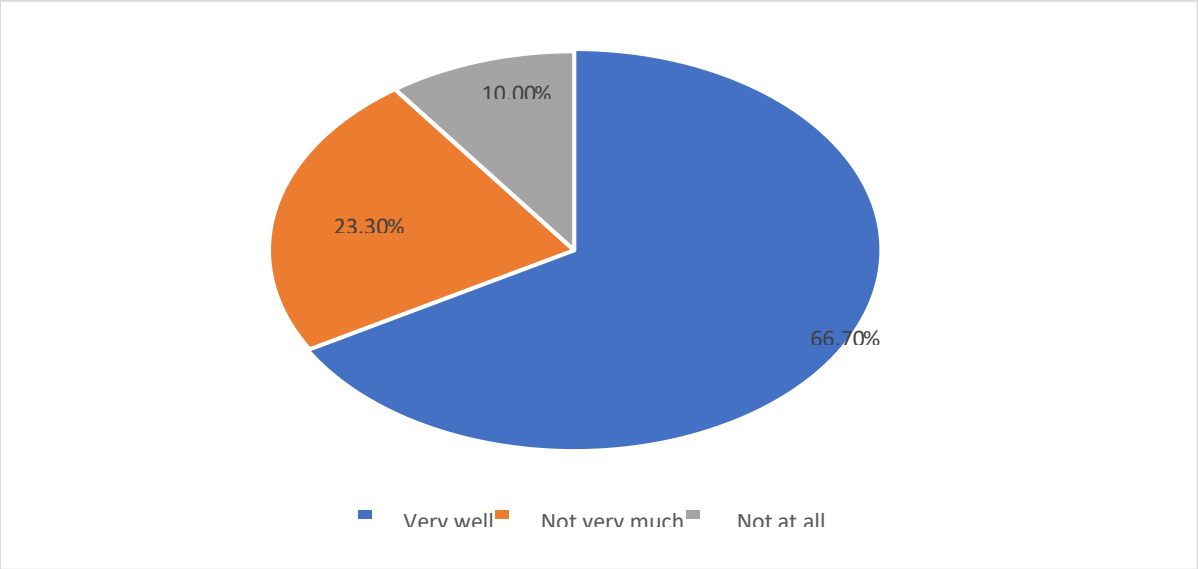

Figure 1, with regard to integrated health services, two-thirds (66.7%) contended that such services had helped them in a good way to use the TB prevention measures, implying the benefits of health integration in the prison service. There were those who felt that the help they had was limited (23.3%), as well as those who felt they had not obtained any help (10.0%), suggesting a need for improvement.

Table 3: Shows that hospital TB preventive measures received, n=30

Variable/questions	Options	Frequency	Percentage (%)
What hospital TB preventive measures received?	Anti–TB therapy	21	70.00%
	BCG vaccination prophylaxis	18	60.00%

Table 3: In the limited group of hospital-specific preventive measures, it was notable that 70% of the inmates had started anti-TB therapy, and in terms of prophylaxis, 60/% had received BCG vaccination, given the overall access to clinical preventive measures.

SJ Mircobiology Africa
Vol. 2 No. 11 (2025): November 2025 Issue
https://doi.org/10.51168/bs809d19
Original Article

Figure 2: Shows the distribution of respondents according to whether they ever got TB screening services from prison, N=30

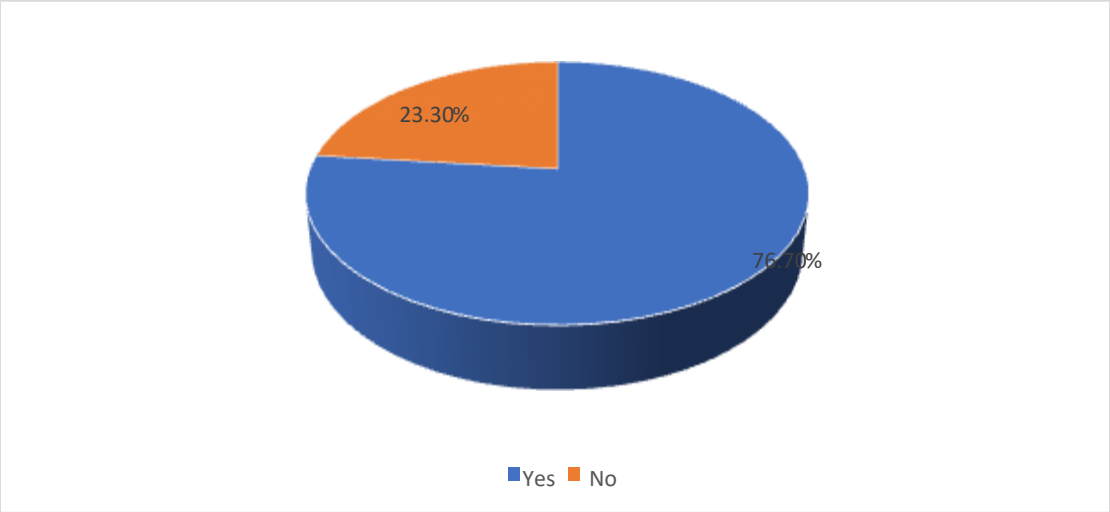

Figure 2: In terms of other interventions, with respect to screening, it responded adequately with 76.67% responding "yes" to ever having TB screening services from the prison facility, while the former response was still somewhat modest, with 23.3% of inmates stating they had not yet participated in TB screening services.

Discussion

Preventive behaviours in prison appeared to be strong. Over 90% of inmates reported washing their hands frequently and completing any TB regimen, while 80-90% of inmates self-reported adopting behaviours such as ventilation, isolation, and sputum checking. The above percentages are much higher than most of those reported in other studies; for example, only 55.1% of household contacts of active TB patients in Ethiopia had good TB-prevention practices (Madebo et al., 2023).

Furthermore, the study employed self-reported practices of participants consistently, and differences were stark, especially in hygiene. For instance, only 18.8% of participants in the

The Ethiopian survey reported washing their hands regularly, compared to 93.3% in the current study.

The high adherence and uptake of screening is likely due to the integrated service for TB and HIV in the prison setting. Indeed, 66.7% of participants rated very well on the integration of health services to facilitate prevention.

Also, the finding that 76.7% of inmates have ever been screened suggests considerable implementation of the policy. Of those screened, most (70.0%) reported taking TB treatment or prophylaxis in a hospital (anti-TB therapy or BCG vaccination). In summary, inmates‘ self- reported prevention practices that are consistently exceed many benchmarks, which would be expected related to the combination of medical interventions and education. Continued reinforcement will be required to ensure the uptake of the practices, and the next study could compare current results to see whether behaviours reported correctly will lead to lower TB incidence rates, as demonstrated previously when people's knowledge and practice are aligned (Kasozi et al., 2024).

Conclusion

Common preventive practices included covering coughs, frequent handwashing, avoiding contact with symptomatic inmates, and willingness to undergo repeat screening. TB survivors reported completing treatment. However, overcrowding and poor ventilation were noted as major barriers to effective prevention.

Recommendations

Inmates should take one step further to help in promoting health by keeping clean, part of this is unnecessary, covering mouths when coughing, attending health talks, and encouraging other inmates to present for medical attention when symptoms of TB present. Their involvement in supporting health care efforts will control the range of transmission of TB in the prison context.

In general, the public should support TB prevention efforts by reducing the stigma surrounding TB and HIV, supporting awareness, advocating for early testing and treatment for those affected, and showing support during visiting hours, especially by the families of inmates. Families should also

seek to engage in a community of care after their loved ones are released.

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LIST OF ABBREVIATIONS

AIDS: Acquired Immunodeficiency Syndrome
ART: Antiretroviral Therapy
HIV: Human Immunodeficiency Virus
TB: Tuberculosis

Source of funding

The study was not funded.

Conflict of interest

The author declares no conflict of interest.

Data availability

Data is available upon request.

Author contribution

Douglas Ebong collected data and drafted the manuscript of the study
Martha Akia supervised the study
Nansereko Hanifa supervised the study
Jane Frank Nalubega supervised the study

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Douglas Ebong is a student of a diploma in clinical medicine and community health at Mildmay Institute of Health Sciences.
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