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Awareness, attitude and adherence on isoniazid presumptive treatment among HIV patients at Kampala International University teaching hospital HIV clinic

Namukasa Damalie and Bwambale William

Faculty of Nursing Sciences, Kampala International University, Uganda

ABSTRACT

In sub-Saharan African countries where both tuberculosis (TB) and HIV are endemic, isoniazid preventive therapy (IPT) for people living with HIV (PLHIV) is a crucial public health intervention. It helps reduce the risk of TB, a leading cause of morbidity and mortality among PLHIV. This study aimed to assess awareness, attitudes, and adherence to isoniazid preventive therapy among HIV-positive clients attending the HIV clinic at KIU Teaching Hospital (KIU-TH) in Bushenyi District. A cross-sectional study was conducted among 58 HIV-positive clients at KIU-TH. Data were collected through structured questionnaires and analyzed manually using Microsoft Excel. Findings were presented in tables and figures as frequencies and percentages for easy interpretation. Results show that majority (50/58; 86%) of participants had heard about IPT for TB, with 28 (56%) obtaining information from healthcare workers. Additionally, 24 (48%) of HIV patients on ART recognized isoniazid as a preventive measure for TB. More than half (28; 56%) of participants believed isoniazid had numerous side effects. A significant proportion (33; 66%) perceived mandatory IPT for all HIV-positive individuals as a form of discrimination. Almost all participants (48; 96%) had been screened for IPT eligibility. However, 32 (66.6%) had never taken IPT, and among those who had, the majority (9/16; 56.25%) did not complete the full course within the recommended period. In conclusion, while awareness of IPT among HIV patients was relatively high, attitudes and adherence levels were poor. Many patients expressed concerns about side effects, stigma, and the perceived risks of taking IPT alongside ART. There was also skepticism regarding the increased TB risk for HIV-positive individuals compared to their HIV-negative counterparts. These findings highlight the need for enhanced health education and interventions to improve IPT uptake and adherence among PLHIV.

Keywords: Isoniazid Preventive Therapy (IPT), HIV/AIDS, Tuberculosis (TB), Adherence, Awareness and Attitudes

INTRODUCTION

Tuberculosis (TB) is among the top ten causes of global morbidity and mortality. Recent estimates indicate that 32% of the world's population is infected with TB [1]. Globally, the development of active TB poses the greatest risk to individuals living with HIV/AIDS who are not receiving isoniazid preventive therapy (IPT)[2]. In Africa, the risk of TB reactivation is significantly heightened due to the HIV/AIDS epidemic, particularly among populations that do not receive presumptive isoniazid treatment [3,4,5]. HIV-positive individuals are at a substantially increased risk of developing active TB, with a likelihood 21 times higher than that of the general population [6]. In sub-Saharan African countries, where both TB and HIV are endemic, IPT for people living with HIV (PLHIV) is a crucial public health intervention [2]. However, due to gaps in implementation, 10 million new active TB cases were recorded in 2018, with 68% occurring among individuals known to be HIV-posi-tive. Uganda's National TB/HIV Collaboration Program has incorporated IPT as part of its TB control strategy since 2005 [4]. According to national guidelines, all PLHIV should be screened for active TB using the WHO's four-symptom-based screening tool (current cough, fever, night sweats, or weight loss). If no evidence of active TB is found, IPT should be provided [4]. The Ugandan national TB guidelines recommend that isoniazid (INH) be administered daily at a dose of 5 mg/kg, with a maximum of 300 mg/day, for six months in HIV-positive individuals without active TB. Despite these recommendations,

the WHO [2] estimated that new TB cases resulting from TB-HIV co-infection would continue to rise by 102,000 annually by 2020 if IPT implementation remains inadequate. Strong evidence supports the effectiveness of IPT in preventing TB among HIV-infected individuals (International Union Against Tuberculosis and Lung Disease, [7]. However, Uganda's Uganda Tuberculosis and Lung Disease (UTLD) Program reports that IPT has failed among HIV-positive clients, primarily due to low enrollment rate [8]. At Kampala International University Teaching Hospital (KIU-TH), no published records exist regarding awareness, attitudes, and adherence to IPT. However, hospital data suggest that most individuals treated for active TB are HIV-positive, implying a lack of awareness about TB prevention through IPT. This gap in knowledge and practice necessitated the present study. Globally, TB causes 1.5 million deaths annually, with the highest mortality occurring among TB-HIV co-infected patients [9]. In Africa, more than 70% of TB patients are co-infected w [10]. East and Southern Africa alone account for 77% of all TB-HIV co-infections (CDC, 2018), yet only 15% of HIV-positive individuals receive isoniazid prophylaxis, while 85% of those on antiretroviral therapy (ART) do not receive IPT [11]. In Uganda, despite policies recommending full integration of IPT into HIV care, only 22% of eligible individuals have initiated preventive therapy. Moreover, IPT completion rates remain low (18%), while TB cases continue to rise, particularly among HIV-positive individuals [12]. At KIU-TH, records from January to December 2022 show that 19 patients were admitted with TB, 16 (84.2%) of whom were co-infected with HIV. Of these, six (37.5%) died. These statistics suggest that many patients either do not receive IPT or do not adhere to it properly. Addressing these challenges is essential to reducing TB-related morbidity and mortality among PLHIV. Given the importance of IPT in TB prevention among HIV-positive individuals, this study aims to assess awareness, attitudes, and adherence to isoniazid presumptive treatment among HIV-positive clients attending the HIV clinic at KIU-TH in Bushenyi District.

METHODOLOGY

Study Design and rationale

This study employed a quantitative descriptive cross-sectional study design and quantitative method of data collection. The study design was chosen because it allowed rapid data collection and a snap short interaction with a small group of respondents at a certain point in time thus allowing conclusions about phenomena across a wide population to be drawn in short time at smaller cost.

Study setting and rationale

The study was carried out at KIU-TH HIV clinic. It is a private hospital located in Ishaka Bushenyi municipality, Bushenyi district. It is approximately 375km from Kampala, Uganda's largest city and capital. The hospital has a capacity of 400 beds receiving both inpatient and outpatients with ultramodern technology and advanced patient care. It's comprised of both private and public wing. The hospital is used to enhance learning of nursing and medical students.

The hospital has active CHAI clinic with more than 3,000 clients on ART for HIV with average attendance on clinic days of 40 clients. The facility is chosen because of having active ART clinic for HIV positive patients and also following the records that showed most of patients that are usually admitted for TB is mostly due to HIV-TB co-infection which could have been prevented by IPT.-

Study Population and rationale

The study consists of HIV positive clients on ART. This population is the most at risk for acquiring TB, and recommended for IPT by guidelines for ministry of Health for IPT prophylaxis treatment.

Sample size determination

Sample size was determined by Yamane method in which the sample size is given by the expression

: $n = \left(\frac{N}{1+N(e2)}\right)$

n = Desired sample size

e= Level of precision 0.05 at 95% confidence interval

N= Total number of population (70, which is a number of HIV positive clients that attend HIV clinic on a clinic day in KIU-TH).

$$n=\left(\frac{70}{1+70(0.05x0.05)}\right)$$
$$=58$$

Therefore, 58 respondents were used as a study sample size for this research study

Sampling procedure and rationale

Simple random sampling method was used, papers of equal numbers containing **YES** and **NO** was folded and put in a basket, and clients asked to choose from randomly. Those that will choose YES was included in the study, while those that choose **NO** was left out. Those that will pick papers was required to place them back in order to keep chances of choices to pick either YES or NO equal.

Inclusion criteria

The study included all ART clients who were not be diagnosed with active TB and that consent for the study.

Exclusion criteria

ART clients with active TB, Non-ART clients, ART clients who do not consent for the study, those that was unable to talk and those that was mentally unstable to give answers

Dependent variables

Utilization of isoniazid presumptive treatment among HIV positive clients

Independent variable

Awareness and attitudes and adherence of ART clients on Isoniazid prophylaxis for TB prevention define the variables

Research Instruments

A semi-structured questionnaire was used as a tool for gathering information. The structured questionnaire was divided into four sections; the first section was used to collect data about bio demographic profile, the second section used to assess awareness about IPT, third section used to assess attitudes and the fourth assessed adherence to IPT among ART clients in KIU-TH.

Data collection procedure

An introductory letter was obtained from Kampala international university, School of nursing research ethics committee and delivered to the Principal Nursing Officer of Kampala International University Teaching Hospital seeking to carry out this research study. After the permission is obtained, the copy of this letter was issued to the in-charge HIV/ART clinic and be allowed the researcher to collect data in the clinic.

The researcher introduced herself to the prospective participants and read to the individual participant the consent form that detailed the title and purpose of the study as well as the rights of the participant. Whenever a participant agrees to be interviewed, he/she was asked to provide written consent by signing or fingerprinting. If they refuse to participate the interviewer skips them to the next clients meeting the selection criteria who is willing to consent.

After obtaining the written consent, the researcher entered the questionnaire serial number and date of interview and proceeded from the first up to the last question using the language understood by the participant. The researcher entered responses given by the participant by ticking the appropriate response and entering the same number in to the coding box.

The researcher reviewed questionnaires on a daily basis to ensure they are being completed correctly and any errors observed be corrected immediately to avoid any missing data. The process of data collection was continued until every effort to attain the required sample size is exhausted. All completed questionnaires was kept safe by the researcher until time when they are analyzed.

Data management

Completed questionnaires was checked for accuracy, any missing data and completeness on a daily basis after data collection at the end of the day

Data analysis

Data collected was statistically analyzed and documented using Microsoft excel and then exported into an SPSS software.

Data management

For reliability and validity, the questionnaires were pretested on 10 ART clients from Ishaka Adventist Hospital. The questionnaire was then be revised and content adjustments made accordingly whenever a need is seen in questions and their arrangement during pretesting in order to bring the exact meanings to respondents.

After data collection, questionnaires were checked daily for completeness, clarity, consistency and uniformity by the researcher.

Ethical consideration

A letter of introduction was obtained from Kampala international university, School of Nursing sciences to permit the researcher to carry out the research.

Permission was obtained from KIU-TH principal nursing officer for acceptance into their facility and consent was sought from every participant. The study participants were selected on voluntary basis and information obtained from each study participant was kept confidential. Participants' anonymity was kept.

The study was conducted while upholding professional code of conduct in a manner that did not compromise the scientific inclinations of the research

RESULTS

Sample description

Table 1: Showing the study participants demographic characteristics

n=58

Characteristic	Variable	Frequency(n)	Percentage (%)
Age	15-19	11	18.9
	20-25	16	27.5
	25 and above	31	53.4
Tribe	Munyankole	48	82.7
	Mukyiiga	8	13.7
	Mukoonzo	1	1.7
	Muganda	1	1.7
Religion	Protestant	24	41.3
	Catholic	20	34.4
	Muslim	6	10.3
	Pentecostal	8	13.7
Education level	Primary	21	36.2
	Secondary	33	56.8
	Tertiary	4	6.8

From the table 1 above, results indicate that majority 31(53.4%) were aged above 25 years while the least 11(18.9%) who were aged 19-19. furthermore, most 48(82.7%) of the participants were Banyankole while the Baganda and Bakonzo formed the least with 1(1.7%). From the findings, most 24(41.3%) of the study participants were protestants, while the least 6(10.3%) were Muslims. In addition to this, majority 33(56.8%) of the study participants had had formal education up to secondary level while only 4(6.4%) had up to tertiary level as shown in Table 1 above.

Awareness of the HIV-ART clients on IPT for TB

n=58

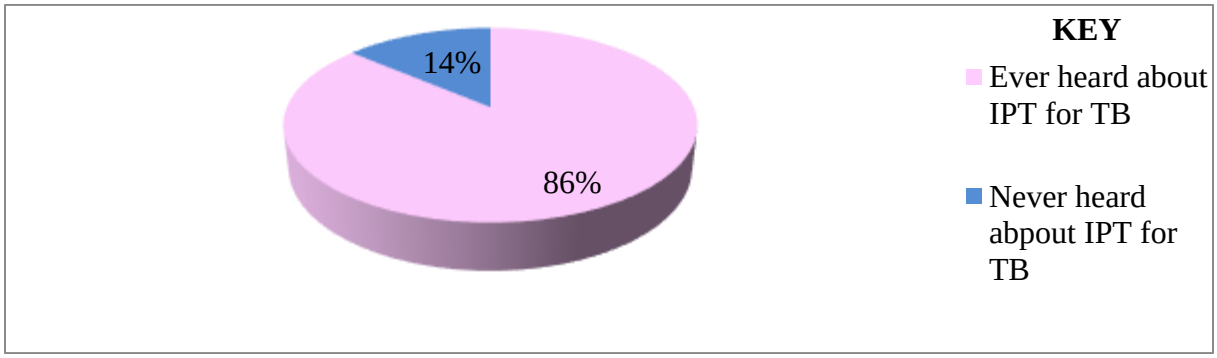

Figure 1 showing whether HIV-ART patients had ever heard about IPT for TB. Results indicate that majority 50(86%) had ever heard about Isoniazid presumptive treatment for TB others 8(14%) had never heard about it.

n=50

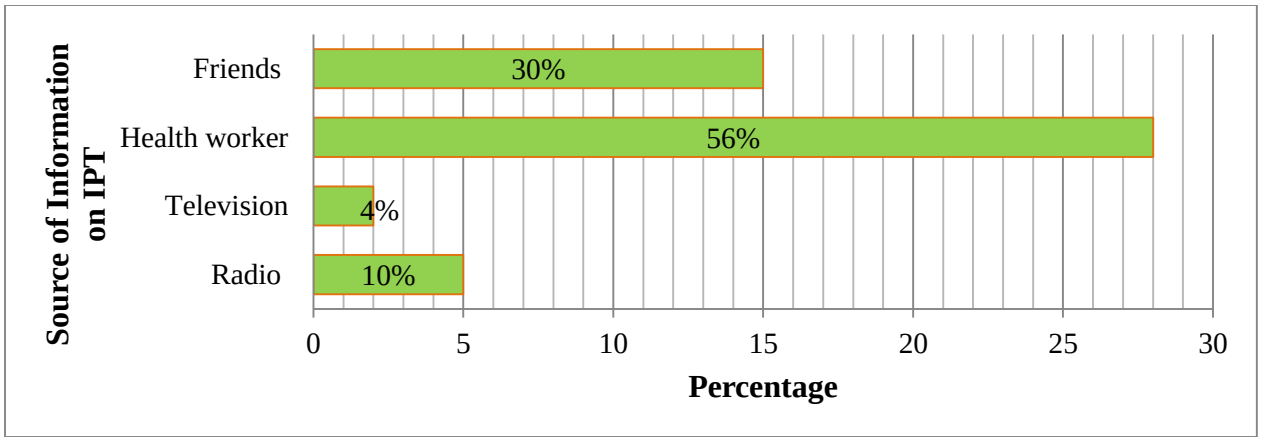

Figure 2 showing source of the information on IPT. Results from the study found out that a larger number 28(56%) had got the information from health workers compared to the least 2(4%) that had got the information from televisions.

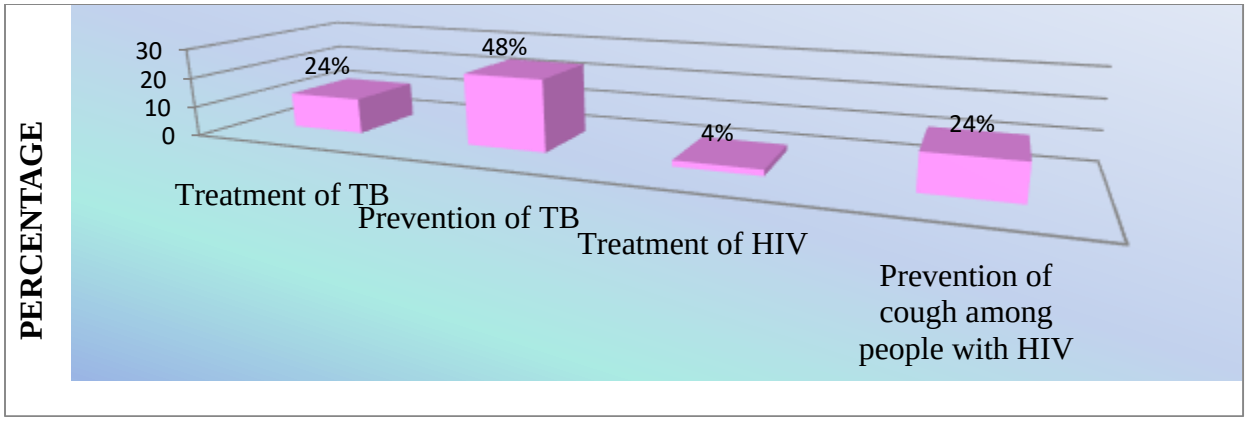

Figure 3 showing awareness of patients on importance of isoniazid presumptive therapy

Majority 24(48%) of HIV patients on ART revealed that they knew isoniazid for prevention of TB while a few 2(4%) said that isoniazid is for treatment of HIV.

Table 2: Showing awareness on who takes isoniazid and for how long does he take the presumptive therapy?
n=50

Character	Variable	Frequency(n)	Percentage (%)
Awareness on who take IPT?	Those suffering from TB	18	36
	HIV positive with no TB	7	14
	HIV patients with TB	23	46
Awareness on lengths of IPT treatment	1 year	4	8
	Life time	16	32
	3 months	2	4
	I don't know	13	26
	6 months	15	30

Results indicated that most 23(46%) of HIV patients knew that IPT was for HIV patients with TB while only a few 7(14%) said that they knew that it is for HIV positive patients with no TB. More so, results

also found out that most 16(32%) of the health workers knew that IPT was taken for lifetime while only 15(30%) knew the appropriate duration of IPT therapy.

Table 3: Attitudes of HIV-ART clients towards IPT for TB
n=50

Characteristic variable	Agree (n)	(%)	Disagree (n)	(%)
Isoniazid has very bad side effects	28	56	22	44
Taking/picking isoniazid in public is shaming	10	20	40	80
Subjecting all HIV positive individuals to isoniazid is a form of discrimination	33	66	17	34
HIV positive individuals are more at risk for TB than negative ones	24	48	26	52
TB is witchcraft and does not need Isoniazid treatment	2	4	48	96
Combining Isoniazid presumptive treatment with ART is harmful to health	39	78	11	22
Given isoniazid, I can take it even public ally	14	28	36	72

From the table 3 above, majority 28(56%) of the study participants agreed that isoniazid had very many side effects while others 22(44%) disagreed. I addition to the above, most 40(80) of the study participants disagreed that taking isoniazid from the public is not a shaming while 10(20%) greed that its shaming. Results also indicated that most 33(66%) of the HIV positive clients agreed that subjecting all HIV positive individuals on Isoniazid presumptive treatment if a form of discrimination while a few 17(34%) disagreed. more so largest number 26(52%) disagreed that HIV positive individuals are at much higher risk of acquiring active TB compared to negative individuals, only 24(48%) agreed. Research study results indicated that majority 48(96%) of HIV clients disagreed that TB is a witchcraft disease and does not require Presumptive treatment while the remainder 2(4%) agreed to it. They also indicated that a larger number 39(78%) of the HIV positive clients agreed that combining isoniazid and ART was more dangerous while 11(22%) disagreed. Results also indicated that majority 36(72) disagreed that given the isoniazid, they could take it public ally while others 14(28%) said that they could not.

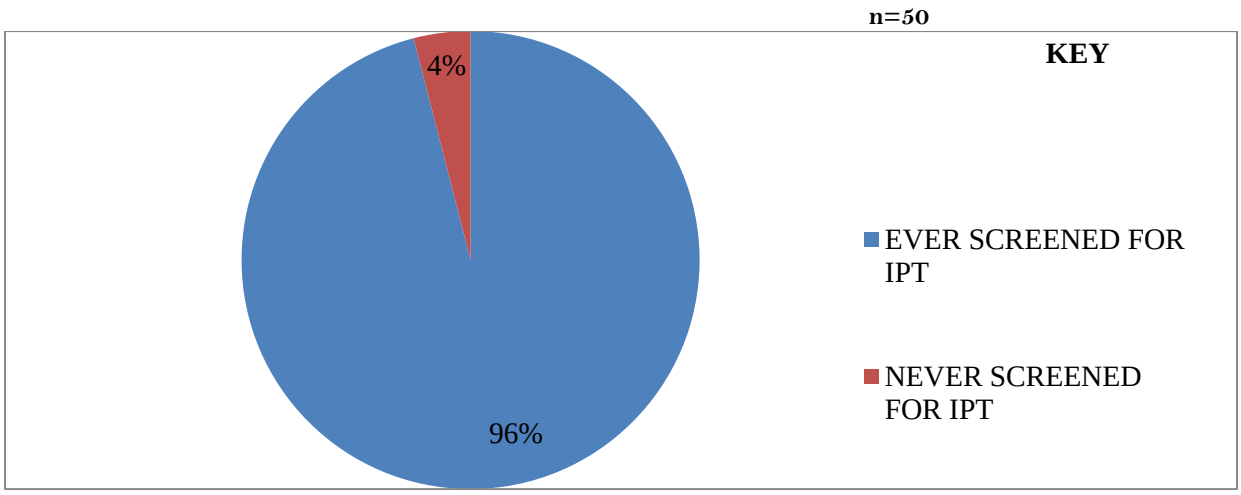

Figure 4: showing whether clients had ever been screened for TB presumptive treatment

Results indicate that the majority 48(96%) had ever been screened for legibility of IPT while only 2(4%) had never been screened.

Table 4: sowing whether a client had ever taken isoniazid presumptive treatment

Character	Variable	Frequency (N)	Percentage (%)
Ever taken isoniazid (n=48)	Yes	16	33.3
	No	32	66.6
Completed the dose (n=16)	Yes	7	43.75
	No	9	56.25
Duration (in months) of those that did not complete the dose took IPT (n=9)	1	1	11.1
	2	2	22.2
	3	3	33.3
	4	2	22.2
	5	1	11.1

From the table 4 above, results indicated that majority 32(66.6%) had never taken isoniazid presumptive treatment while a few 16(33.3%) had ever taken it. results also indicated that among those that had taken isoniazid. Majority 9(56.25) had not completed the dose while the remainder 7(43.75%) had completed the IPT treatment.

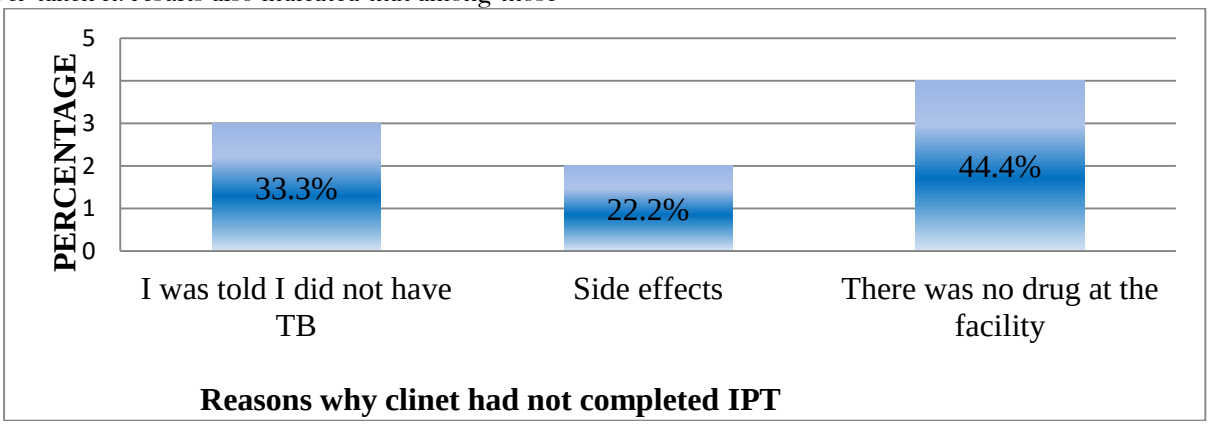

Figure 5 showing reasons why those that had not finished had not managed to finish the duration of IPT

Results from the research study indicate that majority 4(44.4%) had not completed IPT treatment due to drug stock outs at the facility while a few 2(22.2%) had not finished the IPT treatment dure to its side effects.

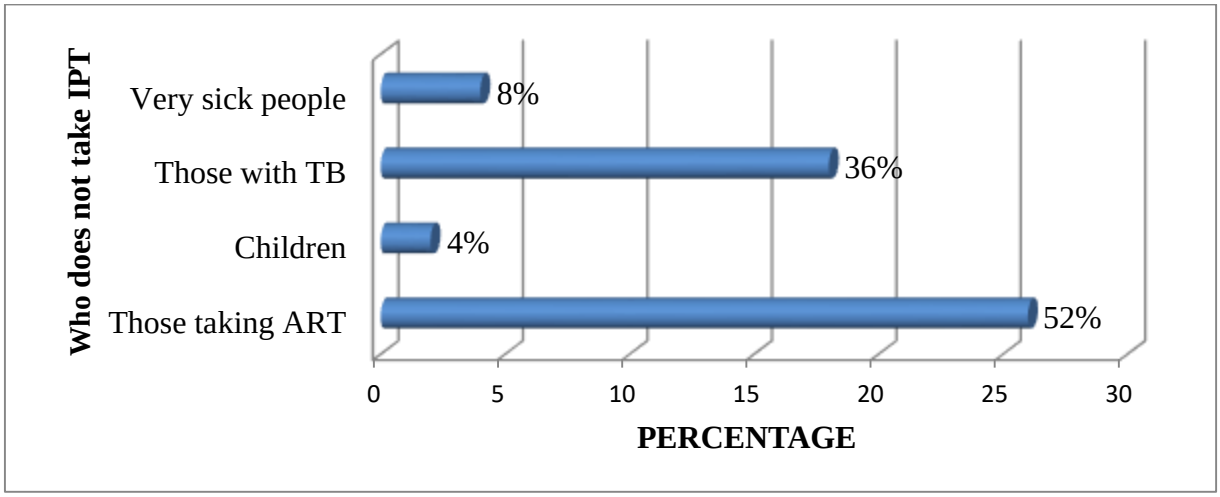

Figure 6 Showing who takes IPT according to IAH HIV.

Research study results indicate that majority 26(52%) of the study participants' knew that IPT should not be taken by those patients that are taking ART, others few 2(4%) said that IPT is not taken by children.

DISCUSSION

Awareness of HIV-ART Clients on IPT for TB Prevention

The study results indicate that the majority, 50 (86%), had heard about Isoniazid Presumptive Treatment (IPT) for TB. This could be attributed to TB prevention being a significant focus in opportunistic infection prevention among HIV patients through mass communication channels such as radio, television, and health education talks at healthcare facilities. Consequently, individuals are expected to have more awareness of the importance of IPT and better utilization of the treatment. However, these results contrast with Viney et al., [13], whose research in the Pacific Island nation of Vanuatu found that the majority (78.6%) of HIV-positive individuals did not know about isoniazid as a prophylactic therapy for tuberculosis. The study further found that a substantial proportion, 28 (56%), received information about IPT from healthcare workers. This could be due to the common and consistent health education provided within HIV clinics, equipping clients with accurate information regarding IPT. However, these findings contrast with WHO [9], which reported that in Sub-Saharan Africa, the failure to initiate IPT was associated with inadequate communication about isoniazid among patients and uncertainty about who should take it. Additionally, 24 (48%) of HIV patients on ART stated that they knew isoniazid was used to prevent TB. This awareness likely results from obtaining information from healthcare workers, who are considered authentic sources, reinforcing the significance of IPT. This finding contrasts with Viney et al., [13], whose study in Vanuatu found that 78.6% of HIV-positive individuals were unaware of isoniazid as a prophylactic therapy but knew that adherence to ART could help prevent opportunistic infections, including TB. Moreover, the study revealed that 23 (46%) of HIV patients mistakenly believed that IPT was intended for HIV-positive individuals who already had TB. This misconception may stem from the fact that while they received information on IPT, they did not clearly differentiate between prevention and treatment. As a result, they might hesitate to take IPT until they are diagnosed with TB. This finding aligns with WHO [9], which found that misinformation about isoniazid usage persists in Sub-Saharan Africa, with uncertainty regarding whether it should be taken by individuals with active TB or those at risk. Furthermore, 16 (32%) of the HIV clients believed that IPT, like ART, should be taken for a lifetime. This suggests a lack of clarity regarding the duration of IPT, which could contribute to negative attitudes and fears of an increased pill burden, potentially discouraging adherence. This finding is consistent with De Vries et al., [14], who found that inadequate awareness about treatment duration led to concerns about long-term medication use among hard-to-reach populations in South Sudan, Burundi, and Malawi.

Attitudes of HIV-ART Clients Towards IPT for TB Prevention

The study found that 28 (56%) of participants agreed that isoniazid has severe side effects. This perception may stem from personal experiences or observations of others who developed side effects while on IPT, leading to fear and negative attitudes toward the treatment. This finding is consistent with Yasin et al. [15], whose study in Kenya revealed that low uptake of prophylaxis treatment among HIV-positive patients was due to fears of neuropathic side effects.

Additionally, 40 (80%) of participants disagreed with the statement that taking isoniazid in public is not shameful. This reluctance may result from a lack of awareness about IPT, with some individuals believing that only those with active TB take IPT. Consequently, they fear being stigmatized as TB patients, which may discourage them from collecting or using the medication. Sagili [16] reported similar findings in India, where patients feared stigmatization and avoided taking IPT in public. The study also revealed that 33 (66%) of HIV-positive clients perceived mandatory IPT for all HIV-positive individuals as discriminatory. This could be due to a lack of understanding about their heightened risk for TB. Similar sentiments were reported by Beanland et al., [17] in Kenya, where HIV-positive clients viewed IPT as a form of discrimination rather than a necessary preventive measure. Additionally, 26 (52%) of participants disagreed with the assertion that HIV-positive individuals are at a much higher risk of acquiring TB than those who are HIV-negative. This misunderstanding could stem from a lack of knowledge about how HIV weakens immunity, increasing susceptibility to opportunistic infections. This finding contradicts Alba et al., [18], who found that HIV-positive individuals in Colombia were aware of their heightened TB risk and had higher IPT uptake (57%) compared to HIV-negative individuals (0.3%). Furthermore, 48 (96%) of HIV clients disagreed with the belief that TB is caused by witchcraft and does not require presumptive treatment. This indicates a relatively better awareness of TB's causes, suggesting that attitudes toward IPT are influenced more by misinformation about its purpose rather than myths about TB causation. This finding contrasts with UNAIDS [6], which reported that HIV-positive clients in the Democratic Republic of Congo often attributed TB to witchcraft rather than infection. Lastly, 39 (78%) of HIV-positive clients believed that combining isoniazid with ART was dangerous. This perception may arise from reports of side effects, leading clients to assume that the combination poses additional health risks. Sommerland et al., [19] reported similar findings in Ivory Coast, where HIV-positive clients feared that combining ART with IPT was riskier than taking ART alone.

Adherence of HIV-ART Clients to IPT for TB Prevention

Results indicate that 48 (96%) of participants had been screened for IPT eligibility. This could be due to the routine implementation of the WHO four-symptom screening approach at every HIV clinic visit. This finding aligns with MOH [9], which mandates TB screening for all PLHIV in Uganda. Despite high screening rates, the study found that 32 (66.6%) of participants had never taken IPT. This may indicate a lack of awareness about its importance or doubts regarding its necessity. Mesele et al., [20] found similar results in Ethiopia, where IPT uptake among HIV-positive patients was extremely low (7.74%). Among those who had taken IPT, the majority, 9 (56.25%), had not completed the full six-month regimen. This suggests that even among those who initiate treatment, there is limited understanding of its importance and the necessity of completing the prescribed duration. Kwara et al., [21] found similar findings in Rhode Island, where 85.4% of HIV patients who started IPT did not complete it. The study also revealed that 4 (44.4%) of participants who did not complete IPT cited drug stockouts as the primary reason. This finding suggests that supply chain challenges within healthcare facilities contribute to non-adherence. Rowe [22] reported similar findings in South Africa, where irregular isoniazid and ART supply hindered adherence. Additionally, 26 (52%) of participants believed that IPT should not be taken alongside ART. This misconception may stem from a lack of understanding of drug interactions and their purposes. Daniela et al. [23] found similar results in Ethiopia, where children received ART but not IPT due to misinformation among caregivers.

CONCLUSION

The study found that awareness of IPT among HIV-ART clients was moderate, attitudes were generally negative, and adherence was poor. While most participants had heard about IPT and received information from health workers, many misunderstood its purpose and duration. Negative attitudes were driven by fears of side effects, stigma, and misconceptions about combining IPT with ART. Adherence was low, with many failing to start or complete the six-month regimen due to misinformation and drug stockouts.

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