

# Knowledge and associated factors about isoniazid preventive therapy among people living with human immune virus in North Ethiopia

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**BACKGROUND:** Preventing the development of active Tuberculosis (TB) among people living with human immune deficiency virus (PLHIV) can prevent millions of people from being infected in the community and in healthcare services. Increasing knowledge of PLHIV about IPT and uptake of IPT is one of the key interventions recommended by WHO to reduce the burden of TB on PLHIV, while low knowledge level about IPT among PLHIV remain as a major practical barrier for provision of IPT. The main aim of this study was to assess knowledge and associated factor among PLHIV regarding IPT.

**METHODS:** An institution-based cross-sectional study was conducted on PLHIV who were attending follow-up in university of Gondar referral hospital, north-western Ethiopia. A validated self-administered questionnaire was distributed to 402 respondents. The data was coded, entered and analyzed in SPSS 21.0 version. Data was presented in frequencies and percentages. Bivariate and multivariate logistic regression was used to identify factor associated with knowledge level.

**RESULTS:** Among 402 study participants included in the survey, one hundred sixty-nine 169 (42.03%) of them has never heard about IPT and 229 (57%) had insufficient knowledge level. The respondents who had received counseling from health professionals about IPT were three times more likely to have sufficient level of knowledge than those who had not received counseling from health professionals (AOR=2.8, 95% CI: (1.21, 2.94).

**CONCLUSION:** The knowledge level of IPT was sufficient only among less than half of study participants. TB screening, educational status, previous counseling by health professionals and duration of IPT were important factors that determine knowledge level of IPT among people living with HIV. It's recommended to focus on strengthening TB screening and Health care professionals should provide adequate counseling for patients at initiation of IPT.

**Key Words:** Isoniazid prophylaxis therapy; People living with HIV; Infection; Health; Ethiopia

**Abbreviations:** IPT: Isoniazid Prophylaxis Therapy; PLHIV: People Living with HIV; CI: Confidence Interval; SPSS: Statistical Packages for Social Sciences; ART: Anti-Retroviral Therapy; HIV: Human Immunodeficiency Virus; WHO: World Health Organization; HC: Health Center; TB: Tuberculosis.

## INTRODUCTION

There is an increase in risk of acquiring tuberculosis and its progression from dormant state to active state among people living with HIV than their counterpart. Since, HIV decrease immunity level of individual and TB also favors the multiplication of HIV as well [1-4]. TB is the ninth leading cause of death worldwide and the leading cause from a single infectious agent, ranking above HIV/AIDS. In 2016, there were an estimated 1.7 million TB deaths overall, among this 374000 of them were attributed to TB/HIV co-infection. Southeast Asia and sub-Saharan Africa are the nations that suffer the most from TB/HIV co-infection. Ethiopia found in 6th place among top 20 nations suffering from TB/HIV co-infection [5].

Escalating the implementation of isoniazid prophylaxis therapy and knowledge level of people living with HIV on IPT is among an important medical and public health strategies for preventing active TB among PLHIV. Treatment of latent TB among PLHIV can prevent a vast number of people from being infected in the community and in healthcare services. Increasing knowledge of PLHIV about IPT and IPT uptake is one of the key interventions recommended by WHO to reduce the socioeconomic burden of TB on PLHIV [6,7].

Low level of adherence, fear of side effect among PLHIV, fear of re-infection, negative attitude of health professional about IPT, INH resistance, inconsistent supply of Isoniazid drug, lack of clarity and knowledge of PLHIV about IPT are some among vast number of obstacles [8-10].

The recommended intervention from many countries around the globe to cope up with these barriers is to encourage the implementation of IPT included advocacy for IPT at the national and world level and distribution of evidence-based information regarding the benefits and feasibility of IPT for

PLHIV [6]. Educating the HIV patients regarding IPT, and implementation of new communication strategies between health professional and patients were emphasized as essential solution for confronting low knowledge level among PLHIV, according to Brazilian study [7].

Based on previous studies in Ethiopia, proportion of study participants those heard about IPT were 50.40% according to study done in Bahir dar [11]. While 28% of study participants were heard about IPT according to report of research had been done in Addis Ababa [12,13]. According these studies report, health professional counseling, TB screening, education status, sex were the factors associated with knowledge level about IPT [11-14].

Therefore, to reduce the obstacles and to promote the level of understanding of patients' towards the utilization of IPT, it is rational to evaluate the knowledge and factors implicating use of IPT among PLHIV in Ethiopia where information regarding IPT knowledge level and associated factors is limited. Therefore, the present study assessed the knowledge and factors on use of IPT among PLHIV in north Ethiopia.

## METHODS

### Study design and setting

An institution-based cross-sectional study was used on HIV patients on follow up in university of Gondar referral hospital, north-western Ethiopia. Gondar Town is located 727 km in Northwest direction from Addis Ababa, Ethiopia. The hospital has 400 beds and has many specialty departments, including HIV/AIDS care unit obstetrics, surgery, psychiatry, internal medicine, pediatric, gynecology and outpatient clinic (Gondar University Referral Hospital Statics and Information Center, unpublished data, 2015). Source populations was All adult PLHIV who visit ART clinic for follow

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**TABLE 1**

**Socio demographic characteristics of PLHIV on ART in Gondar university hospital, northwest Ethiopia, from March 12 to April 12, 2018**

Socio demographic characteristics of study participant		N (%)
Age	18-30	99 (24.6)
	31-40	131 (32.6)
	41-50	110 (27.4)
	Above 50	62 (15.4)
Marital status	Single	237 (59)
	Married	108 (26.9)
	Divorced	25 (6.2)
	Widow	32 (8)
Occupation	Student	3 (0.7)
	Farmer	30 (7.5)
	Government employee	192 (47.8)
	Merchant (business man/woman)	77 (19.2)
	Daily labour	83 (20.6)
	Other (NGO, unemployment, house wife)	17 (4.2)
Residence	Rural	90 (22.4)
	Urban	312 (77.6)
Education	Illiterate (not educated)	138 (34.32)
	Primary	114 (28.35)
	Secondary	103 (25.62)
	University/college	47 (11.7)

**TABLE 2**

**Knowledge level of IPT and its associated factor among PLHIV in Gondar university hospital, from March 12 to April 12, 2018**

Variables	Knowledge level		Crude odd ratio (95% CI)	Adjusted odd ratio (95% CI)
	Sufficient (173)	Insufficient (229)		
<b>Educational status</b>				
Not educated	60 (14.92)	78 (19.40)	1	1
Primary (1-8)	53 (13.18)	61 (15.17)	1.1 (0.7-3.37)	2.92 (0.59-6.29)
Secondary (9-12)	40 (9.95)	63 (15.67)	0.825 (0.48-1.92)	0.564 (0.43-1.99)
Postsecondary (Above 12)	20 (4.975)	27 (6.716)	1.03 (1.001-5.2)	1.81 (1.61-6.91)
<b>Previous TB screen</b>				
Yes	123 (30.59)	119 (29.6)	22.7 (8.2-29.9)	16.1 (2.78-20.5)
No	50 (12.437)	110 (27.36)	1	1
<b>Previous counseling</b>				
Yes	123 (30.59)	74 (18.40)	5.15 (1.27-6.01)	2.8 (1.21-5.94)
No	50 (12.437)	155 (38.55)	1	1
<b>Duration of IPT</b>				
Less than 3 month	14 (3.48)	72 (17.91)	1	1
3 month and above	159 (39.55)	229 (56.96)	3.5 (2.82-12.61)	4.7 (2.77-9.55)

up in Gondar university hospital and selected adult PLHIV who visit ART clinic for follow up in UOG referral hospital during data collection period was considered as the study population. The study was conducted from 12 March to 12 April 2018.

**Sample size determination**

The sample size was determined by using single population proportion formula considering 50.40% of overall proportion taken from study done in Bahir dar to determine sample size [1]. Also, 95% confidence interval and 5% degree of accuracy assumed to determine sample size. Expecting an overall proportion of 50.4% at a 95% confidence interval, and after adding 5% of the calculated sample size for possible non response, 402 patients were interviewed. The study participants who came to hospital during data collection period were approached consecutively until the required sample size reached.

**Data collection tool and techniques**

An interviewer administered questionnaire on knowledge and associated factor was developed after extensive review of available literature related with the topic. The tool had two part, the first part contained socio demographic profile of respondent while the second part had six questions that assess knowledge of study participants about IPT. Questions assessing knowledge had only one "correct" answer and each answer had one point. The total knowledge score which ranged from 0-6 were used to categorize level of

knowledge of the study participants as sufficient and insufficient knowledge level. Study participants who answered equal or greater than three questions correctly were categorized as having sufficient knowledge while the study participants who answered less than three questions correctly considered as having insufficient knowledge. Data collection was done by pharmacists through interviewer-administered questionnaire. The investigators properly trained the data collectors on the instrument and ways of approaching the patients and securing their permission for interview prior to the data collection process. The tool was Pretested on 20 (5%) PLHIV who were not included in final analysis at one health center in Gondar town and necessary correction were made before administering the questioner to the final participants.

**Data analysis**

The data was coded, entered and analyzed in SPSS 21.0 version. Data was presented in frequencies and percentages. Bivariate and multivariate logistic regression was used to identify factor associated with knowledge level. CI 95% and p-value <0.05 were used as cut points for determining the significance of association.

**RESULTS**

**Socio-demographic characteristics**

Out of 402 interviewed participants about half them (51.7%) were females.

The mean age of participant was 39.4 with standard deviation of 10. Among study participants one hundred thirty eight (34.3%) of them were illiterate and about half 192(47.8%) of them were government employer, with most of them make urban as their place of residency (77.6%) (Table 1).

**Level of knowledge about IPT**

Among total of 402 participates, one hundred sixty-nine (42.03%) of them have never heard about IPT and overall proportion of study participant those heard about IPT was 233(57.07%). Among those heard about IPT fifty two (22.3%) of them knew the eligibility criteria of isoniazid prophylaxis therapy and the 90(38.64%) of them knew that IPT prevent the conversion of latent tuberculosis to its active form.

**IPT knowledge level and its associated factor among people living with HIV**

Out of 402 study participates, 229(57%) had lack of sufficient knowledge level and the rest 173(43%) of them had sufficient knowledge level about IPT. Variables that were significantly associated with knowledge level of IPT in the bivariate analysis were further examined in multivariate logistic regression. Hence, education status, duration of IPT, previous counseling by health professionals and TB screening were found to have a significant association in multivariate logistic regression analysis. The respondents who had received counseling from health professionals about IPT had three times more likely to have sufficient level of knowledge than those who had no received counseling from health professionals (AOR=2.8, 95% CI: (1.21, 5.94). The odd of knowledge level of IPT was higher among participants who previously screened for TB as compared with their counterparts (AOR=16.1, 95% CI: (2.78-20.5). It also shows that participants who studied up to higher education institution were almost two times more likely to have higher level of knowledge about IPT than illiterate participants (AOR=1.81,95% CI (1.61-6.91). Another important determinant of knowledge level of PLHIV about IPT was duration of IPT. Thus, the participants who took IPT for three and above month were nearly five times more likely to have higher knowledge level compared to those who took for less than average month (AOR=4.7,95% CI: (2.77-9.55) (Table 1).

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**DISCUSSION**

This study was attempted to assess the knowledge level of IPT and its associated factors among HIV positive patients on ART in university of Gondar referral hospital. Insufficient knowledge level about IPT is among huge challenge for implementation of IPT on HIV positive people. Thus, WHO recommend increasing knowledge level of IPT among PLHIV as a key intervention to reduce the socioeconomic burden of active TB on PLHIV and general population [15]. Among study participants, the overall proportion of study participants those heard about IPT was found to be (57.07%). This was almost similar with study done in Bahir Dar, where the level were, 50.4% [11]. However, this finding is far greater than study done in Addis Ababa where the level were 34.70% [13]. This difference might be, due to nine years gap of study period among two studies during which time the level of awareness about IPT might have been changed.

Among study participants who heard about IPT, 22.3% of them knew the eligibility criteria of isoniazid prophylaxis therapy and 38.64% of them knew that IPT prevent activation of latent tuberculosis among PLHIV. Many of study participants were claimed Health professionals in the hospital and neighbors/friends as their most common source of information about IPT. Out of overall study participants, 57% had lack of sufficient knowledge level. This finding is almost similar with report from study done in Bahir Dar. This might be due to decrease in health professional attention to importance of counseling for implementation of IPT program [11].

Among variables education status, duration of IPT, previous counseling by health professionals and TB screening were the most important factors that determine knowledge level. The respondents who had received counseling from health professionals about IPT had three times more likely to have

sufficient level of knowledge than those who had no received counseling from health professionals. This was in agreement with finding reported from study done in Bahir dar which identified previous counseling by health professional as predictor of knowledge level [11].

According to study done in Bahir dar, previous TB screening was one factor associated with knowledge level of IPT among PLHIV (11). Which corroborate our study finding, those respondents who were screened for TB were two times more likely had sufficient level of knowledge about IPT than their counterpart. This could be due better exposure to Health professional around TB screening clinical setup and related enhanced chance to get IPT related information meanwhile.

In this study participants who have had post-secondary education were two times more likely to have sufficient knowledge level than uneducated participants. This finding was in line with study verdict reported from previous studies from Bahir dar and Addis Ababa [11,13]. This could be due to wider range of source information including printed media for respondents who were educated in advance than those who were not formally educated.

It also showed that participants who took IPT for three and more months were about five times more likely to have sufficient knowledge level about IPT than those who took for less than three months. This could be due to repeated exposure to health professional and their counseling and lack of providing sufficient counseling by health professional at initiation of IPT.

**Strength and limitation of the study**

The strength of the study is that since there is only few studies done on knowledge of PLHIV about IPT and associated factors, the result of this study could be used as a reference for other studies on this topic and the results could serve as baseline for program implementation. The study has some limitations that should be considered while interpreting the results. The study being cross sectional and use of self-reported survey, which may be subjected to under reporting. Thus, it's difficult to establish exact cause and effect relationship here in this study.

**CONCLUSION**

The knowledge level of IPT was sufficient only among less than half of study participants. TB screening, educational status, previous counseling by health professionals and duration of IPT were important factors that determine knowledge level about IPT among people living with HIV. It's recommended to focus on strengthening TB screening, and Health care professionals should provide adequate counseling for patients at initiation of IPT.

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**ETHICAL CONSIDERATIONS**

In conducting the study ethical clearance was secured from School of Pharmacy, College of Medicine and Health Sciences, University of Gondar and. Verbal informed consent was obtained from the respondents for the interview and data was maintained with confidentiality.

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**CONSENT FOR PUBLICATION**

Not applicable.

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**AVAILABILITY OF DATA AND MATERIALS**

Questionnaire used for knowledge and associated factors.

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**COMPETING INTERESTS**

The authors declare that there is no competing interest.

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**AUTHOR'S CONTRIBUTION**

Both authors contributed from conceptualization of the study to making first draft of the manuscript.

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