

## Assessment of Utilization of Provider Initiated HIV Testing and Counseling and Associated Factors among Adult Out Patient Department Patients in Wonchi Woreda, South West Shoa Zone, Central Ethiopia

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### Abstract

**Back ground:** Currently in health facility, provider-initiated human immunodeficiency virus testing is the key entry point to prevention, care, treatment and support services but most people remains unaware of their HIV status due to various reasons. In many high-prevalence countries, fewer than one in ten people with HIV are aware of their HIV status. HIV, the virus that causes AIDS, "acquired immunodeficiency syndrome," has become one of the world's most serious health and development challenges. Reaching individuals with HIV who do not know their serostatus is a global public health priority.

**Objective:** To assess utilization of provider initiated HIV testing and counseling and associated factors among adult outpatient department patients.

**Methods:** Health facility based cross-sectional study was conducted among 392 adult outpatient department patients in Wonchi woreda from February 24 to March 24, 2013. The study participant was recruited patients from all adult outpatient department patients of all four public health facilities of wonchi woreda using systematic sampling. A structured interviewer administered questionnaire was used to elicit all important variables from the study participants and multiple logistic regression analysis was used.

**Result:** A total of 371 adult outpatient department patients aged between 15 to 64 years were actively participated in the study and 291 (78.4%) of them utilized provider initiated HIV testing and counseling and 80 (21.6%) of them refused. Knowledge on HIV is low in the study population; majority of the participants didn't have comprehensive knowledge (64.7%) and (35.3%) fail to reject misconception about means of HIV transmission and prevention. Utilization of provider-initiated HIV testing and counseling were associated with divorced/widowed marital status [AOR (95%CI) = 0.32 (0.15, 0.69)], being male sex [AOR (95% CI) = 1.81 (1.01, 3.24)], having comprehensive knowledge on HIV [AOR (95%CI) = 0.408 (0.220,0.759)], having awareness about provider initiated HIV testing and counseling [AOR (95%CI) = 2.89 (1.48,5.66)] and receiving test on HIV before [AOR (95%CI) = 4.15 (2.30, 7.47)].

**Conclusion:** Utilization of provider initiated HIV testing and counseling among adult outpatient departments in wonchi woreda public health facility was [(78.4%)]. Strengthening health information through mass media and peer education on HIV to address barrier to testing in the community such as low awareness on PITC, to increase up take of PITC among adult OPD patients.

**Keywords:** Utilization; Human immunodeficiency virus testing; Provider initiate

### Introduction

HIV testing and counseling is the process by which an individual, couple, or family receives HIV testing and counseling on HIV prevention, treatment, care, and support [1]. It is the key entry point to prevention, care, treatment and support services, where people learn whether they are infected, and are helped to understand the implications of their HIV status and make informed choices for the

future. Currently, most people remain unaware of their HIV status due to various reasons [2,3].

Provider-initiated testing and counseling recommended during treatment by health care providers to enable specific clinical decisions to be made and/or specific medical services to be offered that would not be possible without knowledge of the person's HIV status [2,4,5]. In 2007, the World Health Organization issued guidelines recommending that countries and organizations adopt PITC to increase HIV testing rates [6].

In 2009, more countries adopted policies on provider initiated testing and counseling, and the number of facilities providing HIV

testing and counseling continued to increase. However, knowledge of HIV status remained inadequate [7]. HIV testing is also an integral part of the National HIV/AIDS Strategy to prevent the spread of HIV and improve health outcomes for those who are already infected [8]. HIV testing and counseling services were started in Ethiopia following the endorsement of the national AIDS policy in 1998 [9].

HIV, the virus that causes AIDS, "acquired immunodeficiency syndrome," has become one of the world's most serious health and development challenges [10,11]. Sub-Saharan Africa remains the most heavily affected region by HIV. In 2010, about 68% of all people living with HIV resided in sub-Saharan Africa, a region with only 12% of the global population. Sub-Saharan Africa also accounted for 70% of new HIV infections in 2010. Most children with HIV live in this region (91%) [12,13].

HIV/AIDS has become a major public health concern, leading the Government of Ethiopia to declare a public health emergency in 2002. In 2011, adult HIV/AIDS prevalence in Ethiopia was estimated at 1.5% with 1% among males and 1.9% among females. Approximately 1.2 million Ethiopians were living with HIV/AIDS in 2010 [13].

In 2007, over 8% of pregnant women in Ethiopia were estimated to be living with HIV [14].

People living in periurban and small market towns, as well as young women, are the most at risk segments of the population. HIV prevalence varies widely between urban and rural settings. A 2011 Ethiopia demographic and health survey (EDHS), reports show that urban adult HIV prevalence was 4.2% and rural was 0.6% [15,16].

However, the use of testing globally is very low. Around the world, the proportion of the population who know their HIV status is generally low. In 23 countries Demographic and Health Surveys between 2005 and 2007, the proportion of adult women who reported having ever been tested and received their results ranged from a low of 2% in Niger to a high of 45% in Ukraine; the median was about 11% for women and 10% for men, and the report were slightly lower for countries of sub-Saharan Africa (9% of women and 8% of men) (WHO 2008). Such low utilization of testing and counseling indicates that obstacles are considerable, and programmes need a better understanding of how to overcome them [17].

Even in more developed countries, about 20% to 30% of seropositive individuals are unaware that they are HIV positive. This means that most people living with HIV get testing and counseling only when they already have advanced clinical disease [18,19].

EDHS 2011 report show that nationally 36% of women and 38% of men have ever been tested for HIV and received their test results and in Oromia region only 32.5% women and 31.9% men ever tested and received their test result [15].

Many countries offered client-initiated testing and counseling programme. However, in many high-prevalence countries, fewer than one in ten people with HIV are aware of their HIV status. Reaching individuals with HIV who do not know their serostatus is a global public health priority. To achieving the goal of universal access to care and treatment for all people with HIV WHO and UNAIDS (2007) have advocated provider-initiated HIV testing and counseling in addition to client-initiated testing and counseling [20].

Studies in Ethiopia and other African countries among different populations between 2007 and 2011 revealed less than expected acceptance of PITC and high HIV positivity rate in health care settings

[21-23]. Thus, to achieve the purpose of PITC, it is crucial to assess PITC utilization status and clients' reasons for missing PITC in health care settings [24]. To date, most studies related to acceptance of PITC in Ethiopia and other countries were done in TB, ANC, and STI clinics [22,25-27]. These clinics are generally composed of a cohort of clients in terms of risk to HIV and higher HIV suspected wards than adult outpatient department (OPD) wards. PITC related studies are limited in adult OPD. Therefore, it is timely and appropriate to study utilization status and factors that influence client use of PITC, in adult OPD patients.

## Methods and Materials

### Study area, design and sampling

Health facility based cross-sectional study was conducted in Wonchi Woreda public health facilities from February 24 to March 24, 2013. Wonchi woreda is one of the twelve woredas found in South West Shoa zone 122 km from Addis Ababa to the West. The woreda have a total population of 109,901 with 49.5% of them is women. Most of the population 105,015 (96%) live in rural area and are engaged in farming. The district has four public health centers, which routinely offer PITC service free of charge and 23 governmental health posts and three private small clinics [28].

Study population was all adult population (15-64 years) attending adult outpatient departments of public health facility in Wonchi woreda during data collection period. The sample size was determined by using a single population proportion formula, by taking 36.5% of adult OPD population in Ethiopia accepts PITC offered by health care provider [23], 5% margin of error, and 95% confidence level. By adding 10% non-response rate the final sample size was calculated to be 392.

All the four public health centers of Wonchi woreda which routinely offer PITC for all adult patients attending OPD were used to sample the subjects in this study. Based on the number of customers who visited each health institution during the previous three months (monthly report of each health institution), proportional allocation of the total sample size was carried out to obtain the required sample size in each health institution. One hundred fifty four from Chitu, 106 from Leman, 77 from Dulele, and 55 from Darian health center. Sampling interval was determined by dividing average number of adult patients visiting each health center during data collection period by the corresponding number of adult patients to be interviewed in each health center.

Adult OPD patients who accept recommended test from provider were given green card and sent to prepared data collection room/data collectors and patients who refuse recommended test were given yellow card and sent to prepared data collection room/data collectors. Finally, the determined sample for each health center was achieved through exit interview by systematic sampling and voluntarily consenting adult patients within four weeks of working day.

The study variables were selected after reviewing relevant literatures according to objective of the research and by considering the local context of the study area. The dependent variables was PITC utilization among adult OPD patients. The independent variables were Individual related factors, Social factors and Provider related factors.

## Data collection and measurement

A structured interviewer administered questionnaire was used to elicit the following information: socio-demographic data, comprehensive knowledge on HIV/AIDS, risk perception of HIV infection, perceived benefit of HIV test, stigmatizing attitude towards people having HIV/AIDS, knowledge of PITC of HIV, attitude towards PITC, utilization of PITC, and use of PITC protocol by counselors from the study participants.

The questionnaire was adapted from DHS as well as from different reviewed literatures. It was prepared in English and was translated into Afan Oromo then back to English to check for the consistency. Data collectors were degree holder (two in sociology and two in English) who speak the local language and had experience in data enumeration.

Before the actual data collection process, the questionnaire was pre-tested on Ameya woreda public health center 8 km away from the study setting using 20 cases (5% of sample size). The pretest was conducted by involving the data collectors, supervisors and the principal investigator. After pre testing ambiguous and difficult questions to data collectors as well as the respondents were assessed and modification and correction before the actual data collection process was carried out.

In order to avoid ambiguity of data collection, the following terms were operationally defined:

**Misconception:** Study participants were considered to have misconceptions about HIV/AIDS transmission and prevention if, they agreed incorrectly to any of the five misconception questions (HIV is transmitted by shaking hands of a person living with HIV, wearing of cloths of a person living with HIV, Sharing meal with a person living with HIV, through mosquito bite and through supernatural means).

**Comprehensive knowledge about HIV:** Respondents were considered to have comprehensive knowledge about HIV if they correctly identify the three main ways to prevent HIV transmission (HIV is prevented by abstinence, staying faithful with one uninfected partner and using condom every time during sex) and reject the five misconceptions about HIV transmission and prevention.

**Stigma:** Individual who has stigmatizing idea for at least one of five questions related to stigma towards people living with HIV/AIDS (Would you willing to share a meal with a person you knew had HIV/AIDS? If your family member became ill with HIV, would you willing to care for him/her in your own household? If you knew a shopkeeper or food seller had HIV, would you buy food from them? If a member of your family became ill with HIV, would you want it to remain secret? If a teacher has the HIV virus but not sick, should he/she be allowed to continue teaching?).

## Statistical Analysis

Data was checked for consistency, edited, coded and entered in to Epidata version 3.1 and exported to SPSS window version 16.0 for analysis and cleaned to identify and correct inconsistencies and missing values.

Frequency, proportion, summary statistics was used to describe the study population. Bivariate logistic regression analysis was computed to see the presence and degree of association between independent and dependent variable. A p-value less than 0.25 was used to select variables as candidate for multivariate logistic analysis and multivariable logistic regression was done to identify predictors of

PITC utilization among adult OPD Patients. A p-value less than 0.05 were considered to declare statistical significance. Adjusted odds ratio and 95% CI were reported for interpretation.

## Ethical consideration

Ethical clearance was obtained from Jimma University ethical review board and written consent from South West Shoa Zone Health Bureau. Verbal consent of the study participants was obtained after explaining about the purpose of the study.

## Result

### Socio demographic characteristics of the respondents

Of the total of 392 patients requested for interview, 371 patients (94.6% response rate) aged between 15 to 64 years were interviewed. The rest 14 (3.6%) and 7 (1.8%) were refusal and incomplete interview, respectively. The mean ( $\pm$  SD) age of the study participants was  $31.9 \pm 12.2$  years. Among all patient participated in the study 194 (52.3%) were males. The majority [352 (94.9%)] of the respondents were from rural area. Nearly all [362 (97.2%)] of the study participants were Oromo by ethnicity. More than two in five of the participants [152 (41%)] were illiterate. One hundred eighty two (49.1%) of the study participant were followers of orthodox by religion followed by protestant 176 (47.4%) ( Table 1).

With regard to their marital status, two hundred twenty seven (61.2%) were married. More than four in ten (42.9%) were farmers, 116 (31.3%) were housewife. Half of the respondents 186 (50.1%) have average household monthly income of  $\leq$  499ETB (Table 1).

Variables	No	Percent (%)
Age		
15-24	118	31.8
25-34	118	31.8
35-44	66	17.8
45-54	42	11.3
55-64	27	7.3
Sex		
Male	194	52.3
Female	177	47.7
Residence		
Rural	352	94.9
Urban	19	5.1
Religion		
Orthodox	182	49.1
Protestant	176	47.4
Muslim	13	3.5
Ethnicity		
Oromo	362	97.6

Others*	9	2.4
Marital status		
Married	227	61.2
Single	98	26.4
Divorced/widowed	46	12.4
Educational status		
Illiterate	152	41
Primary	151	40.7
Secondary and above	68	18.3
Current occupation		
Merchant	10	2.7
House wife	116	31.3
Farmer	159	42.9
Student	56	15.1
Government employee	9	2.4
Un employee	21	5.7
Average house hold monthly in come		
≤ 499ETB	186	50.1
500-1000ETB	159	49.9
>1000ETB	26	7

### HIV/AIDS knowledge and Personal risk perception of HIV infection

All participant 371 (100%) have heard about HIV/AIDS. Nine of ten respondents (87.6%) believed that HIV/AIDS was definitely not curable disease. Most of the respondents [369 (99.5%)] mentioned sexual intercourse as a means of HIV transmission. Three hundred sixty eight (99.2%), three hundred eight (83.0%) and two hundred fifty one (67.7%) mentioned that HIV can be transmitted by sharing sharp material, through blood transfusion, and mother to child transmission respectively (Table 2).

Most of the participants were aware that HIV is not transmitted by sharing meal with a person living with HIV [367 (98.9%)], shaking hand of person living with HIV [357 (96.2%)], sharing cloths of person living with HIV [354 (95.4%)], supernatural means [299 (80.6%)] and mosquito bite [310 (83.6%)]. Nearly two third (64.7%) have no misconception on HIV transmission.

All of the respondents 371 (100%) reported that avoiding sex (abstinence) as method of HIV prevention, 350 (94.3%) staying with only one uninfected partner (faithful) and 210 (43.3%) participant reported using condom every time during sexual intercourse prevents HIV. Most of the respondents 240 (64.7%) do not have comprehensive knowledge on HIV transmission and prevention (Table 2).

Three hundred thirty nine (91.4%) of the participants do not perceive themselves as having a risk for HIV. Their reason for so were

they trust their sexual partner [164 (48.5%)], no injection with unsterile needle [172 (50.9%)]. On the other hand, risk rating for those who perceived as having a risk for infection was low for 21 (65.6%) , moderate for 5 (15.6%) and the rest 6 (18.8%) rated as high. The main reason for having high or moderate perception of having HIV infection were having multiple sexual partner [4 (36.4%)], injection with unsterile needle [5 (45.5%)] and sexual contact without condom [2 (18.1%)] (Table 2).

Variable /questions	No	Percent (%)
Can HIV be cured?		
Yes	46	12.4
No	325	87.6
HIV/AIDS transmitted through		
Sexual intercourse	369	99.5
sharing sharp material	368	99.2
Blood transfusion	308	83
Mother to child transmission	251	67.7
HIV/AIDS not transmitted through		
Sharing meal with a person living with HIV	367	98.9
Shaking hand of person living with HIV	357	96.2
Sharing cloths of person living with HIV	354	95.4
Supernatural means	299	80.6
Mosquito bite	310	83.6
HIV/AIDS can prevented by		
Avoiding sex (abstinence)	371	100
Staying with only one uninfected partner	350	94.3
Using condom every time during sexual intercourse	210	43.3
Misconception on HIV		
Have misconception	131	35.3
Have no misconception	240	64.7
Comprehensive knowledge on HIV		
Comprehensive	131	35.3
Not comprehensive	240	64.7
Do you think you can get the virus? ( n=371)		
Yes	32	8.6
No	339	91.4
Reason for not having the virus(n=338)		
Trust their sexual partner	164	48.5
No injection with unsterile needle	172	50.9
Using condom every time during sex	2	0.6

What are your chances of getting		
Infected with HIV? (n=32)		
Low	21	65.6
Moderate	5	15.6
High	6	18.8
Reason for having high or moderate perception of having HIV infection(11)		
Having multiple sexual partner	4	36.4
Injection with unsterile needle	5	45.5
Sexual contact without condom	2	18.1

**Table 2:** Knowledge and personal risk perception on HIV infection among adult OPD patients in Wonchi woreda, March, 2013.

### Attitude towards people living with HIV/AIDS

Two hundred thirty nine (64.8%), 349 (94.1%) and 146 (39.5%) of the participants said that they would share meal with HIV positive person, are willing to care for HIV positive and purchase from shop of HIV positive person, respectively. Nine of 10 (85.7%) of the participants reported that if somebody is HIV positive in the family

they will not keep it secret. Two hundred sixty five (73.4%) of the participant do think that an HIV positive teacher without illness should be allowed to continue teaching. Overall, only 105 (28.3%) of the participants do not stigmatize HIV infected individuals and seven of ten of the respondent (71.7%) stigmatize PLWHA.

### Knowledge about and attitude towards PITC among adult OPD patients.

Of 371 patients interviewed only one hundred forty two (38.3%) reported that they were aware of the availability of PITC before this interview. The source of information for PITC mentioned by participants were health worker [115 (81%)], friends [76 (53.5%)], health extension workers [50 (35.2%)], family [39 (27.5%)] and media [17 (12%)]. Majority of the patients have positive attitude toward PITC; 52.1% were extremely or very much in favor of PITC (table 3).

Many of the participants [347(93.5%)] believed that PITC is important in that it helps patients get access to ART and makes HIV testing easier for clients [282 (76.0%)]. Some 29 (7.8%) of the respondent reported that PITC have influence on patients being violates patient human right [16 (54.5%)] and will cause patients to avoid seeing health professionals for fear of being tested [13 (45.5%)] (Table 3).

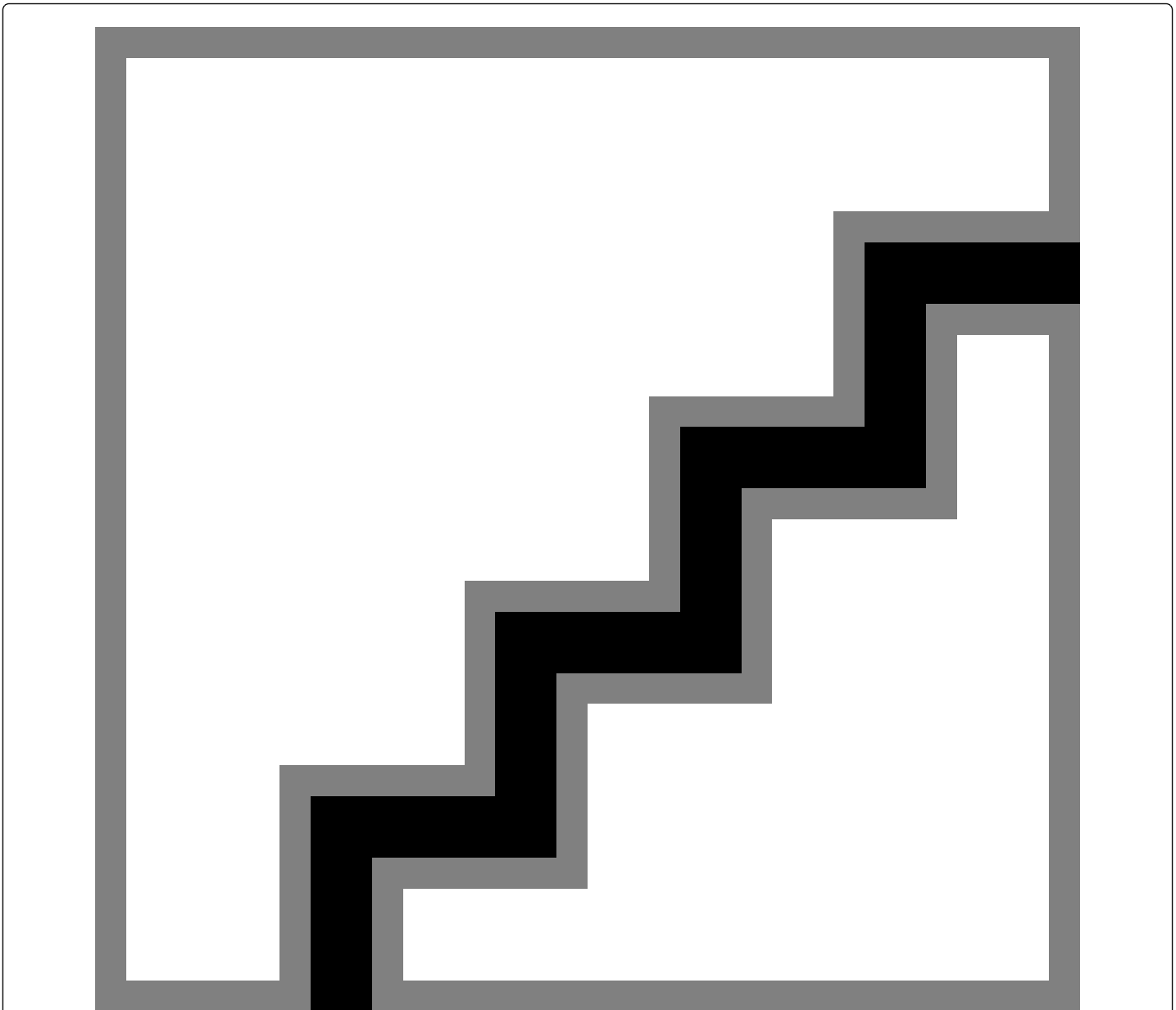
Variable	No	Percent (%)
Have you ever heard of PITC? (371)		
Yes	142	38.3
No	229	61.7
To what extent are you in favor of PITC (n=142)		
Extremely	53	37.3
Very much	21	14.8
Some what	68	47.9
Reason for importance of PITC (n=371)		
Helps patients get access to ART	347	93.7
Makes easier for clients to get tested	282	76.1
Increase number of tested people	47	12.7
Results in less discrimination of HIV Positive patients	29	7.9
Did you feel that PITC has influence on patient? (371)		
yes	29	7.8
no	342	92.2
What are the reasons for feeling that PITC has influence on patients? [29]		
Violet patients human right	16	54.5
Will cause patients to avoid seeing health professionals for fear of being tested	13	45.5
At which time should one be tested for HIV? (n=371)		
When one is sick	148	39.9

Before marriage	170	45.8
If only has multiple partners	34	9.2
At any time	315	84.9
Who are people in need of HIV test? (n=371)		
Female commercial sex workers	63	17
Drivers	48	12.9
People with history of unprotected sex	76	20.5
TB patients	15	4
Those with multiple partners	58	15.6
Any one sexually active	248	66.8
Those who are sick	210	56.6
Any one at risk	193	52

**Table 3:** Knowledge and Attitude Related to PITC among adult OPD patients Wonchi woreda March, 2013.

#### **PITC utilization and reasons for utilization among adult outpatient department patients**

The overall utilization of PITC among the respondents was [291 (78.4%)] and the rest [80 (21.6%)] refusal of PITC (Figure 1).



**Figure 1:** PITC utilization among adult OPD patients of wonchi woreda March, 2013.

The perceived facilitators for PITC utilization were recommendation by health worker [268 (92.1%)], sickness [253 (86.9%)], heard that he/she could take test and get result on the same day 128 (44.0%) (Table 4).

On the other hand, reported barriers for PITC utilization were, thinking oneself as not being at risk [60 (75%)], partner trust [48 (56.2%)], unable to cope with the positive result [41 (51.2%)], tested before [23 (28.3%)] (Table 4).

Reason for utilization of PITC:	n=291
Health worker recommend it	268 (92.1%)
He/she was sick	253 (86.9%)

Heard that he/she could take test and get result on the same day	128 (44.0%)
Knowing that treatment is available	45 (15.5%)
TV/radio messages	13 (4.5%)
Parents/family/friends advised to have test	9 (3.1%)
Knowing that the test result will be confidential	7 (2.4%)
Was encouraged by someone who was tested	7 (2.4%)
Was worried about the previous sexual contact	6 (2.1%)
Reason for refusal of PITC	n=80
Thinking self as not being at risk	60 (75%)

Partner trust	48 (56.2%)
Unable to cope with the positive result	41 (51.2%)
Tested before	23 (28.3%)
Fear of test result	13 (16.2%)
Fear of stigma and discrimination following the positive result	3 (3.8%)
Belief that testing is not useful	2 (2.5%)
Fear of discrimination by health providers	1 (1.2%)

**Table 4:** Reasons for utilization and refusal of PITC among adult OPD patient of Wonchi woreda, Oromia, central Ethiopia, 2013.

### Factors associated with PITC utilization among adult OPD patients

Selected variables that were significantly associated at the bivariate logistic regression analysis (sex, marital status, educational level, having awareness about availability of PITC, having HIV test before and giving explanation on process of testing for patient by counselor) were further examined in the multiple binary logistic regression to see their association with PITC utilization (table 5).

Compared to female adult OPD patients, male adult OPD patient were 1.81 times more likely to utilize PITC [AOR & (95% CI) = 1.81

(1.02, 3.24)]. Divorced/widowed adult OPD patients were 68% times less likely to utilize PITC compared to married adult OPD patient [AOR & (95%CI) = 0.32 (0.15, 0.69)].

Adult OPD patients who have comprehensive knowledge of HIV were 59% times less likely to utilize PITC compared to adult OPD patients who do not have comprehensive knowledge of HIV [AOR & (95%CI) = 0.41 (0.220, 0.759)]. Patient who heard about PITC before data collection were 2.89 times more likely to utilize PITC compared to adult OPD patients who don't heard about PITC before [AOR & (95%CI) = 2.89 (1.48, 5.66)]. Adult OPD patient who received HIV test before were 4.15 times more likely to utilize PITC than those who were not tested before [AOR & (95%CI) = 4.15 (2.30, 7.47)]. Finally, explaining the process of testing for adult OPD patient by counselor were positively associated with PITC utilization. Patient who reported of having received an explanation about the process of testing were 2.26 times more likely to utilize PITC than patients who reported of not having an explanation about the process of testing in OPD by provider [AOR & (95%CI) = 2.26 (1.15, 4.45)].

On the contrary, educational level, income status, residence, age, current occupation, having knowledge on HIV transmission and prevention, holding stigmatizing attitude towards people having HIV/AIDS, risk perception of HIV infection, perceived benefit of PITC testing and provider related factors such as informed consent, confidentiality, efficiency of referral and support, were not independently associated with utilization of PITC.

Explanatory variable	PITC utilization		Crude OR (95%CI)	Adjusted OR (95%CI)
	Utilizer	Non utilizer No (%)		
Sex				
Male	163 (84)	31 (16)	2.01 (1.214,3.338)	1.81 (1.015,3.240)
Female	128 (72.3)	49 (27.7) <sup>R</sup>	1	1
Marital status				
Married	183 (80.6)	44 (19.4) <sup>R</sup>	1	1
Single	85 (86.7)	13 (13.3)	1.57 (0.804,3.072)	1.81 (0.852, 3.829)
Divorced /widowed	23(50)	23(50) <sup>R</sup>	0.24 (0.124,0.468)	0.32 (0.149,0.696)
Comprehensive Knowledge On HIV				
Comprehensive	96 (73.3)	35 (26.7)	0.63 (0.382,1.049)	0.408 (0.220,0.759)
Not comprehensive	45 (18.8)	195 (81.2) <sup>R</sup>	1	1
Heard about PITC Before				
Yes	127 (89.4)	15 (10.6)	3.13 (1.828,6.160)	2.89 (1.480,5.659)
No	164 (71.6)	65 (28.4) <sup>R</sup>	1	1
Have you tested for HIV before				
Yes	192 (88.5)	25 (11.5)	4.27 (2.508,7.258)	4.15 (2.301,7.472)
No	99 (64.3)	55 (35.7) <sup>R</sup>	1	1
Provider explained for you about HIV testing process				



Yes	116 (87.9)	16 (12.1)	2.65(1.461,4.812)*	2.26 (1.148,4.448)*
No	175 (73.1)	64 (26.8) <sup>R</sup>	1	1
statistically significant variable P < 0.05 <sup>R</sup> –reference group				

**Table 5:** Association between utilization of provider initiated HIV testing and counseling and selected explanatory variable (using crude and adjusted OR).

## Discussion

The finding of this study revealed that the utilization rate of PITC among adult outpatient were [291 (78.4%)]. These report were higher than acceptance rate of HIV testing and counseling reported by different studies done in South Ethiopia at Arbaminch (35%), North West Ethiopia (70.6%) [21,22], PITC in Dessie town among adult OPD patients (36.5%) [23], in East Sudan (12.7%) and in rural South Africa 43.5% [30,31] and lower than PITC in Gondar town among pregnant women (82.5%) [32]. This increasing result in utilization of PITC among adult may due to high governmental concern giving awareness on HIV to achieve zero HIV infection, zero discrimination to PLWHA and zero HIV/AIDS related death.

The most frequent perceived facilitators for PITC utilization were health worker recommends it 268 (92.1%), he/she was sick 253 (86.9%), heard that he/she could take test and get result on the same day 128 (44%). Knowing that treatment is available 45 (15.5%), TV/ radio messages 13 (4.5%), knowing that the test result will be confidential 7 (2.4%) were the least perceived facilitators for PITC utilization which is less than study in Botswana which reported the most common facilitating factors among those tested were TV or radio messages (69%), knowing that treatment was available (65%), and knowing that the test results would be confidential (64%) [33].

On the other hand, reported barriers for PITC utilization were, thinking self as not being at risk 60 (75%), partner trust 48 (56.2%), unable to cope with the positive result 41 (51.2%), tested before 23 (28.3%), fear of test result 13 (16.2%) which is higher than study done in urban and rural South Africa [26,34].

All participants, 371 (100%), have heard about HIV/AIDS, comparable with EDHS 2011 [18]. Only 131 (35.3%) have comprehensive knowledge on HIV which were higher than EDHS 2011 and lower than study by Alemayehu et al. in Addis Ababa [25].

One hundred thirty one of the respondent (35.3%) have misconception which is lower than a study conducted in 33 districts all over the Ethiopia in which 41% not rejected two common misconceptions and study by Alemayehu et al. in Addis Ababa [25,35].

Three hundred thirteen (85.1%), of the respondent believed that health looking person can have HIV which is greater than study conducted in 33 districts all over the country sixty-nine percent said a healthy looking person can have HIV and EDHS 2011 [15,35].

Although all subjects included in this study reported that they had heard of HIV/AIDS, the assessment done on their knowledge of the modes of transmission and preventive measures indicated the fact that most of the interviewed adult OPD patients six of ten were lacking the comprehensive knowledge. This indicates the prevailing fact among our population in general.

Three hundred thirty nine (91.4%) of the participants not perceived themselves as having risk for HIV. The reason for not get the virus were

they trust their sexual partner 164 (48.5%), no injection with unsterile needle 167 (50.9%) and using condom every time during sex 2 (0.6%). These report were higher than study by Degu et al. in South Ethiopia among TB patient, Muheza district in Tanzania 68% of the respondents did not consider themselves at risk and North East Ethiopia in Dessie town [21,23,36].

Two hundred sixty five (73.4 %) of the participant do think that an HIV positive teacher without illness should be allowed to continue teaching, which is higher than EDHS 2011 report. Overall, only 105 (28.3%) of the participant have no stigma to all five indicators which is in line with EDHS 2011. Study in North West Ethiopia on predictors of HIV Testing among patients with tuberculosis found that low awareness and stigma were the major reasons for non acceptance of HIV testing [37].

Concerning attitudes towards PITC in this study, only one hundred forty two (38.3%) reported that they were aware of the availability of PITC before this interview which is lower than study in Botswana fifty-four percent of respondents had heard of routine testing [33]. Majority of the patients have positive attitude toward PITC 52.1% were “extremely” or “very much” in favor of PITC, this report were lower than study in Uganda [38]. These might be due to difference in study setting and study population.

All of the participant believed that PITC were important being helps patients get access to ART 347 (93.5%) and makes easier for clients to get tested 282 (76.0%) and followed by increase number of tested people 47 (12.7%) this result is comparable with study conducted in Zimbabwe and Zambia [39,40].

Some of the respondent 29 (7.9%) reported that PITC have influence on patient. Reason for influence of PITC were being violet patient human right 15 (54.5%) and will cause patients to avoid seeing health professionals for fear of being tested 14 (45.5%) this finding is higher than study in Gondar town 17.75% of mothers believed that routine testing would cause people to avoid seeing their health care provider for fear of being tested and 8.25% of mothers thought that routine testing would lead to more violence against women and population based study in Botswana [32,33].

Male adult OPD patient were 1.81 times more likely to utilize PITC which is in line with study in Eastern Sudan and sub Saharan Africa report Ethiopia uptake of testing and results collection was higher among men [30,41]. These results indicate fear of partner by female since most of our respondent was rural community that females are dominated by their husband in rural area due to community norm.

These results were contrary with study in Kenya Nairobi that reveal males were less likely to have had PITC compared to females and study in Addis Ababa among adult OPD patients presenting with conventional sexually transmitted infections [25,42]. These may be due to difference in study setting and sample size.

Divorced/widowed marital status among adult OPD patients was negatively associated with utilization of PITC. Divorced/widowed adult OPD patient were 68% times less likely to utilize PITC compared to married adult OPD patient, this might be divorced/Widowed respondent may have more than one sexual partner that they perceive themselves high risk to HIV infection that lead them fear to receive their test result. This result was inconsistent with study in Kenya Nairobi reports divorced/Separated/widowed were more likely to have had PITC than their married and never married counterpart [42]. This may be due to difference in socio cultural and study setting.

Comprehensive knowledge on HIV has negative association with utilization of PITC; adult OPD patients who have comprehensive knowledge of HIV were 59% times less likely to utilize PITC compared to adult OPD patients who do not have comprehensive knowledge on HIV. This finding is contrary with study in Gondar town among pregnant women [32]. This might be due to that people who not have comprehensive knowledge on HIV, in our study, had no or low risk for HIV infection than who have comprehensive knowledge which made them confident enough to utilize PITC. Thus it is difficult to judge people who have comprehensive knowledge on HIV who were relatively more educated than who not have comprehensive knowledge on HIV have less utilization of PITC.

Having health information/awareness on provider initiated HIV testing and counseling were positively associated with utilization of PITC. Patient who heard about PITC before data collection were 2.89 times more likely to utilize PITC compared to adult OPD patients who don't heard about PITC before. This might be due to that those who ever not heard of PITC need time to think of HIV test and/or discuss with whom they want to discuss before receiving PITC service. This finding is in line with case control study conducted in East Gojjam and study in North West Ethiopia [17,29] and contrary of study in South Africa among women attending urban sexually transmitted disease clinic [26]. This could be due to difference in study setting and socio culture.

Having HIV test before were positively associated with utilization of PITC, during the study adult OPD patient who received HIV test before were 4.15 times more likely to utilize PITC than those who were not tested before. This is due to individuals who were tested before know the presence of PITC in the facility, have awareness on benefit of PITC, they think their result were negative as previous & have readiness to have it. This finding is in line with finding in Addis Ababa among adult OPD patients presenting with conventional sexually transmitted Infections, study in North West Ethiopia and study done by Dalal et al. in South Africa [22,25,43].

Patient who reported of having received an explanation about the process of testing were 2.26 times more likely to utilize PITC than patients who reported of not having an explanation about the process of testing in OPD by provider. This might be explaining the process of testing for the patient could reduce stress on fear of test result and increase readiness to receive test because PITC testing done by their counselor with in short time.

## Conclusions

The overall PITC utilization among adult OPD patient in the study setting was 87.4%. Knowledge on HIV is low in the study population; majority of the participants didn't have comprehensive knowledge (64.7%) and (35.3%) fail to reject misconception about means of HIV transmission and prevention. Only thirty two (8.6%) of the

participants perceived themselves as having risk for HIV. Majority of the participants (71.7%), have not expressed accepting attitude to all five indicators of stigma and discrimination to ward PLWHA.

Generally being male sex, having awareness about PITC preceding the study, receiving test before and explaining process of testing during counseling were factors independently positively associated with utilization of PITC where as divorced/widowed marital status and having comprehensive knowledge on HIV were negatively associated with PITC utilization.

## Authors' contributions

DF contributed to proposal development, pre-testing the questionnaires, organizing data collection process, data entry, data cleaning, data analysis, result writing, interpretation and manuscript preparation. TD and SA contributed advise in proposal development , result writing and interpretation. MS contributed in scientific manuscript preparation. All the authors read and approve the draft manuscript.

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