

# HIV prevalence, risk perception, and correlates of risky sexual practice among migrant workers in Northwest Ethiopia

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## Abstract

**Background:** Migrant laborers exhibit high risk sexual behaviors. This is believed to facilitate HIV transmission.

**Objective:** To determine the prevalence of HIV, risk perception, and correlates of risky sexual behavior among migrant laborers in Northwest Ethiopia.

**Methods:** A community-based cross-sectional survey was carried out along with qualitative in-depth and key informant interviews in March 2014. A total of 626 workers from three development project sites were randomly selected and were involved in the study. Blood sera from 561(90 %) of the samples were tested for HIV at the Regional Health Research Laboratory Center. While binary logistic regression was employed to identify independent predictors of risky sexual practice, qualitative data helped to explain the risk factors for HIV infection among migrant workers.

**Results:** The median,  $\pm$  inter quartile range (IQR), age of workers was 22 ( $\pm$  6) years. HIV prevalence among the study population was found to be 0.53%. The majority (81.4%) of study participants perceived that they have low (49.5%) or no (31.9%) risk to acquire HIV. In the last 12 months, 52 (17%) workers reported to have had casual sex with two or more non-marital partners. The prevalence of consistent condom use was found to be 16.9%. Risky sexual practice among migrant workers was independently associated with being female (AOR= 0.32, 95% CI: 0.15, 0.65), the need to save money (AOR=0.46, 95%CI: 0.24, 0.87), low perceived risk of HIV (AOR= 4.5, 95%CI: 1.62,12.77), drinking alcohol (AOR=8.96, 95%CI: 3.27, 24.57), perceived effectiveness of condoms (AOR=4.16, 95%CI: 1.48, 11.75), and discussion about HIV/AIDS with partner (AOR = 0.2, 95%CI: 0.11, 0.39). Living and working conditions, changes in sexual behavior at the destination, lack of condoms, low perceived risk of HIV, and multiple sex partners were risk factors for HIV.

**Conclusions:** In this study, HIV prevalence among migrant laborers was much lower (0.53%) than the national and regional averages despite low risk perception, multiple sexual partners, relatively low consistent condom use. This is an opportune moment to maximize prevention efforts among migrant workers so that prevalence remains low. Education and counseling services at the place of origin as well as the project site may improve risk perception, and access to condoms. [*Ethiop. J. Health Dev.* 2015;29 (2):90-98]

## Introduction

Adult HIV prevalence in Ethiopia is estimated at 1.5%, with highest rates in urban areas and among females. Amhara region has one of the highest HIV prevalence and hosts the second largest number of HIV-infected persons in Ethiopia (1).

Daily laborers and temporary employees who live away from home are believed to experience a high risk in acquiring HIV infection and sexually transmitted infections. This is often attributed to such factors as a low level of condom use, engagement in multiple sexual partnership and low level of risk perception(2, 3) . Studies revealed relatively higher HIV prevalence among the spouses of migrant workers back home than the general female population suggesting the potential role of this in facilitating HIV transmission (2-5).

Migrant workers reside far from their families and are likely to experience sexual engagement with non-regular partners including female sex workers (6). Condom use among migrant workers is documented to be low despite engagement in casual sexual practices (7, 8).

Studies in other parts of Ethiopia documented that migrants are engaged more in multiple sexual partnerships as compared to non-migrant workers (31.4% versus 7.4%), have more sexual engagement with commercial sex workers (CSWs) (22.3% versus 13.3%), and do not consistently use condoms (12.7% versus 9.8%) (9).

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Available evidence generally documented that male, age, perceived severity of HIV/AIDS, knowledge of HIV/AIDS, peer influence, perceived benefits of prevention, and working conditions are common determinants of HIV infection (3, 10, 11). Migrant workers are nearly twice more likely to be vulnerable to HIV infection compared to non-migrant local workers. Among all workers, those who were single or had poor HIV knowledge and low access to condoms were more likely to be vulnerable to HIV infection (12-14).

Given their high interaction with CSWs, frequent sexual contact with casual partners, and low and inconsistent condom use, migrant workers are believed to be bridging the spread of HIV from high risk areas to low risk places of origin (5). Unprotected sex in places of destination with high HIV prevalence poses a risk of transmission from high-risk population groups to migrants, and in turn to their married and other sexual partners in places of origin (6, 15).

An epidemiological synthesis of data on HIV/AIDS in Ethiopia by the Federal HIV/AIDS Prevention and Control Office (16) documented that due to the heterogeneity of the epidemic, HIV/AIDS programs should not be drawn based on national-level statistics. The report implies the need to generate evidences from regions, districts, communities, and population groups that exhibits higher prevalence rates. Programs that do not target HIV hot spots with appropriate intervention will be inefficient and miss opportunities to address the unique factors driving infection in the most at risk populations (16). Such up-to-date and context specific evidence may contribute to improved programming (17).

In as much as there are development programs in the country, there is an expansion of large farms, road and other construction work and consequent rapid migration of young people in search of job in Amhara region. Such emerging initiatives require additional resources and more focused programs for HIV prevention. This study was carried out to determine the level of HIV infection among migrant workers in selected development projects and factors that contribute to risky sexual behaviors among this group. The study, more particularly aims to determine the prevalence of HIV, risk perception, and correlates of risky sexual behavior among migrant workers in the development projects that were chosen for this study.

## Methods

**Design:** A community-based quantitative cross-sectional study was carried out along with qualitative methods (in-depth and key informant interviews) at the development projects in Amhara Region in March 2014.

**Setting:** The study was conducted in three project areas in Amhara Region: Beles sugar development, Rib irrigation dam construction, and Dejen-Markos road construction sites. According to the Amhara Labor and Social Affairs Bureau, the three projects have a total of

10,897 workers. Beles sugar development project employed 8,100 workers while Rib irrigation dam project employed 2,300 workers and Dejen-Markos road construction project employed 497 workers. In Beles sugar development project there is a town and FSWs reside there while in the other two project sites, there were no FSWs in the vicinity.

**Study population:** The source population for the study included all project workers residing in or around the projects employed as temporary or permanent workers in the respective projects. The study population comprised all migrant workers in the selected development projects. Office workers were excluded from the study because they often stay in office and don't exhibit similar behaviors.

Sample size for this study was calculated using estimation for single population proportions with the following assumptions confidence level,  $z=1.96$ , prevalence of HIV,  $p=15.2\%$  (5), margin of error,  $w=0.03$ , and non-response rate 15% (since the workers are highly mobile within the project sites). The sample size was calculated at 633 using Epi Info version 7. Study participants were selected using simple random sampling method using a random number generator from Open Epi software. The number of participants from each development project was allocated proportional to the number of workers in the respective project site. Accordingly, 134 workers from the Rib Irrigation dam, 470 from Beles sugar development, and 29 from Dejen-Markos road construction projects.

**Data collection procedures:** Data on socio-demographic characteristics, health service and risk perception were collected using a structured questionnaire adapted from a study conducted in Metema on migrant laborers (14). The outcome variables were HIV prevalence, risk perception and practice to HIV infection while independent variables included socio-demographic indicators, living conditions, availability and access to health service, and working environment. HIV risk perception of oneself and friends was measured by asking the participant on the extent to which he/she or a friend is at risk of acquiring HIV.

Questionnaire was pre-tested on migrant workers in another development project in Bahir Dar. Data collectors were recruited on the basis of their previous experiences, with at least a diploma level of education and not working around the project areas to minimize observer and social desirability bias. Data collectors were trained on how to conduct the interview and record. They were closely supervised during data collection. Completeness of questionnaires was checked daily.

A total of 12 in-depth interviews and 6 key informant interviews were conducted among project coordinators, foremen, health care providers, and migrant laborers to explore the risk factors for HIV infection among migrant laborers.

**HIV testing:** Individuals included in the interviews were requested to give blood for HIV testing. All migrant workers irrespective of their sexual experience were included in the HIV test.

Infectious disease experts working at the Regional Research Laboratory Center that is a WHO accredited reference laboratory carried out the HIV tests, using current national guideline for laboratory diagnosis of HIV using KHB (first test), Stat Pack (second test for positives), and Unigold (tie breaker). At the end of testing, all positive tests and 10% of the negatively tested samples were subject to HIV-1/2 Vironostika ELISA testing for quality assurance.

Quantitative data were entered into Epi Info 7 and cleaned and exported to SPSS 20 statistical package for analysis. Univariable analyses were used to describe the basic characteristics of participants and determine the level of HIV infection, condom use, and multiple sexual partnerships. The median was used because the age was skewed (Kolmogorov-Smirnov test statistic = 0.23,  $p < 0.0001$ ). Bivariable and multivariable, (using backward stepwise method), logistic regression analyses were employed to identify independent determinants of risky sexual practice. Qualitative data were transcribed, translated, and analyzed using thematic analysis, which helped to explore the risk

behaviors among migrant workers that contributed to HIV infection, in Open code software version 3.4.

**Ethical Issues:** The study was conducted following ethical approval from the Institutional Review Board of Amhara Regional Health Bureau. Permission was obtained from the heads of each of the three projects. Written consent was obtained from each participant before interviews and sample collection following detail explanation about the purpose of study. Participants were told that they have the right to withdraw from the study at any point during data collection.

To ensure confidentiality, the questionnaires were anonymous and codes were established to link the questionnaire to the HIV testing data. The questionnaires were kept locked in a secure place.

## Results

**Socio-demographic characteristics of migrant workers:** A total of 626 laborers participated in the study with a response rate of 98.9%. The median (+ interquartile range) age of the workers was 22(+/-6) years and 437(69.8%) were in the age group of 15-24 years. Three hundred ninety two (62.8%) workers were males. More than half (54.6%) of the workers had attained secondary education levels or higher (Table 1).

Table 1: **Socio-Demographic Characteristics of migrant and resident laborers in the development corridors of Amhara region, Northwest Ethiopia, March 2014**

Characteristics	Number of workers	Percent
<b>Project site</b>		
Dejen-Markos	28	4.5
Beles sugar development	471	75.2
Rib irrigation	127	20.3
<b>Gender</b>		
Male	392	62.6
Female	234	37.4
<b>Age of respondent</b>		
15-19	138	22.0
20-24	299	47.8
25-29	91	14.5
30-34	31	5.0
35-39	27	4.3
40+	40	6.4
<b>Ethnic Group</b>		
Amhara	541	86.4
Agew	75	12.0
Others	10	1.6
<b>Home Address (Zone)</b>		
West Gojjam	211	33.7
Awi	167	26.7
South Gonder	159	25.4
East Gojjam	28	4.5
Bahir Dar	16	2.6
North Gonder	11	1.8
Waghimra	9	1.4
Others	25	4.0
<b>Marital Status</b>		
Currently married	234	37.4
Never married	68	10.9
No steady partner	305	48.7
Others	19	3.0
<b>Level of Education</b>		
Un able to read and write	96	15.3
Read and write only	23	3.7
Primary	165	26.4
Secondary	203	32.4
College Diploma & Above	139	22.2

**Workplace and movement-related characteristics:** Almost half (49.1%) of the workers lived alone outside campus in rented houses. Nearly one-third (29.1%) of them were living in shared houses in the campus. Others lived together with a friend, relative or other residents. Wages were found to be paid every month. More than two-thirds (71.2%) did not have dependents that they use their wages for basic needs (565), 90.3% save (421), 68.8%, or for entertainment, (141) 22.5%.

**HIV prevalence among migrant laborers:** Of the 626 participants, 12 samples were lost due to a malfunctioning centrifuge, and the rest (53) refused to give blood samples, yielding the success rate of 561 (89.6%) were drawn and sera were transported to the Regional Research Laboratory Center. Finding shows HIV prevalence among migrant workers in selected development projects in Amhara was 0.53%. All of those who tested HIV positive were male workers and were from Beles sugar development project.

**Awareness of HIV/AIDS:** All workers reported to have heard about HIV/AIDS. The main sources of information were health workers (87.5%), television/radio (51.6%), friend/colleague (35%), newspaper (16.3%), girlfriend/partner (8.5%), and social gathering (3.7%). Almost all heard that HIV can be transmitted from one person to another. The main modes of transmission mentioned by migrant workers were sharp blades/materials 581(92.8%), engagement in sexual activity without wearing condom 365(58.3%), injection with a contaminated needle 351(56.1%), pregnancy/delivery 178(28.4%), and sex with many partners 169(27.0%). Some workers mentioned misconceptions, such as kissing 6(1.0%) or touching a person living with HIV 5(0.8%). The major methods of prevention mentioned by migrant workers were found to include: avoiding use of contaminated sharps; having sex with only one partner; and abstinence (Table 2).

Table 2: Awareness of HIV/AIDS among migrant laborers in the development corridors of Amhara Region, Northern Ethiopia, March 2014 (multiple responses)

Characteristics	Number of Workers	Percent
<b>Source of information about HIV/AIDS</b>		
Health worker	548	87.5
Television	323	51.6
Friend or colleague	219	35.0
Newspaper	102	16.3
Girlfriend/Casual partner	53	8.5
Social gathering	23	3.7
Other sources of information	127	20.3
<b>HIV can be transmitted from person to person</b>		
Yes	622	99.4
No	3	0.5
Don't know	1	0.2
<b>Mode of transmission of HIV mentioned*</b>		
Sharing shaving/sharp materials	581	92.8
Have sex without a condom	365	58.3
Injection with/sharing a used needle	351	56.1
During pregnancy/delivery	178	28.4
Have sex with many partners	169	27.0
Breastfeeding	113	18.1
Kissing a person who has HIV/AIDS	6	1.0
Touching a person who has HIV/AIDS	5	0.8
<b>Methods of prevention of HIV mentioned</b>		
Avoid using contaminated needles	439	70.1
Sexual engagement with one partner	348	55.6
Have no sex at all	240	38.3
Avoid blood contact	204	32.6
Consistently use of condoms	153	24.4
No sex with sex workers	72	11.5
Have sex with a healthy-looking partner	30	4.8
Reduce number of partners	16	2.6
Don't know	1	0.2

**Perceived risk of HIV infection:** Migrant workers perceived that CSWs, migrant workers, substance users, and people who have sex without condom are at higher risk of acquiring HIV. Regarding their own perceived risk, majority described having either low (49.5%), or no (31.9%) risk of acquiring HIV. With

regard to their friends, however, the majority said that their friends are at higher (35.0%) or very high (36.6%) risk of acquiring HIV infection, while 28.4% of them reported that their friends have low or no risk of getting HIV (Table 3).

Table 3: HIV risk perception among migrant laborers in development corridors of Amhara region, Northern Ethiopia, March 2014 (multiple response)

Characteristic	Number of Workers	Percent
<b>Perceived at risk of HIV</b>		
Commercial sex workers	365	58.3
Migrant workers/people who travel	304	48.6
Persons addicted to alcohol, khat	300	47.9
People who don't use condoms	249	39.8
People unfaithful to their partners	206	32.9
People with many girlfriends	5	0.8
<b>Perceived self-risk of acquiring HIV</b>		
No risk	199	31.9
Low	310	49.5
High	71	11.3
Very high	46	7.3
<b>Perceived risk of a friend acquiring t HIV</b>		
No risk	41	6.5
Low	137	21.9
High	219	35.0
Very high	229	36.6
<b>Previous experience of HIV test</b>		
No	123	19.6
Yes	503	80.4
<b>Knew test result (if ever tested), n=503</b>		
Yes	10	2.0
No	465	92.4
Difficult to respond	28	5.6

**Risky sexual practice:** Nearly two-thirds (65.2%) of participants reported to have ever had sexual intercourse. In the last 12 months, 69 (17%) participants had had sexual engagement with two or more partners. Casual sexual partners (66.9%) and CSWs (33.1%) were the common sex partners for migrant workers. The types of sex partnership at the work place were non-regular and were multiple partnership. The prevalence of condom use was 26.0%, among whom nearly half, (51.9%), used condoms consistently, making the prevalence of consistent condom use to 13.5% among workers who ever had sex (Table 4).

**Factors facilitating HIV infection:** Qualitative findings revealed that various factors facilitate HIV infection among migrant workers. These factors were categorised under five key themes: living and working conditions at destination, wage payment, change in sexual practice at destination, multiple sexual partnership, and low and inconsistent condom use.

#### **Situation at work place**

Data from in-depth interviews revealed that living conditions influence sexual behavior. Migrant workers living in rented houses in the towns often share small rooms, which expose them to unplanned sex. An administrator in the Beles Sugar development project described the living conditions of workers - "In this campus, males and females are living in a separate block. But for those who live outside of this campus, males and females share rooms to save money without having formal marital union." In Dejen Markos and Rib projects, in-depth interviews revealed that the daily laborers live with their families and are at lower risk of having unprotected sex. This was due to the proximity

of project sites to their villages where they get back home after working hours.

It was gathered that, young laborers do not talk openly about HIV/AIDS that they are unable to access condoms, and do not know how to negotiate for safer sex practices. In an in-depth interview, a male daily laborer from Jawi explained this as "these young people who are working in the project secretly practice sex because they consider that talking about HIV/AIDS and sexual issues is shameful."

Female migrant workers who fail to get job after arrival in the project area were reported to temporarily engage in sex work. This is explained to put them at risk of acquiring HIV infection. A male migrant worker from Beles sugar development project explained the situation as: ";;; usually they (female workers) are told that they can find work easily at project sites. They arrive without enough money and when they stay long without job, they start going to the towns and unfortunately go to sex work to survive..." The work site, usually far away in the fields, could also put female laborers at risk of unsafe sex. There may be intimacy with male workers who stay longer in the evening, or men who help women to finish their work may force them to have sex in exchange.

**Payday:** Pay day was found to be considered by daily laborers as a day to entertain. The findings revealed that on pay day migrant workers get out for drinks and get engaged in casual sex with female sex workers. A daily laborer reflected that - "Once the workers get their salary, they run out to enjoy drinking, chewing khat, and get sexual outlet."

Table 4: Risky sexual practice of migrant laborers in development projects of Amhara Region, Northern Ethiopia, March 2014.

Characteristics	Number of Workers	Percent
<b>Ever had sex</b>		
Not at all	218	34.8
Yes	408	65.2
<b>Number of sexual partners in the last 12 months</b>		
One	339	83.0
Two	45	11.1
Three or more	24	5.9
<b>Ever used condom (n=408)</b>		
No	302	74.0
Yes	106	26.0
<b>Condom use frequency (n=106)</b>		
Every time	55	51.9
Most times	9	8.5
Sometimes	42	39.6
<b>Reasons for not using condom (n=302)*</b>		
I trust myself/herself	237	78.5
Prefer skin to skin	27	8.9
Condoms are expensive	9	3.0
Condoms are not available	42	13.9
We got tested	17	5.7
<b>Ever paid money for sex, in the last 6 months</b>		
No	372	91.2
Yes	36	8.8
<b>Encountered any form of STIs in the past</b>		
No	391	97.3
Yes	11	2.7
<b>Drank alcohol before last sex</b>		
No	374	93.0
Yes	28	7.0
<b>Ever chewed khat</b>		
No	392	97.0
Yes	12	3.0
<b>Perceived condom effectiveness to prevent HIV</b>		
Not at all effective	128	20.4
Moderately effective	160	25.6
Completely/very effective	338	54.0

\*multiple response

**Change in sexual behavior at destination of migration:** Migrant laborers were found to exhibit such risky sexual behavior as engaging in multiple sex, considering other partner than partner at home and practicing drinking and Khat chewing. This was argued to be attributed to feeling of not seen. Fueled by evident lower risk perception and poor life skills to protect themselves from HIV, migrant workers become most vulnerable to HIV infection. One migrant worker noted that “...Here, it is very easy to get engaged in sexual activity without any inhibition since no one would see you..”

**Multiple sexual partnerships and sex with female sex workers:** Many workers, however, go to female sex workers for paid sex, and it is possible to have unprotected sex if they pay more money for the sex workers. Multiple sexual partnership is very common among workers due to the working and living conditions described above. Laborers whose families

reside close to the project area may join their family during break time, but some workers to go to nearby towns during their breaks and have sex with female sex workers.

**Low and inconsistent condom use:** Condom use among workers is a big concern due to low availability, the casual nature of sex practices, substance use, and desire for increased sexual pleasure. A male migrant laborer in Beles sugar development project explained: “condom use is not consistent. When you start you may use frequently, but later on you become careless when you are more familiar with her. . . .”

In the project areas, condoms were not available in places for easy pick up by migrant workers when the need arises. Social marketing or government structures tried to provide condoms to some project areas, including the campuses where some workers live but finding shows that condoms were available only in

health centers, clinics, and hotels and condoms were not available in the project villages where most of the workers reside.

Different factors contributed to low condom utilization among migrant workers. The perception that condoms are not effective to protect users from HIV infection makes migrant workers reluctant to use condoms and contributes to very low condom utilization. The perception that condoms may transmit disease coupled with lack of skills to use condoms properly could also decrease condom utilization among migrant workers.

**Correlates of risky sexual practice among migrant workers:** In the multivariable logistic regression being female had a 68% reduced risk of having risky sexual practices (AOR =0.32, 95% CI: 0.15, 0.65) than males. Migrant laborers who saved from their wages were

54% less likely to have experienced risky sexual practice as compared to their non-saving counterparts (AOR=0.46, 95%CI: 0.24, 0.87). Trust to sexual partners increases risky sexual practice by 3.34 fold (AOR= 3.34, 95%CI: 1.6,6.97), migrant workers who drank alcohol just before sex were nearly 9 times more likely to have risky sex as compared to workers who didn't drink alcohol (AOR=8.96, 95%CI: 3.27, 24.57). Migrant workers who perceived that condoms are moderately effective (AOR =4.16, 95%CI: 1.48, 11.75) or completely effective (AOR= 2.78, 95%CI: 1.06, 7.29) to prevent HIV infection were more likely to experience risky sex as compared to those who said condoms are not effective. Having discussion about HIV/AIDS with partner resulted in reduction of risky sexual practice by 80% (AOR = 0.2, 95%CI: 0.11, 0.39) (Table 5).

Table 5: Binary logistic regression analysis of factors associated with risky sexual practice among migrant laborers in Northwest Ethiopia, March 2014

Risk factor	Risky sexual practice n=408		Crude OR (95% CI)	P- value	Adjusted OR (95% CI)	P- value
	YES	NO				
<b>Sex</b>						
Male	60	206	1		1	
Female	14	128	0.38 (0.2, 0.7)	0.002	0.32 (0.15, 0.65)	0.002
<b>Saving</b>						
No	36	96	1		1	
Yes	38	238	0.43 (0.26, 0.71)	0.001	0.46 (0.24, 0.87)	0.017
<b>HIV Risk Perception</b>						
No risk	10	115	1		1	
Low	43	162	3.05 (1.47, 6.32)	0.003	2.45 (1.07, 5.6)	0.034
High	18	33	6.27(2.64,14.89)	<0.001	4.54 (1.62, 12.77)	0.004
Very high	3	24	1.44(0.37, 5.62)	0.60	1.24 (0.26, 5.85)	0.770
<b>Having HIV test in the past</b>						
No	16	29	1		1	
Yes	58	305	0.35(0.18,0.68)	0.002		
<b>Having trust on partner</b>						
No	52	298	1		1	
Yes	22	36	3.5(1.91,6.42)	<0.001	3.34 (1.6, 6.97)	0.001
<b>Drank alcohol before last sex</b>						
No	55	325	1		1	
Yes	19	9	12.5(5.37,28.98)	<0.001	8.96 (3.27, 24.57)	<0.001
<b>Perceived condom effectiveness</b>						
Not at all effective	7	74	1		1	
Moderately effective	29	69	4.44(1.28, 10.8)	0.001	4.16 (1.48, 11.75)	0.007
Completely effective	38	191	2.1(0.9, 4.92)	0.086	2.78 (1.06, 7.29)	0.038
<b>Discussed about HIV/AIDS with partner</b>						
No	53	111	1		1	
Yes	21	223	0.197(0.11,0.34)	<0.001	0.20 (0.11, 0.39)	<0.001

## Discussion

Risky sexual behavior such as engagement in multiple sexual partnerships and with commercial sex workers and low rate of consistent condom use is common among migrant workers. The fact that almost half (49.1%) of migrant workers live alone outside campus contributes to their exposure to risky sexual behaviors. Nonetheless, the prevalence of HIV infection (0.53%), is three times lower than regional average for Amhara Region as well as national HIV prevalence in the

general population (1). This may have to do with general decline in the incidence of HIV infection in Ethiopia after nationwide documentation in EDHS 2011report. The other potential reason is the fact that migrant workers have come from rural areas where HIV prevalence is relatively lower (1).

The prevalence of HIV in this study is also much lower than the study by Yared et al. (2008), which reported prevalence of 15.2% among daily laborers in Amhara

region. That study included workers that have come from urban areas where HIV prevalence is relatively higher. HIV prevalence in our study is also lower than prevalence in a 2002 study among migrant laborers in the Thai-Cambodian border (3) and a study on a sugar plantation in Malawi (2).

HIV prevalence is reported in this study only among male migrant workers. Other studies elsewhere also reported HIV prevalence is high among male migrant workers (2,3,5). While HIV prevalence is higher among females than males in the general population (1), the higher prevalence among males in this study could be due to the sheer number of migrant workers and consequent inclusion of more male workers in the study (63.6%) (Table 2). Finding also suggests that females are 68% less likely to engage in risky sexual practices as compared to male counterparts. Despite this, finding from this study may not be conclusive of males being more affected by HIV than females.

All HIV infected participants in this study were from the Beles sugar development project, which may be due to the fact that migrant workers reside away from their family unlike those from other project sites. In Dejen and Rib project sites, workers stay with their families' or with a relative after working hours and were less likely to engage in risky sexual practice. Other studies have also documented that living outside project camps and away from home creates opportunities for risky sexual practice as workers may engage in sexual activities that may facilitate HIV infection (6). Moreover, several female sex workers were found to reside near the sugar project which is not the case in Rib and Dejen-Markos projects which may contribute to increased risky sexual practice.

There is low level of knowledge of risk factors and prevention methods of HIV infection among migrant workers. Only 27% of the workers mentioned multiple sexual partnerships as a risk factor for HIV infection. Consistent condom use was mentioned as a method of preventing HIV by only 24.4% of participants. This is very low compared to the EDHS 2011 report for Amhara (54.3% for women and 79% for men) region. This might be due to the lack of access to continuing HIV prevention information to migrant workers.

Majority (81.4%) of migrant workers considered themselves at low or no risk of HIV infection. This may be due to denial by laborers about their risk of acquiring HIV and reluctance on safer sexual practices. Seventeen percent of laborers had two or more sexual partners in the last 12 months. This figure is very high as compared to the national (3.5%) and Amhara Region (1.5%) (1). This could be due to the fact that workers staying away from families feel unnoticed of their sexual engagement and do not have any restraint that they are more likely to be engaged in sex with female sex workers and casual partners. This phenomenon has also been reported in other studies (4, 6, 7, 15). The low risk perception of migrant workers where majority

believed that they have low no risk of getting HIV also contributes a lot to the high level of multiple sexual partners. The situation at work place of the workers was found to offer opportunities for migrant workers to engage in sex with casual partners and female sex workers on the one hand and multiple sexual partners on the other.

The low HIV prevalence among migrant workers in place of the high level of risky sexual practice could be due to short duration of stay at project sites (of workers arriving from low prevalence rural areas) and need for more time for the high risk practices to result in high prevalence.

Of migrant workers who ever had sex, 13.5% used condoms consistently. This finding is much lower than reports from the EDHS 2011 where consistent condom use for Amhara region was reported at 24.3% (1). The main reasons were lack of access to condoms in convenient places in their work place, low perceived risk of HIV infection, and the belief that condoms are ineffective to prevent HIV.

Migrant laborers who started saving from their wages were 54 % and are less likely (AOR=0.46, 95% CI: 0.24, 0.87) to have risky sexual practice as compared to those who were not saving money. This may be because migrant workers who save money were less likely to engage in drinking and visit bars.

Migrant workers who perceived that their sexual partners were at lower risk of HIV infection were more than 3 times (AOR=3.34, 95%CI: 1.6, 6.97) more likely to be engaged in risky sexual practice as compared to migrant workers who thought their partners were at higher risk to be HIV infected. This may be due to the fact that they were less likely to use condoms consistently due to trust. There is also a similar finding that argues familiarizing with sex partner resulting in unlikely use of condoms (8).

#### **Conclusions:**

HIV prevalence among migrant workers in development project areas in Amhara was found to be low. Although many workers reported to have been engaged in high-risk sexual behaviors, HIV prevalence remains to be low. Thus this is an opportune moment to maximize prevention efforts so as to sustain the low prevalence. Migrant workers may have to be provided with appropriate information and service at their workplace. Besides, development projects should provide their migrant workers with residence within the camps as to protect their staff from the risk of acquiring HIV.

**Limitations of the study:** About 10.9% of participants refused to give blood samples for HIV test from all project sites. This might have impacted on the prevalence of HIV. The fact that the Beles sugar development project site was very different from the other two in terms of the size of workers and the



presence of a town in the project vicinity where female sex workers are present in number while the other project sites do not share similar characteristics making comparison difficult.

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