



Hiv Prevention Practice and Associated Factors Among Hawasa Industrial Park Factory Workers, Southern Ethiopia: The Cross-Sectional Study Design

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Abstract:

Human immune deficiency virus (HIV) is a workplace issue that mainly affects adults in the working-age group. The effects of HIV/AIDS among factory workers have a significant challenge for the private as well as government sector, which reduce prospects for sustainable development. Therefore, the aim of this study is to assess HIV prevention practice and associated factors among Hawasa Industrial Park factory workers, Southern Ethiopia. Institutional based cross-sectional study was conducted on 636 Hawasa Industrial Park factory workers in February 2019 by using a multistage sampling method. Data were entered into the computer using Epi-data software version 3.1 and exported to SPSS software version 22 for cleaning and analysis. This study found that the magnitude of overall HIV prevention practice among Hawassa Industrial Park workers was 79.3%. The participants who had more than two sexual partners were found to be 74% less likely to have HIV prevention practice than those who had one sexual partner in the last twelve months (AOR=0.26;95%CI=0.11,0.58; P=0.001). The odds of being engaged in the HIV prevention practice were 2.04 times higher for participants who had no experience of alcohol intake when compared to participants who had the experience of alcohol intake in the last twelve months (AOR=2.04; 95%CI=1.21, 3.83; P=0.03). The magnitude of condom utilization and being faithful to one sexual partner was below the report of Ethiopia demographic health survey 2016. The monthly income, living alone, age of respondents, number of sexual partners, and alcohol consumption had a significant effect on the HIV prevention practice of factory workers.

Keywords: HIV Prevention Practice, Hawassa Industrial Park, Factory Workers

INTRODUCTION

The acquired immunodeficiency syndrome (AIDS) is an incurable infectious disease that is caused by the human immunodeficiency virus (HIV). Globally, by the end of 2018, 37.9 million people were living with human immunodeficiency virus (HIV) (Abdissa, 2015). Sub-Saharan Africa carries the highest burden with an estimated 71% of the global total. In Ethiopia, an estimated 715 404 people were living with HIV in 2015 and this increased to 722 248 in 2017 (Lakew, 2018).

The national survey conducted on needs assessment for the establishment of a workplace HIV/AIDS program mentioned that the causes for the death of 78 workers from 6560 permanent workers were HIV/ AIDS, and these studies also indicated that the trend of death in the workplace has been increasing (CETU, 2006). HIV Infection constitutes a major health crisis worldwide. It has become a development crisis that affects not only human health but also has several consequences of social and economic aspects (Omer & Mariam, 2008). It mainly affects the working-age group of countries (Martins-fonteyn et al., 2010).

HIV / AIDS should be recognized as a workplace issue and should be treated like any other serious illness/condition in the workplace (CETU, 2006). The effects of HIV/AIDS in factory communities have a significant challenge for the private as well as government sector that reduce prospects for sustainable development (Choi et al., 2002). In developing countries, which account for approximately 95% of all HIV infections, the epidemic is not only a health and humanitarian concern but also a sustainable development issue (Alphajoh Cham, 2015). Various strategies, policies, and programs have been designed and implemented in the past to reduce transmission and the incidence of new cases of HIV at global, regional, and national levels (Smith, 2021). As a result, much has changed in the response to HIV over the last three decades, especially in the areas of prevention, testing, and treatment (Tiruneh et al., 2015). But what is left is an inclusive and respective response to vulnerable population groups like industrial workers in Ethiopia particularly in the largest and highly developing industrial park in the country like HIP. Therefore, this study is initiated to assess HIV prevention practice and associated factors among Hawasa Industrial Park factory workers.

METHODS AND MATERIALS

STUDY AREA AND PERIOD

The study area was Hawassa Industrial Park (HIP). The HIP is one of the newly established industrial parks in the country constructed as the plan of the Federal Government to transform the economy of the country from the agriculture led to the industry-led. It is the largest and eco-friendly Industrial Park that the government puts its hope on it to create job opportunities for the large community and to get foreign exchange. It has the capacity to accommodate about 60,000 workers but, currently, it has about 21250 workers. The factories together produce many types of textiles and apparel ranging from socks, underwear, and shirts up to suits (Hardy et al., 2018). Among, 21250 workers 18735 (88%) females and 2515 (12%) males. The study was conducted from February 1– 20, 2019 with an institutional-based cross-sectional design.

STUDY DESIGN

An institutional-based cross-sectional study was conducted to assess HIV prevention practice and associated factors among factory workers of Hawassa Industrial Park, southern Ethiopia from February 1– 20, 2019.

SOURCE POPULATION

The source population was all employees who were working in Hawassa Industrial Park.

STUDY POPULATION

The study population was all selected employees who were currently working in factories irrespective of their age and sex.

Inclusion and Exclusion Criteria

Inclusion Criteria

All selected employees who work in factories irrespective of their age and sex were included in the study.

Exclusion Criteria

Respondents who were unable to communicate due to severe illness or deafness were excluded from the study.

Operational Definition

HIV prevention practice: if an individual is abstaining from sexual intercourse, has only one partner, or uses a condom consistently in the past twelve months until the time of study period.

Multiple partners: the number of sexual partners one has in the past twelve months.

Design effect: The loss of sampling efficiency resulting from the use of two-stage sampling instead of simple random sampling.

Living arrangements: living status of respondents like living with family or alone.

Sample Size Determination

The sample size was calculated by using single population proportion formula based on the assumptions of the magnitude of HIV prevention practice 50% (P), the safest method was used in this case (Lakew, 2018).

Where P = the proportion of HIV prevention practice (50%).

Z = standard score corresponds to 1.96.

d = margin of error 0.05

For the calculation, a 95% confidence interval and a 5% margin of error were used.

$$n = \frac{z^2(1 - \alpha/2)p(1 - P)}{d^2} = \frac{(1.96)^2 * 0.653 * 0.347}{(0.05)^2} = 349$$

Due to the use of a two-stage sampling technique, a design effect of 1.5 was considered. Therefore, a total of workers of 578 was included in the study.

By adding 10% of the non-response rate, the final sample size was 636.

Data Collection

Data was collected by a pretested structured self-administered questionnaire and interviewer-administered questionnaire. The questionnaire was first developed in English, translated to Amharic, and back-translated to English. The Amharic questionnaire was used to collect data. The questionnaire was distributed at the worksite during their break time after permission from the shed leader. No compensation was given for the participation. The questionnaire contains questions about the socio-demographic status of the respondents, Personal Factors, New Social Environment factors, and respondents' HIV Prevention practice against HIV/AIDS.

The questionnaire was filled by the respondents from July 3- 6/2019 GC. During data collection, the data collectors verified any unclear and misunderstood question and the ways of answering the question. HIV Prevention practice was dependent variable whereas Socio-demographic factors: age, gender, religion, marital status, educational status, monthly income, place of residence before joining HIP and duration of stay in HIP; Personal factors: knowledge towards HIV/AIDS, multiple sexual partners, use alcohol, chat chewing or other substances, HIV testing and gotten HIV related training and new social environment factor: separation from spouse or family, presence of multiple sex workers are independent variables.

Data Quality Control

To improve the quality of the data, the questionnaire was pretested a week before the actual data collection time on a 5% sampled unit of factories workers, which were not selected for the actual study ,and modification was made accordingly. The data were collected by four data collectors and coordinated by one supervisor. Data collectors were closely supervised, each completed questionnaire was checked to ascertain all questions were properly filled and corrected by the principal investigator.

Data Management and Analysis

Data were entered into the computer using Epidata software version 3.2 and exported to SPSS software version 22 for analysis. Descriptive statistics were computed, such as frequency distributions, median, proportion, and interquartile ranges (IQRs). Tables and graphs were formed for the data presentation. Bivariate analysis was performed between independent and outcome variables to select candidate variables at $p < 0.25$. Multivariate analysis was used to explore the predictors of the outcome variable (HIV prevention practice). Possible predictors were tested in bivariate associations with the

outcome variables (HIV prevention practice). The goodness of fit was tested by Hosmer-Lemeshow Odds and Omnibus tests. Multiple logistic regressions were tested for possible predictor variables to identify factors associated with HIV prevention practice and to control for potential confounders. Statistical significance will be taken as $p < 0.05$.

Ethical Consideration

The ethical clearance was obtained from the Institutional Review Board (IRB) of Hawassa University, College of medicine, and health sciences school of public health. The letter was taken to the Hawassa Industrial Park administrator office. The informed verbal consent was obtained after giving information about the aim of the study. The right of participants not to be included in study was ensured. Confidentiality was also assured before commencing the data collection process

RESULT

Socio-Demographic Status of the Study

A total of 629 workers in Hawassa Industrial Park were interviewed, yielding a 94% response rate. Among those respondents, 420(66.8%) were females and 209(33.2%) were males. The median age of study participants was 23 ranging from 16 to 39 with a standard deviation of 3.92. Of the total of 629 respondents, 303(48.2%) joined industrial parks from urban and 326(51.8%) from rural. Regarding marital status, a large number of 480(76.3%) of study participants were single, followed by 149(23.7%) who were married. Concerning the monthly income of respondents, a large number of workers 379(60.3%) got between 600-1599 monthly incomes.

HIV Prevention Practice

The overall HIV prevention practice among Hawassa Industrial Park workers was 499 (79.3%) in the last twelve months preceding study time. This figure was obtained after counting each yes response for abstinence, faithfulness, and correct and persistent condom utilization in the last twelve months. Accordingly, 320(50.9%) had abstained from sexual intercourse while 118(38.2%) and 146(47.1%) were faith-full to their sexual partner and had used a condom respectively in the last twelve months from the study time.

The binary logistic regression was carried out to determine the factors associated with HIV prevention practice. The variables which had a significance at the level of $p < 0.25$ in the simple binary logistic regression were entered into the multiple binary logistic regression model. Finally, the variables which were still significant at the level of $p < 0.05$ in the final model were taken as factors that were significantly associated with the outcome variables.

The five variables which were significant in the first model were still significant in the final model. Thus, alcohol consumption, age of respondents, monthly income, number of sexual partners and living arrangements were significantly associated with HIV prevention practice in the final model. In this model, the homer and Lemeshow tests were not significant.

The experience of obtaining any training related to HIV/AIDS and the ages of the respondent have a positive association with the HIV prevention practice. The workers who had any training related to HIV/AIDS were 2.16 times more likely to have HIV prevention practice compared with the workers who had not any training related to HIV/AIDS (AOR=2.04;95%CI=1.21,3.83; P=0.009). The workers between the ranges of 26-30 ages were 3.34 times more likely to have the HIV prevention practice compared to between the ranges 16-20 ages (AOR=3.34;95%CI=1.43,7.78; P=0.005).

The workers living arrangements and the number of sexual partners they had in the last twelve months were inversely associated with the experience of HIV prevention practice. The workers who lived with their spouses were about 50% less likely to have HIV prevention practice than those who lived with their families (AOR=0.50; 95%CI=0.26, 0.99; P=0.05).

The participants who had more than two sexual partners were 74% less likely to have HIV prevention practice than those who had one sexual partner in the last twelve months (AOR=0.26;95%CI=0.11,0.58; P=0.001) .

Additionally, alcohol consumption and monthly income had also an association with HIV prevention practice. After other factors were controlled, the odds of being engaged in the HIV prevention practice were 2.04 times higher for participants who had no experience of alcohol intake than who had the experience of alcohol intake in the last twelve months (AOR=2.04; 95%CI=1.21, 3.83; P=0.03) .

DISCUSSION

This is a preliminary study to assess the HIV/AIDS prevention practice among Hawassa Industrial Park workers who may be vulnerable to HIV infection due to their age (majority young, single) and gender (majority females). Abstinence, being faithful and condom use is one of the HIV/AIDS prevention strategies based on a combination of risk avoidance and harm reduction which modifies the approach of abstinence-only sex education by including education about the value of partner reduction, safe sex, and birth control (Key Facts, 2018). Regarding to magnitude of the three well known HIV/AIDS infection prevention practices, different studies carried out in different regions of Ethiopia as well as in the world showed that there was a significant variation in the magnitude of HIV prevention practice and different factors that had an association was identified (Abdissa, 2015).

This study found that the overall magnitude of HIV prevention practice among Hawassa Industrial Park workers was 79.3% in the last twelve months. The result of the present study was higher than the study conducted in Bangladesh among factory workers (52.10%)(Howard, 2014), in Bahir Dar among construction workers (55.1%)(Somerset et al., 2010) and Benchi Maji (45%)(Abdissa, 2015). The difference in the figures may be due to the methodological and time variation between the present and previous studies.

In this study, the magnitude of condom utilization was 47.1% which was evidenced by the study conducted in India among factory workers, which indicated that the magnitude of condom utilization was (48.3%) (Rizward, 2003). The result of the present study is also nearly the same as the report of EDHS 2016 which indicated that the number of respondents who know condom utilization was preventing the risk of HIV infection was 49% despite sex difference (Martins-fonteyn et al., 2010). However, the result of this study was lower than the study conducted in Sri Lanka on construction workers (54%) (Kanda et al, 2018). The difference in the figure might be due to the methodological and geographical variation between current and previous studies.

The magnitude of respondents who were faithful to their sexual partner in the last twelve months was 38.2%. This finding was higher with the study conducted in Debre Berhan (30%)(Addis, 2016) and Bench Maji (23.5%) (Abdissa, 2015). The difference in the figure might be due to the methodological and time variation between current and previous studies. But, this finding was lower than the study conducted in Jordan among factory workers (52.7%) (Nylander, 2012).

The magnitude of abstinence in this study was 50.9%. The result of this study was in line with the result of the study conducted in Debre Berhan which indicated that the magnitude of abstinence was (50%) (Addis, 2016). This finding was also nearly the same as the result of the study conducted in Sri Lanka on construction workers that revealed the magnitude of abstinence was (53%) (Kanda et al, 2018). However, this result may be incompatible with the result of the study done in Jordan that indicated the magnitude of abstinence 24.7% (Nylander, 2012). The difference may be due to the awareness creation as well as time variation between present and previous studies. Also, the result of a study from the USA and Switzerland indicated a lower magnitude of abstinence from the other three well-known HIV prevention mechanisms which is not similar to the result of the current study [Addis et al, 2015] (Addis, 2016). This difference may be attributed to socioeconomic differences and lower prevalence of HIV in western countries influencing the HIV prevention preference method among study subjects.

Socio-demographic factors independently associated with HIV prevention practice were monthly income and the age of respondents. This study found that respondents with higher monthly income were 4.5 times more likely to engage in HIV preventive practice than respondents with lower monthly income. This finding was not similar to the study conducted in Addis Ababa and Benchi Maji (Abdissa, 2015). This study also found that most Hawassa Industrial Park workers are females (66.8%), young (65%), and living away from home (43%). These characteristics were consistent with the profile of the HIV/AIDS vulnerable population reported by the ILO and other international organization (Mulu, 2014).

Alongside socio-demographic factors, a number of personal and new social environment factors like alcohol drinking, gotten any training related to HIV/AIDS, the number of sexual partners they had, and living arrangements were significantly associated with HIV prevention practice. Alcohol consumption and having more than two sexual partners were hindering factors for HIV prevention practice while obtaining any HIV/AIDS-related training and living with the family were positively associated with HIV prevention practice.

This study revealed that having any training related to HIV/AIDS had a positive association with HIV preventive practice which was compatible to a study done in Dessie Town that showed a positive association between HIV preventive practice and HIV/AIDS training (Omer & Mariam, 2008). This study also assumes that living arrangement was one of the factors that affected HIV prevention practice. Respondents who were separated from their parents due to work conditions as in the case

of the majority of Hawassa Industrial Park workers were less likely to engage in HIV prevention practice. In the current study, the respondents who lived with their spouse were 50% less likely to have HIV prevention practice when compared to those who were lived with their families. This was the same as to study conducted in Addis Ababa which stated that respondents who lived with their parents/relatives were about twice more likely to have experience HIV prevention practice than those who lived away from their families (Lakew, 2018). This result was also similar to the study conducted by the Ethiopian Roads Authority in which the majority of respondents mentioned that living away from family can liberate them to do anything like having multiple sexual partner(Tiruneh et al., 2015). This study also found that the workers who had no experience of alcohol intake in the last six months were 2.04 times more likely to have HIV prevention practice compared to those who had the experience of alcohol intake. This finding was in line with the result of the study conducted in Ethiopia that indicated alcohol consumption increased risky sexual behavior (Omer & Mariam, 2008)

CONCLUSION AND RECOMMENDATION

Findings from this study indicated that even though the overall HIV prevention practice was high, the result of each component is below the report of the EDHS 2016. The magnitude of condom utilization (47.1%) and being faithful (38.2%) to one sexual partner was below the report of EDHS 2016(49%). The monthly income, living arrangements, age of respondents, number of sexual partners, and alcohol consumption had a significant effect on the HIV prevention practice of factory workers.

The finding of this study has important implications in understanding this population segment as the most at-risk population segment in a country like Ethiopia where they were not yet taken as at risk. This study explored that factory worker had a potential risk of contracting HIV/AIDS.

The Hawwasa Industrial Park should offer the workshops, the program that play an important role in increasing the awareness of factory workers toward importance of condom utilization, being faithful to one uninfected sexual partner and abstinence. This programme can assist companies in pursuing their corporate social responsibility (CSR).Providing educational workshops organized by external professionals such as local public health agencies for factory workers for one to two hours would be one way to increase HIV/AIDS awareness.

Increasing awareness of HIV/AIDS among factory workers would be valuable to minimize the risks of infection for keeping the nation's HIV prevalence at the minimum level. An interventional program such as institution-based outreach which makes the target group involved as fully as possible in the design and implementation of the program should be implemented.

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Conflict of interest

The authors and sponsored organizations have no financial and non-financial conflict of interest regarding the publication of this paper.

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LISTS OF TABLES

Table 1: Socio demographic status of respondents on Assessments of HIV prevention practice and its associated factors among Hawassa Industrial Park workers, Feb 2019.

Variables(N=329)	Categories	N (%)
Sex	Female	420(66.8%)
	Male	209(33.2%)
Age of respondent	16-20	184(29.3%)
	21-25	220(35.0%)
	26-30	188(29.9%)
	>30	37(5.9%)
Educational status	Can read and write	60 (9.5%)
	Elementary school	66(10.5%)
	Secondary school	258(41.0%)
	Diploma and above	245(39.0%)
Marital status	Single	480(76.3%)
	Others	149(23.7%)
Religion	Orthodox	159(25.3%)
	Catholic	25(4.0%)
	Protestant	350(55.6%)
	Muslim	65(10.3%)
	Other	30(4.8%)
Monthly income	600-1599	379(60.3%)
	1600-2699	162(25.8%)
	>2699	88(14.0%)

Table 2: Bivariate and multivariate analysis of factors associated with HIV prevention practice among Hawassa Industrial Park workers, Feb 2019.

Variables	Categories	HIV prevention practice		OR (95%CI)	
		Yes	No	Crude	Adjusted
Sex	Female	324	96	1(reference)	1(reference)
	Male	175	34	1.52(0.99,2.35)	1.40(0.77,2.58)
Age of respondent	16-20	133	51	1(reference)	1(reference)
	21-25	180	40	1.72 (1.07,2.76)	2.34(1.15,4.79)*
	26-30	155	33	1.80(1.09,2.95)	3.34(1.43,7.78)*
	>30	31	6	1.98(0.78,5.03)	3.25(0.93,11.35)
Educational status	Can read and write	43	17	0.50 (0.26,0.97)	1.17(0.43,3.11)
	Elementary school	54	12	0.90(0.44,1.83)	1.55(0.56,4.31)
	Secondary school	198	60	0.66(0.42,1.03)	1.12(0.58,2.16)
	Diploma and above	204	41	1(reference)	1(reference)
Marital status	Single	389	91	1(reference)	1(reference)
	Others	110	39	0.60(0.39,0.94)	2.38(0.84,6.69)
Religion	Orthodox	122	37	1(reference)	1(reference)
	Catholic	15	10	0.46 (0.18,1.09)	0.36 (0.10,1.27)
	Protestant	285	65	1.33(0.84,2.09)	1.02(0.51,2.02)
	Muslim	54	11	1.48(0.70,3.13)	0.77 (0.29,2.08)
	Other	23	7	0.99(0.39,2.50)	0.81 (0.23,2.89)
Monthly income	600-1599	290	89	1(reference)	1(reference)

	1600-2699	126	36	1.07(0.69,1.66)	0.85(0.42,1.70)
	>2699	83	5	5.09(2.00,12.95)	4.50(1.31,15.43)*
Alcohol drinking	Yes	93	55	1(reference)	1(reference)
	No	75	406	3.20(2.11,4.84)	2.04(1.05,3.95)*
Chat chewing	Yes	27	14	1(reference)	1(reference)
	No	116	472	2.11(1.07,4.15)	1.28(0.46,3.54)
Getting HIV/AIDS related training	Yes	338	66	1.79(1.07,4.15)	2.16(1.21,3.83)*
	No	64	161	1(reference)	1(reference)
Living arrangement	Family	216	31	1(reference)	1(reference)
	Relative	38	15	0.36(0.17,0.73)	0.71(0.25,1.99)
	Spouse	113	47	0.34(0.20,0.57)	0.50(0.26,0.99)*
	Alone	51	7	1.04(0.43,2.50)	2.38(0.75,7.57)
	Husband/wife	81	30	0.39(0.22,0.68)	0.40(0.12,1.31)
Number of sexual partner	One	214	37	1(reference)	1(reference)
	Two	19	54	0.061(0.032,0.114)	0.046 (0.021,0.101)*
	Three and above	31	24	0.22(0.11,0.42)	0.26(0.11,0.58)*
	No sexual partner	235	15	2.70(1.44,5.07)	3.82(1.81,8.06)*

*p-value significant at $p < 0.05$