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Prevalence of precancerous cervical lesion and associated factors among women in North Ethiopia

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Literature shows that cervical cancer is very prevalent among women living in low resource settings. Once it progresses to invasive cervical cancer, its cost is very high. Thus, screening cervical cancer is highly recommended in poor settings including Ethiopia, where the disease burden is very high. However, little is documented on the prevalence and determinants of precancerous cervical lesion among healthy women. Thus, this study aimed to assess the prevalence and factors associated with precancerous cervical lesion among women working in Almeda textile factory, Adwa, North Ethiopia. An institution-based cross-sectional study was conducted from February 20 to 25, 2016 among women working in Almeda textile factory in North Ethiopia. Three hundred forty-two women were included in this study. Data were collected using a structured checklist. SPSS version 20 was used for data entry and analysis. Logistic regression was used to identify factors associated with the precancerous cervical lesion. Statistical significance was set at p-value < 0.05. The mean (± SD) age of the respondents included in this study was 32.95 (± 6.94). In this study, the overall prevalence of precancerous cervical lesion was 6.7% (95% CI: 4.4, 9.6). Being infected with sexually transmitted infections [AOR=49.88, 95% CI: (16.59, 149.91)] was significantly associated with the precancerous cervical lesion. In conclusion, the prevalence of precancerous cervical lesion was high among women working in Almeda textile factory in North Ethiopia. Therefore, cervical cancer screening and treatment services should be initiated and expanded to reduce morbidity from cervical cancer and its adverse effects.

Key words: Precancerous cervical lesion, screening, Ethiopia.

INTRODUCTION

Cervical cancer is caused by certain types of the human papillomavirus (HPV), the most common sexually transmitted infection (STI). Almost all sexually active individuals become infected with HPV at some point in their lives; the peak time for infection is shortly after starting to have sex. Fortunately, most women's immune systems will eliminate HPV naturally, but if an infection with specific types of HPV associated with cervical cancer persists, it may lead to precancerous lesions. If left untreated, these lesions may progress to cervical cancer (WHO, 2008; Ferlay et al., 2010; Bray et al., 2001; Munoz et al., 2004).

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Cancer is the leading cause of death in economically developed countries and the second leading cause of death in developing countries (WHO, 2008; WHO, 2013). Cervical cancer is the second most common cancer in women. Globally, more than half million (530,000) new cases of cervical cancer occur each year. More than eighty-five percent of the cases occur in low-resource countries like Africa, Latin America and Southeast Asia (Ferlay et al., 2010). Sub-Saharan Africa is one of the most affected regions. The incidence of cervical cancer is 52.8 per 100,000 women in sub-Saharan Africa, whereas the incidence is only 6.8 per 100,000 women in Western countries (Ferlay et al., 2010). The disproportionately high burden of cervical cancer in developing countries and elsewhere in medically underserved populations is largely due to a lack of screening that allows detection of precancerous and early stage cervical cancer (Parkin et al., 2008; Mathew and George, 2009; Vizcaino et al., 2000). The most simple, efficient and cost-effective screening technique in low-resource countries is visual inspection using acetic acid (VIA) (Sherris et al., 2009; Mvundura and Tsu, 2014), which performs well in identifying precancerous lesions (Sherris et al., 2009; Sauvaget et al., 2011). Different studies have demonstrated that using VIA, trained physicians and other health service providers can correctly identify between 45 and 79% of women at high risk of developing cervical cancer (Sherris et al., 2009). In addition to screening, VIA is the lowest-cost option for treating precancerous cervical lesion which significantly decreases cervical cancer deaths (Mvundura and Tsu, 2014).

Ethiopia is one of the sub-Saharan Africa countries most affected by cervical cancer. According to World Health Organization (WHO) report, the age-adjusted incidence rate of cervical cancer in Ethiopia is 35.9 per 100,000 patients with 7619 annual number of new cases and 6081 deaths every year (WHO/ICO, 2009). Moreover, facility-based studies show that cervical cancer is the leading cause of cancer in Ethiopia (Aseffa et al., 1986; Ruland et al., 2006) and other studies show that cervical cancer account for 25.8 to 32% of all female malignancies (Loutfi and Pickering, 1992; Ashine and Lemma, 1999). Despite this fact, very few women receive screening services in Ethiopia (Waktola et al., 2005). Information on the prevalence and associated factors of precancerous cervical lesion among healthy women are urgently needed to convince concerned bodies for prioritizing, designing and initiating cervical cancer screening programs aimed at improving maternal health. However, there is no study that documented the prevalence and associated factors of precancerous cervical lesion among healthy women in the study area.

Therefore, it is believed that this study will help health planners to plan appropriate screening and treatment strategies, to prevent cervical cancer mortality and morbidity.

MATERIALS AND METHODS

Study setting, population, and sampling

An institution-based cross-sectional study was conducted from February 20 to 25, 2016 among women employee of Almeda textile factory, Adwa town. Adwa town is located in the northern part of Ethiopia between 14012' North Latitude and 38056' East Longitude at a distance of 977 km away from Addis Ababa. According to the census 2007 report of Central Statistical Agency of Ethiopia, the total population of Adwa town is 40,500, of whom 18,307 are men and 22,193 are women (CSA [Ethiopia], 2008). Almeda textile factory is one of the biggest factories found in Adwa town, central zone of Tigray regional state. In Almeda textile factory currently, there are 4,400 women employees. Women employees who were screened for precancerous cervical lesion from September 12 to 20, 2015 as part of the screening campaign made by Family Guidance Association (FGA) in Almeda textile factory was the source population for this study. The precancerous cervical lesion screening campaign was done by trained nurses using VIA. The inclusion criteria for this study were being a female employee of Almeda textile factory, 25 to 64 years old and being screened for the precancerous cervical lesion in the screening campaign conducted from September 12 to 20, 2015. Since the total women included in the screening were 342, all the 342 women were eligible and included in this study.

Data collection tool and procedure

A structured checklist, adapted from the available national medical registers used for similar purpose, was used to collect the data. The checklist included selected socio-demographic and reproductive characteristics. The data were collected by two diploma nurses and the data collection was entirely supervised by one senior public health professional. Furthermore, the data collection process was closely monitored by the principal investigators. Both data collectors and supervisors were trained for two days on the objectives of the study, sampling technique, ethical consideration, data collection tool and techniques of collecting data to maintain precaution throughout the study. The collected data were checked daily by the supervisors and feedback was provided to data collectors when necessary.

Data processing and analysis

Data were entered, cleaned and analyzed by SPSS version 20 statistical package for a window. Descriptive summaries using frequencies and proportions were used to present the study results. Multivariable logistic regression was used to identify factors associated with the pre-cancerous cervical lesion. Adjusted odds ratio at 95% confidence interval and p-value were used to measure the strength of association and identify statistical significant result. P-value < 0.05 was considered as a statistically significant association. Model goodness-of-fit was checked by Hosmer-Lemeshow test (P=0.56). Multicollinearity was checked by VIF.

Ethical considerations

Ethical clearance and official letter were obtained from Aksum University College of Health Sciences and Tigray Regional Health Bureau. Permission letter was then received from Family Guidance Association (FGA). As this study used secondary data, informed consent from individual women was not relevant and feasible. Names and code numbers were not included in the study so as to ensure confidentiality.

Table 1. Selected socio-demographic and reproductive characteristics of women working in Almeda textile factory, Adwa, North Ethiopia, 2015.

Variables	Number (n)	Percent (%)
Age		
<35	218	63.7
≥35	124	36.3
Marital status		
Married	233	68.1
Single	109	31.9
Educational status		
Primary	83	24.3
Secondary and above	259	75.7
Parity		
< 4	299	87.4
≥4	43	12.6
History of STI		
Yes	82	24.0
No	260	76.0
Current STI status		
Positive	36	10.5
Negative	306	89.5
PITC (provider-initiated HIV testing and counselling) test result		
Positive	16	4.7
Negative	326	95.3

RESULTS

Characteristics of the study participants

The mean (±SD) age of the respondents included in this study was 32.95 (±6.94). The minimum and maximum ages were 24 and 56 years, respectively. The majority (68.1%) of the study participants were married. More than three fourth of the study participants were secondary and above by educational level. Regarding the reproductive characteristics, the median parity was 2 and the range of parity was 7 with minimum and maximum parities of 0 and 7, respectively.

The majority of the study participants had a total parity of less than four. Of the total study participants, 82 (24%) had history of STI and 36 (10.5%) had a STI during the date of data collection. Sixteen (4.7%) of the study participants were living with human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS) (Table 1).

Prevalence of precancerous cervical lesion and associated factors

Out of 342 screened women, 23 (6.7%) [95% CI: 4.4, 9.6] were found to be positive for a precancerous cervical lesion. In the determination of factors associated with the prevalence of precancerous cervical lesion, a multivariable logistic regression model was fitted using enter method and STI status was the only variable found to have a significant association with the outcome variable. That is, study participants who were infected with STIs during the cervical cancer screening campaign were nearly 50 times more likely to have precancerous cervical lesion as compared to their counterparts [AOR=49.88 (95% CI: 16.59, 149.91)] (Table 2).

DISCUSSION

This study assessed the prevalence of precancerous cervical lesion among women employee of Almeda

Table 2. Logistic regression analysis of factors associated with precancerous cervical lesion among women working in Almeda textile factory, North Ethiopia, 2015.

Characteristics	Precancerous cervical lesion screening result		COR (95% CI)	AOR (95% CI)
	Positive	Negative		
	N (%)	N (%)		
Age				
<35	17 (73.9)	201 (63.0)	1.66 (0.64,4.34)	1.63 (0.43, 6.22)
≥35	6 (26.1)	118 (37.0)	1	1
Marital status				
Married	19 (82.6)	214 (67.1)	2.33 (0.77,7.02)	2.63 (0.68, 10.15)
Single	4 (17.4)	105 (32.9)	1	1
Educational status				
Primary	5 (21.7)	78 (24.5)	0.86 (0.31,2.39)	1.21 (0.29, 5.10)
Secondary and above	18 (78.3)	241 (75.5)	1	1
Parity				
< 4	20 (87.0)	279 (87.5)	0.96 (0.27,3.36)	0.86 (0.13, 5.59)
≥4	3 (13.0)	40 (12.5)	1	1
History of STI				
Yes	8 (34.8)	74 (23.2)	1.77 (0.72,4.33)	1.16 (0.34, 3.97)
No	15(65.2)	245 (76.8)	1	1
Current STI status				
Positive	17 (73.9)	19 (6.0)	44.74 (15.82,126.55)	49.88 (16.59,149.91)
Negative	6 (26.1)	300 (94.0)	1	1
PITC test				
Positive	1 (4.3)	15 (4.7)	0.92 (0.12,7.30)	0.29 (0.02, 3.61)
Negative	22 (95.7)	304 (95.3)	1	1

Textile factory, North Ethiopia. Results of this study showed that the prevalence of precancerous cervical lesion was 6.7% [95% CI: 4.4, 9.6]. This finding is in line with the study conducted in Rwanda (Makuza et al., 2015), in which the prevalence was 5.9%. However, the finding of the current study is lower than the study done among HIV-infected women in Southern Ethiopia by Gedefaw et al. (2013) , in which the prevalence was 22.1%. Similarly, it is lower than the study done among HIV-infected women in Kenya by Memiah et al. (2012), in which the prevalence was 26.7%. This discrepancy may be due to the difference in the study population. In the present study, the participants were not in HIV infected population, whereas the two studies were carried out in HIV infected population who are at a higher risk of developing cervical cancer (Frisch et al., 2000; De Vuyst et al., 2008). This finding suggests the need to access community-based precancerous cervical lesion screening service integrated with health system by referral which could significantly avert the progress of precancerous cervical lesion to invasive cervical cancer among women. However, none of the study participants were ever screened for precancerous cervical lesion before this study conducted. This would let the precancerous lesion progress to invasive cancer which is very costly. This results in high cost due to the progress of precancerous lesion to invasive cancer (Mvundura and Tsu, 2014).

This study also assessed factors associated with precancerous cervical lesion among the study participants and the findings revealed that women who were infected with sexually transmitted diseases were more likely to develop precancerous cervical lesion than their counterparts. This finding is consistent with the finding of a similar study done in Southern Ethiopia (Gedefaw et al., 2013), in which women who had a history of STIs were more likely to develop precancerous as well as invasive cervical cancer lesion than their counterparts. This finding implies that cervical cancer screening service should

primarily target women infected with STIs in general including those who are infected with HIV/AIDS.

Finally, one of the limitations of this study is worth mentioning. Since secondary data was used for this study, it was impossible to include some key sexual and reproductive characteristics such as age at menarche, age at first sexual intercourse, lifetime number of sexual partners and so on that need to be included in this study.

Conclusion

The prevalence of precancerous cervical lesion was very high. Of the variables included in the analysis, STI was significantly associated with developing precancerous cervical lesion. Cervical cancer screening and treatment service should be available and accessible with emphasis to those that have STIs. Alongside accessing the service, appropriate community sensitizing programs need to be implemented to create awareness at the grass root level.

Conflict of interests

The authors have not declared any conflict of interest.

Abbreviations

AIDs, Acquired immune deficiency syndrome; **AOR,** adjusted odds ratio; **CI,** confidence interval; **COR,** crude odds ratio; **FGA,** Family Guidance Association; **HIV,** human immune deficiency virus; **HPV,** human papilloma virus; **PITC,** provider-initiated HIV testing and counseling; **SD,** standard deviation; **STI,** sexually transmitted infection; **VIA,** visual inspection using acetic acid.

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