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Prevalence of hazardous alcohol consumption and associated factors among HIV-positive pregnant women attending public hospitals in Northwest Ethiopia: a multicentred cross-sectional study

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ABSTRACT

Background Alcohol is a major public health problem in pregnant women due to its harmful effects on pregnancy and adverse birth outcomes. Therefore, assessing the prevalence and the factors associated with hazardous alcohol consumption among HIV-positive women is important for early identification and intervention and implementation of rehabilitation centres in healthcare settings in order to prevent maternal adverse birth outcomes.

Objective The aim of this study was to assess the prevalence of hazardous alcohol consumption and the associated factors among HIV-positive pregnant women attending public hospitals in Northwest Ethiopia.

Design and study setting A facility-based, cross-sectional study was conducted among 401 HIV-positive pregnant women attending public hospitals in Northwest Ethiopia from 7 February to 7 April 2021.

Participants From a total calculated sample size of 423, 401 HIV-positive pregnant women who had a follow-up with selected hospitals' prevention of mother-to-child transmission (PMTCT) clinics completed the interview (17 participants refused to provide information and 5 terminated the interview in the middle of it due to serious illness).

Main outcome measures The main outcome measure of this study was hazardous alcohol consumption assessed using the Fast Alcohol Screening Test. Bivariate and multivariable binary logistic regressions were used to identify factors associated with hazardous alcohol consumption. Statistically significant associations were set at $p<0.05$.

Results The overall prevalence of hazardous alcohol consumption among HIV-positive pregnant was found to be 7.7% (95% CI 5.2, 10.5). After adjusting for possible confounders, history of mental illness (adjusted OR (AOR)=3.10; 95% CI 1.19, 8.05), having comorbid psychological distress (AOR=4.39; 95% CI 1.57, 12.30), non-disclosure of HIV status to partner (AOR=3.28; 95% CI 1.21, 8.84) and poor medication adherence (AOR=2.82; 95% CI 1.20, 6.62) were significantly associated with hazardous alcohol use.

Conclusions and recommendations The overall prevalence of hazardous alcohol consumption among HIV-positive pregnant women was high, especially among pregnant women who had a history of mental illness. Poor medication adherence, non-disclosure of HIV status to partner and having comorbid psychological distress are the main factors associated with hazardous alcohol consumption. Early detection and appropriate interventions to prevent hazardous alcohol consumption should be promoted at PMTCT clinics.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ We attempted to address the clinical and psychosocial factors associated with hazardous alcohol consumption and used a validated instrument, which are strengths of this study.
⇒ Recall bias might be a limitation of this study.
⇒ Another limitation is that pregnant women who used substances, especially khat and cigarette, might have responded to the questionnaire in socially acceptable ways given that use of substances is culturally unaccepted in Northwest Ethiopia.
⇒ The instrument did not measure the level of harmful alcohol use and probable alcohol dependency.
⇒ The instrument did not have standardised language translation (local working language).

INTRODUCTION

Hazardous alcohol consumption is a rising public health concern affecting over two billion adults globally.[1] According to recent global data, 99.2 million disability-adjusted life years were attributed to hazardous alcohol consumption.[2] Another WHO report also showed that globally up

to three million people die every year due to harmful use of alcohol.[3] In South Africa, approximately 62 300 adults died of alcohol-attributable causes. Of these, 60% occurred in low socioeconomic groups.[4]

Alcohol consumption is a major public health concern both in developed and developing countries. Alcohol is also the most prevalent substance used by pregnant women and a significant contributor to intrauterine growth retardation, low birth weight,[5 6] preterm birth,[6 7] stillbirth,[8] spontaneous abortion[9 10] and fetal alcohol spectrum syndrome.[3]

There have been limited studies carried out to assess the prevalence of alcohol use among HIV-positive pregnant women. The recent Demographic and Health Survey data in Sub-Saharan Africa showed that 36% of women use alcohol during their pregnancy.[11] In the USA, 39% and 10% of HIV-positive women report current drinking and binge drinking, respectively.[12] A study conducted in South Africa reported a prevalence of alcohol consumption of 18% among HIV-positive pregnant women.[13] Another study conducted in this country also showed that approximately 16% of HIV-positive pregnant women report risky alcohol use.[14]

Different determinant factors have been identified by previous studies to contribute to alcohol consumption. These include history of mental illness, perceived high level of stress,[15] being separated, divorced or widowed, unplanned pregnancy,[16–18] intimate partner violence,[19] living alone,[20] poor social support,[15 18 21 22] psychological distress[16 23] and unemployment.[24]

In Ethiopia, various studies have been carried out to assess hazardous alcohol consumption among pregnant women without HIV, with rates of consumption ranging from 3.7% to 58%.[16 18 21 22 25 26] However, there has been no study conducted to assess hazardous alcohol use among HIV-positive pregnant women in Ethiopia. Therefore, assessing the prevalence and the factors associated with hazardous alcohol consumption among HIV-positive women is important for early identification and intervention and implementation of rehabilitation centres in healthcare settings in order to prevent maternal adverse birth outcomes.

MATERIALS AND METHODS

Study setting, design and period

A facility-based, cross-sectional study was conducted to determine the prevalence of hazardous alcohol consumption and its associated factors among HIV-positive pregnant women in Northwest Ethiopia from 7 February to 7 April 2021. The study was conducted in Debre Tabor, Woldia, Gondar and Felege Hiwot referral hospitals located in the Amhara region. Bahirdar Town is the capital city of the Amhara region and is 564 km from Addis Ababa (the capital city of Ethiopia). The region is divided into 12 zones (South Gondar, Central Gondar, North Gondar, West Gondar, East Gojjam, West Gojjam, Awi, Waghimra, South Wollo, North Wollo, Oromia Zone and North Shewa). According to 2007 population census report, the estimated total population size in the Amhara region is 17 221 976, of whom 8 641 580 were men and 8 580 396 were women.

Source population and inclusion and exclusion criteria

All HIV-positive pregnant women aged 18 years and above from selected public hospitals in the Amhara region in Northwest Ethiopia were the source population. Adult HIV-positive pregnant women from selected public hospitals in the Amhara region were included in the study during the data collection period. Pregnant women living with HIV/AIDS who complained of serious illness and who were unable to communicate during the data collection period were excluded. We obtained information on whether the study participants have serious illness or not during data collection. If the study participant complained of any illness and reported inability to provide any information related to their illness, they are considered seriously ill.

Sampling procedure and sample size determination

We determined the sample size using the single population proportion formula, taking the prevalence of hazardous alcohol consumption among HIV-positive pregnant women at 50% (unknown prevalence), with a 5% margin of error and 95% CI. Adding a 10% non-response rate resulted in the final sample size of 423.

A simple random sampling technique was employed to select 401 HIV-positive pregnant women attending prevention of mother-to-child transmission (PMTCT) clinics. We selected four referral hospitals (Woldia, Debre Tabor, Gondar and Felege Hiwot). First, we allocated the sample size proportionally for each hospital. The list of study participants from PMTCT clinics of every hospital was used as a sampling frame, and each study participant was selected by simple random sampling technique.

Study variables

Hazardous alcohol consumption was the dependent variable of this study. Sociodemographic characteristics (age, marital status, ethnicity, educational status, religion and residency), psychosocial factors (stressful life events, social support, disclosure of HIV status and treatment adherence) and clinical factors (psychological distress and other comorbid physical illness) were the independent variables.

Data collection procedures and instruments

Data were collected by face-to-face interviews using a semistructured, interviewer-administered questionnaire that contained sociodemographic, psychosocial (social support, disclosure of HIV status to partner and stressful life events) and clinical (history of mental illness, psychological distress and treatment adherence) factors.

Alcohol use

The level of hazardous alcohol use was measured using the Fast Alcohol Screening Test (FAST). FAST is a

Table 1 Sociodemographic characteristics of the HIV-positive pregnant women in Northwest Ethiopia, 2021

Variable	Category	Frequency	Percentage
Age	18–30	201	50.1
	31–45	200	49.9
Ethnicity	Amhara	370	92.3
	Other	31	7.7
Educational status	Unable to read and write	92	22.9
	Grades 1–8	124	30.9
	Grades 9–12	62	15.5
	Diploma and above	123	30.7
Religion	Orthodox	278	69.3
	Others	123	30.7
Marital status	Currently married	346	86.3
	Currently not married	55	13.7
Residence	Rural	169	42.1
	Urban	232	57.9

four-item questionnaire that measures hazardous alcohol consumption over the last year. FAST has better psychometric properties than the CAGE (Cut down, Annoyed, Guilty and Eye-opening) questionnaire and the Alcohol Use Disorders Identification Test (AUDIT), with sensitivity and specificity of 0.93% and 0.88%, respectively.[27] A total score of 3 or more on FAST was considered as having hazardous alcohol drinking.[28]

Adherence to medication

Medication adherence is defined as the extent to which clients take medications as ordered by their trained healthcare professionals.[29] The level of antiretroviral medication adherence was measured using the five-item, self-reported Medication Adherence Rating Scale (MARS). MARS is rated on a 5-point Likert scale: 1=always, 2=often, 3=sometimes, 4=rarely and 5=never, with the total score ranging from 5 to 25. A higher score indicated good medication adherence.[30]

Social support

The level of social support was measured using the three-item Oslo Social Support Scale. The tool was categorised from 3 to 14, with scores of 12–14, 9–11 and 3–8 indicating strong, moderate and poor social support, respectively.[31]

Stressful life events

To assess the presence of stressful life events over the last 6 months, we used the 12 items of the List of Threatening Experiences. A score of one or more experiences of stressful life events in the last 6 months indicate stressful life events.[32]

Table 2 Distribution of clinical and psychosocial factors among HIV-positive pregnant women in Northwest Ethiopia, 2021

Variable	Category	Frequency	Percentage
Social support	Poor	248	61.8
	Moderate	91	22.7
	Strong	62	15.5
History of mental illness	Yes	49	12.2
	No	352	87.8
Adherence to medication	Good	316	78.8
	Poor	85	21.2
Disclosure of HIV status to partner	Yes	357	89
	No	44	11
Stressful life events	No	315	78.6
	Yes	86	21.4
Psychological distress	No distress	277	69.1
	Mild	52	13
	Moderate	40	10
	Severe	32	8
Comorbid physical illness	Yes	308	76.8
	No	93	23.2

History of mental illness

To examine the history of mental illness, the study participants were asked: 'Did you have a previous history of mental illness?' A response of 'yes' indicated a history of mental illness.

Comorbid physical illness

To examine other comorbid physical illnesses, the study participants were asked: 'Did you have any other chronic comorbid medical, surgical, and neurological illness?' A response of 'yes' indicated a chronic physical illness.

Comorbid psychological distress

The likelihood of psychological distress was measured using the Kessler Psychological Distress Scale-10 (K-10). The tool has 10 items and each item is rated on a 5-point Likert scale: 0=none of the time, 1=little of the time, 2=some of the time, 3=most of the time day and 4=all of the time, with the total score ranging from 0 to 40. A score of 7 or higher on the K-10 questionnaire indicated psychological distress in the last month.[33]

Data quality control issues

We recruited degree-holder nurses for data collection, and training on data collection tools and sampling procedures was provided. Supervision was held regularly by psychiatry professionals. Additionally, the questionnaire was translated from English to Amharic language (the local working language).

Data processing and analysis

Data were entered into EpiData V.3.1 and then exported to SPSS V.21 for analysis. To identify the factors associated

Table 3 Bivariate and multivariable analyses of hazardous alcohol use among HIV-positive pregnant women in Northwest Ethiopia, 2021

Variables	Category	Hazardous alcohol drinking		COR (95% CI)	AOR (95% CI)	P value
		No	Yes			
Psychological distress	No distress	261	16	1	1	
	Mild	48	4	1.35 (0.43, 4.24)	0.87 (0.26, 2.90)	0.82
	Moderate	36	4	1.81 (0.57, 5.72)	1.00 (0.29, 3.50)	0.99
	Severe	25	7	4.56 (1.71, 12.15)	4.39 (1.57, 12.30)	**0.00**
History of mental illness	No	329	23	1	1	
	Yes	41	8	2.79 (1.17, 6.64)	3.10 (1.19, 8.05)	**0.02**
Medication adherence	Good	296	20	1	1	
	Poor	74	11	2.20 (1.01, 4.79)	2.82 (1.20, 6.62)	**0.01**
Disclosure of HIV to partner	Yes	333	24	1	1	
	No	37	7	2.62 (1.05, 6.50)	3.28 (1.21, 8.84)	**0.01**
Stressful life events	No	296	19	1	1	
	Yes	74	12	2.52 (1.17, 5.43)	2.03 (0.89, 4.64)	0.09

*Variables that demonstrated significantly associated with with hazardous alcohol alcohol consumption P<0.05.
†
AOR, adjusted OR; COR, crude OR.

with hazardous alcohol use, we applied bivariate analysis with a value of p≤0.2. In the multivariable regression analysis, variables with a p value less than 0.05 and 95% CI were considered statistically significant with hazardous alcohol use.

Patient and public involvement

Study subjects or the public were not involved in the study design, data collection, recruitment procedures, reporting and interpretation of the results.

RESULTS

A total of 401 study participants were interviewed, with a response rate of 94.79%. Majority of the study participants (201, 50.1%) were in the 18–30 years age range. 278 (69.3%) participants were Orthodox Christian by religion, 124 (30.9%) achieved elementary school, over half (57.9%) were residing in urban areas and 370 (92.3%) were Amhara by ethnicity. Regarding marital status, 346 (86.3%) were currently married (table 1).

Clinical and psychosocial factors of the respondents

Of the total respondents, 316 (78.8%) had good medication adherence and 248 (61.8%) had poor social support. Regarding physical illness, approximately three-fourths (308, 76.8%) of the respondents had no comorbid physical illness and 277 (69.1%) did not have psychological distress (table 2).

Prevalence of hazardous alcohol consumption

The prevalence of hazardous alcohol consumption among HIV-positive pregnant women was 7.7% (95% CI 5.2, 10.5).

Factors associated with hazardous alcohol consumption

To identify factors associated with hazardous alcohol use, bivariate and multivariate binary logistic regression analyses were carried out. In the bivariate analysis, independent variables associated with hazardous alcohol consumption declared at a p value of less than 0.2 were entered in the multivariable binary logistic regression model to control the confounding effects of the variables. The results showed that poor medication adherence, stressful life events, comorbid psychological distress, history of mental illness and non-disclosure of HIV status to partner were significantly associated with hazardous alcohol consumption on bivariate analysis. However, on multivariable analysis, only poor medication adherence, comorbid psychological distress, history of mental illness and non-disclosure of HIV status to partner were significantly associated with hazardous alcohol use.

Pregnant women who had a history of mental illness were three times more likely to have hazardous alcohol consumption than women who did not have a history of mental illness (adjusted OR (AOR)=3.10; 95% CI 1.19, 8.05). Study participants who had severe psychological distress were 4.39 times more likely to develop hazardous alcohol consumption compared with those who did not have psychological distress (AOR=4.39; 95% CI 1.57, 12.30). The likelihood of developing hazardous alcohol consumption was 2.82 times higher among study subjects who had poor medication adherence compared with those who had good medication adherence (AOR=2.82; 95% CI 1.20, 6.62). Study participants who did not disclose their HIV status to their partners were more likely to have hazardous alcohol consumption compared with study participants who

disclosed their HIV status to their partners (AOR=3.28; 95% CI 1.21, 8.84) (table 3).

DISCUSSION

As per our knowledge, there has been no study conducted to assess the magnitude of hazardous alcohol consumption in these groups of women in Ethiopia. However, the aim of this study was to assess the prevalence of hazardous alcohol consumption and the associated factors among HIV-positive pregnant women attending public hospitals in Northwest Ethiopia. In this study, the prevalence of hazardous alcohol consumption among HIV-positive pregnant women was 7.7% (95% CI 5.2, 10.5). The finding of this study is consistent with a previous study conducted in Southern Ethiopia, with a prevalence of 8.1%,[16] but higher than a study conducted in Addis Ababa (the capital city of Ethiopia), which is at 3.7%. Conversely, the finding of this study is lower than the studies done in South Africa: 16% in Cape Town,[14] 18% in KwaZulu-Natal,[13] 22.8% in Sub-Saharan Africa[11] and 16.1% in another part of Ethiopia.[21] The possible reason for this discrepancy might be the different instruments used to measure hazardous alcohol use. That is, studies done in other parts of Ethiopia used the AUDIT and the CAGE questionnaire, while in KwaZulu-Natal and Cape Town, South Africa AUDIT-C was used to measure hazardous alcohol consumption. Our study, on the other hand, used FAST. Other variations such as sample size and cultural and economic differences might have also contributed to this discrepancy.

In the present study, pregnant women who reported severe psychological distress were more likely to have hazardous alcohol consumption when compared with those who did not report psychological distress. The possible reason might be that individuals who have severe psychological distress may be consuming alcohol as a mechanism to relieve distress. This finding is consistent with studies done in Ethiopia[23 34] and Lebanon.[35]

Hazardous alcohol consumption was significantly higher among HIV-positive pregnant women who reported a history of mental illness compared with those who did not report a history. The possible reason could be that study subjects who had a history of mental illness were more likely to consume large amounts of alcohol as a form of self-medication or as a mechanism to relieve mental illness symptoms. The finding of this study is in line with a study conducted in Ethiopia.[36]

In the present study, hazardous alcohol consumption was 2.82 times higher among study subjects who had poor medication adherence compared with those who had good medication adherence. The possible reason might be that study subjects who had hazardous alcohol use might be frequently exposed to alcohol intoxication and forget to take their medications due to memory and judgement impairments related to hazardous alcohol drinking.[37] This finding is consistent with a study done in Ethiopia.[38]

Finally, we found an association between non-disclosure of HIV status to partner and hazardous alcohol consumption (AOR=3.28; 95% CI 1.21, 8.84). The dual impact of their HIV status and non-disclosure of HIV status to their partner might be worsening their distress and might push them to drink alcohol hazardously as a mechanism for self-treatment of their distress. The finding of this study is in line with a study conducted in Uganda.[39]

Limitations of the study

The instrument did not measure the level of hazardous alcohol use and probable alcohol dependency. In addition, pregnant women who use substances, especially khat and cigarette, might have responded to the questionnaire in socially acceptable ways given that use of substances is culturally unaccepted among women in Northwest Ethiopia. Conducting the interviews in a language other than the native language of the participants might also be an additional limitation of this study.

CONCLUSIONS AND RECOMMENDATIONS

The prevalence of hazardous alcohol consumption among HIV-positive pregnant women was found to be high. Poor medication adherence, having comorbid psychological distress, history of mental illness and non-disclosure of HIV status to partner were significantly associated with hazardous alcohol consumption. Therefore, we recommend that clinicians working at PMTCT clinics focus on early regular screening for hazardous alcohol consumption and pay more attention to HIV-positive pregnant women with poor medication adherence, psychological distress, history of mental illness and those not disclosing their HIV status to their partners. We also recommend strengthening the linkage with trained mental health service care providers.

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Competing interests None declared.

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Patient consent for publication Obtained.

Ethics approval This study involves human participants and was approved by the ethical review committee of Debre Tabor University (reference number R/P/2056/2021). Participants gave informed consent to participate in the study before taking part.

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