Assessment of Prevalence and Associated Factors of Alcohol Use during Pregnancy among the dwellers of Bahir-Dar City, Northwest Ethiopia, 2014

Kirubel Anteab[1], Balem Demtsu *[1], Mulualem Megra[1]

[1]Department of Midwifery, College of Health Sciences, Mekelle University,
,Mekelle, Ethiopia, P.O.BOX 1871
E-mail: balemdim@gmail.com
Tel: +251-9-10-30-16-68
Fax: +251-034-441-66-81

Abstract

Background: Alcohol is the most commonly used teratogen substance which is used during pregnancy with detrimental effects on the fetus and the mother.

Objective: to assess prevalence and associated factors of alcohol use during pregnancy among the dwellers of Bahir-Dar, Northwest Ethiopia

Method: Community based cross sectional study was conducted among 810 pregnant women in Bahar-Dar City from March to June 2014. Information on socio-demographic characteristics reproductive health and alcohol use were collected using pre prepared structured checklist and analyzed using SPSS version 20.00. Besides association between dependent and in dependent variables was analyzed and presented using descriptive and inferential statistics.

Results: Most (40.6%) of the respondents were found between the age of 25-29 years old and 48.3% of them were in the third trimester of pregnancy. This study revealed 34% of respondents consumed alcohol during pregnancy at least once per week."Tella", beer, and wine were the commonest kinds of alcohol beverages consumed by the pregnant mothers. In this study, being married (AOR = 3.09; 95% CI: 1.79, 5.33), having alcohol consuming partner (AOR=1.71; 95% CI: 1.09, 2.67) and (AOR=3.84; 95% CI: 2.34, 6.30), being unemployed (AOR=3.11; 95% CI: 1.73, 5.60), and unplanned pregnancy AOR = 3.12; 95% CI: (1.85, 5.28) were found significantly associated with alcohol consumption.

Conclusion: This study indicated that alcohol consumption during pregnancy is still high. Hence, responsible bodies working on maternal and child health shall endeavor while planning interventions to mitigate or eliminate the above listed factors.

Key words: Alcohol consumption, prevalence, cross-sectional, Bahir-Dar, Ethiopia

Abbreviations

FASD: Fetal alcohol spectrum disorders

FAS: Fetal alcohol syndrome

T-ACE: Tolerance- Annoyed, Cut off, Eye opening

WHO: World Health Organization

INTRODUCTION

Alcohol is the most commonly used teratogen substance that has not only detrimental effects on the developing fetus which can be life-long, but also causes problems for the pregnancy and puts the mother at risk (1).

Consumption of alcoholic beverages during pregnancy might increase the incidence of preterm delivery and spontaneous abortion, substantial risk of mental, physical and psychological harm to her offspring which is the so called fetal alcohol spectrum disorders (FASD) and fetal alcohol syndrome (FAS) (2-4). Infant with FAS is characterized by at least one feature from the following: physical anomalies, intrauterine growth retardation, and moderate to severe learning difficulties and/or identifiable drinking problem of the mother (5).

Prenatal alcohol exposure is also associated with fetal death, reduced brain mass and prenatal and postnatal growth retardation (6,7) . World Health Organization (WHO) had recognized the risk of prenatal alcohol exposure on developmental and intellectual disabilities (8). Moreover, cognitive deficits have also been demonstrated in language, fine and gross motor ability, attention, memory and judgment. Besides, cardiac,

skeletal, renal, ocular and auditory deficits have been proved effect of alcohol consumption during pregnancy (9).

Maternal alcohol consumption often occurs in conjunction with other risk factors like smoking and family history of alcohol abuse and so it is difficult to attribute the effects to fetal alcohol exposure or to the characteristics of the mother and the child's home environment (10). No evidence has been found to conclusively link low to moderate maternal alcohol consumption with Autism Spectrum Disorder nor infantile autism or longitudinally measured fetal growth characteristics and no evidence has been found correlating light drinking with childhood behavioral difficulties or cognitive deficits (11-13). Research has even supported the modest protective effect of light maternal alcohol consumption on restriction of fetal growth during gestation, preterm birth and childhood behavioral difficulties or cognitive deficits compared to mothers who abstained from alcohol consumption (13, 14).

Older maternal age is reported frequently as robustly associated with alcohol consumption during pregnancy and cigarette smoking during pregnancy and use of illicit drugs such as cocaine and marijuana are also important predictors of alcohol consumption during pregnancy (15). It is also indicated that women who have had a previous child with FASD are at high risk for drinking during subsequent pregnancies (16). Domestic violence, primiparity, low socio-economic status, pre-pregnancy drinking, and being employed are also all reported in the literature as predictors of any alcohol consumption during pregnancy (17).

Across the globe, it is evident that the consequences of using of alcohol during pregnancy are similar, but its prevalence varies. It has been reported that up to 1 in 100 children in the United States are born with FASD(18).Furthermore, around 2 children in 1,000 are diagnosed with FAS in the US (2). European study discovered only 53% of women in France reported complete abstinence during pregnancy and an Australian study reported 81% of pregnant women consume alcohol (8,19). Study conducted in Geneva showed that about 36.3% of the women drank at least one glass of alcohol during pregnancy (20). Screening of alcohol use in Swedish antenatal clinics for the year preceding pregnancy, explored as one-third of the subjects (30%) were continued to regular alcohol use during pregnancy, and 6% reported consumption two to four times per month (21). A study done on one thousand pregnant Korean women who visited the Department of Obstetrics and Gynecology in 2010 showed 16.4% of them were using alcohol during their pregnancy (22). The epidemiological study that had been done in Canadian women found that 10.8% of women drank alcohol at some point during their pregnancies (23). A survey conducted in California reported that among women who recently gave birth found that approximately 15.8% of women in 2006 reported drinking during the first or third trimester of their pregnancy (24). The highest fetal alcohol syndrome rate was documented in a South African community in Western Cape Province where FAS was reported to affect 40.5 to 46.4 children (25).

Despite the fact that alcohol use by pregnant women is a leading cause of mental, physical, and psychological problems in infants and children, nowadays trends indicated that the use of those alcohols have become one of the rising major public health and socio-economic problems particularly in developing countries (1,26)

The 2011 Ethiopia Demographic and Health Survey (EDHS) found that 45% of women and 53% of men reported drinking alcohol at some point in their lives. For both women and men this proportion increases with age, and it is higher among urban residents than rural residents. Among regions the percentage of respondents who ever drank alcohol ranges from 2 percent of women and 5 percent of men in Somali to 86 percent of women and 91 percent of men in Tigray. In addition to the above, in majority of the community, it is common and normal habit to prepare beverage at home in every ceremony and holydays and drinking it without hard restriction of gender, and age for lack of knowledge on its unfavorable consequence (27).

So far, emphasis was not given to the issue, hence, this study will provide base line information on prevalence and associated factors of alcohol use during pregnancy among the dwellers of Bahir-Dar, Northwest Ethiopia

METHODOLOGY

Study Design and Period

Community based cross sectional study was conducted among reproductive age women (15-49 years) who are dwellers of Bahir-Dar Northwest Ethiopia, March-June, 2014.

Sample size and Sampling technique

A total of 810 of respondent were recruited from six selected kebeles of the city which was determined using a single population proportion formula based on the assumption of 50% prevalence of alcohol consumption, expected margin of error (d) 0.05 at 95% confidence level (Za/2). Considering non response rate of 5% and adding design effect, the sample size was computed to be 810. A multi-stage sampling technique was used to get the required study subjects. Kebelles were selected using random selection and a systematic random sampling method was employed to select the households. Respondents were recruited proportionally to the population size of each kebelle they reside. Whenever more than one eligible respondent is found in the same selected household, only one respondent was chosen using the lottery method.

Data collection and analysis

A standardized questionnaire from national maternal and child health bureau U.S.A department of health and human services was adopted with some modification and customization to the local context. Data was collected by face to face interview using a structured and pre-tested questionnaire first prepared in English and translated to local language after revision of the original completed questionnaire. To describe the study population in relation to relevant variables descriptive statistics like frequencies, mean, SD, and percentage were made. Moreover, bivariate and multiple logistic regression was used to assess the association between outcome and explanatory variables.

Variables

Dependent variable

- Alcohol consumption

Independent Variables

- Socio-demographic characteristics
- Relevant obstetric histories like parity, gestational age, number of children, pregnancy plan status, previous history of abortion, ANC follow up

Quality control measures

The data collection instrument was pretested at one of the Kebelle which was not included in the actual data collection and revision to the data collection instrument was subsequently made. To confirm uniformity, data collectors were also trained.

Ethical Considerations

Ethical clearance was obtained from Institutional Review Board of University of Gondar. Official letter that explains the objectives, rationale and expected outcomes of the study was written to Bahir-Dar city health bureau from the department of midwifery. Informed verbal consent was also obtained from the clients before commencing the study and confidentiality was also maintained. Respondents were also informed that they can refuse or discontinue participation at any time they want. Information was recorded anonymously.

RESULT

Socio-demographic Characteristics

A total of 810 pregnant women were interviewed in this study. Amongst which 329 (40.6%) were found between the age of 25-29 years old. Of the respondents, 600 (74.2%) of the subjects were married living with their partner. As it would be expected based on population values of the study area, a vast majority (83.65%) of the respondents' ethnicity was Amhara and 70.2% of the study subjects are Orthodox by religion.

Eighteen percent of the study participants were illiterate, while 69% attended formal education varying from primary school to tertiary level. Thirty-seven percent of the participants declared themselves as employed. Of the participants, about three-fourth of them used modern source of information like Radio and/or Television (66.5%), and magazine and/or Internet (6.7%) Table one.

Table:1 Socio demographic characteristics of Dwellers of Bahir-Dar City Northwest, Ethiopia 2014.

Variable	Frequency	Percent
Age		
<20	58	7.2
20-24	240	29.6
25-29	330	40.7
30-34	134	16.5
35+	48	5.9
Mean-26.42, SD-4.501		
Marital status		
Married(live with)	600	74.1
Single(live alone)	210	25.9
Ethnicity		
Amhara	677	83.6
Tigre	62	7.7
Other	71	8.8
Religion		
Orthodox	569	70.2
Protestant	57	7.0
Muslim	184	22.7
Maternal Educational status		
Illiterate	151	18.6
Read And Write	100	12.3
Primary Education	136	16.8
High School and TVET	302	37.3
College and University	121	14.9
Employment		
Currently employed	301	37.2
Unemployed/ looking for job	351	43.3
Student	158	19.5
Monthly household income in Birr		
<1000	128	15.8
1000-2000	264	32.6
2001-3000	168	20.7
3001-4000	82	10.1
4000+	168	20.7
Mean-2,294.99, SD-1135.93		
Source of information		
No modern source of information	217	26.8
Radio and/or TV	539	66.5
Magazine and/or Internet	54	6.7

Reproductive History

During the study period, 20.1%, 31.6% and 48.3% subjects were in the first, second and third trimester of pregnancy, respectively. Thirty seven percent of the study subjects were primiparous and sixty seven percent of the pregnancies were planned. Besides, history of abortion was experienced by 11.9 % of respondents. Even

though most of participants 666 (82.2%) reported to have ANC follow up, only 14% of them claimed to be informed about the risks of drinking alcohol during pregnancy by their health care providers.

According to the T-**ACE** screening instrument (T-tolerance, A –annoyed, C-cut off, and E-eye opening) questions, 34% of the study subjects claimed consumption of alcohol during pregnancy at least once per week. This study indicated that 32.3% of the pregnancy was unplanned while 11.9% had history of abortion. Assessment of the study participants' partners alcohol use revealed that 54% of them consumed alcohol. In addition to the above, 45% of them were offered alcohol to drink once or more times by someone around them who aware of their pregnancy (Table 2).

In regard to the amount of alcohol intake in a single occasion, most (29%) of them consumed less than two standard drinks, and some 61(7.7%) had four to five drinks, and a few 15 of the subject had eight or more drinks. 'Tella' (locally prepared alcoholic drink), beer, wine and some alcoholic-liquors was the commonest kinds of alcohol beverages which were taken by the respondents. Majority (70.5%) of the respondents reported that they were drinking 'Tella" during pregnancy. The second most used alcohol was beer consumed by 105(13.0%) pregnant women while the third one was wine consumed by 78(9.6%).

Table: 2 Reproductive History of dwellrs Bahir-Dar City Northwest, Ethiopia 2014.

Variable	**Frequency**	**Percent**
Gestational Age		
First Trimester	163	20.1
Second Trimester	256	31.6
Third Trimester	391	48.3
Number of children		
No child yet	299	36.9
One child	153	18.9
Two children	202	24.9
Three or more children	156	19.3
ANC follow up		
Yes	666	82.2
No	144	17.8
informed about alcohol drinking on ANC visit(N-666		
Yes	111	13.7
No	555	68.5
Ever consume alcohol during pregnancy		
Yes	275	34.0
No	535	66.0
Ever use of alcohol Before pregnancy		
Yes	640	79.0
No	170	21.0
Pregnancy plan		
Unplanned	262	32.3
Planned	548	67.7
Previous history of abortion		
Yes	96	11.9
No	714	88.1
Partner use of alcohol		
Yes	440	54.3
No	370	45.7
Alcohol use encouraged by others		
Yes	361	44.6
No	449	55.4

5.5. Logistic Regression-Bivariate and Multivariate Analysis

Multivariate analysis revealed that marital status, educational status, employment status, alcohol consuming partner, encouragement to drink by someone, advice given by health care provider at ANC, parity were found to have an effect on maternal alcohol consumption. According to the finding of this study, married study participants were three times more likely to drink alcohol during pregnancy than the single mothers (AOR = 3.09; 95% CI: 1.79, 5.33). Besides, mothers who had alcohol consuming partner and those who were offered an alcohol to drink by someone were two and four times more likely to consume alcohol than their counter parts (AOR=1.71; 95% CI: 1.09, 2.67) and (AOR=3.84; 95% CI: 2.34, 6.30), respectively.

Statistically significant association was also found between alcohol consumption and educational status. Accordingly, mothers who had accomplished high school were three times more likely to drink during pregnancy than illiterate mothers (AOR = 2.70; 95% CI: 1.25, 5.81). The findings also revealed that mother's employment status was proved to have a significant association. Unemployed mothers were three times (AOR=3.11; 95% CI: 1.73, 5.60) and student four times (AOR=4.20; 95% CI: 1.93, 9.14) more likely to drink alcohol than mothers who were employed.

Unplanned pregnancy had also increased likelihood of drinking during pregnancy (AOR = 3.12; 95% CI: (1.85, 5.28). On the contrary, pregnant mothers who had a child were less likely to consume alcohol during pregnancy as compared to those who are nuli para mother (AOR= 0.15; 95% CI 0.06, 0.37) (Table 3).

Table: 3 Logistic regressions of predictors of alcohol use among dwellers of Bahir-Dar City Northwest, Ethiopia 2014.

Variables	**Alcohol Use During pregnancy**		**COR(95% CI)**	**AOR(95% CI)**
	Yes	No		
Age				
<20	20	38	1	1
20-24	65	65	1.42(0.77, 2.61)	2.23(0.84, 5.93)
25-29	128	128	0.83(0.46, 1.49)	1.33(0.50, 3.52)
30-34	44	44	1.08(0.56, 2.06)	1.57(0.53, 4.63)
30-34	44	44	1.08(0.56, 2.06)	1.57(0.53, 4.63)
Marital status				
Married	188	412	1.55(1.12, 2.14)	3.09(1.79, 5.33)
Single(live alone)	87	123	1	1**
Ethnicity				
Amhara	229	448	1	
Tigre	17	45	1.35(0.76, 2.42)	
Other	29	42	0.74(0.45, 1.22)	
Religion				
Orthodox	239	330	1	
Protestant	16	41	1.86(1.02, 3.39)	
Muslim	20	164	5.94(3.63, 9.73)	
Educational Status				
Illiterate	56	95	1	1
Read And Write	37	63	1.00(0.60, 1.69)	1.72(0.78, 3.81)
Primary Education	39	97	1.47(0.89, 2.41)	1.29(0.59, 2.82)
High School and TVET	89	213	1.41(0.93, 2.13)	2.70(1.25, 5.81)**
M. Employment Status				
Currently employed	98	178	1	1**
Unemployed (looking for job)	123	253	0.56(0.40, 0.78)	3.11(1.73, 5.60)
Other Student	54	104	0.75(0.50, 1.12)	4.20(1.93, 9.14)
Monthly household income in Birr				
<1000	46	82	1	1
1000-2000	103	161	0.88(0.57, 1.36)	0.53(0.26, 1.10)
2001-3000	55	113	1.15(0.71, 1.87)	0.49(0.22, 1.12)
3001-4000	23	59	1.44(0.79, 2.63)	0.73(0.26, 2.09)
4000+	48	120	1.40(0.86, 2.30)	1.40(0.53, 3.70)
Source of information				
None	76	141	1	1
Radio and/or TV	172	367	1.15(0.83, 1.60)	0.90(0.49, 1.67)
Magazine and/or Internet	27	27	0.54(0.30, 0.98)	0.41(0.11, 1.46)
Gestational Age				
First Trimester	43	120	1	1
Second Trimester	174	82	0.17(0.11, 0.26)	0.11(0.06, 0.20)
Third Trimester	58	333	2.06(1.32, 3.21)	1.44(0.62, 3.34)
Parity				
Nulli Para	38	261	1	1**
Has One child	101	52	0.08(0.05, 0.12)	0.15(0.06, 0.37)**
Has two children	76	126	0.24(0.16, 0.38)	1.01(0.42, 2.45)
Has three and above children	60	96	0.23(0.15, 0.37)	0.81(0.33, 2.00)
Pregnancy				
Unplanned	46	216	3.37(2.35, 4.84)	3.12(1.85, 5.28)
Planned	229	319	1	1*
Previous abortion				

No	247	64	1.28(0.81, 2.05)	
Yes	28	471	1	
Partner alcohol use				
Yes	139	301	1.26(0.94, 1.69)	1.71(1.09, 2.67)
No	136	234	1	1*
Alcohol encourage by some body				
Yes	72	289	3.32(2.41, 4.55)	3.84(2.34, 6.30)
No	203	246	1	1*
ANC follow up				
Yes	229	437	0.90(0.61, 1.32)	
No	46	98	1	
Informed about the risks of alcohol on ANC visit(N-666)				
Yes	45	66	0.73(0.48, 1.11)	1.29(0.71, 2.37)
No	184	371	1	1

DISCUSSION

This study assessed the prevalence of maternal alcohol consumption during pregnancy, as well as predictors of this behavior among the dwellers of Bahir-Dar city mothers.

This study depicted that the prevalence of alcohol use during pregnancy was 34%. This is more or less similar with the results from Uganda (31%) (28), Sweden (30%) (21), Geneva (36.3%) (20). – Ascertaining the true prevalence and extent of alcohol consumption during pregnancy is difficult as under-reporting is common and women's understanding of what constitutes a standard "drink" or "unit" may differ from person to person(29). In the United States, one standard drink is defined as 340 gram of beer, 142 gram of wine, or 42 grams of liquor or 14 gram of alcohol (30). In this study, the data was gathered as what type of alcohol was consumed, to what amount of alcohol was taken in terms of milliliters and it was changed into standard drink, accordingly. Even though studies have shown that there is no known safe amount of alcohol consumption during pregnancy, the general tenor supports the concept that small amounts are safe.

The Ethiopia Demographic and Health Survey (2011) found that 45 % of women reported drinking alcohol at some point in their lives with great variations in different parts of the country ranging from 2% in Somali to 86% in Tigray (27) which is similar to our finding.

Following adjustment, being married, having of alcohol consuming partner and/or alcohol offering by someone aware of their pregnancy, and unplanned pregnancy had increased likelihood of consuming of alcohol during their pregnancy. On the other hand, being employed, and nuli-parity yet) were found to have a protective effect on alcohol consumption during pregnancy time.

The analysis demonstrated that married mothers were three times more likely to drink alcohol during pregnancy than the single mothers. This result goes in agreement with a study conducted in Canada (23). Moreover, the association between having alcohol consuming partner and being offered by someone with alcohol consumption during pregnancy in this finding is in line with the study conducted in Geneva (20). This might be due to the fact that being invited to drink alcohol could provoke some body to accept and consume it. The association found between educational status and alcohol intake during pregnancy is consistent to the findings reported by EDHS (27). This study revealed that employment has protective effect on alcohol consumption which contradicts with study in Geneva (20). This difference might be because of socio-demographic and cultural difference among the comparison areas. Unplanned pregnancy was found in many other studies to have increased likely hood of alcohol consumption during pregnancy (16).

Conclusions

Despite its effect, this study revealed that the prevalence of alcohol consumption during pregnancy is high in the study area. Being encouraged/ invited an alcohol to drink by someone aware of her pregnancy, being married, attaining higher educational statues, unemployment, unplanned pregnancy and null parity were found to predict alcohol consumption during pregnancy. Hence, responsible bodies working on maternal and child health shall endeavor while planning interventions to mitigate or eliminate the above listed factors.

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Limitations

Since a cross sectional study design was implemented, cause and effect relationship could not be established. Besides, the study might have been affected by recall bias.

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