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Alcohol use during pregnancy: prevalence and patterns in selected Buffalo City areas, South Africa

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Abstract

The high rate of foetal alcohol spectrum disorders, which results from alcohol consumption during pregnancy, is of concern in South Africa. The aims of this research were to establish the prevalence, patterns and factors associated with alcohol use amongst pregnant women attending antenatal clinics in two former township areas of Buffalo City, South Africa. A survey was conducted using a structured questionnaire that included socio-demographic questions, and the Alcohol Use Test (AUDIT). The questionnaire was administered in English, Afrikaans or isiXhosa by healthcare providers trained in its administration. Consecutive sampling was used, with all willing women presenting at public clinics offering antenatal care in the two townships being invited to participate. Of the 18 clinics operating in the two townships, 16 were willing to participate, resulting in a sample of 1028 women over a nine-month period. Data were analysed in Medcalc using descriptive statistics, one-way analysis of variance, independent samples t-test and a multivariable binary logistic regression analysis. Two-thirds of the sample did not drink alcohol, but results showed high levels of risky alcohol use: 20.1% on the total AUDIT scale, and 16.8% on the AUDIT-C scale. The following variables were found to be significantly associated with risky drinking: age; race; report of intimate partner violence (IPV); and other regular drinker in the home. Employment status, education status, relationship status, parity and gestation were not associated with risky drinking. Interventions aimed at reducing alcohol use during pregnancy should address: drinking youth cultures; drinking norms within the home; and intimate partner violence. Future studies should include additional mental and physical health variables. *(Afr J Reprod Health 2021; 25[1]: 114-121).*

Keywords: Alcohol, pregnancy, prevalence, South Africa

Résumé

Le taux élevé de troubles du spectre de l'alcoolisation fœtale, qui résulte de la consommation d'alcool pendant la grossesse, est préoccupant en Afrique du Sud. Les objectifs de cette recherche étaient d'établir la prévalence, les schémas et les facteurs associés à la consommation d'alcool chez les femmes enceintes fréquentant des cliniques prénatales dans deux anciens cantons (*townships*) de Buffalo City, en Afrique du Sud. Une enquête a été menée à l'aide d'un questionnaire structuré qui comprenait des questions sociodémographiques, et le test d'identification des troubles liés à l'abus d'alcool (AUDIT). Le questionnaire a été administré en anglais, afrikaans ou isiXhosa par des prestataires de soins formés à son administration. Un échantillonnage consécutif a été utilisé, toutes les femmes consentantes se présentant dans des cliniques publiques offrant des soins prénatals dans les deux cantons ont été invitées à participer. 16 des 18 cliniques opérant dans les deux cantons ont été disposées à participer, ce qui a donné un échantillon de 1028 femmes sur une période de neuf mois. Les données ont été analysées dans Medcalc en utilisant des statistiques descriptives, une analyse unidirectionnelle de la variance, un test-t pour échantillons indépendants et une analyse multivariée de régression logistique binaire. Les deux tiers de l'échantillon ne buvaient pas d'alcool, mais les résultats ont montré des niveaux élevés de consommation d'alcool à risque: 20,1% sur l'échelle AUDIT totale et 16,8% sur l'échelle AUDIT-C. On a trouvé les variables suivantes significativement associées à la consommation à risque d'alcool: âge; course; rapport de violence entre partenaires intimes (VPI); et autre buveur régulier à la maison. Le statut d'emploi, le niveau de scolarité, le statut relationnel, la parité et la gestation n'étaient pas associés à une consommation d'alcool à risque. Des interventions visant à réduire la consommation d'alcool pendant la grossesse devraient aborder: les cultures de consommation d'alcool chez les jeunes; les normes de consommation d'alcool à la maison; et la violence entre partenaires intimes. Des études futures devraient inclure des variables de santé mentale et physique supplémentaires. *(Afr J Reprod Health 2021; 25[1]: 114-121).*

Mots-clés: Alcool, grossesse, prévalence, Afrique du Sud

Introduction

Foetal alcohol spectrum disorders (FASD) are a cluster of disorders caused by alcohol consumption during pregnancy. Given this, emphasis is being placed on investigating the prevalence and patterns of alcohol use by pregnant women. Studies conducted amongst women accessing antenatal

care in a range of countries indicate different levels of reported alcohol use during pregnancy: in the UK, 25%[1]; in Sweden 12%[2]; in Korea 16.4%[3]; in Ethiopia, 8.1%[4]; and Tanzania 15.1%[5].

Studies in South Africa, the country in which this study was conducted, show varying but high rates of FASD across locations, ranging from 29 to 290 per 1 000 live births[6]. Household surveys have revealed that 2.5% of pregnant women in South Africa report drinking alcohol at hazardous or harmful levels[7]. However, there are no national or provincial data collected from women presenting at antenatal clinics[8]. Research conducted in the city of Cape Town with women attending antenatal clinics revealed that 20.2% drank alcohol, with most of these drinking at risky levels[9]. This is higher than results from a survey conducted in a health district of Mpumalanga in which 6.6% of the pregnant women indicated that they drink alcohol[10].

Research shows that the predictors of drinking during pregnancy are varied. In South Africa, depression has been associated with alcohol use during pregnancy[9]. Reasons supplied by pregnant women in the Western Cape, South Africa, for drinking alcohol include: alcohol being used as a coping strategy and to foster social connection; social norms around drinking; addiction; and lack of attachment to the pregnancy/motherhood[11]. Research with HIV+ pregnant women indicates that the younger women (18-21) reported the highest levels of alcohol-related harm[12], and drinking was associated with living in urban or peri-urban areas, and higher economic status[13]. In Tanzania, alcohol use during pregnancy was found to be associated with pre-pregnancy alcohol use, having relatives who use alcohol, low education status, making local brews as a source of income, and not having had complications in previous pregnancies[5]. In Ethiopia, unplanned pregnancy, abortion history, pre-pregnancy alcohol use and mental distress were found to associated with alcohol use during pregnancy[4].

Research on general alcohol consumption amongst women and men in the Eastern Cape, the province within which this study was conducted, reveals a high 12 month prevalence of alcohol dependency (19.1% amongst women)[14]. Given the association of pre-pregnancy alcohol consumption with drinking alcohol during pregnancy[5], it is likely that many of these women will continue drinking if pregnant. However, no studies, to our knowledge, have been conducted on drinking levels during pregnancy in the Eastern Cape, as well as the demographic variations in drinking. The current study addresses the dearth of knowledge about drinking during pregnancy in the Eastern Cape by conducting a survey of the prevalence and features of drinking amongst antenatal clinic users in selected wards in Buffalo City.

Methods

Using a survey research design, the objectives of the study were to establish the prevalence and patterns of alcohol use during pregnancy amongst women presenting at antenatal clinics in two townships of Buffalo City, the Eastern Cape. Specifically, the aims were to establish the prevalence of alcohol consumption and of risky alcohol use; and to ascertain whether the following variables are associated with risky drinking: age, employment, intimate partner violence, education, parity, gestation and alcohol usage in the home.

Data were collected in public primary healthcare facilities and clinics that provide maternity services for pregnant women. All willing facilities (sixteen out of the eighteen that provide services) in two major townships of Buffalo City were sites of data collection. Consecutive sampling of participants was used (i.e. all willing pregnant women who attended the clinics over a nine-month period), resulting in a sample of 1028 pregnant women. Sampling was completed when the target of 1000 participants was reached.

Data were collected through the use of a structured questionnaire that included socio-demographic information and the Alcohol Use Disorders Identification Test (AUDIT). The socio-demographic items included questions on age, race, education, employment, parity, gestational date, intimate relationship status ("Are you married or currently living with a partner?"), intimate partner violence ("At any time during your current pregnancy, did your husband/partner push, hit, slap, kick, choke or physically hurt you in any other way?"), and drinkers in the home ("Does your partner or anybody else regularly drink at your home?"). The AUDIT is a well-validated, brief measure that was developed by the World Health Organization to screen for hazardous and harmful drinking and alcohol dependence in a variety of clinical settings[15].The measure consists of 10

items, each giving a score of 0 to 4, with a maximum score of 40, and can be easily administered orally by a healthcare worker or by written self-rating[16]. The AUDIT-C is a shortened version of the AUDIT that comprises of items that assess alcohol consumption (items 1 to 3), and it is used to identify hazardous drinkers[15]. Its score ranges from 0 to 12. AUDIT has been used in a number of large South African epidemiological studies[17]. It has been used as a screening measure for alcohol use in pregnancy in the UK[1] and South Africa[9,10].

A rigorous process of forward and backward translation was used to translate the questionnaire into isiXhosa and Afrikaans. Forward translation is a method in which a document or questionnaire is converted from the source language to the target language, while backward translation is a method in which the same document or questionnaire is translated back from the target language to the source (original) language. This method is vital as it is used to identify conversion errors when translating back from the target language to the source language[18]. The services of language experts in the University's School of Languages were used to conduct the translations and to resolve any linguistic or conceptual differences between the various versions.

Questionnaires were thus administered in the participant's language of choice (English, Afrikaans or isiXhosa). A health service provider at each of the 16 clinics was trained in data collection. Two training sessions were provided by one of the researchers. The training introduced the health service providers to the purpose of the study, consent procedures, the role of the health service providers in collecting data and the data collection method. Additionally, they were provided with files for the purpose of data storage and copies of the various language versions of the survey instrument, consent forms, manuals and important contact details. Health service providers had the opportunity to practice the administration of the survey. Researchers visited the sites at regular intervals to provide support and to ensure consistency of data collection by the 16 health service providers.

Data were analysed through the use of descriptive statistics and inferential statistics conducted in Statistica. Descriptive statistics were used to describe the demographics of participants (age, race, education, employment, parity, and gestation, relationship status) and reports of intimate partner violence and other drinkers in the house. In order to determine the prevalence of risky drinking, responses to individual questions were condensed in addition to calculating the overall score on AUDIT-C. In analysing risky drinking, two measures were used: total AUDIT score of 5 or more; AUDIT-C of 3 or more. The total AUDIT score is calculated for all the AUDIT items and refers to consumption and consequences of drinking (e.g. dependence, emotional and cognitive difficulties). AUDIT-C measures consumption only and is based on the first three questions of the AUDIT questionnaire: How often do you have a drink containing alcohol? How many drinks containing alcohol do you have on a typical day when you are drinking? How often do you have six or more drinks on one occasion? Overall scores were utilized to derive the number of women meeting criteria for hazardous and harmful drinking, and heavy episodic (binge) drinking that is, six drinks or more monthly or more frequently. One-way analysis of variance and independent samples t-test were used to test whether age, employment, experience of IPV, parity, gestation, and alcohol use in the home may be associated with particular drinking patterns. A multivariable binary logistic regression analysis was used to determine whether variables found to be significant in previous inferential analyses were independently associated with risky drinking during pregnancy. "No responses" were factored out of the calculations in these analyses.

Ethics clearance was obtained from Rhodes University, tracking number: RU-HSD-16-05-0001. Permission to conduct the study was granted by the Eastern Cape Department of Health and Buffalo City Metropolitan Municipality. All necessary precautions were taken to ensure that the rights of participants were respected, and that participation proceeded on an informed consent basis.

Results

The demographic questions revealed the following. The majority, 95%, of the sample

Table 1: Reproductive variables

No. of previous pregnancies			**Gestation (trimester)**		
	N	***%***		***N***	***%***
0	240	23.4	First	197	19.2
1	266	25.9	Second	473	46.0
2	203	19.5	Third	193	18.8
3	66	6.4	No resp	165	16.1
4	31	3.0		1028	100%
5+	10	1.0			
No resp	212	20.6			
	1028	100%			

identified as African and 5% as Coloured. The term "Coloured" is a contested one in South Africa. It refers to people of mixed race ancestry. We note the public debate around the word, in particular the potential for entrenching apartheid generated truths regarding race. The category continues to be used in official South African documents and policy, however. On this basis, we use the word in this article, with a caveat – that all racial categories are socially constructed – attached to its use. The average age of the sample is 27 years (SD = 6.07). The majority (67.4%) were between the standard reproductive ages of 18 and 35 (23.8% did not give an age). The majority of participants had either a High School (39.7%) or Matric level (39.1%) education; 6.9% had primary school or no education, while 13.5% indicated that they had higher education qualifications. A large percentage (68.3%) of participants reported being unemployed.

Table 1 outlines participants' parity and pregnancy gestation. Just under half (49.3%) the participants were experiencing their first or second pregnancy at the time of data collection. There was a concentration of participants who were in the second trimester of the pregnancy (46%). Table 2 outlines intimate partner status, as well as reportage of intimate partner violence and or other drinkers in the home. A majority of participants (63.9%) reported being married or cohabiting with a partner. A small percentage (5.7%) responded positively to the question regarding intimate partner violence. A substantial minority (38.1%) reported that there is another person in the home who drinks on a regular basis.

Table 3 describes the prevalence of drinking as measured in various ways by the AUDIT. Significantly, two-thirds of the sample reported not drinking alcohol. For those who did drink alcohol, the large majority reported drinking once monthly or less often. Nevertheless, results show high levels of risky drinking: 20.1% on the total AUDIT scale, and 16.8% on the AUDIT-C scale. Heavy episodic drinking, as measured by question 3 of the AUDIT, was reported by 6.6% of the participants.

Table 4 contains the associations between socio-demographic variables and AUDIT-C mean scores. The following variables were found to be significantly associated with risky alcohol consumption during pregnancy: age; race; report of IPV; and other regular drinker of alcohol in the home. The table reveals that older age (35 to 45 years) is associated with lower AUDIT-C scores than younger age. Those who identify as Coloured drink more alcohol than those who identify as African. Those who report intimate partner violence (IPV) drink more alcohol than those who do not, and those who report that their partner or somebody else drinks alcohol regularly at home drink more than those who do not. Interestingly, employment status, education status, relationship status, parity and gestation were not associated with risky drinking of alcohol.

To determine if older age, race, IPV and having other regular drinkers at home are independently associated with risky drinking of alcohol during pregnancy, all predictors were entered into a multivariable binary logistic regression model. Being 35 or younger, Coloured, reporting intimate partner violence, and having others drinking alcohol at home all independently predict risky drinking. The odds ratios are reported in Table 5.

Although an analysis of statistical differences between the clinics was not possible owing to the small sample sizes within each clinic, it was clear that there was some variability in drinking patterns across the communities close to the clinics. The lowest mean AUDIT-C score for a clinic was 0.62 with a SD of 1.23, compared to the highest of 1.91 and a SD of 2.36.

Discussion

We collected data on alcohol consumption during pregnancy from a sample of women presenting at antenatal care clinics in two townships in Buffalo City over a period of nine months. While the demographics in terms of race (vast majority black African), education (minority have higher education) and employment (two-thirds

Table 2: Intimate partner, intimate partner violence and other drinker in the home

Married/cohabiting			**Intimate Partner Violence during pregnancy**			**Other drinker in home**		
	N	***%***		***n***	***%***		***n***	***%***
Yes	317	30.8%	Yes	59	5.7%	Yes	392	38.1
No	657	63.9%	No	916	89.1%	No	563	54.8
No resp	55	5.4%	No resp	54	5.3	No resp	74	7.2
	1028	100%		1028	100%		1028	100%

Table 3: Frequency of current drinking amongst participants according to AUDIT

Frequency	**n**	**%**
Never	693	67%
Monthly or less	222	21.6%
2-4 times a month	92	8.9%
2-3 times a week	13	1.3%
4 or more times a week	8	0.8%
Total AUDIT score 5 or more	207	20.1%
Heavy episodic drinking (six or more drinks on one occasion) monthly or more frequently	68	6.6%
AUDIT-C score of 3 or more	173	16.8%

Table 4: Association between socio-demographic variables and AUDIT-C mean scores

Variable	**Range**	**N**	**%**	**AUDIT-C Mean**	**p-Value**
Age	18-25	329	42.0%	1.00	**0.00****
	26-35	364	46.5%	1.28	
	36-45	90	11.5%	0.54	
Race	African	974	95.3%	0.98	**0.02***
	Coloured	48	4.7%	1.90	
Parity	Nulliparous	240	29.4%	0.98	0.35
	Multiparous	576	70.5%	1.12	
Gestation (weeks)	First trimester	197	22.8%	1.11	0.25
	Second trimester	473	54.8%	1.10	
	Third trimester	193	22.4%	0.84	
Education	None	11	1.1%	0.64	0.31
	Primary School	60	6.1%	1.15	
	High School	393	39.7%	1.16	
	Matric	387	39.1%	1.00	
	Higher Education	139	14.0%	0.80	
Employment	Yes (incl. maternity leave)	282	28.7%	0.90	0.12
	No	702	71.3%	1.10	
Partner	Yes	317	33%	0.98	0.36
	No	657	67%	1.10	
IPV	Yes	59	6%	2.05	**0.00****
	No	916	94%	1.00	
Other regular drinker at home	Yes	392	41%	1.37	**0.00****
	No	563	59%	0.86	

**: significant at the p<0.01 level

*: significant at the p<0.05 level

Table 5: Sociodemographic predictors of risky drinking during pregnancy

Predictive factor	**OR**	**95%CI**	
Age 35 to 45	0.24	0.92	0.60
Coloured race	2.72	1.29	5.76
IPV	2.70	1.40	5.23
Other drinkers at home	1.84	1.23	2.73

unemployed) are not surprising for pregnant women living in these areas, the low reportage of intimate partner violence is surprising. Other South African studies have revealed a high percentage of IPV in general (around 30% of women report being victimized by a male partner)[19], and during pregnancy (between 15% and 40% of pregnant report that their partners with sexually or physically abused them)[20]. The reason for this discrepancy is not clear: either the rate is much lower in these areas or the question posed regarding intimate partner violence was too specific. Whatever the case, those who did report IPV were, as has been shown in other studies, more likely to report consuming alcohol.

Responses to the AUDIT questions revealed that two-thirds of the sample reported not drinking alcohol. Despite this, high levels of risky drinking were reported. These are equivalent to the scores found in a Western Cape, South Africa, study[9], but significantly higher than reports from similar studies conducted in Mpumalanga, South Africa[10] and the UK[1], and lower than one conducted in Australia[21], which respectively reported a rate of 6.6%, 5.4% and 49% pregnant women drinking at risky levels. This, together with the variation of drinking levels reported in various clinics in this study, points to the importance of context in alcohol use during pregnancy.

Age, other regular alcohol drinker in the home, race, and report of IPV were associated with risky drinking. Women below the age of 35 were more likely to report drinking at risky levels. This is different to a Swedish study in which older pregnant women were more at risk[2]. Women living with regular alcohol drinkers were also more likely to report risking drinking. The trend was also reported in a study conducted in Tanzania[5].

Given the small percentage of participants who identified as Coloured and who reported IPV, the associations between these variables and risky drinking must be read with caution. Nevertheless, the former result is in line with other South African research that suggests that Coloured women drink at higher rates than African women[22]. The association between IPV and alcohol consumption has been established in South African research[23] in a systematic review of African studies[20] and in and a multi-country study[24].

Conclusion

Data were collected over a nine-month period on the alcohol drinking patterns of pregnant women in sixteen public healthcare centres and clinics across Buffalo City in the Eastern Cape. Results show that the majority of pregnant women reported not drinking alcohol at all. However, there is a substantial minority who reported drinking alcohol at risky levels, in particular engaging in binge drinking. The results are similar to those recorded in the Western Cape, but higher than those recorded in Mpumalanga. These variations as well as the differences found in studies conducted in other countries suggest that interventions must take context into account.

Results show that Coloured women, women younger than 35, women who experience IPV, and women who live with someone who drinks regularly were more likely to drink at risky levels. Each of these variables independently predicted risky drinking. Education, employment, marital or cohabiting status, gestation and parity were not associated with drinking patterns.

These associations suggest that interventions aimed at reducing alcohol use during pregnancy in these areas should address: specific concerns of women below 35 in relation to drinking cultures and the stresses of pregnancy; address home circumstances, in particular drinking norms within the home; open up discussion of intimate partner violence, and provide support for those experiencing IPV (counselling, legal advice, referral etc.).

This study did not measure variables such as depression, HIV status, and trauma exposure, all of which have been found to be important in relation to alcohol use[12,23]. Future prevalence research should consider adding additional mental and physical health variables so as to increase the nuance of understandings around alcohol use in pregnancy.

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Contribution of Authors

Catriona Macleod and Charles Young conceptualised the project. Katlego Molokoe facilitated data collection and conducted an initial analysis. Charles Young completed the statistical analysis. Catriona Macleod led the process of write-up. All authors approved the submitted manuscript.

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