

ORIGINAL ARTICLE

Knowledge of pregnant women regarding tobacco and alcohol use in pregnancy at Mariental clinic, Hardap region: a quantitative study

SELMA HAMUTENYA, EMMA MAANO NGHITANWA and MARIAN SANKOMBO

School of Nursing and Public Health, University of Namibia, Namibia

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Abstract. Globally, alcohol and tobacco use during pregnancy is a challenge and linked to negative effects on health and well-being on both mother and the fetus. To investigate the knowledge of pregnant women attending antenatal care at Mariental clinic regarding the use of tobacco and alcohol in pregnancy. A quantitative approach with descriptive, cross-sectional, analytical design was used. The population were all pregnant women attending antenatal care at Mariental clinic. Systematic sampling method was used to select the sample of 224 pregnant women. Data was collected using a self-administered questionnaire that collected information on sociodemographic data and knowledge on tobacco and alcohol use. Data was analysed using Statistical Package of the Social Sciences (SPSS) version 27. Descriptive statistics was utilized to generate frequencies and percentages. Fisher's Exact test at 0.05 alpha level was used to determine the association between variables. The mean age was 28.8 with a standard deviation of 6.9 years. Most participants, 43.6% were aged between 18 and 24 years. Majority, 88.15% were in third trimester of pregnancy, 73% were single, and unemployed. Most participants 78.7% have a high level of knowledge regarding the use of alcohol during pregnancy and 70.1% have higher level of knowledge regarding tobacco use during pregnancy. No association was found on the level of knowledge on alcohol and tobacco use during pregnancy and socio demographic characteristics as all variables show a P-value of more than 0.05. Participants have higher knowledge on alcohol and tobacco use during pregnancy.

Introduction

Alcohol intake during pregnancy is known to have detrimental effect to the fetal development, therefore pregnant

women should refrain from alcohol intake (1). Alcoholic beverages are described as liquids with alcohol (ethanol) in them that are meant to be consumed. The majority of the alcoholic drinks are made through the procedures of fermentation and distillation, but some are also made through the process of blending (2). Moreover, smoking during pregnancy, has detrimental effects on both the mother and the foetus because it is the best indicator of foetal outcomes such as ectopic pregnancy, and orofacial clefts (3). Smoking is defined as breathing in tobacco smoke from cigarettes, pipes, or cigars (4).

Tobacco and alcohol use during pregnancy has negative consequences, particularly for the unborn baby, affecting the baby's birth weight, leading to short and long-term complications such as an increased risk of psychiatric disorders, Attention Deficit Hyperactivity Disorder (ADHD), and poor school performance in children (5). According to Mariental District Hospital's maternity data from January to June 2019, there were a total of 443 deliveries, with 11% (47) of those being low birth weight babies (6). In addition, 76 of the 443 women who gave birth at Mariental hospital during the stated period claimed that they had drunk alcohol or smoked tobacco during their pregnancy (7). Moreover, 36% of premature babies were delivered to mothers who smoked during pregnancy, and 25 percent of premature babies were born to mothers who consumed alcohol during pregnancy (7).

Materials and methods

Ethical considerations. Ethical approval for the study was granted by the University of Namibia, Research Ethical Committee (SON/594/2020). Approval was also obtained from the Ministry of Health and Social Service Research Ethics Committee and from Hardap region management team as well as Mariental clinic management. Written informed consent was sought and obtained from the participants. Anonymity and confidentiality was ensured by not recording the participants names on the questionnaire and by storing records in the lockable cabinet. The researcher made sure that the questions are well structured to prevent psychological harm to the participants. Justice was ensured by selecting participants for reasons directly related to the research problem. All participants

Correspondence to: Emma Maano Nghitanwa School of Nursing and Public Health, University of Namibia, P/Bag 13301, Windhoek, Namibia

E-mail: enghitanwa@unam.na

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were treated equally irrespective of their race, language and educational background.

Study setting. The study setting was Mariental clinic which is situated in Mariental district. Mariental is situated in Hardap region, 268 km from Windhoek, the capital city of Namibia. It provides comprehensive primary health care services that include antenatal care, immunization, postnatal care and screening among others. Pregnant mothers attending ANC at Mariental clinic mostly deliver at Mariental hospital. According to Mariental District Hospital's maternity data from January to June 2019, there were a total of 443 deliveries, with 11% (47) of those being low birth weight babies (below 2500g). According to Mariental Hospital's maternity records, 76 of the 443 women who gave birth claimed that they had drunk alcohol or smoked tobacco during their pregnancy (Mariental Hospital maternity records, 2019). About 36% of premature babies were delivered to mothers who smoked during pregnancy, and 25 percent of premature babies were born to mothers who consumed alcohol during pregnancy (ANC annual report, 2019).

Study design. A quantitative, descriptive, cross-sectional, analytical design was used.

Population and sampling. The study population included all the pregnant women attending antenatal care at Mariental clinic. A sample size of 224 was calculated using Yamane's formula ($n = \frac{N}{1 + N(a)^2}$) at a 5% margin of error. The inclusion criteria were all pregnant women who attended antenatal care at Mariental clinic aged 18 years and above. The study excluded pregnant women who are under 18 years of age, pregnant women diagnosed with mental illnesses and pregnant women attending ANC at other clinics rather than Mariental clinic. A systematic sampling was used where by pregnant women were selected at equal intervals from the antenatal care register so that every second element was included in the sample size until the desired number of participants was reached.

Data collection and analysis. Data was collected over a period of two months between 01st February and 30th March 2022 with a self-administered questionnaire developed by researchers in English. The tool consisted of questions regarding sociodemographic characteristics and on knowledge about alcohol and tobacco use during pregnancy. Data was collected in a private room and the researchers were available for clarifications of questions when needed.

Validity was ensured by giving the questionnaires to the experts in midwifery to evaluate the content of the instrument and the questionnaire was based on literature reviews and by handing the instrument to an expert in the field to check if the instrument appears to measure what it is supposed to measure. Reliability was ensured by pilot testing of the questionnaire on 22 pregnant women prior to the actual study to ensure that all important areas of concern are reflected in it. No adjustments were done on the questionnaire after the pilot study. Furthermore, the data from all participants was collected using the same instrument with the same questions.

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive univariate analysis was performed for each variable, generating

Table I. Age classification of the participants.

Age category	Frequency	Percentage (%)
18-24 Years	92	43.6
25-34 Years	77	36.5
35-44 Years	30	14.2
No age indicated	12	5.7
Total	211	100.0

frequencies and percentages for sociodemographic factors. Fisher's Exact test at 0.05 alpha level was used to determine the association between sociodemographic characteristics and the level of knowledge regarding alcohol and tobacco use during pregnancy.

Results

Sociodemographic characteristics of participants. The mean age was 28.8 with a standard deviation of 6.9 years. The participants' ages were further categorized into age groups as shown in Table I. Most participants, 92 (43.6%) were aged between 18 and 24 years. The minimum number of children for the participants was one and the maximum was eight children. The number of children was further grouped into three categories. Most of the participants 163 (77.3%) had 0 to 2 children, 40 (19.0%) had 3 to 5 children while 8 (3.8%) participants had 6 to 8 children before the current pregnancy. Majority of the participants 186 (88.15%) were single, 21 (9.9%) were married while only 4 (1.90%) had divorced. Most of the participants 154 (73%) were unemployed while 57 (27%) were employed. Fig. 1 shows that most participants 153 (72.86%) had attended secondary education as their highest level of qualification, while nine (4.29%) have never attended school.

Knowledge of alcohol use during pregnancy. Participants were asked different questions to assess their knowledge regarding the risks of alcohol use in pregnancy as presented in Table II. Most participants 163 (77.3%) have read about the dangers of using alcohol during pregnancy. Majority 185 (87.7%) agreed that drinking alcohol while pregnant can harm the unborn baby. Most participants 161 (76.3%) have received information from a nurse on the possible harm of using alcohol in pregnancy. A large number of participants 127 (60.2%) agreed that damages to the baby depend on the amount and frequency of alcohol consumption. Furthermore, more 145 (68.7%) participants agreed that drinking alcohol while pregnant causes low birth weight.

Levels of knowledge towards alcohol use during pregnancy. All statements on knowledge of alcohol use during pregnancy were scored and added together to produce a total score range of 10 to 30. The individual scores were then categorized as follows: 10-16=Low; 17-23=Average; 24-30=High. The results show that the majority (78.7%) had a high level of knowledge regarding the use of alcohol during pregnancy. In addition, 41 (19.4%) were rated average knowledge and 4 (1.9%) were rated with low knowledge.

Table II. Knowledge on alcohol use during pregnancy.

No.	Statement	Disagree (%)	Not sure (%)	Agree (%)
01.	I have read about the dangers of using alcohol during pregnancy.	30 (14.2)	18 (8.5)	163 (77.3)
02.	I have received information from the nurse on the possible harm of using alcohol in pregnancy.	27 (12.8)	23 (10.9)	161(76.3)
03.	Drinking alcohol while pregnant can harm the unborn baby.	8 (3.8)	18 (8.5)	185 (87.7)
04.	The type of alcohol a woman takes when she is pregnant affects the outcome of her pregnancy.	7 (3.3)	63 (29.9)	141 (66.8)
05.	Alcohol consumption in pregnancy results in lifelong disabilities in children.	16 (7.6)	78 (37.0)	117 (55.5)
06.	Damages to the baby depend on the amount and frequency of alcohol consumption.	9 (4.3)	75 (35.5)	127 (60.2)
07.	Drinking alcohol while pregnant causes low birth weight.	14 (6.6)	52 (24.6)	145 (68.7)
08.	Home-made alcohol can also affect the unborn baby.	26 (12.3)	44 (20.9)	141 (66.8)
09.	Women who consume alcohol before pregnancy are more likely to continue drinking alcohol during pregnancy.	32 (15.2)	53 (25.1)	126 (59.7)
10.	It is difficult for the pregnant woman to quit alcohol if her partner/friends drink alcohol.	55 (26.1)	48 (22.7)	108 (51.2)

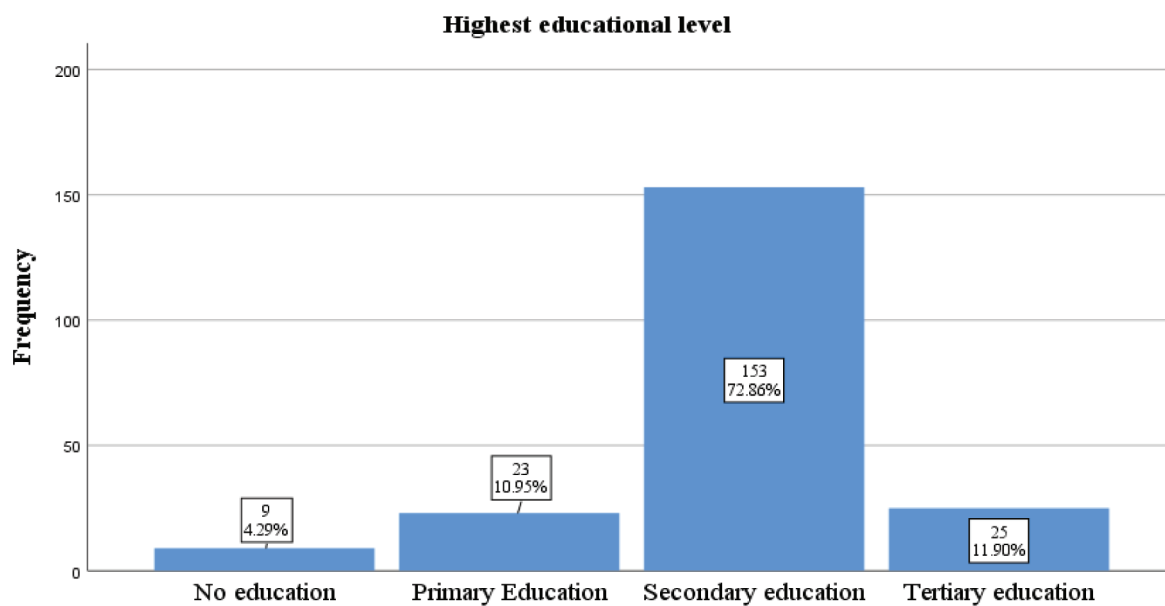


Figure 1. Educational status.

Knowledge on tobacco use during pregnancy. To assess participants' knowledge on the use of tobacco in pregnancy, participants were asked questions about the risks of smoking tobacco in pregnancy (Table III). A large number of participants, 181 (85.8%) indicated that they were aware that smoking in pregnancy can harm the baby. Most participants 138 (65.4%) have received health education on the effects of tobacco during pregnancy. Majority of participants 165 (78%) agreed that smoking tobacco affects the pregnant women's health. A lot of participants 139 (65.9) agreed that other forms of tobacco such as snuff puts the life of the unborn baby at risk. Many participants 135 (64%) agreed that exposure to second-hand smoke also puts the pregnant woman and unborn child in danger.

Levels of knowledge towards smoking during pregnancy. All statements on knowledge of smoking during pregnancy were scored and added together to produce a total score range of 10 to 30. The individual scores were then categorized as follows: 10-16=Low; 17-23=Average; 24-30=High. The majority of the participants 148 (70.1%) indicated higher knowledge, 59 (28%) indicated average knowledge while 5 (1.9%) were rated low level of knowledge.

Association of levels of knowledge on alcohol and tobacco use in pregnancy with demographic characteristics. The overall levels of knowledge on alcohol use during pregnancy was analysed for its association with demographic characteristics. The level

Table III. Knowledge on tobacco use during pregnancy.

No.	Statement	Disagree (%)	Not sure (%)	Agree (%)
01.	I am aware that smoking tobacco in pregnancy can harm the unborn baby.	12 (5.7)	18 (8.5)	181 (85.8)
02.	I have received health education on the effects of tobacco during pregnancy.	41 (19.4)	32 (15.2)	138 (65.4)
03.	I am aware that smoking tobacco in pregnancy causes miscarriages.	11 (5.2)	101 (47.9)	99 (46.9)
04.	Tobacco smoking in pregnancy increases the deliveries of low-birth-weight babies.	4 (1.9)	76 (36.0)	131 (62.1)
05.	Smoking tobacco affects the pregnant women's health.	9 (4.3)	37 (17.5)	165 (78.2)
06.	Pregnant women who smoke tobacco are at risk of delivering premature babies.	7 (3.3)	68 (32.2)	136 (64.5)
07.	Other forms of tobacco such as snuff put the life of the unborn baby at risk.	12 (5.7)	60 (28.4)	139 (65.9)
08.	Even taking one cigarette per day in pregnancy can cause harm to the unborn baby.	25 (11.8)	63 (29.9)	123(58.3)
09.	Exposure to second hand smoke also puts the pregnant woman and unborn child in danger.	20 (9.5)	56 (26.5)	135 (64.0)
10.	Tobacco use in pregnancy is associated with incomplete antenatal care	13 (6.2)	96 (45.5)	102 (48.3)

of association and its significance were tested using Fisher's Exact test at 0.05 alpha level. None of the demographic variables revealed a significant association with alcohol use in pregnancy. In addition, the overall levels of knowledge on tobacco smoking during pregnancy was analysed for its association with demographic characteristics using Fisher's Exact test at 0.05 alpha level. None of the demographic variables revealed a significant association with tobacco use during pregnancy.

Discussion

The study found that majority of pregnant women were 18 to 44 years that reflect middle age which is the reproductive age (8). The study also found that single women were more represented than married women. This contradicts the study conducted in Ethiopia that found that unmarried women had poor utilization of ANC services because they were afraid to be seen pregnant (9).

The findings of the study revealed that 77.3% of the participants had knowledge on the dangers of using alcohol during pregnancy, with 76.3% of the participants having received that information from nurses. These findings imply that the Mariental clinic's nurses invested their time and resources in educating expectant mothers about health-related issues, especially on the effects of alcohol. The time spent in ANC teaching about the effects of alcohol during pregnancy will be limited as the majority of women would have received the information already before becoming pregnant as a result of the information received by these pregnant women potentially being passed on to other women in the community of Mariental. These results correlate with a study of Esposito *et al* (10) who indicated that 75.4% of participants revealed that during pregnancy they have received information from a physician about possible

damages to the new-born baby resulting from alcohol intake during pregnancy. On the contrary, Doherty *et al* (11), revealed that significant lower proportions of women 15.8% reported receiving advice on the safety of not consuming alcohol during pregnancy, potential risks associated with alcohol consumption during pregnancy 21.0% and complete advice 8.8%.

The findings of the study revealed that 87.7% of the participants agreed that drinking alcohol while pregnant can harm the unborn baby with 68.7% of participants acknowledging that it causes low birth weight. These findings imply that pregnant women are aware of the risks associated with alcohol use during pregnancy. One of these risks is low birth weight, which pregnant women would prefer to avoid because it would mean longer hospital stays for the baby to gain weight. As a result, pregnant women would abstain from alcohol consumption to have healthy newborns. These results correspond with a survey done in Canada in 2017 which revealed that the majority of women 75% are aware that any degree of prenatal alcohol exposure can impair the foetus, and there is a widespread notion that the higher the level of alcohol intake, the more severely the baby is impacted (12).

The findings of the study revealed that 60.2% of the participants agreed that damages to the baby depend on the amount and frequency of alcohol consumed. This suggests that higher levels of alcohol consumption increase the risks to the foetus and the complications to the mother during pregnancy, but the percentage of participants is unsatisfactory because the 39.8% of participants who did not agree is a larger margin, necessitating more education on the subject. These results are supported by Waterson and Murray-Lyon (12) who revealed that any degree of prenatal alcohol exposure can impair the foetus, and there is a widespread notion that the higher the level of alcohol intake, the more severely the baby is impacted.

Furthermore, the findings of the study revealed that the level of knowledge towards alcohol use during pregnancy is high 78.7%, while 19.4% had average level and 1.9% had low levels of knowledge. This implies that while the majority of participants had high levels of knowledge, there is still a need to increase education and awareness on the use of alcohol during pregnancy so as to build on the knowledge of participants with average and low knowledge levels. The study results are supported by Waterson and Murray-Lyon (12) who indicated that the majority of women 75% are aware that any degree of prenatal alcohol exposure can impair the foetus, and there is a widespread notion that the higher the levels of alcohol intake, the more severely the baby is impacted.

The findings of the study revealed that the majority 85.8% of participants were aware that smoking during pregnancy can harm the baby, with 65.4% of the participants having received health education on the effects of tobacco during pregnancy. This suggests that medical staff at Mariental Clinic have actively participated in educating expectant mothers about the risks of smoking, and that more education is needed to inform the remaining pregnant women of the risks of tobacco use. In support, Jaber *et al* (13). Revealed that more than 38% of pregnant women were told by a healthcare provider that continuing to smoke a few cigarettes during pregnancy is acceptable, however 47.6% of the participants perceived smoking a few cigarettes during pregnancy as safe.

The findings of the study revealed that 65.9% of the participants agreed that other forms of tobacco such as snuff put the life of the unborn baby at risk. These findings imply that all types of tobacco have harmful effects on the foetus, so all expectant mothers should be aware that smoking during pregnancy is not advised and should not be considered. These results are similar to the study conducted in China, that reported that 82% of smoking women had to stop smoking after finding out they were pregnant, citing the risks of smoking to the foetus, such as preterm birth (14). Moreover, pregnant women had higher knowledge of the risks of environmental tobacco on their health and the foetus (15). However, the study results were contrary to that of Bertani *et al* (16). who found that the level of knowledge possessed by pregnant women about the adverse effects of smoking tobacco was disappointing. Most of the pregnant smokers were not aware of the hazards that smoking poses to the foetus and new-born infants, as well as tobacco-related diseases in general.

The study revealed that 70.1% of the participants had high levels of knowledge towards smoking during pregnancy while 28% had average levels and 1.9% had low levels of knowledge on smoking during pregnancy. This implies that the education at Mariental clinic on smoking during pregnancy is effective however they would need to introduce various methods of teaching so that those with low and average levels of knowledge may be empowered.

Limitation

The study was conducted in one clinic in one region, so the findings could not be generalised. Furthermore, the study only used quantitative approach that limit the participants to closed questions.

Conclusions

The study concluded that participants have higher knowledge on alcohol and tobacco use in pregnancy. It is recommended that the Ministry of Health and Social Services (MoHSS), develops guidelines and policies on preventative measures and awareness programs on tobacco and alcohol use during pregnancy.

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Contributions

SH, EMN, MS, study design; SH, data collection and data analysis; EMN, manuscript writing; MS, manuscript review. All the authors approved the final version to be published.

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Ethical approval and consent to participate

Ethical approval for the study was granted by the University of Namibia, Research Ethical Committee (SON/594/2020). Approval was also obtained from the Ministry of Health and Social Service Research Ethics Committee and from the Hardap region management team as well as Mariental clinic management.

Informed consent

Written informed consent was sought and obtained from the participants.

Conflict of interest

The authors declare no potential conflict of interest.

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