

ORIGINAL ARTICLE

Practices of pregnant women regarding tobacco and alcohol use during pregnancy at one primary health care clinic in Southern Namibia

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Abstract. Tobacco and alcohol use during pregnancy has negative consequences for the fetus. The study's purpose was to investigate the practices of pregnant women regarding the use of tobacco and alcohol during pregnancy. A quantitative research approach with a descriptive, cross-sectional, analytical design was used. The population was all pregnant women aged 18 years and above attending antenatal care at the Mariental clinic. Written informed consent was obtained from all respondents prior to data collection. Data was collected from 211 respondents selected through a systematic sampling. Data was analyzed using Statistical Package of the Social Sciences version 27. Descriptive statistics were used for 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, 92 (43.6%), were aged between 18 and 24 years. The majority, 186 (88.15%), were in the third trimester of pregnancy, and 154 (73%) were single. Most, 148 (70.14%), respondents have good practices towards alcohol use during pregnancy. Moreover, 190(90 %) of the respondents were classified as having good practices towards tobacco use in pregnancy. Educational levels showed a significant association with practices towards tobacco smoking ($P=0.042$). The study concluded good practices among pregnant women on alcohol and tobacco smoking during pregnancy. It is recommended that health facilities should introduce awareness campaigns on the dangers of alcohol and tobacco use during pregnancy. Moreover, educational materials should be developed in local languages and distributed to the community.

Introduction

Globally, alcohol and tobacco use during pregnancy is considered a challenge and has been linked to negative effects on a person's health and well-being (1). Alcoholic beverages are described as liquids with alcohol or ethanol that are meant to be consumed (2). Smoking is defined as breathing in tobacco smoke from cigarettes, pipes, or cigars (3). 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 (4). A study conducted in Jordan revealed that there was a high prevalence of smoking among pregnant women with little knowledge of the health risks of smoking during pregnancy (5). A study conducted in Slovenia, revealed that despite knowing and being informed about the problems smoking poses to the pregnancy and the foetus, about 66% of women continued to smoke during pregnancy (6).

Addila, Bisetegn, Gete, Mengistu, and Beyene reported that alcohol intake during pregnancy was high in Sub-Saharan Africa as women continued to drink even after finding out that they are pregnant (7). Moreover, Fawole *et al* (8) conducted a cross-sectional study in Nigeria to assess the prevalence of tobacco use among pregnant women. These authors found that 3.6% of pregnant women reported tobacco use during pregnancy, with age, education level, and occupation being significant determinants. Similarly, a cross-sectional study was conducted in Ghana to examine the prevalence and predictors of tobacco use among pregnant women (9). Furthermore, the study found that 2.9% of pregnant women reported current tobacco use, with age, education level, and occupation being significant predictors. Moreover, tobacco smoke during pregnancy increases the prevalence of depressive symptoms during pregnancy. This indicates the need for tobacco smoking interventions at home, work and public places to improve foetal, maternal and societal health (10).

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 2,500 g). 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 (11).

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In addition, 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 (11). Therefore, the study objective was to determine and describe the practices of pregnant women regarding alcohol and tobacco smoking during pregnancy and to analyze the association between demographic factors and practices and practices of alcohol and tobacco smoking during pregnancy.

Materials and methods

Ethical considerations. The study was granted an ethical approval certificate by the University of Namibia, Research Ethical Committee (SON/594/2020). In addition, the study was approved by the Ministry of Health and Social Service Research Ethics Committee, Hardap regional management team and Mariental clinic nurse in charge. Respondents provided written informed consent to confirm their agreement to participate in the study. Anonymity and confidentiality were ensured by not recording the respondent's names on the questionnaire and by storing records in the lockable cabinet. The data collection tool was well structured to prevent psychological harm to the respondents. Justice was ensured by selecting respondents for reasons directly related to the research problem. All participants were treated equally irrespective of their race, language and educational background.

Study setting. The study setting was Mariental clinic, in Mariental district. Mariental is situated in Hardap region, 268 km from Windhoek, the capital city of Namibia. It provides primary health care services that include antenatal care, immunization, postnatal care and screening among others. Pregnant women attending antenatal care at the Mariental Clinic mostly deliver at the Mariental Hospital. According to Mariental District Hospital's maternity data from January to June 2019, there were a total of 443 deliveries and 76 of the 443 women who gave birth indicated that they had drunk alcohol or smoked tobacco during their pregnancy (11).

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

Population and sampling. The study population was 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 antenatal care at other clinics rather than Mariental clinic. A systematic sampling was used whereby 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 1st February and 30th March 2022 with a self-administered questionnaire developed by researchers in

English. The questionnaire consisted of questions regarding sociodemographic characteristics and practices on 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 developing the data collection tool based on the literature reviews and by handing the instrument to an expert in midwifery to check if the instrument appeared to measure what it was 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 were reflected in it. Furthermore, the data from all participants was collected using the same instrument with the same questions. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive univariate analysis was performed for each variable, generating frequencies and percentages. Fisher's Exact test at 0.05 alpha level was used to determine the association between sociodemographic characteristics and the level of practices 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 respondents' ages were further categorized into age groups, as shown in Table I. Most respondents, 92 (43.6%), were aged between 18 and 24 years. The minimum number of children for the respondents was one, and the maximum was eight children. The number of children was further grouped into three categories. Most of the respondents 163 (77.3%) had 0 to 2 children, 40 (19.0%) had 3 to 5 children while 8 (3.8%) respondents had 6 to 8 children before the current pregnancy. The majority of the respondents, 186 (88.15%), were single, 21 (9.9%) were married, and only 4 (1.90%) had divorced. Most of the respondents 154 (73%) were unemployed. Fig. 1 shows that most participants 153 (72.86%) had attended secondary education as their highest level of qualification, 25 (11.90%) attended tertiary education, 23 (10.95%) attended primary education while nine (4.29%) have never attended school.

Practices of pregnant women towards the use of alcohol during pregnancy. Respondents who were drinking alcohol during pregnancy were classified as having bad practices, while those who were not drinking were classified as having good practices towards alcohol use during pregnancy, as shown in Fig. 1. A total of 148 (70.14%) respondents were classified as having good practices towards alcohol use during pregnancy.

Severity of drinking for respondents who were alcohol drinkers. Four questions that assessed the severity of alcohol drinking were summed up to produce a total score indicative of the levels of drinking. The total scores were then categorized into low to moderate for scores between four and eight and heavy drinkers for scores of nine to 12. The results show that the majority, 55 (87.3%), were classified as low to moderate drinkers, and 8 (12.7%) were classified as heavy drinkers.

Smoking status among the respondents. Respondents' smoking status during pregnancy was assessed. At least 90%

Table I. Age categories of the respondents.

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

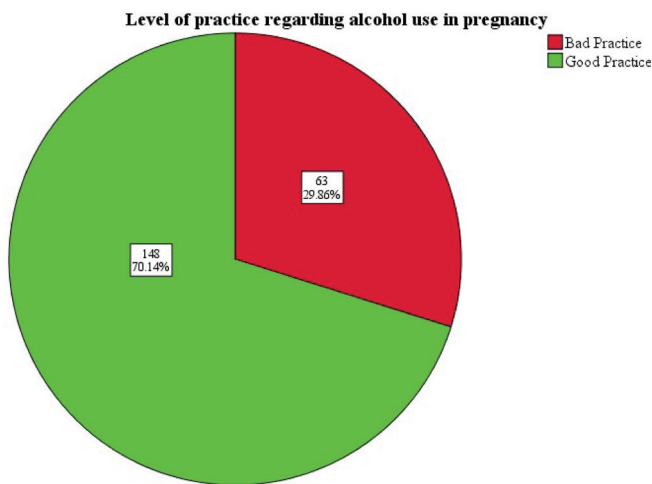


Figure 1. Classification of practices regarding alcohol use during pregnancy.

of the respondents indicated that they do not smoke tobacco. The shortest length of time a respondent has been smoking was one year while the longest was 25 years. The average length was 6.1 years with a standard deviation of 6.2 years. The minimum number of times respondents smoked per day was one and the maximum was two. The mean was 3.1 times with a standard deviation of 1.7 times. Furthermore, 17 (8.1%) of the respondents indicated their willingness to quit smoking tobacco while 4 (1.9%) indicated that they do not want to stop smoking. Regarding the number of cigarettes smoked per day most respondents 19 (9%) indicated that they smoked one to nine cigarettes per day, 2 (1%) indicated above 10 cigarettes per day while majority 190 (90%) were non-smokers.

Level of practices towards cigarette smoking during pregnancy. Respondents who were smoking cigarettes during pregnancy were classified as having a bad practice while those who were not smoking were classified as having a good practice towards smoking during pregnancy. As shown in Fig. 2, 21 (10.0%), respondents were classified as having bad practices toward tobacco use during pregnancy.

Severity of smoking for those who were tobacco smokers. Four questions that assessed the severity of tobacco smoking were summed up to produce a total score indicative of the severity of smoking. The total scores were then categorized into low to moderate for scores between four and six and heavy smokers for scores of seven to eight. The majority, 16 (76.2%), were

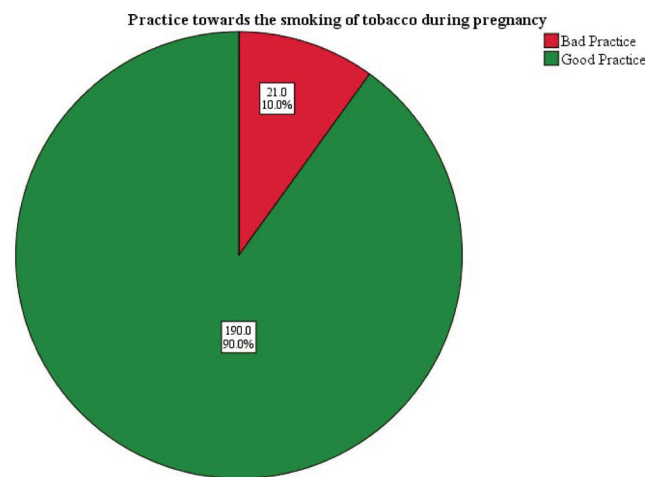


Figure 2. Practices towards the smoking of tobacco during pregnancy.

categorized as low to moderate smokers, and 5 (23.8%) were categorized as heavy smokers.

Association of levels of practices towards alcohol use during pregnancy with demographic characteristics. The overall levels of practices towards alcohol use/consumption during pregnancy were analyzed for their association with demographic characteristics. The level of association and its significance were tested using Fisher's Exact test at 0.05 alpha level. Only educational levels showed a significant association with the practice of alcohol use ($P=0.042$). All the other demographic variables were not significantly associated as shown in Table II.

Association of the severity of alcohol consumption during pregnancy with demographic characteristics. The severity of alcohol use/consumption during pregnancy was analyzed for its association with demographic characteristics. The level of association and its significance were tested using Fisher's Exact test at 0.05 alpha level. Marital status ($P=0.015$) and educational levels ($P=0.049$) showed a significant association with the severity of alcohol use. All the other demographic variables were not significantly associated as shown in Table III.

Association of levels of practices towards tobacco smoking during pregnancy with demographic characteristics. The overall levels of practices towards tobacco smoking during pregnancy were analyzed for their association with demographic characteristics. The level of association and its significance were tested using Fisher's Exact test at 0.05 alpha level. Only educational levels showed a significant association with tobacco smoking ($P=0.042$). All the other demographic variables were not significantly associated as shown in Table IV.

Association of the severity of tobacco smoking during pregnancy with demographic characteristics. The severity of tobacco smoking during pregnancy was analyzed for its association with demographic characteristics. The level of association and its significance were tested using Fisher's Exact test at 0.05 alpha level. All the demographic variables were not significantly associated as shown in Table V.

Table II. Association of levels of practices towards alcohol use during pregnancy with demographic characteristics.

Demographic characteristic	Levels of practices towards alcohol use in pregnancy		P-value
	Bad (%)	Good (%)	
Mother Age			
18-24 years	24 (26.1)	68 (73.9)	0.566
25-34 years	25 (32.5)	52 (67.5)	
35-44 years	7 (23.3)	23 (76.7)	
Number of children			
0-2	48 (29.4)	115 (70.6)	0.427
3-5	11 (27.5)	29 (72.5)	
6-8	4 (50.0)	4 (50.0)	
Age of pregnancy			
1st trimester	8 (53.3)	7 (46.7)	0.120
2nd trimester	21 (30.4)	48 (69.6)	
3rd trimester	34 (27.0)	92 (73.0)	
Marital status			
Single	57 (30.6)	129 (69.4)	0.297
Married	4 (19.0)	17 (81.0)	
Divorced	2 (50.0)	2 (50.0)	
Employment status			
Employed	20 (35.1)	37 (64.9)	0.315
Not employed	43 (27.9)	111 (72.1)	
Education level			
No education	2 (22.2)	7 (77.8)	0.042
Primary education	11 (47.8)	12 (52.2)	
Secondary education	38 (24.8)	115 (75.2)	
Tertiary education	11 (44.0)	14 (56.0)	

Table III. Association of the severity of alcohol consumption during pregnancy with demographic characteristics.

Demographic characteristics	Severity of alcohol consumption during pregnancy		P-value
	Low to moderate (%)	Heavy (%)	
Mother age			
8-24 years	22 (91.7)	2 (8.3)	0.647
25-34 years	20 (83.3)	4 (16.7)	
35-44 years	6 (85.7)	1 (14.3)	
Number of children			
0-2	42 (89.4)	5 (10.6)	0.760
3-5	9 (81.8)	2 (18.2)	
6-8	4 (100.0)	0 (0.0)	
Age of pregnancy			
1st trimester	7 (87.5)	1 (12.5)	0.317
2nd trimester	17 (81.0)	4 (19.0)	
3rd trimester	31 (93.9)	2 (6.1)	
Marital status			
Single	51 (91.1)	5 (8.9)	0.015
Married	4 (100.0)	0 (0.0)	
Divorced	0 (0.0)	2 (100.0)	
Employment status			
Employed	17 (85.0)	3 (15.0)	0.671
Not employed	38 (90.5)	4 (9.5)	
Education levels			
No education	2 (100.0)	0 (0.0)	0.049
Primary education	7 (63.6)	4 (36.4)	
Secondary education	35 (94.6)	2 (5.4)	
Tertiary education	10 (90.9)	1 (9.1)	

Discussion

The findings of the current study revealed that 29.86% of the respondents were classified as having bad practices towards alcohol use during pregnancy. These findings seem to indicate that even after learning about the negative effects of alcohol consumption on both the pregnant mother and the foetus, some women continued to find solace in drinking. This could be due to a number of factors, including the fact that these women are alcoholics or that they are under stress in their lives, which may cause them to desire to drink while they are expecting. These results are similar to that of Dendir and Deyessa (12), who revealed that approximately 28.9% of women reported drinking alcohol regularly before pregnancy, but 74.8% of these women reported that they had stopped drinking when they became pregnant. Similarly, a study conducted in Australia found that pregnant women were often uncertain about the safety of drinking during pregnancy and relied on personal experiences and advice from family and friends (13).

The findings of the study revealed that 10.0% of the respondents were classified as having bad practices towards alcohol use in pregnancy. These findings imply that women

who continue drinking may have an alcohol addiction or may do so as a result of societal pressures or cultural norms that may have caused them to drink throughout their pregnancy. This was similar to the global statistics which revealed that 9% of women who drank alcohol continued to drink daily during pregnancy (14). The study revealed that 87.3% had low to moderate levels of severity of drinking for those who were alcohol drinkers while 12.7% had high levels of severity of drinking alcohol. This implies that a majority of the respondents quit alcohol when they became pregnant, which might have been based on the education received and also on wanting to have a healthy baby. The results also suggest that those that are still heavy drinkers may not be aware of the consequences of drinking alcohol or they are ignorant of the risks associated with alcohol intake during pregnancy. The study results are similar to that of Agiresaasi *et al* (15) who revealed that there was a wide range of knowledge and attitudes towards drinking alcohol while pregnant such as that drinking small amounts of alcohol is allowed during pregnancies, while others believed that any amount of alcohol consumption poses a danger to the foetus.

Table IV. Association of levels of practices towards tobacco smoking during pregnancy with demographic characteristics.

Demographic characteristics	Levels of practices towards smoking during pregnancy		P-value
	Bad (%)	Good (%)	
Mother age			
18-24 years	5 (5.4)	87 (94.6)	0.215
25-34 years	9 (11.7)	68 (88.3)	
35-44 years	4 (13.3)	26 (86.7)	
Number of children			
0-2	16 (9.8)	147 (90.2)	0.296
3-5	3 (7.5)	37 (92.5)	
6-8	2 (25.0)	6 (75.0)	
Age of pregnancy			
1st trimester	2 (13.3)	13 (86.7)	0.699
2nd trimester	7 (10.1)	62 (89.9)	
3rd trimester	11 (8.7)	115 (91.3)	
Marital status			
Single	18 (9.7)	168 (90.3)	0.503
Married	2 (9.5)	19 (90.5)	
Divorced	1 (25.0)	3 (75.0)	
Employment status			
Employed	7 (12.3)	50 (87.7)	0.605
Not employed	14 (9.1)	140 (90.9)	
Education levels			
No education	2 (22.2)	7 (77.8)	0.021
Primary education	2 (8.7)	21 (91.3)	
Secondary education	10 (6.5)	143 (93.5)	
Tertiary education	6 (24.0)	19 (76.0)	

Table V. Association of the severity of tobacco smoking during pregnancy with demographic characteristics.

Demographic characteristics	Severity of tobacco smoking during pregnancy		P-value
	Low to moderate (%)	Heavy (%)	
Mother age			
18-24 years	4 (100.0)	0 (0.0)	0.241
25-34 years	8 (88.9)	1 (11.1)	
35-44 years	2 (50.0)	2 (50.0)	
Number of children			
0-2	13 (86.7)	2 (13.3)	0.249
3-5	2 (66.7)	1 (33.3)	
6-8	1 (50.0)	1 (50.0)	
Age of pregnancy			
1st trimester	2 (100.0)	0 (0.0)	0.361
2nd trimester	6 (100.0)	0 (0.0)	
3rd trimester	7 (63.3)	4 (36.5)	
Marital status			
Single	13 (76.5)	4 (23.5)	1.000
Married	2 (100.0)	0 (0.0)	
Divorced	1 (100.0)	0 (0.0)	
Employment status			
Employed	7 (100.0)	0 (0.0)	0.249
Not employed	9 (69.2)	4 (30.8)	
Education levels			
No education	2 (100.0)	0 (0.0)	0.292
Primary education	1 (100.0)	0 (0.0)	
Secondary education	6 (60.0)	4 (40.0)	
Tertiary education	6 (100.0)	0 (0.0)	

The study revealed that about 90% of respondents did not smoke tobacco at all. These findings seem to indicate that these expectant mothers are aware of the negative effects of smoking, but the 10% who continue to smoke raise serious concerns since they endanger the unborn child. These results are supported by Jorda *et al* (16) who indicated that smoking during pregnancy has been linked to a variety of health problems in children, including asthma, recurrent otitis media, obesity, and future nicotine addiction. On the contrary, another study revealed that there was a high prevalence of smoking among pregnant women, as well as alternative tobacco use, with little knowledge of the health risks of all types of smoking during pregnancy (5).

The findings of the study show that 89.1% of the respondents were not smoking tobacco before pregnancy. These findings appear to suggest that because these women did not smoke previously, they did not consider starting to smoke. However, this may not be related to their knowledge of the negative effects of smoking or the education they received during antenatal care, but rather to their individual decision to abstain from smoking. The findings of the study revealed that only a small number of the respondents (18.1%), are willing to quit smoking tobacco. This may be because they

are aware of the negative effects, such as preterm birth, and have made the decision to stop smoking. However, the low percentage indicates that more education and counseling are still needed to persuade pregnant smokers to give up because of the harmful effects smoking has on the unborn child. These results are similar to that of Vivilaki *et al* (17) who revealed that out of 119 women who tried to reduce or quit smoking because of their pregnancy, only 45.1% succeeded and 38.7% continued to smoke during pregnancy. Pregnant women talked about their smoking habits and expressed the desire to cut down or stop. The justification for a change in habit was the health of the baby and the mother (18). The main strategy employed by pregnant women was a gradual reduction in the number of cigarettes smoked. Contrary to these study findings, Rozman *et al* (19) revealed that despite knowing and being informed about all of the problems smoking poses to the pregnancy and the foetus, about 66 percent of women continued to smoke during pregnancy.

The study revealed that 76.2% of the respondents had low to moderate severity of smoking for those who were smokers, while 23.8% had heavy severity of smoking. This implies

that radical approaches to educating pregnant women about smoking still need to be applied as there is a high percentage of heavy smokers. The study results are contradictory to the study of Vu *et al* (2020), who revealed that both smoking and non-smoking women had moderate to poor knowledge of KAPs throughout pregnancy. The subsequent scores corroborated this: knowledge (mean score 4.19/10, SD=2.12) and practice (mean score 4.30/10, SD=2.39) with a relatively high attitude towards tobacco smoking (7.45/10, SD=3.05).

The study findings revealed that the levels of knowledge of smoking did not correlate with any demographic factor. Other demographic factors, with the exception of marital status, were not linked to attitudes about alcohol and tobacco use. The study's results also showed that, other than educational levels, no other demographic factors were related to the practice of drinking alcohol and smoking tobacco. These findings imply that pregnant study respondents were not impacted by any demographic factors while learning about the negative health impacts of alcohol and cigarette use. The findings also imply that educational levels and marital status had a substantial relationship with the use of cigarettes and alcohol. This may be because people are more aware of the risks these behaviors provide to unborn children and the more education they have. Pregnant women continue to drink during pregnancy due to having disposable income, marital problems and low levels of education on the consequences of alcohol to the unborn child (20). Therefore, smoking and alcohol intake should be avoided during pregnancy.

Conclusions

The study also deduced that 70.14% of the respondents had good practices with regard to alcohol consumption. The study results imply that pregnant women are aware of the effects of alcohol consumption during pregnancy. The study concluded that the highest level of practice was 90% of respondents were not smokers. The study concluded that a higher percentage of women did not smoke, and those who were smoking had the intention of stopping smoking.

Limitations

The study was conducted at Mariental clinic and the study results cannot be generalised to other hospitals in Namibia.

Authors' contributions

SH, study design, data collection and data analysis; EMN, study design, manuscript writing. All the authors have read and approved the final version of the manuscript and agreed to be held accountable for all aspects of the work.

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None.

Ethics approval and consent to participate

The study was granted an ethical approval certificate by the University of Namibia's Research Ethical Committee

(SON/594/2020). In addition, the study was approved by the Ministry of Health and Social Service Research Ethics Committee, Hardap regional management team and Mariental clinic nurse in charge. Respondents provided written informed consent to confirm their agreement to participate in the study. Anonymity and confidentiality were ensured by not recording the respondent's names on the questionnaire and by storing records in the lockable cabinet.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Conflict of interest

The authors declare no potential conflict of interest.

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