

BMJ Open Suicidal behaviour in postnatal mothers in northwestern Ethiopia: a cross-sectional study

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ABSTRACT

Aim To assess the prevalence and associated factors of suicidal behaviour (suicidal ideation, plan or suicide attempt) in postpartum mothers.

Method An institutional cross-sectional study was employed from March to April 2017.

Setting Two primary health centres and one referral hospital in northwestern Ethiopia.

Participants A total of 1065 mothers aged ≥ 18 years during routine postnatal care were included and 988 of them completed the study. Those who were unable to communicate due to illness were not included.

Outcome measure Mothers who visit for routine postnatal care were assessed for suicidal behaviour using a suicidal screening tool. Logistic analysis was employed with adjusted OR (AOR) and 95% CI, and with p value less than 0.05 as the level of significance.

Results The prevalence of suicidal behaviour (suicidal ideation, plan or suicide attempt) was found at 14.0% (138/988) (95% CI 12.00 to 16.00) in postpartum mothers. Poor wealth of the mother (AOR=2.80, 95% CI 1.18 to 6.84), unplanned pregnancy of the current child (AOR=2.28, 95% CI 1.48 to 3.54), history of rape (AOR=2.26, 95% CI 1.42 to 3.61) and sickness of the new child (AOR=1.68, 95% CI 1.12 to 2.52) were significantly associated with suicidal behaviours.

Conclusion Suicidal behaviour was found pretty high among postpartum mothers and was associated with poor wealth, unplanned pregnancy, history of rape and sickness of the new infant. It is recommended to screen mothers for possible suicidal behaviour during routine postnatal care.

INTRODUCTION

Suicidal behaviour is one of the most important contributors to the global burden of disease among women.¹ Scholars recommended that social and health organisations make all possible efforts to identify women who are at high suicidal risk in order to launch important programmes to prevent suicidal behaviour.² However, little is known about the prevalence and modifiable risk factors of suicidal behaviour in low-income and middle-income countries. Some studies have reported higher suicidal rate among mothers who were born in low-income countries.³ Although not specific to women with

Strengths and limitations of this study

- The study aimed to determine the prevalence of suicidal behaviour in postpartum mothers, who have high emotional disturbance during childbirth.
- This study is important to indicate future risk studies in low-income countries.
- The study's cross-sectional design prevents us from drawing conclusions regarding the risk factors' temporal cause–effect association with suicidal behaviour.
- Teenage mothers, who may report frequent suicidal behaviours, have been excluded from this study.
- The presence of depression was not screened, and only known cases of depression were included.

suicidal behaviour, in low-income countries such as Ethiopia, the community attitude of people with suicidal behaviour is distorted. In Ethiopian culture, suicidal behaviour may be considered a mental illness and also a sin among family members, with a potential risk for rejection. In a community study in Ethiopia, mental illness was also thought to be due to supernatural forces and was found to be a risk for stigma.⁴

The prevalence of suicidal behaviour among mothers in the community in low-income countries ranged from 0.8% (lifetime suicidal attempt) in Tanzania to 29% (lifetime suicidal thought) in Peru province.¹ However, the prevalence of suicidal behaviour is higher during the postpartum period, ranging from 4% to 17.6%,^{5–7} with three times more maternal death in low-income countries than in developed countries³; however, this has been given less attention. The risk for suicidal behaviour is significantly increased among women with a psychological disturbance during this critical period,^{8–10} and suicidal behaviour is the leading cause of death among mothers with psychopathological disorders.^{11 12}

Most importantly the risk factors were found inconsistent among different studies, and perhaps study design, sample size variability,

residency, culture and attitude about suicide in different studies may have contributed to the heterogeneity of the risk factors for suicide. However, in low-income countries, many risk factors are not well addressed. Domestic violence, early childhood abuse (sexual or physical), low socioeconomic status and poor social support may play a major role in contributing to suicide.^{6 8 10 12} However, since suicide has a strong association with psychological disturbance and is highly linked with mental illnesses,⁸ the risk factors may be heterogeneous based on the assumption of the biopsychosocial risk factor model of mental illness. Domestic violence and assault may lead to behavioural disturbance in mothers.^{11 13 14} The risk of suicidal behaviour also increases when the pregnancy was unplanned.^{2 7 13 15 16} Early childhood sexual abuse and childhood experiences of emotional neglect increase the likelihood of poor childcare and significantly contribute to suicidal behaviour among postnatal mothers.^{17–19} Emotional disturbance and domestic violence had negative effects on child development,²⁰ and the suicidal behaviour of mothers makes them less sensitive and responsive to their infants' cues, which has a negative effect on child to mother attachment.²¹

Recently, from the Ethiopian health sector, a number of achievements have been reported through the millennium development goals under the maternal and child health programmes. For example, a 67% reduction in under-5 mortality and a 71% decline in maternal mortality ratio have been reported as an achievement.²² However, the proportion of suicidal attempts and deaths of mothers has been raised a public health concern, with a high proportion of suicidal behaviour (7.9%) in the region²³ and a potential increase in fatal outcomes during the postpartum period. Domestic violence (sexual/physical or both) is common among women in Ethiopia, and most women had suffered from sexual or physical violence or both.²⁴ In western Ethiopia, the lifetime and past 12 months' prevalence of intimate partner violence against women was 76.5% and 72.5%, respectively.²⁵ In this study, the overlap of psychological, physical and sexual violence was 56.9%. In Amhara Region, Ethiopia, the prevalence of domestic violence was 78.0%, and about 73.3%, 58.4% and 49.1% of women reported different forms of psychological, physical and sexual violence, respectively.²⁶ Early marriage before age 15 is also very common, 37.1% than other regions in the country.²⁷ Early childhood marriage and sexual abuse are common among those aged 12–17 years in the study state (Amhara Region), increasing the risk for suicidal behaviour.²⁸ Up to now, this impact has not been well addressed in our maternal healthcare system. Therefore, our objective was to determine the prevalence and the associated factors of suicidal behaviour among postnatal mothers.

METHODS

Study setting

A cross-sectional survey was conducted from April to May 2017 at three obstetrical care centres (Felege Hiwot

Referral Hospital, Bahir Dar Health Center and Hann Health Center), which were selected randomly from a total of six health facilities providing postnatal care services in the town of Bahir Dar. The three health facilities are located in Bahir Dar in different subcities in north-western Ethiopia and serve a total population of 180 174; of these 93 014 are women. Felege Hiwot Referral Hospital serves an average of more than 1100 postpartum mothers per month, and the other two health centres also each serves an average of 500 mothers per month for routine postnatal care. The hospital is a referral hospital and has many different departments/units, and the obstetric department is the one that provides postnatal care. The two health centres also deliver similar care for postnatal mothers. All settings provide obstetric care specifically for postpartum mothers, and all mothers visit the centres for routine check-up (for themselves and for their babies, such as immunisation and other services). Except for the high proportion of early marriage practice in the study population, there is not much different specification for the study population from other parts of the population in Ethiopia.

Participants

All mothers who were attended at the three centres for routine postnatal care (general check-up for the mother and the baby, and for immunisation which is mandatory during the 6-week postpartum period) were the source population. Mothers aged 18 years and above were included in the study (we excluded mothers aged younger than 18 years due to ethical issues, mothers who are considering children in Ethiopia and those who were unable to communicate due to complaints of discomfort or pain). From a total of 1065 potential participants, 988 completed the interview, 20 refused participation, 19 failed to complete the interview and 38 were excluded (15 of them because of inability to communicate due to complaints of discomfort or pain and instability (but with no confirmed diagnosis yet) and 23 because they were under 18 years old). We had included 988 mothers who were selected through systematic random sampling technique. An average, 500 postnatal mothers have a visit in each of the two health centres and 1100 in the hospital per month which help as a frame for this study. During the follow-up, mothers' chart has been leveled based on their chance of being enrolled in the study or not. After mothers had contacted the data collectors, they were fully informed about the purpose of the study and were given the chance to be involved in the study if they volunteer. Proportional numbers of women were taken from each clinic based on the flow of postnatal women per day calculated from the previous month's postnatal care record. Mothers were recruited proportionally from the three facilities (494 from Felege Hiwot Referral Hospital, 247 from Bahir Dar and 247 from Hann health centres), and systematic random sampling method was used to select postnatal women from each health facility within every two mothers (see figure 1).

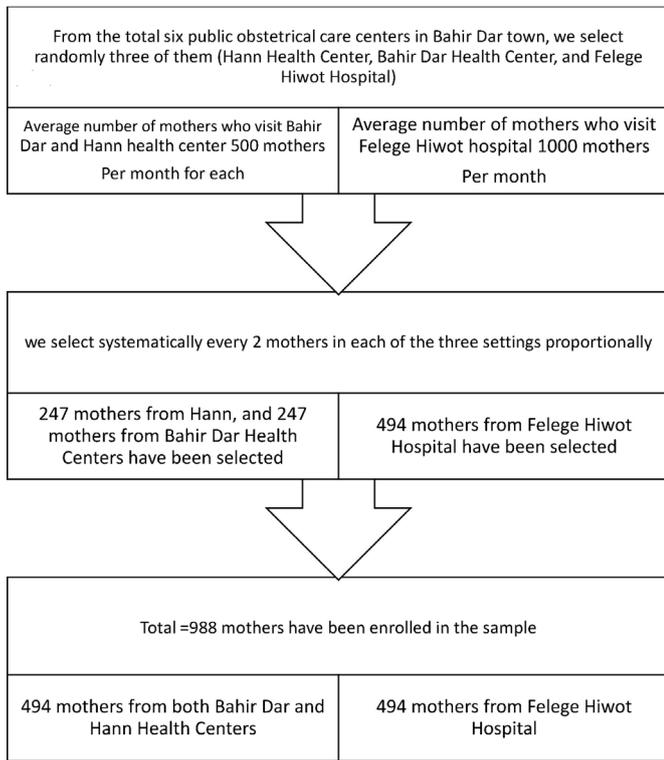


Figure 1 Sampling process of how mothers were selected systematically from the three maternal clinics.

Patient and public involvement

No participants were involved in setting the research questions or the outcome measures, nor were they involved in the design or performance of the study. No participants were asked to advise on the interpretation or write-up of the results. No plans were set in place to disseminate the results of the research to study participants.

Instruments

Suicidal behaviour was assessed using the suicidal screening tool which is part of the Mini-International Neuropsychiatric Interview, and it was set based on the Diagnostic and Statistical Manual of Mental Disorders-IV criteria and includes the following questions.

Over the last month:

- ▶ Have you wished you were dead?
- ▶ Have you wanted to harm yourself?
- ▶ Have you thought of committing suicide?
- ▶ Have you planned how to commit suicide?
- ▶ Have you attempted suicide?
- ▶ Have you ever attempted suicide?

If the mother responds 'yes' to one of the six questions, she is considered at risk for suicidal behaviour.²⁹ This tool is short and structured and has good validity and reliability in screening suicidal behaviour.³⁰ The questionnaire was originally in English, and was translated to Amharic language (local working language). Even though this tool was not validated in Ethiopia, a pretest was done and was found to be understandable among mothers, with a good internal consistency (Cronbach's alpha) of 78%. Social support for mothers was assessed using the Oslo-3 Social

Support Scale,³¹ which has three items assessing the number of close confidants, perceived level of concern from others and perceived ease of getting help from neighbours. This tool has good convergent and predictive validity³² and was plausible to understand among adults during a previous community study.³³ Substance use among mothers during the survey was screened using the Alcohol, Smoking and Substance Involvement Screening Test.³⁴ The presence of abuse was assessed using the Abuse Assessment Scale,³⁵ which is an important tool to assess lifetime and current abuse among mothers in clinical settings. Relative wealth was assessed by simply asking the mothers what she perceived their wealth to be in relation to other people in the neighbourhood,³² and they were asked to level their own income by comparing it with others as less than others, similar to others and better than others. Educational status of mothers was assessed based on their opportunity for education and has been categorised into two (illiterate and literate). Mothers were asked whether their current pregnancy was planned (if the pregnancy was self-initiated) or not and if they had a history of rape during their lifetime. Mothers were also asked about depression; their chart was reviewed, and it was determined whether they were clinically diagnosed with depression or not. The health status of the baby was assessed by asking the mothers about their baby's health conditions after delivery (during the first 45 days), and their chart was also reviewed. Mothers were asked about their husband's sexual faithfulness and whether their husband had a history of cheating over their wife, and if so they are considered sexually unfaithful husband.

Analysis

We entered data using EpiData V.3.1 (which is important to command values for variables and helps reduce data entry mistakes compared with the Statistical Package for Social Sciences) and were analysed using Statistical Package for Social Sciences V.20. Logistic regression analysis was used to identify factors associated with suicidal behaviour. All variables have been tested whether they have significant associations with suicidal behaviour, and then those that were significant at p value <0.05 during the bivariate analysis were run for multivariable regression analysis. The strength of the association was presented using OR with 95% CI. A p value less than 0.05 was considered statistically significant.

RESULTS

Sociodemographic characteristics of mothers

A total of 988 postpartum mothers were included in the study, with 92.8% (988/1065) response rate. The age of majority of the mothers (615/988, 62.3%) was between 25 and 34 years. A substantial proportion of mothers (365/988, 36.9%) grew up with stepmothers or relatives (table 1).

Prevalence of suicidal behaviour

The prevalence of suicidal behaviour was 14.0% (138/988), and of these 36.2% (50/138) had attempted,

Table 1 Sociodemographic characteristics of mothers related to the presence or absence of suicidal behaviour

Characteristics	Overall n (%)	Suicidal behaviour		χ^2	P value
		Yes n (%)	No n (%)		
Age					
18–24	202 (20.4)	28 (13.9)	174 (86.1)	0.09	0.95
25–34	615 (62.3)	85 (13.8)	530 (86.2)		
>34	171 (17.3)	25 (14.6)	146 (85.4)		
Education					
Illiterate	158 (16.0)	31 (19.6)	127 (80.4)	5.00	0.025
Literate	830 (84.0)	107 (12.9)	723 (87.1)		
Grew up with					
Mother	623 (63.0)	87 (14.0)	536 (86.0)	0.09	0.95
Stepmother	179 (18.2)	24 (13.4)	155 (86.6)		
Relatives	186 (18.8)	27 (14.5)	159 (85.5)		
Marital status					
Currently married	806 (81.6)	107 (13.3)	699 (86.7)	1.74	1.93
Currently unmarried	182 (18.4)	151 (83.0)	31 (17.0)		
Job					
Has job	600 (60.7)	85 (14.2)	515 (85.8)	0.05	0.82
Jobless	388 (39.3)	53 (13.7)	335 (86.3)		
Relative wealth					
Lower	302 (30.6)	41 (13.6)	261 (86.4)	5.5	0.06
Same	654 (66.2)	88 (13.5)	566 (86.5)		
Higher	32 (3.2)	9 (28.1)	23 (71.9)		
Age at marriage					
Younger than 20 years	537 (54.4)	73 (13.6)	464 (86.4)	0.61	0.74
21–25 years	360 (36.4)	54 (15.0)	306 (85)		
26 years and above	91 (9.2)	12 (13.2)	79 (86.8)		

72.5% (100/138) had suicidal plans and 78.3% (108/138) had suicidal ideations.

Maternal abuse was commonly found; 522 (52.8%) mothers had been verbally or sexually or physically abused. History of rape was reported in 123 (12.4%) mothers (table 2).

Among 138 suicidal postnatal mothers, 86 (62.3%) had sexually unfaithful husbands.

Contributing factors to suicidal behaviours

All variables were first run in the bivariate analysis, and educational status, having sexually unfaithful (cheater) husband, poor wealth of the mother, unplanned pregnancy of the current child, verbal abuse, history of rape and sickness of the new child were candidates for further analysis. Social support and marital status did not associate with suicidal behaviour during the bivariate analysis. However, after multivariable regression analysis, poor wealth of the mother, unplanned pregnancy of the current child, history of rape and sickness of the new child were significantly associated with suicidal behaviours (table 3).

DISCUSSION

Suicidal behaviour was commonly found among women with (very) young children in the northwest part of Ethiopia. The prevalence of suicidal behaviour is higher than an earlier study in Brazil (11.5%),⁶ in the UK (9.0%),⁵ and in low-income countries such as Tanzania (0.8%), Peru (12.0%) and Serbia (1.9%), and is lower than Peru province (29%).¹ Maternal care among settings, cultural attitude towards suicidal behaviour and methodological differences may be reasons for these differences.

The socioeconomic status of the mothers has a strong significant association with suicidal behaviour. Mothers who have poor relative wealth had higher risk for suicidal behaviour than those who had better relative wealth (adjusted OR (AOR)=2.8, 95% CI 1.18 to 6.84). Being a mother and having economic problems are difficult for mothers during the postpartum period, which entails high cost to welcome the new baby, which is why mothers from low-income countries were found to be at three times higher risk for suicide.³ Poor wealth in mothers may be due to low employment rate, which is supported

Table 2 Psychosocial and clinical factors of mothers related to the presence or absence of suicidal behaviour

Characteristics	Overall n (%)	Suicidal behaviour		χ^2	P value
		Yes n (%)	No n (%)		
Parity					
First	457 (46.2)	63 (13.8)	394 (86.2)	8.0	0.04
Second	315 (31.9)	49 (15.6)	266 (84.4)		
Third	157 (15.9)	13 (8.3)	144 (91.7)		
Fourth	59 (6.0)	13 (22.0)	46 (78.0)		
Verbal abuse					
Yes	305 (30.9)	54 (17.7)	251 (82.3)	5.1	0.02
No	683 (69.1)	84 (12.3)	599 (87.7)		
Physical abuse					
Yes	217 (22.0)	39 (18.0)	178 (82.0)	3.7	0.054
No	771 (78.0)	99 (12.8)	672 (87.2)		
History of rape					
Yes	123 (12.5)	34 (27.6)	89 (72.4)	22.8	0.000
No	865 (87.5)	104 (12.0)	761 (88.0)		
Pregnancy					
Planned	836 (84.6)	98 (11.7)	738 (88.3)	22.8	0.000
Unplanned	152 (15.4)	40 (26.3)	112 (73.7)		
History of abortion					
Yes	273 (27.6)	40 (14.7)	233 (85.3)	0.14	0.70
No	715 (72.4)	98 (13.7)	617 (86.3)		
Social support					
Poor	207 (21.0)	36 (17.4)	171 (82.6)	4.7	0.09
Moderate	660 (66.8)	81 (12.3)	579 (87.7)		
Good	121 (12.2)	21 (17.4)	100 (82.6)		
Infant health status					
Sick	231 (23.4)	50 (21.6)	181 (78.4)	14.8	0.000
Healthy	757 (76.6)	88 (11.6)	669 (88.4)		
History of depression					
Yes	79 (8.0)	10 (12.7)	69 (87.3)	0.12	0.73
No	909 (92.0)	128 (14.1)	781 (85.9)		
Substance user husband					
Yes	309 (31.3)	53 (17.2)	256 (82.8)	3.8	0.51
No	679 (68.7)	85 (12.5)	594 (87.5)		
Sexually unfaithful husband					
Yes	538 (54.5)	86 (16.0)	452 (84.0)	4.0	0.04
No	450 (45.5)	52 (11.6)	398 (88.4)		
Alcohol use					
Yes	323 (32.7)	46 (14.2)	277 (85.8)	0.03	0.86
No	665 (67.3)	92 (13.8)	573 (86.2)		
Smoking					
Yes	10 (1.0)	2 (20.0)	8 (80.0)		
No	978 (99.0)	136 (13.9)	842 (86.1)		
Khat chewing					
Yes	16 (1.6)	6 (37.5)	10 (62.5)	7.5	0.006

Continued

Table 2 Continued

Characteristics	Overall n (%)	Suicidal behaviour		χ^2	P value
		Yes n (%)	No n (%)		
No	972 (98.4)	132 (13.6)	840 (86.4)		
Cannabis use					
Yes	16 (1.6)	3 (18.8)	13 (81.2)		
No	972 (98.4)	135 (13.9)	837 (86.1)		

by previous studies,¹⁸ and is associated with a high risk for suicidal behaviour. Mothers who had unplanned pregnancy for the current child were found to be at a higher risk for suicidal behaviour than mothers who had planned

pregnancy (AOR=2.28, 95% CI 1.48 to 3.54). Maternity requires a strong commitment to delivering better care for the child, in addition to adapting to the new lifestyle after giving birth; this finding is supported by previous

Table 3 Adjusted OR of risk factors for suicidal behaviour in postnatal mothers

Explanatory variables	Overall n (%)	Suicidal behaviour		AOR (95% CI)	P value
		Yes n (%)	No n (%)		
Marital status*					
Currently married	806 (81.6)	107 (10.8)	699 (70.8)	–	1.93
Currently unmarried	182 (18.4)	151 (15.3)	31 (3.1)		
Educational status					
Literate	158 (16.0)	31 (3.1)	127 (12.9)	1.00 (reference)	
Illiterate	830 (84.0)	107 (10.8)	723 (73.2)	0.73 (0.45 to 1.12)	0.187
Wealth					
Lower	302 (30.6)	41 (4.2)	261 (26.4)	2.8 (1.18 to 6.84)	0.020
Same	654 (66.2)	88 (8.9)	566 (57.3)	1.15 (0.76 to 1.74)	0.499
Higher	32 (3.2)	9 (0.9)	23 (2.3)	1.00 (reference)	
Pregnancy					
Planned	836 (84.6)	98 (9.9)	738 (74.7)	1.00 (reference)	
Unplanned	152 (15.4)	40 (4.0)	112 (11.3)	2.28 (1.48 to 3.54)	0.000
History of rape					
Yes	123 (12.5)	34 (3.4)	89 (9.0)	2.26 (1.42 to 3.61)	0.001
No	865 (87.5)	104 (10.5)	761 (77.0)	1.00 (reference)	
Sexually unfaithful husband					
Yes	538 (54.5)	86 (8.7)	452 (45.8)	0.82 (0.55 to 1.20)	0.305
No	450 (45.5)	52 (5.3)	398 (40.3)	1.00 (reference)	
Verbal abuse					
Yes	305 (30.9)	54 (5.5)	251 (25.4)	0.89 (0.59 to 1.35)	0.611
No	683 (69.1)	84 (8.5)	599 (60.6)	1.00 (reference)	
Infant health status					
Sick	231 (23.4)	50 (5.1)	181 (18.3)	1.68 (1.12 to 2.52)	0.012
Healthy	757 (76.6)	88 (8.9)	669 (67.7)	1.00 (reference)	
Social support*					
Poor	208 (21.0)	36 (3.7)	171 (17.3)		0.09
Moderate	660 (66.8)	81 (8.2)	579 (58.6)	–	
Good	121 (12.2)	21 (2.1)	100 (10.1)		

*Not associated during the bivariate analysis.
AOR, adjusted odds ratio.

studies.^{15 16 18} An early childhood traumatic life experience has a strong association with suicidal behaviour among mothers. History of rape among mothers during their lifetime has a significant association with suicidal behaviour. They were at a higher risk for suicidal behaviour compared with mothers who had no history of rape (AOR=2.26, 95% CI 1.42 to 3.61). This finding was supported by earlier studies, that is, mothers who had a history of childhood rape, abuse or family conflict are more at risk for the occurrence of suicidal behaviours and other psychopathological disorders in their lifetime.^{1 14 18} The health status of the new baby has a strong association with maternal mental health. Mothers whose child was getting sick were more at risk for suicidal behaviour than mothers whose child was healthy (AOR=1.68, 95% CI 1.12 to 2.52). After giving birth, maternal emotional health has a strong link with the child's wellness. When mothers see their new baby with good health status, their emotional wellness becomes good and they mostly feel happy when they see their new child. However, mothers may not be happy and feel sad if their new child becomes ill, which may result in suicidal behaviours. Even though maternal mental illness significantly contributes to suicidal behaviour, in this study depression was not associated with suicidal behaviour. This may be due to the low rate of diagnosis of depression among mothers in routine obstetrics care settings; for instance, there are no trained professionals on maternal mental illnesses in the two health centres.

The strength of this study was to try to assess the suicidal behaviour of mothers who may suffer from different psychosocial stressors, using a sufficient sample size from low-income settings. However, this study has several limitations. The first limitation was the study population (which is in a single town) and the lack of control group, which make it difficult to generalise to other populations. Second, teenage mothers, who may report frequent suicidal behaviours, have been excluded from this study. Third, the presence of depression was not screened in this study, and only known cases of depression were included.

CONCLUSION

Suicidal behaviour was commonly found in this study and was associated with poor wealth of the mother, unplanned pregnancy, history of rape and sickness of the new child. Suicidal detection and intervention programmes should be incorporated with routine postnatal care within the maternal healthcare system.

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Contributors HB designed the study, performed the statistical analyses and drafted the manuscript. EM worked on the development of the research concept, design, manuscript and analysis.

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Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Ethical clearance was obtained from the Ethical Review Committee of the College of Medicine and Health Sciences, Bahir Dar University. Formal permission letter was taken from the administration of the hospital and health centres. Written consent was taken from the participants. Data were collected in a secure place by female nurses. All participants who had suicidal behaviour were linked with the psychiatric clinic.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article.

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