BMJ Open

Suicidal behaviours and associated factors among residents of Jimma Town, Southwest Ethiopia: a community-based cross-sectional study

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To cite: Tessema SA, Torba AN, Tesfaye E, *et al*. Suicidal behaviours and associated factors among residents of Jimma Town, Southwest Ethiopia: a community-based cross-sectional study. *BMJ Open* 2024;**14**:e085810. doi:10.1136/bmjopen-2024-085810

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-085810).

Received 28 February 2024
Accepted 05 September 2024

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ABSTRACT

Introduction Suicidal behaviour is a major public health concern in Africa and a cause of premature mortality. The availability of community epidemiological data in Ethiopia is limited. This study assessed the prevalence of suicidal behaviour and its associated factors in Jimma Town, Southwest Ethiopia.

Methods Using the Suicide Behaviour Questionnaire-Revised (SBQ-R), a community-based cross-sectional survey was conducted between September and November 2021. Multistage sampling was used to screen 636 participants for suicidal behaviour. The association between suicidal behaviour and other variables was explored using binary and multivariable logistic regression analyses.

Results The overall estimated prevalence of suicidal behaviour of the respondents in the study was 7.9% (95% CI 5.9% to 10.3%), using the SBQ-R score (>7). One-third of the individuals with lifetime attempts encountered stigma. Multivariable logistic regression models indicated that being female (AOR 2.81, 95% CI 1.48 to 5.31), having depression (AOR 6.9, 95% CI 1.98 to 24.57), family history of mental illness (AOR 4.11, 95% CI 1.38 to 12.19), poor social support (AOR 3.86, 95% CI 1.23 to 12.15) and good coping efficacy (AOR 0.91, 95% CI 0.88 to 0.94))were significantly associated for suicidal behaviour with p value less than 0.05.

Conclusion The overall prevalence of suicidal behaviour was relatively higher in this population than in other studies done in Ethiopia. In addition, the current study indicates the presence of suicide stigma, which further influences poor health-seeking behaviours. The factors significantly associated with suicidal behaviour in this study included being female, having a family history of mental illness, poor social support, poor coping self-efficacy and depressive symptoms. Findings warrant the attention of policy-makers in early screening of depression, developing preventive measures targeting risk factors and enhancing access to mental healthcare services.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Assessed lifetime, overall and 12-month suicidal behaviours.
⇒ Included data on personal suicide stigma, coping self-efficacy and health-seeking behaviours.
⇒ A community-based study with a large sample size and including the late adolescent age group.
⇒ The method of suicide attempt was not assessed.
⇒ The current study did not assess personality disorders or other mental illnesses, except for depression.

INTRODUCTION

Suicidal behaviour is a complex process that ranges from ideation, planning and finally to attempt.[1] According to the WHO, approximately one million people worldwide die because of suicide every year, with a mean mortality rate of 16 per 100 000.[2] There were more than 700 000 deaths by suicide in the year 2023,[2] with one death every 20 s and one suicide attempt every 1–2 s.[2–4] Suicide accounts for 1.4% of deaths worldwide.[2] It is a serious global public health problem in every region and occurs in high-income and low-income countries.[5] In 2016, over 79% of global suicides occurred in low-income and middle-income countries (LMICs).[1 6]

Suicidal behaviour is an important public health problem in Africa. Although it is a major cause of premature mortality, data on the epidemiology of suicide are limited.[6 7] More research is needed to assess the burden, incidence and patterns of suicide across the continent, both in urban and rural settings.[7] Suicide research in Africa is restricted by the scarcity of systematic data collection.[7] On the African continent, less than 10% of African countries report mortality data to the WHO. Official statistics are available for less than 15% of the continent's total population.[7] The knowledge of suicidal behaviour in Africa is based on studies from high-income countries, which may not be generalised to LMICs.[7] Additionally, existing research was primarily conducted in clinical settings. There is,

therefore, a critical gap in the literature related to understanding the epidemiology of suicide in the general population in African LMICs.

Despite the high overall mortality rates in Africa, suicide is an under-reported and hidden cause of death in LMICs.[8] Several factors influence the under-reporting of suicide, such as sociocultural factors, high levels of stigma, religious or cultural sanctions and lack of access to medical facilities with psychiatry services.[7 9] Furthermore, there is even less understanding of non-fatal suicidal behaviours (ideation, plans and attempts). The lack of community-level data is a major barrier to the design and implementation of prevention strategies.[9]

In Ethiopia, the prevalence of suicidal behaviours, including suicidal ideation and attempts, among patients with severe mental illness is reported to be 23.3% for major depression, 23.8% for bipolar disorder and 13.1% for schizophrenia.[1] An institution-based cross-sectional study conducted among patients with diabetes reported in Bahir Dar, Ethiopia that the lifetime prevalence of suicidal behaviours was 10.7% for planning and 7.6% for attempting.[5] A community-based and facility-based study in the Guraghe zone of Ethiopia reported the overall 12-month prevalence of non-fatal suicidal behaviour, including ideation, planning and attempts, was 7.9%.[10]

Factors most highly correlated with suicidal behaviour are being male,[11] psychological distress,[12] depression,[2] dissatisfaction with academic performance, feeling neglected by parents, substance abuse, psychiatric disorders, drug use such as opioids, poor social support,[2] lifetime alcohol use, family history of suicide attempt, rural residence, less frequent engagement in religious practice, loss of a loved one by suicide and emotional turmoil related to bereavement.[2 13] In addition, studies suggest that being unmarried, divorced, widowed, separated or single was associated with a significantly increased risk of suicide death.[14] Evidence also suggests suicide rates increased both during and after the COVID-19 pandemic.[15 16] The mental health consequences of the pandemic, including suicidal behaviour, are likely to be present for a long time, even peaking later than the actual pandemic.[15 16]

Suicide was the fourth-leading cause of death among 15–29 years in 2016.[1–4 6] In LMICs, much higher suicide rates occur among young adults and elderly women than among their counterparts in high-income countries.[5]

The current study is a community-based investigation into suicidal behaviour in Jimma, Ethiopia. This study had two primary objectives: (1) assess the prevalence of suicidal behaviour, including ideations, planning and attempts and (2) identify demographic and personal factors associated with suicidal behaviours. Understanding the epidemiology of suicide in this context will extend knowledge of the personal and sociocultural factors related to suicidal behaviour. Identifying these factors will enhance prevention and intervention efforts.

Objectives

General objectives

- To determine the prevalence of suicidal behaviour and its associated factors in Jimma town community, Southwest Ethiopia, 2021.

Specific objectives

- To determine the prevalence rate of suicidal behaviour (ideation, plans and attempts) in Jimma town.
- To identify associated factors of suicide behaviour in Jimma town, Southwest Ethiopia.

MATERIALS AND METHODS

Study design, study area and period

A community-based cross-sectional study was conducted to determine the prevalence of suicidal behaviours and their associated factors. This study was conducted in Jimma Town from September to November 2021. Jimma Town is located in southwest Ethiopia, 356 km southwest of Addis Ababa, the capital city of Ethiopia. It is one of the largest cities in the Oromia regional state, with an estimated population of 200 000 and divided into 17 administrative units (Kebeles).[17] It is one of the fastest-growing business centres, expansion of construction and infrastructure like roads, public facilities and modern facilities and market centre in the southwest areas of Ethiopia.[18 19] There is inward migration from the surrounding rural areas to Jimma Town in search of jobs, education and a better search of city lifestyle living.[19] The town is home to a diverse and increasingly cosmopolitan population.[20]

Sample

Population source

Individuals were eligible for the study if they (1) had been permanent residents of Jimma Town for at least 6 months as of November 2021 and (2) were 15 years or older. Individuals who were incapable because of being seriously ill and who were unable to communicate were excluded from the study. Participants who had been previously diagnosed with severe mental illness by a psychiatrist or other mental health professional and who could not provide appropriate information due to their acute illness (eg, psychosis, mania) were excluded from the study.

Sample size calculation

The sample size was calculated using a single population proportion formula, considering the following assumptions: Even though a mixed study (facility and community)-based study was available in Ethiopia, it had this limitation. This study had no separate sample size calculation undertaken on suicidality but rather included districts that had treatment coverage for common mental disorders as a result of the Programme for Improving Mental Health Care (PRIME) interventions. Furthermore, the study population was over 18 years old, which was quite different from our study.[10] With the study of rare cases and variation in prevalence within settings and with an estimated proportion (prevalence) of 10% or more, it is safe to apply 'p=50%'.[21] In addition, no

previous studies have reported the overall prevalence of suicidal behaviours in the Jimma town community (p=50 %). Using the design effect, the sample size (424) was multiplied by 1.5, and the final number of study subjects was 636.

Sampling techniques

A multistage stratified sampling technique was used to select study participants. Jimma Town is divided into 17 administrative units (kebeles). Stratification was first performed at the kebele level, then by the household, and finally by the individual. Initially, three kebeles were selected using simple random sampling (lottery method). A simple systematic random sampling technique was then used to identify samples with proportional allocation to the house hold number of three kebeles from the total sample size of 636. The households were selected from a list of house numbers, which included a total of 8939 households in the three kebeles; the sample interval was calculated by N/n=14; that is, N=size of population and n=size of the sample[22 23] (see online supplemental figure 1). If there is a household that included more than one eligible individual, the lottery method was used to select from among them. If there were no eligible individuals in the household, the next house was visited.

Final sample

The response rate was 99.076%. From a total of 636 participants, 630 were included in the study.

Procedure

Data were collected by three masters-level psychiatry professionals and a supervisor. The PI (SAT) provided training to the research team at Jimma University. The data collection team took the prevention measures related to COVID-19 transmission, including data collection procedure, criteria for inclusion of participants, sampling techniques, information of questionnaire and identify high-risk group and referral system to the hospital.

Measures

A structured questionnaire was developed through an extensive review of the literature and existing measures. Questionnaires about demographic, family and chronic illness factors were developed after an extensive review of the literature and similar study tools. All questionnaires were translated into the Amharic and Afan Oromo languages and retranslated back to English to ensure consistency. All the tools are validated in the Ethiopian cultural context.

To identify potential problems with the questionnaire, we conducted a pretest with 32 participants (5% of the study sample size) randomly selected from the same population outside the study area. The questionnaire was evaluated by the principal investigator and supervisor for completeness and alignment with the study objectives and completeness with the study objectives.

Suicidal thoughts and behaviours

This study assessed suicidal thoughts and behaviours with the four-item Suicide Behaviour Questionnaire-Revised (SBQ-R).[24] The SBQ-R assesses different aspects of suicidal behaviours, including ideation/thoughts, plans, threats and attempts. Scores range from 3 to 18, and individuals with scores of 7 or above are considered to have high-risk suicidal behaviour.[25] The sensitivity and specificity in the adult general population are 93% and 95%.[24] In our sample, the internal reliability was considered acceptable, with Cronbach's alpha α=0.895.

Substance use

The ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) was used to assess psychoactive substance use. With a sensitivity and specificity of 97 and 90%, respectively, ASSIST was developed by the WHO.[13 26 27] Psychoactive substances were assessed for use of alcohol, khat, tobacco and cannabis. Scores were categorised as follows: 0–3 (low-risk current pattern of use); 4–26 (moderate-risk current pattern of use) and 27+ (high risk of experiencing severe problems with likelihood of dependence).[28]

Depression

Depressive symptoms in the past 2 weeks were assessed using the 9-item Patient Health Questionnaire (PHQ-9), which was developed to screen for depression in primary care settings.[10] The PHQ-9 has been previously validated in both general hospital and primary care settings in Ethiopia as well as in primary care settings with the validity of Cronbach's α=0.85 in preparation for the population-based study performed in the Sodo Guraghe zone by Fekadu *et al*.[10 29] The PHQ-9 could be used either as a continuous scale, or the scores may be categorised into severity grades, typically as mild (score of 5–9), moderate (score of 10–14), moderately severe (score of 15–19) and severe (score of 20 and above).[10]

Social support

Social support was assessed the three-item Oslo Social Support Scale, which has been previously used in community studies in Ethiopia.[30] It was reliable in the study (Cronbach's α=0.91) performed at Woloyta University.[13 31] Scores indicate poor support (3–8), intermediate support (9–11) and strong social support (12–14).

Coping self-efficacy

The Coping Self-Efficacy Scale (CSES) is a 26-item self-report measure designed to assess self-efficacy for coping in difficult situations.[32] The CSES includes three subscales that assess problem-focused coping (six items), emotion-focused coping (four items) and social support (three items). In this study, we used two subscales, problem-focused coping and emotion-focused coping. In our sample, internal reliability was excellent for problem-focused coping (Cronbach's α=0.91) and emotion-focused coping (Cronbach's α=0.91) and obtaining support from friends and family (three items, α=0.80).

Stigma

Personal experiences of stigma related to suicidality were assessed with the 16-item Personal Suicide Stigma Questionnaire.[28] Individuals rate each item on a 5-point Likert scale from 1: 'never' to 5: 'very often. The scale assesses themes of stigma: rejection, minimisation and self-blame. The questionnaire has demonstrated excellent internal consistency (Cronbach's alpha=0.95).[28]

Family history

The study asked participants to report any family history of suicide attempts, completed suicide and mental illness were included.

Demographic factors

Participants reported the following demographic factors: age, sex, religion, ethnicity, marital status, educational status, occupational status, residence, living condition and income.

Data quality control

After data collection, the principal investigator and supervisor checked each questionnaire for completeness and errors.

Data processing and analysis

Data were checked, coded and entered into Epi Data V.4.1. Then, the data were exported to the SPSS V.26 for further analysis. Available case analysis was used to manage missing data. No data imputation was used for other incomplete data; rather, a pairwise technique was used. Descriptive statistics (mean and SD) for continuous variables and frequencies and percentages for categorical variables) were computed. Non-parametric χ^2 tests and logistic regression were performed. Bivariate analysis was used to screen the significant variables with p<0.25 for multivariable analysis. Variables that met these criteria were entered into multivariate logistic regression models; significance in multivariate models was determined by a 95% CI and p<0.05. Collinearity among predictors was tested using tolerance and variance inflation factors (VIF). Tolerance values greater than 0.1 indicate that a variable has low correlations with others in the model. VIFs ≤10 indicate low collinearity.

Patient and public involvement

None.

RESULTS

Sociodemographic characteristics

The demographics of the study sample are shown in table 1. Of the 630 participants, no data imputation was used for other incomplete data; rather, a pairwise technique was used. 314 (50.2%) were males, and the remaining 311 (49.8%) were females. Their ages ranged from 15 to 82 years old. The mean age was 36.31±11.95 years. 381 (61.4%) were married, 341 (54.4%) were Muslim religious followers and 235 (37.8%) respondents were graduates with a diploma and above. The mean monthly income of the participants ranged from ETB0 to ETB15 000 (M=3830.65±2423.60).

Table 1 Sociodemographic characteristics of participants in Jimma Town, southwest, Ethiopia, 2021 (n=630)

Variable	Category	Frequency (N)	%
Sex	Male	314	49.8
	Female	311	49.4
	Missing	5	0.8
Age	15–19	29	4.6
	20–29	174	27.7
	30–39	198	31.4
	40–49	135	21.4
	50–49	61	9.8
	60 and above	31	4.9
Marital status	Single	164	26.4
	Married	381	61.4
	Divorced	45	7.2
	Widowed	31	5.0
Religion	Muslim	341	54.4
	Orthodox	181	28.9
	Protestant	95	15.2
	Catholic	8	1.3
	Others*	2	0.3
Occupation	Government employee	153	24.8
	Merchant	137	22.2
	Private employee	118	19.1
	Housewife	104	16.8
	Others†	52	8.4
	Unemployed	26	4.2
	Day labourer	25	4.0
	Farmer	3	0.5
Education	Illiterate	18	2.9
	Elementary	181	29.1
	High school	188	30.2
	Diploma and above	235	37.8
Ethnicity	Oromo	364	64.1
	Amhara	106	18.7
	Gurage	28	4.9
	Others‡	61	10.7
	Tigre	9	1.6
Monthly income	ETB0–ETB4999	518	82.7
	ETB5000–ETB9999	107	17.1
	ETB10 000–ETB15 000	1	0.2

*Wakefata, Atheist, Jehovah's witness and Apostle.
†Includes (retired, student).
‡Include (Yem, Silte, kefa, Wolayta and Benchi maji ethnic groups).

Table 2 Prevalence estimates of suicidal behaviour in Jimma Town, South West Ethiopia, 2021 (n=630)

Variables	Category	Number (N)	%
Lifetime suicidal behaviour	No	469	74.4
	Yes	161	25.6
Lifetime suicide ideation	Yes	104	16.5
Lifetime suicide plan	Yes	35	5.6
Lifetime suicide attempt	Yes	22	3.5
Suicidal ideation over the past 12 months	No	570	90.5
	Yes	60	9.5
Frequency of suicidal ideation over the past 12 months	Never	570	90.5
	Rarely one time	21	3.3
	Sometimes two times	21	3.3
	Often 3–4 times	14	2.2
	Very often five times or more	4	0.6
Threat of suicide attempt	No	593	94.1
	Yes	37	5.9
Frequency of threat of suicide attempt	More than once	14	2.2
	No	593	94.1
	One time	23	3.7
Suicidal behaviour in the future (plan)	No	612	97.1
	Yes	18	2.9
Overall suicide behaviour risk grade	Yes (≥7)	50	7.9
	No (<7)	580	92.1
Received any professional medical treatment for thinking about or attempting to	Yes	10	1.6
	No	620	98.4
Admission to hospital for a few hours overnight or longer as a result	Yes	15	2.4
	No	612	97.6
Personal suicide stigma	Yes	65	10.3
	No	565	89.7

Suicidal thoughts and behaviours

Table 2 shows the prevalence of suicidal thoughts and behaviours in the study sample. The overall estimated prevalence of suicidal behaviour among the total respondents in the study was 7.9% (n=50), using the SBQR score (>7) with an interval of proportion of (5.9%, 10.3%). The lifetime prevalence rates of suicidal ideation, plan and attempts with CIs were 16.5% (13.6% to 19.4%), 5.6% (3.76% to 7.35%) and 3.5% (2.05% to 4.93%), respectively. The prevalence of suicidal ideation over the last 12 months was 9.5% (7.23%, 11.82%). The lifetime prevalence of suicidal ideation was 15.9% (n=50) for males and 17.4% (n=54) for females, and for suicide plans was 5.1% (n=16) for males and 6.1% (n=19) for females. Furthermore, the lifetime prevalence of suicide attempts among male participants was 1.6% (n=5) and among female participants was 5.5% (n=17) (see online supplemental figure 2). The prevalence of suicidal ideation in the past 1 year was high among females (13.2%, (n=41) when compared with males (6.1%, n=19) with phi cream (0.121), p=0.002) (see online supplemental figure 2). Of the participants who had suicidal ideation in the past 1 year, 3.3% had one-time suicidal thoughts, 3.3% had twice suicidal thoughts and 2.2% had more than twice suicidal thoughts. Approximately 5.9% (n=37) told someone that they were going to complete suicide; out of these, 3.7% (n=23) told one time, and 2.2% (n=14) told more than one time (see online supplemental figures 3 and 4). A total of 60.25% of the respondents with lifetime suicidal ideation never told someone about suicidal ideation (see online supplemental figure 4). Suicide stigma was seen among 10.3% (n=65) of the respondents. Of these participants, one-third of the individuals who encounter suicide stigma were those with a lifetime attempt of 30.8% (n=20) lifetime ideation of 23.1% (n=15) and a lifetime plan of 43.1% (n=28).

Out of 630 respondents included in the study, 4.6% are adolescents (15–19 years), 90.3% are adults (20–59 years) and 4.9% are elderly (60 years and above). The bulk of respondents in this study are in the adult age group. The overall suicide behaviour for adolescents (15–19 years), adults and the elderly was 24.1%, 7.4% and 3.2%,

Table 3 Description of the frequency distribution of psychosocial characteristics among Jimma Town residents, South West Ethiopia, 2021 (n=630)

Variable	Category	Frequency (n)	%
Social support	Poor	61	9.7
	Intermediate	162	25.7
	Strong	403	64.0
Depression	Mild	268	42.5
	Minimal	273	43.3
	Moderate	30	4.8
	Moderately severe	5	0.8
	Severe	20	3.2
Living condition	Alone	73	11.6
	With family	556	88.4
Chronic medical illness	Yes	48	7.6
	No	580	92.4
Family history of mental illness	Yes	56	8.9
	No	574	91.1
Family history of suicidal attempts committed	Yes	72	11.4
	No	558	88.6
Recent loss or bereavement in the past 3 months	Yes	72	11.4
	No	558	88.6
Sexual abuse	Yes	14	2.2
	No	616	97.8

Table 4 Description of substance-related factors in Jimma Town, South West Ethiopia, 2021 (n=630)

Substance	Number (N)	%
Khat		
Current use	262	41.6
Lifetime use	363	58.0
Low	400	63.5
Moderate	174	27.6
High	51	8.1
Tobacco		
Current use	148	23.6
Lifetime use	71	11.3
Low	555	88.1
Moderate	49	7.8
High	22	3.5
Alcohol		
Current use	158	25.1
Lifetime use	284	45.4
Low	531	84.3
Moderate	72	11.4
High	23	3.7
Cannabis		
Current use	3	0.5
Lifetime use	13	2.1
Low	622	98.7
Moderate	3	0.5
High	1	0.2

Overall Alcohol, Smoking and Substance Involvement Screening Test scored the following: 0–3 (low-risk current pattern of use), 4–26 (moderate risk) and 27+ (high risk of experiencing severe problems and are likely to be dependent).

respectively. The lifetime suicidal attempt of the adolescent age group was 17.2% and 12 months of suicidal ideation was 24.1% which is higher than the other age groups. The elderly (60 years and above) had lifetime suicide plans and ideation, respectively, 6.5% and 22.6% which were higher than the other age group (see online supplemental table 1).

Clinical and psychosocial characteristics

The clinical and psychosocial characteristics of participants are shown in table 3. Almost half of the respondents reported mild depressive symptoms (42.5%), and 3.2% had severe depressive symptoms and 4.8% (n=30) had moderate depressive symptoms. A family history of mental illness was found in 8.9% (n=56) of participants. A family history of suicide attempts and completed suicide was 11.4% (n=72). A total of 7.6% (n=48) of respondents had a chronic medical illness. Approximately 11.4% (n=72) of the respondents had experienced recent loss or bereavement in the past 6 months. Regarding social support, the majority of the respondents (64%, (n=403) scored for strong social support. The remaining respondents scored for poor social support (9.7%, (n=6) and intermediate social support (25.7%, (n=162). Approximately 2.2% (n=14) of the respondents had a history of sexual abuse.

Substance-related factors

Substance-related factors are shown in table 4. A total of 45.4% (n=284) of participants reported having drunk alcohol in their lifetime, and 25.1% (n=158) of respondents reported current usage. Khat tree leaves are a psychoactive substance that is commonly used in the cultural and religious practices of Ethiopia and the Arab Peninsula.[33 34] It is also known as Catha Edulis and contains a psychoactive substance called cathinone, which has a similar mechanism of action as amphetamine. It has an effect similar to stimulants in the central and peripheral nervous systems and most use it for the effect of euphoria, alertness and focus.[34 35] Lifetime khat use among the respondents was 58% (n=363), and the current khat use was 41.6% (n=262), which is quite higher than the other substances. Approximately 13 (2.1%) of the participants

had lifetime use of cannabis, and around 0.5% (n=3) of the respondents currently used cannabis. Approximately 23.6% (n=148) of the respondents reported smoking tobacco in their lifetime, and around 11.3% (n=71) of the participants reported current tobacco use.

Help-seeking behaviour

Only 1.6% (n=10) of the respondents sought professional help for suicidal thoughts or attempting to take their own lives (see online supplemental figure 5). Only 4 (0.67%) of those reporting suicidal behaviour sought help. A total of 2.4% (n=15) of the respondents required admission as a result of the attempt to take their own life (see table 2).

Factors associated with suicidal behaviour

In bivariate logistic regression analysis, the following factors were associated with suicidal behaviour at p<0.25: female (OR 2.805, 95% CI (1.48 to 5.31); age 14–19 (OR 9.55 95% CI (1.09 to 83.29); married OR 0.38, 95% CI (0.10 to 1.40); chronic medical illness (OR 1.74, 95% CI (0.70 to 4.32); family history of mental illness (OR 7.15, 95% CI (3.66 to 13.96); moderate and moderately severe depression (OR 48.16, 95% CI (5.18 to 447.41); high-risk alcohol use (OR 10.31, 95% CI (3.02 to 35.16); coping self-efficacy (OR 0.888, 95% CI (0.863 to 0.913) and poor social support (OR 14.59, 95% CI (7.00 to 30.41). Detailed results can be found in online supplemental tables 2–5.

Multivariable logistic regression of factors associated with suicidal behaviour

This study estimated a multivariable logistic regression model including the risk factors identified in bivariate models. The logistic regression model was statistically significant, χ^2 (10)=164.96, p=0.00 (p<0.05). In addition, the Hosmer and Lemeshow test showed that the p value was greater than 0.05 (p=0.793). This illustrates that there is no significant difference between the observed and predicted model values; hence, the model fits the data well. The model explained 65.2% (Nagelkerke R^2) of the variance in suicidal behaviour and correctly classified 95.3% of cases. Results from the model are shown in table 5.

The multivariable logistic regression analysis results revealed that the likelihood of suicidal behaviour was higher among participants with a family history of mental illness than among those without (Adjusted odds ratio (AOR) =4.11, 95% CI 1.38 to 12.19). Respondents with moderate depressive symptoms had six times the odds of having suicide behaviour as those with minimal depressive symptoms (AOR 6.9, 95% CI 1.98 to 24.57). The odds of having suicidal behaviour among participants who had poor social support were four times higher than among those who had strong social support (AOR 3.86, 95% CI 1.23 to 12.15). The odds of suicide among female participants were three times higher than those among male participants (AOR 2.81, 95% CI 1.48 to 5.31). Respondents with better-coping self-efficacy had decreased odds of suicidal behaviour (AOR 0.91, 95% CI 0.88 to 0.94).

Table 5 Multivariable logistic regression examining the associated factors and suicidal behaviour among Jimma Town community, South West Ethiopia, 2021 (n=630)

		Suicidal behaviour				
Variable	**Category**	**Yes**	**No**	**AOR (95% CI)**	**COR (95% CI)**	**P value**
Depression (PHQ 9 score)	Minimal	3 (1.1%)	270 (98.9%)	**Reference**	**Reference**	
	Mild	12 (4.5%)	256 (95.5%)	1.23 (0.46 to 3.29)	0.56 (0.28 to 1.14)	0.687
	Moderate	9 (30.0%)	21 (70.0%)	6.9 (1.98 to 24.57)	5.16 (2.14 to 12.45)	**0.002***
	Moderately severe	4 (80.0%)	1 (20.0%)	13.99 (0.48 to 406.96)	48.16 (5.18 to 447.41)	0.125
	Severe	19 (95.0%)	1 (5.0%)	0.00039	0.001	1.000
Social support	Intermediate	11 (6.8%)	151 (93.2%)	0.85 (0.29 to 2.41)	1.88 (0.85 to 4.19)	0.756
	Poor	22 (36.1%)	39 (63.9%)	3.86 (1.23 to 12.15)	14.59 (7.00 to 30.41)	**0.021***
	Strong	15 (3.7%)	388 (96.3%)	**Reference**	**Reference**	
Sex	Male	14 (4.5%)	300 (95.5%)	**Reference**	**Reference**	
	Female	36 (11.6%)	275 (88.4%)	3.45 (1.27 to 9.39)	2.81 (1.48 to 5.31)	**0.015***
Family history of mental illness	Yes	17 (30.4%)	39 (69.6%)	4.11 (1.38 to 12.19)	7.15 (3.66 to 13.96)	**0.011***
	No	33 (5.7%)	541 (94.3%)	**Reference**	**Reference**	
Coping self-efficacy				0.91 (0.88 to 0.94)	0.89 (0.86 to 0.91)	**<0.001***

Bold value only show reference and significant value.
*Variables that demonstrated a significant association with suicidal behaviours in multivariable analysis with p<0.05.
AOR, Adjusted odds ratio; COR, Crude odds ratios; PHQ-9, 9-item Patient Health Questionnaire.

Marital status, age range, chronic medical illness and hazardous/high-risk alcohol use were not associated with suicidal behaviours.

DISCUSSION

This study assessed the prevalence of suicidal behaviour and its associated factors among the Jimma town community. The results of this study showed that the overall prevalence of suicidal behaviour among residents was 7.9%. The lifetime prevalence rates of suicidal ideation, plans, and attempts were 16.5%, 5.6% and 3.5%, respectively. Over the last 12 months, the prevalence of suicidal ideation was 9.5%. The factors associated with suicidal behaviour in this study were female sex, family history of mental illness, poor social support, poor coping efficacy and depressive symptoms. This study documents that suicidal behaviour is a public health problem in Jimma town, Ethiopia.

Prevalence of suicidal behaviours

This study showed a much higher 12-month prevalence of suicidal ideation than a community-based study performed in the Gurgae zone of Ethiopia (6.3%).[10] These higher values in our sample may be explained by the higher burden of mental illness, substance use in our study population, the COVID-19 pandemic and economic impact, and the study population included a late adolescent age group. There is, therefore, a need for future studies to investigate the need to measure the stated factors to confirm the stated hypothesis. Furthermore, another explanation for the different findings from our study; the study in the Gurgae zone of Ethiopia is a mixed (facility and community)-based study, the study population was above 18 years, the study area was within reasonable travel distance of specialist mental health services and participants included were from districts that had treatment coverage for common mental disorders as a result of interventions of PRIME.

Our findings on the lifetime prevalence rates of suicide are comparable to those from a community-based study performed in Campinas Brazil, which found that the lifetime prevalence rates for suicidal ideation, plans and suicide attempts were 17.1%, 4.8% and 2.8%, respectively.[36] The approximate finding of lifetime suicide behaviour prevalence in this Brazilian study when compared with our study might be due to both the included study population adolescent and adult age groups residing in urban areas. The 12-month prevalence rate in this study was 9.5%, which was much higher than that in this Brazilian study of Botega *et al* (5.3%).[36] However, the Brazilian study of Botega *et al* used the Composite International Diagnostic Interview Schedule (CIDI) to assess suicidal behaviour, while in our study, the SBQ-R was used. The CIDI assesses only 12 months of suicidal behaviour, whereas the SBQ-R assesses both lifetime and 12 months of suicidal behaviours. The CIDI questionnaire also has methodological limitations related to the complexity of questions and instructions, which may hinder its validity in cross-cultural settings.[37] The CIDI is administered by a trained interviewer and also assesses mental health conditions including suicide. The criteria of scoring are different from SBQ-R which is self-reported, only assesses suicidal behaviour and has a different scoring method. These differences in measures of suicidality may influence study findings.

Other community-based studies based in Uganda, South Africa, India and Nepal showed that the 12-month suicidal ideation in these countries was much higher in Uganda (5%), South Africa (14.8%) and India (11.1%) than the 9.5% prevalence in our setting except Uganda.[9] These studies performed in South Africa, India and Nepal had larger sample sizes ranging from 3220 to 1897 compared with the 636 participants of the current study. Furthermore, such disparate values are also due to possible social, religious and cultural differences that can influence the reporting.[7] The tools used in these studies to assess suicidal behaviours were the CIDI suicidality module, which is quite different from the current study.

The lifetime suicide attempt in our study was 3.5% which falls in between the range of several existing studies. The lifetime prevalence of suicide attempts also varied across studies, with a median estimate of 2%–3%.[7] This also compares with 0.4%–4.2% found in the WHO SUPRE-MISS community survey in LMICs and 2.7% from the 17 countries in the World Mental Health Surveys.[7] The variety of prevalence ranges in several countries has been attributed to several reasons. Mars *et al* suggested that numerous studies in African countries elaborated that suicidal behaviour is associated with negative religious and cultural sanctions. Despite the reported number, it might be higher than the actual reports. For this reason, suicide behaviours may be under-reported, hidden or deliberately mislabeled.[3]

The lifetime suicide attempt and suicide ideation in this study were 3.5% and 16.5%, respectively. In Ethiopia, studies on this topic are very rare and among the few studies, a community-based studies in other parts of Ethiopia reporting point prevalence showed lower values than our study. A study performed in Addis Ababa among an adult population showed current suicidal ideation (2.7%) and suicide attempts (0.9%).[38] In addition, another study performed in Butajira (Southern Ethiopia) among the adult population reported a current suicide attempt rate of 3.2%.[38] The higher magnitude of suicidal attempts, plans, and ideation in our study was most likely because our study was conducted in a late adolescent and adult age group population, and the difference might be due to variation in study design and the difference in assessment tools used. Suicidal behaviour is a global concern and the leading cause of death among youth and adolescents in Ethiopia and other developing nations.[39 40] The tool used in the study was a Self-Reporting Questionnaire which only used the five-questions related to suicidal behaviour and because it is a self-administered questionnaire; associated with lower specificity and underreporting of suicidal

behaviour. These other studies assessed current suicidal ideation, but the current study considered lifetime and 12-month suicidal behaviour. This study adds valuable addition, due to the finding of lifetime and 12-month prevalence in an urban area of Ethiopia.

When comparing the prevalence of lifetime suicidal behaviour with our study, the finding was quite lower than that of a study performed in India. Singh *et al*, in a community-based study performed in India, the lifetime prevalence of suicidal ideation, plans and attempts was reported to be 20%, 2.1% and 5.7%, respectively. The 12-month suicidal ideation in this study was 12.5%. This community-based cross-sectional study was conducted among adults aged 18 years and above in rural and urban areas of Puducherry, India. The Columbia Suicide Severity Rating Scale questionnaire was used to assess suicidal behaviour.[41] A higher magnitude of lifetime suicidal behaviour of Singh *et al* was most likely because the study was conducted in rural and urban areas. Evidence suggests that high suicidal behaviour in rural areas when compared with urban areas might be due to limited access to mental healthcare, stigma towards mental illness, level of awareness, social isolation, economic hardship and access to lethal material.[42] The differences in assessment tools used can contribute to the variation of the findings from this study. Furthermore, such disparate values are also due to possible differences in response to suicidal behaviour social, religious influences and cultural differences in India.[43]

Our study's lifetime prevalence of suicide ideation, plans and attempts in adolescents (15–19) years of adolescent age was 17.2%, 3.4% and 17.2%. The finding in our study was higher than a national survey study done among 6483 adolescents (ages 13–18 years) in the USA showed an estimated lifetime prevalence of suicide ideation, plans and attempts among 12.1%, 4.0% and 4.1%.[44] A community-based study among the youth was done in North Gonder, Ethiopia; the lifetime prevalence of suicide attempts was 5.5%.[39] The finding in our study showed that the value of lifetime suicide ideation and attempts were higher. These finding calls for future study and investigation comparing suicidal behaviour in adolescents and adults. The lifetime suicidal attempt of the adolescent age group was 17.2% which is higher than the other age groups. The adolescent age group has a greater attempt rate with a higher attempt/completion ratio[45 46] which similar to the finding of this study. Evidence suggests that younger adults have a high ratio of attempted suicide to completed suicide when compared with the elderly population.[47 48] In addition, there are differences in the lethality of suicide with age older adults.[47 48]

The findings of the current study showed that 5.9% told someone that they were going to commit suicide; out of these, 3.7% told one time and 2.2% told more than one time. In Ethiopia, health-seeking behaviour is low especially those people with mental illness[49 50]; victims of suicide rarely visit clinics before the attempt because they may not regard their problem as medical. This study further supported low health-seeking behaviour after an attempt of 1.6%. Because there is a scarcity of trained mental health professionals who can adequately assess and forecast the risk of future suicide, even those seeking healthcare might not receive proper assessment and treatment.[38] Hence, the findings in our study suggested that suicide stigma was seen in 10.3% of the respondents. Out of these participants, the majority of individuals with suicide stigma were those with 30.8% lifetime attempts, 23.1% lifetime ideation and 43.1% lifetime plans. Several lines of evidence suggest that suicidal behaviour is an under-reported and hidden cause of death in most LMICs due to high levels of stigma and religious or cultural sanctions.[9]

However, attending health services following a suicide attempt or suicidal ideation offers an opportunity for prevention.[10] In this study setting, most people with suicidal behaviours did not use health services. Furthermore, communication of suicidality with family members, providers or other people was also very low. Moreover, only 1.6% of the respondents sought professional help for thinking about or attempting to take their own life. Approximately 2.4% of the respondents required admission as a result of the attempt to take their own life. The health-seeking behaviour after the attempt in another community-based study by Fekadu *et al* was 26%, which is much higher than in our study. In addition, in community-based studies in South Africa, the help-seeking behaviour after the attempt was 21%, which is quite higher in our settings. In other community-based studies in India and Uganda, the help-seeking behaviour after an attempt was 0% and 0%, respectively, which is lower than our setting.[9] The low health-seeking behaviour may be explained partly by the lack of accessible services; however, the low communication of suicidality with family and low level of awareness of mental health issues is an important barrier to the implementation of prevention strategies.[51 52] The high levels of stigma and condemnation related to suicidal behaviour in different settings limit the openness of respondents and health-seeking behaviour.[53] The presence of huge cultural and religious diversity found across countries with geographical, economic and political differences can contribute to the variation in the prevalence and health-seeking behaviour for suicide.

Factors associated with suicidal behaviour

Suicide is influenced by a complex interplay of biological, social, cultural and psychological factors.[7] In our sample, being female, having depression, having a family history of mental illness, having poor social support and having poor coping efficacy were significantly associated with suicidal behaviour.

In this study, the odds of suicidal behaviour among female participants were three times higher than those among male participants. This finding was consistent with a community-based study performed in Brazil, which demonstrated that suicidal ideation was 1.7 likely to be reported by women.[36] Another study performed

in Finland reported a higher prevalence of suicidal ideation among men.[54] Despite this, most women present a higher prevalence of suicidal behaviour in the majority of contexts studied despite the sociocultural differences, and epidemiological variation of the targeted population appears to be important as well for this discrepancy.

The odds of having suicidal behaviour among respondents who had moderate depression were six times higher than those among respondents who had minimal depression. The findings showed a significant association between moderate depression compared with severe depression. However, the presence of a wide CI occurred due to the unequal number of participants in each level of depression, which led to a wide CI and large AOR. This might be due to the small number of participants with severe depression in the respondents and the fact that severe depression was mostly less prevalent in community studies than in hospital studies. This result was supported by a study performed in the Gurgae zone by Fekadu *et al*, which showed that the odds of suicidal behaviour among participants with moderate and above depression were 24 times higher than those with minimal depression.[10] Other community studies consistent with this finding include a study in Brazil by Botega *et al*,[36] and several study reviews in Africa,[7] South Africa,[55] Uganda,[9] India and Nepal.[9 41] Existing evidence justifies that the presence of depression is highly associated with suicidal behaviours. This might be due to the direct effect of depression, which makes individuals feel hopeless and worthless. It also indicated that the decreased level of serotonin neurotransmitter in the brain of a depressed individual was found to be associated with increased suicidal behaviour.[56 57] More than 75% of people who have mental health problems reside in LMICs. In developing countries, mental illness and substance use disorders are important causes of disease burden.[58] Despite the high mental health burden in LMICs, there is a shortage of mental health professionals, limited drugs available and high costs of the drugs, which can further worsen the impacts and burdens of the problems.[58]

The findings of this study showed that respondents who had a family history of mental illness had four times more odds of having suicide behaviour than those who had no family history of mental illness. This result is supported by a previous study performed in India by Singh *et al*.[41] The possible reason might be a genetic predisposition to mental illness and environmental factors, which include shared family stress and unstable family dynamics.[59]

The finding in this study was also strengthened by the result that people with poor social support were found to be more vulnerable to suicidal behaviour. This result was supported by a study conducted in the USA by Nock *et al*, which examined the prevalence of, trends in and risk and protective factors for suicidal behaviour in the USA and cross-nationally. This research showed that perceptions of social and family support and connectedness are significantly associated with lower rates of suicidal behaviour.[59] Social support reduces the feeling of isolation which is correlated to suicidal behaviour. Furthermore, it can enhance the chance of seeking professional help. This might be because of a lack of social support and a significant other to share emotional and other psychosocial burdens due to various environmental stresses that predispose to depression with manifestations including hopelessness and suicidal behaviours.[59]

Finally, the findings of this study showed that respondents with good coping self-efficacy had 9% lower odds of exhibiting suicidal behaviour than those with poor coping self-efficacy. This finding was consistent with a study performed by Nancy *et al*. This showed that those who engaged in suicidal behaviour in the last 12 months reported significantly lower coping self-efficacy.[60] The authors, furthermore, found that the benefits of mindfulness for emotion regulation function to some significant degree through maximising an individual's CSE.[60] Suicidal behaviour is more related to an individual's ability to cope in challenging situations with skills in problem-solving as well as abilities to tolerate and manage emotional distress.[60]

Jimma is the second biggest city in Ethiopia and the study findings can be representative of Jimma town southwest part of Ethiopia. This study found higher prevalences among women and people with depression. Thus, it is important to launch preventive strategies such as improving standardised screening for depression and giving more emphasis on women and those with a family history of mental illness in the community. Furthermore, there is a need to compensate for the low help-seeking in this study by establishing home-based mental health services that include intensive counselling, support and case management services provided on an outreach basis. Policy-makers need to start a free mobile hotline for suicide prevention in the community. Lastly, it is crucial to inaugurate community-based programmes that create awareness and knowledge of emotional disturbance, health-seeking behaviour and suicidal behaviour.

Limitations of this study

The study has limitations that should be considered when interpreting the findings. This study was not able to assess the methods of suicide attempts, which would be useful in understanding the immediate contexts of suicidal behaviour and could inform prevention strategies. Qualitative data, such as those obtained from in-depth interviews, could provide better insight into the reasons for and methods of suicide attempts. Another limitation was the use of retrospective self-reporting, which introduces the risk of recall bias. Furthermore, stigma against suicidal behaviour continues to exist in Ethiopia[7] and may have impacted some individuals' reporting of ideations or attempts. The cross-sectional nature of the study makes it determines the temporal relation between risk factors and suicidal behaviours. Another limitation involves the content of the questionnaire; the only mental illness assessed for was depression. There is evidence from other research that other types of mental illness, including

personality disorders may be associated with suicidal behaviours.[12]. Although the study was conducted during the COVID-19 pandemic, the study did not assess specific factors related to COVID-19. Finally, this study assessed suicidal behaviours in one town in Ethiopia and may not be generalisable to other populations.

CONCLUSIONS

In general, the prevalence of overall suicidal behaviour (7.9%) and lifetime suicidal behaviours (25.6%) was relatively higher in this population than in other populations in Ethiopia. The higher prevalence of suicidal behaviour in the Jimma community is a finding that merits further investigation. In addition, the evidence of the low communication of suicidality to others and suicide stigma further influences poor health-seeking behaviour, which is evident in the current study. The factors significantly associated with suicidal behaviour in this study included being female, family history of mental illness, poor social support, poor coping self-efficacy and depressive symptoms. This finding warrants a focus on the attention of policymakers in the early screening of depression and enhancing mental healthcare service access and other preventive measures targeting these factors is vital.

Acknowledgements I express my deep sense of gratitude and immense respect to the study participants who were willing to participate in this study. My grateful acknowledgment also goes to data collectors; and supervisors for their valuable contribution during data collection. I would also like to express my cordial thanks to Jimma University, colleagues and friends for providing me with unfailing support and continuous encouragement during the process of conception, literature reviews and writing this study.

Contributors SAT was involved in idea conception and of the writing the structure of the review with literature searches, data entry, analysis of data, interpretation, analytical writing and preparing the manuscript. Coauthors ANT, ET, BA and RO were involved in revising the manuscript,supplementing and advising on the work. All authors are sufficiently involved in the work to take public responsibility for the appropriate portion of the content. SAT is the guarantor of this study and she takes full responsibility for ensuring reliability, accuracy of data analysis, ethical standard and scientific rigor of the study. All authors were involved in ensuring reliability, ethical standard and scientific rigor of the study. Furthermore, all authors read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and the study was carried out after ethical clearance was obtained from the ethical review board of the faculty of health and medical sciences of Jimma University and performed following the Declaration of Helsinki and the reference number of IHRPGN/493/21. An official letter was obtained from the head of the department of psychiatry. Ethical clearance was taken from Jimma Zone health bureau, and finally, permission was taken from this bureau to each kebeles administrator. Selected participants were told about the nature, purposes, benefits and adverse effects of the study and invited to participate voluntarily. The names of the participants were omitted from the questionnaire; instead, code numbers were used to ensure confidentiality. Participants who have suicidal behaviours were referred for assessment to the psychiatric clinic. When acute suicidal behaviour is detected; we bridged the confidentiality and participants were linked to the psychiatric clinic for further evaluation and interventions were informed to the family member or any caregiver. Informed written consent was obtained from all participants after informing the study's objectives. For those participants who are under 18 years of age parents or guardian consented to participate in this study. The consent was obtained from the parent or guardian. If the participants are illiterate, we obtained written informed consent from their proxies. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are avialable upon reasonable request from corresponding author.

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