

# Suicidal Ideation and Its Associated Factors Among Patients with Major Depressive Disorder at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia

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**Background:** Suicidal ideation is thinking about suicide/serving as the agent of one's own death. Patients with a major depressive disorder are the highest group which are affected by suicidal ideation. It is a pre-condition for suicide attempts and to commit suicide among major depressive patients. Suicidal behavior and major depressive disorder have been becoming the main attention in recent years. In Ethiopia, there is limited knowledge of suicidal ideation among major depressive disorder patients and the factors of suicidal ideation are also limited.

**Objective:** This study assessed the prevalence of suicidal ideation and its associated factors among major depressive disorder patients at Amanuel Mental Specialized Hospital, Ethiopia.

**Methods:** A cross-sectional study was conducted from March 1–30, 2019. A total of 337 major depressive disorder patients were successfully interviewed using structured and pre-tested questionnaires. A systematic random sampling technique was applied. Logistic regression was applied to identify factors of suicidal ideation. Statistical significance was considered at P-value < 0.05.

**Results:** In this study, the prevalence of suicidal ideation among major depressive disorder patients was 48.4%. Being female (AOR 2.4, 95% CI=1.40, 4.25), family history of suicide (AOR 3.2, 95% CI=1.26, 8.11), and having poor social support (AOR 4.2, 95% CI=2.29, 7.59) were significantly associated with suicidal ideation among patients with major depressive disorder.

**Conclusion:** The prevalence of suicidal ideation among major depressive disorder patients was relatively high. Hence, due attention should be given to the screening of suicidal ideation for all patients with major depressive disorder to initiate timely interventions.

**Keywords:** major depressive disorder, suicidal ideation, Amanuel Mental Hospital, Ethiopia

## Introduction

Suicide is a deadly act of ending one's own life.<sup>1</sup> It has different stages such as suicidal ideation, plan, attempt, and commit. Suicide is the result of a whole coordinated suicidal process.<sup>2</sup> In the beginning, there are intermittent suicidal ideas that could lead to the establishment of a suicidal plan.<sup>3</sup> Some people may plan even for yours to commit suicide while others end their own life impulsively.<sup>4</sup> Suicide is a huge but largely preventable health problem causing almost half of all violent deaths.<sup>5,6</sup> It is a major risk among patients with major depressive disorder (MDD) and a significant proportion of patients with major mood disorders die by suicide.<sup>5–9</sup>

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The occurrence of suicide among individuals with MDD is substantial, and it is one of the most disturbing outcomes of depression. Suicide is obviously the end consequence of a person's feeling of hopelessness, worthlessness, and incapacity.<sup>10</sup>

Suicidal ideation is thinking about suicide/serving the agent of one's own death.<sup>11</sup> It is an important phase in the suicidal process preceding attempted suicide and it is common in the general population.<sup>12</sup> Suicidal ideation is considered a dangerous step leading to subsequent suicidal behaviors. Furthermore, suicidal ideation or suicidal thoughts are a major risk factor for suicide attempts.<sup>13,14</sup> Even though suicidal ideation is highly prevalent among patients with MDD, it may be present outside of depression, and is now being recognized as a trans diagnostic phenomenon.<sup>11</sup>

Suicidal ideation arises as a symptom of depression, especially if there are reasons for a person to feel hopeless concerning the future.<sup>11</sup> Patients with MDD are the highest group which are affected by suicidal ideation.<sup>9</sup> Suicidal ideation appears to be a pre-condition for suicide attempts and is a strong risk factor for completed suicide among patients with MDD.<sup>12,15</sup> According to previous studies there is significant association between suicidal ideation among patients with MDD.<sup>10</sup> MDD causes feelings of sadness, loss of interest in activities once enjoyed.<sup>16</sup>

The prevalence of suicidal ideation has been reported since the 1970s. In recent years, the prevalence of suicidal ideation is increasing.<sup>3</sup> Depending on the setting of each particular study, the 12-month prevalence has varied from 2.3% to 58%.<sup>6,11</sup> Prior studies also suggest a variety of risk factors for suicidal ideation. Low social support, substance use disorder,<sup>14</sup> previous suicide attempts,<sup>17</sup> hopelessness and sleep disturbances,<sup>18</sup> elevated inflammation<sup>19</sup> have been found to be associated with suicidal ideation. The studies we have cited above have also investigated suicidal ideation among patients with MDD. The association between suicidal behavior and MDD has been becoming the main attention in recent years. In Ethiopia, there are currently very limited studies about the prevalence of suicidal ideation and its associated factors among patients with MDD. Therefore, this study assessed the prevalence of suicidal ideation and its associated factors among patients with MDD at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia. Early detection of suicidal ideation may enable the health care providers to identify patients at relatively high risk for eventual suicide and to initiate timely interventions.

## Materials and Methods

### Study Area and Period

The study was conducted from March 1–30, 2019 at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia. The hospital is one of the oldest and the only mental care hospital in Ethiopia. The hospital provides services for people with psychiatric, neurological, substance use, and psychosocial problems in both outpatient and inpatient cares. It serves on average for 682 major depressive disorder patients monthly and provides outpatient and inpatient service (unpublished Amanuel Mental Specialized Hospital report 2019).

### Study Design

A cross-sectional study design was carried out to achieve the aim of this study.

### Source and Study Population

All patients with MDD who had a follow-up at the outpatient department of Amanuel Mental Specialized Hospital were the source population. Those who came for the follow-up during the data collection period were considered as the study population.

### Inclusion and Exclusion Criteria

Clients with a confirmed clinical diagnosis of MDD and age above or equal to 18 years during the data collection period were considered as eligible candidates for participation, whereas those who had other known psychiatric disorder (other than MDD) and those who are unable to speak or hear were excluded from the study.

### Study Variables

The dependent variable was suicidal ideation. The independent variables included sociodemographic factors (age, sex, ethnicity, religion, living condition, marital status, educational status, occupational status) and psychosocial factors (social support).

### Operational Definitions

#### Suicidal Ideation

It is defined as thinking about suicide/serving the agent of one's own death. It was measured by asking the participants: "Have you ever seriously thought about committing suicide?" If the respondent answered "Yes" for the question, the patient had suicide ideation.

## Social Support

It was measured with Oslo's 3 social support scale. Oslo's social support scale is a 14-item multiple-choice tool for measuring the perceived social support of patients with MDD. The value of each answer is scored as poor, moderate, and strong social support. Oslo social support scale is scored by summing across all scale items. Respondents who answered "3–8", "9–11" and "12–14" of Oslo's social support scale questions correctly were classified as poor social support, moderate social support, and strong social support, respectively.<sup>20</sup>

## Ever Substance Use

It is defined as consuming any substance at least once in his/her lifetime. It was measured by asking the participants: "Have you ever used any substance in your lifetime?" If the respondent answered "Yes" for the question, the participants had ever used the substance.

## Current Substance Use

It is defined as taking of any one of the substances at least once with in the last one month.

## Sample Size and Sampling Technique

The sample size was determined by using a single population proportion formula with the following assumptions. The proportion of suicidal ideation  $p = 15.2\%$  taken from the previous study conducted in Saint Paul General Hospital,<sup>21</sup> with a 95% confidence interval (CI) to be 1.96, and margin of error to be 4%. With the above assumptions and adding a non-respondent rate of 10%, the total sample size was 337.

The study participants were selected by using systematic random sampling technique. The sampling interval was determined by dividing the total study population (major depressive disorder patients) who had monthly follow-up during the study period by the total sample size (682/337). The first study participant was selected by the lottery method from their order to follow up registration, and every other patient at the exit of the hospital was included in the study.

## Data Collection

The structured and pre-tested questionnaire was prepared first in English from peer-reviewed articles<sup>21,22</sup> and then translated into Amharic (national languages) by expertise. A necessary correction was done after the pretest. The included questionnaire comprised four sections; socio-

demographic characteristics, social support questions, suicidal ideation measuring tool, and ever substance used history. Data collectors were trained by principal investigators on how to use the questionnaire and the ethical principles of confidentiality before the actual data collection. The principal investigators control the overall events of the data collection.

Suicidal ideation was assessed using the suicidality module of the World Mental Health survey initiative version of the World Health Organization Composite International Diagnostic Interview tool which was validated in Ethiopia.<sup>23</sup> Social support was measured by the Oslo social support scale which is validated for measuring social functioning.<sup>20</sup>

## Data Analysis

Data were checked for completeness and inconsistencies. Epi-data version 3.1 was used for data entry and data were exported into SPSS version 21 for further analysis. Descriptive statistics were computed. Logistic regression analyses were done to identify the relationship between suicidal ideation and independent variables. Independent variables that had a significant association in the bivariate analysis were entered into the multivariable analysis. A significant association was declared at a  $p < 0.05$ . The results were presented in text and tables with adjusted odds ratio (AOR) and the corresponding 95% confidence interval.

## Ethical Considerations

Helsinki declaration for medical research involving human subjects was followed. Ethical approval was obtained from the research and an ethical review committee of Debre Berhan University. Written informed consent was obtained from each study participant. All the information obtained from the study participants were kept confidential throughout the process of study, and the name of the participant was replaced by code. Withdrawal from the study at any point if they wished was assured.

## Results

### Socio-Demographic Characteristics

A total of 337 patients with MDD were successfully interviewed. The mean age of the participants was 31.82 ( $\pm 10.14$ ) years. Fifty-five percent (55.5%) of respondents were female. Half (50.4%) of the study participants were Orthodox Christians and 27.6% were Muslim. The largest

proportions, (84%) of the participants were living alone and more than half of the respondents were single (52.2%). Concerning the occupation of the respondents, 20.5% of the respondents were daily laborers. Twenty-eight percent (28.5%) of respondents were had completed secondary education whereas 27.7% of study participants could not read and write. From the total of the study participants, 221 (65.6%) of them reported that poor social support (Table 1).

## Clinical Characteristics and Substance Use

Among the respondents majority of them were first episodes 178 (52.8%) and 192 (57.0%) were one up to 12

month since diagnosed. Among the respondents 37 (11.0%) have known physical illness. One hundred twenty nine (38.3%) study participants have ever use of substance and 115 (34.1%) have current use of substance use.

## Prevalence and Factors Associated with Suicidal Ideation

Alarmingly, the overall prevalence of suicidal ideation among patients with MDD were 163 (48.4%); of whom 120 (35.6%) of them reported suicidal ideation in the last 12 months. In addition, 133 (39.5%) of the respondents had ever planned to commit suicide. For fourteen percent of the study participants, the presence of family conflict was the reason for suicidal ideation (Table 2).

In the multivariable analysis, being a female, previous family history of suicide, and having poor social support

**Table 1** Socio-Demographic Characteristics of Major Depressive Disorder Patients at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia, 2019

Variables	Categories	Frequency	Percent
Age of the respondents	18–24	81	24.0
	25–34	150	44.5
	35–44	65	19.3
	>44	41	12.2
Sex of the respondents	Male	150	44.5
	Female	187	55.5
Marital status of the respondents	Married	103	30.6
	Single	176	52.2
	Divorced/	58	17.2
	widowed		
Religion of the respondents	Orthodox	170	50.4
	Muslim	93	27.6
	Protestant	61	18.1
	Catholic	13	3.9
Educational status of the respondents	Illiterate	92	27.3
	Primary	89	26.4
	Secondary	96	28.5
	College	60	17.8
Occupational status of the respondents	Day laborer	69	20.5
	Employee	56	16.6
	Merchant	57	16.9
	Student	45	13.4
	Housewife	38	11.3
	Others (have no jobs)	72	21.2
Living condition of the respondents	With family	54	16.0
	Alone	283	84.0
Estimated monthly income	<1653ETB	94	27.9
	>1653ETB	243	72.1

**Table 2** The Status of Suicidal Ideation Among MDD Patients at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia, 2019

Variables	Categories	Frequency	Percent
Ever seriously thought about committing suicide	Yes	163	48.4
	No	174	51.6
Duration of ever seriously thought	1–12	120	35.6
	>12	43	12.8
Ever planned for committing suicide	Yes	133	39.5
	No	30	8.9
Duration of ever made a plan for committing suicide	1–12	99	29.4
	>12	34	10.1
Reason for suicidal ideation	Family conflict	47	13.9
	Poverty	18	5.3
	Family death	18	5.3
	Financial loss	11	3.3
	Physical illness	10	3.0
	Others*	59	17.5
Perceived seriousness of suicidal ideation (n=163)	Serious	99	60.7
	Not serious	57	35.0
	For cry for help	7	4.3
Social support status of MDD patients	Poor	221	65.6
	Moderate	22	6.5
	Strong	94	27.9

**Note:** \*Feeling lonely, stress, unknown feeling at the time of ideation.

**Table 3** Factors Associated with Suicidal Ideation Among MDD Patients at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia, 2019

Variable	Category	Suicidal Ideation		COR 95% CI	AOR 95% CI
		Yes	No	COR	AOR
Sex of respondents	Female	104	83	1.9(1.25, 3.00)	2.4(1.40, 4.25)*
	Male	59	91	1	1
Previous family history of suicide	No	167	135	1.00	1.00
	Yes	7	28	4.9(2.10, 11.68)	3.2(1.26, 8.11)*
Status of social support	Poor	221	25	1.00	1.00
	Moderate	22	6	2.4(1.70, 18.33)	2.8(0.89, 9.11)
	Strong	94	134	4.3(2.50, 7.23)	4.2(2.29, 7.59)*
Ever used substance	No	122	86	1.00	1.00
	Yes	52	77	2.1(1.34, 3.29)	1.7(0.94, 3.05)
Having medical and physical illnesses	No	135	165	1.00	1.00
	Yes	28	9	0.27(1.74, 8.33)	0.45(0.23, 6.02)

Notes: 1=reference, \*p-value < 0.05.

were associated with suicidal ideation among patients with MDD. It was observed that females were 2 times more likely to have suicidal ideation than males (AOR 2.4, 95% CI=1.40–4.25). In addition, the odds of suicidal ideation were higher among MDD patients who had a previous family history of suicide (AOR 3.2, 95% CI=1.26, 8.11). On the other hand, suicidal ideation was higher among patients with MDD who had poor social support than those who had strong social support (AOR=4.2, 95% CI=2.29, 7.59) (Table 3).

## Discussions

This is one of the few studies that shed light on the prevalence of suicidal ideation and its associated factors among patients with MDD in Ethiopia, thereby helping health professionals and health services to tailor suitable treatment and prevention programs in this context. Alarming, the overall prevalence of suicidal ideation among patients with MDD was 48.4%. This figure was higher than the study conducted in Tanzania (26.9%),<sup>3</sup> and Singapore (43.6%).<sup>24</sup> On the other hand, it was also lower than a study done in Finland (58%).<sup>11</sup> This variation could be due to socioeconomic and time variation, the difference in the geographical area, and social support practices for MDD patients. Strong social support could reduce suicidal ideation by hiding feelings of sadness and prevent loss of interest in activities once enjoyed.<sup>25</sup>

In this analysis, associated factors of suicidal ideation among major depressive disorder patients were identified.

Our study found that females were 2 times more likely to have suicidal ideation than males. This is supported by previous studies.<sup>3,26</sup> The possible reason might be cyclical hormonal fluctuation that intensifies their stress response. Women are greater vulnerability to other psychosocial stressors.<sup>27</sup> There is also evidence that women's traditional family roles may lead to higher female suicide ideation.<sup>28</sup> A family history of suicide was one of the predicting variables for suicidal ideation. The odds of suicidal ideation were higher among MDD patients who had a previous family history of suicide. In agreement with our results, a family history of suicide has been reported as a factor for thinking of suicide in a study conducted in Hungary.<sup>29,30</sup> Family relations and connections could contribute to suicidal ideation, also feeling of hopelessness lead to a feeling of worthlessness and a dark future which might be the cause for suicidal ideation.

Another important finding of our study concerns about perceived social support of patients with major depressive disorder. Suicidal ideation was higher among patients with MDD who have poor social support than those who have strong social support. The previous study done in Ethiopia, in line with our result, revealed that poor social support was associated with suicidal ideation.<sup>31</sup> World Health Organization also reported that weak social ties and low support from friends or relatives have been significantly associated with suicidal ideation.<sup>32</sup> The reason might be poor social ties leads to the perceived stigma which again may result in suicidal thinking.



## Conclusions

In this study, the prevalence of suicidal ideation among major depressive disorder patients was relatively high. Being female, previous family history of suicide, and having poor perceived social support were associated with suicidal ideation among major depressive disorder patients. Hence, due attention should be given to the screening of suicidal ideation for all major depressive disorder patients for early diagnosis and treatment.

## Data Sharing Statement

The data used to support the findings of this study are included in this manuscript.

## Ethics Approval and Consent to Participate

Declaration of Helsinki for medical research involving human subjects was followed. Ethical clearance was obtained from the Ethical Review Committee of Debre Berhan University, College of Health Science. Permission was obtained from Amanuel Specialized Mental Hospital. Confidentiality and privacy of the information were assured and maintained by preventing disclosure of the information to other third parties.

## Consent for Publication

Not applicable

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no any competing interests.

## References

- Kaplan BJ. Kaplan and sadock's synopsis of psychiatry. Behavioral sciences/clinical psychiatry. *Tijdschr Psychiatr*. 2016;58(1):78–79.
- Al-Maani MA. Suicidal Ideation among Patients Suffering Depression. *Middle East J Psychiatry Alzheimers*. 2015;84(1696):1–3.
- Guedria-Tekari A, Missaoui S, Kalai W, Gaddour N, Gaha L. Suicidal ideation and suicide attempts among Tunisian adolescents: prevalence and associated factors. *Pan Afr Med J*. 2019;34. doi:10.11604/pamj.2019.34.105.19920
- Lee J-I, Lee M-B, Liao S-C, et al. Prevalence of suicidal ideation and associated risk factors in the general population. *J Formosan Med Assoc*. 2010;109(2):138–147. doi:10.1016/S0929-6646(10)60034-4
- Mekonnen D, Kebede Y. The prevalence of suicidal ideation and attempts among individuals attending an adult psychiatry out-patient clinic in Gondar, Ethiopia. *Afr Health Sci*. 2011;11(1):103–107.
- Bullock AG, Williams JV, Lavorato DH, Patten SB. The relationship between major depression and marital disruption is bidirectional. *Depress Anxiety*. 2009;26(12):1172–1177. doi:10.1002/da.20618
- Vuorilehto M, Valtonen H, Melartin T, Sokero P, Suominen K, Isometsä E. Method of assessment determines prevalence of suicidal ideation among patients with depression. *European Psychiatry*. 2014;29(6):338–344. doi:10.1016/j.eurpsy.2013.08.005
- Nordentoft M, Mortensen PB, Pedersen CB. Absolute risk of suicide after first hospital contact in mental disorder. *Arch Gen Psychiatry*. 2011;68(10):1058–1064. doi:10.1001/archgenpsychiatry.2011.113
- Trivedi MH, Morris DW, Wisniewski SR, et al. Clinical and socio-demographic characteristics associated with suicidal ideation in depressed outpatients. *Canadian J Psychiatry*. 2013;58(2):113–122. doi:10.1177/070674371305800209
- Bhattacharjee A, Deb S. Suicidal tendencies among depressive patients. *J Indian Acad Appl Psychology*. 2007;33(2):213–218.
- Sokero P. Suicidal ideation and attempt among psychiatric patients with major depressive disorder. 2006. Available from: <https://www.julkari.fi/bitstream/handle/10024/78764/2006a13.pdf;sequence=1>.
- Dunlop BW, Polychroniou PE, Rakofsky JJ, Nemeroff CB, Craighead WE, Mayberg HS. Suicidal ideation and other persisting symptoms after CBT or antidepressant medication treatment for major depressive disorder. *Psychol Med*. 2019;49(11):1869–1878. doi:10.1017/S0033291718002568
- Ben-Zeev D, Young MA, Depp CA. Real-time predictors of suicidal ideation: mobile assessment of hospitalized depressed patients. *Psychiatry Res*. 2012;197(1–2):55–59. doi:10.1016/j.psychres.2011.11.025
- Gensichen J, Teising A, König J, Gerlach FM, Petersen JJ. Predictors of suicidal ideation in depressive primary care patients. *J Affect Disord*. 2010;125(1–3):124–127. doi:10.1016/j.jad.2009.12.008

15. Banwari GH, Vankar GK, Parikh MN. Comparison of suicide attempts in schizophrenia and major depressive disorder: an exploratory study. *Asia-Pacific Psychiatry*. 2013;5(4):309–315. doi:10.1111/j.1758-5872.2012.00188.x
16. Holma KM, Haukka J, Suominen K, et al. Differences in incidence of suicide attempts between bipolar I and II disorders and major depressive disorder. *Bipolar Disord*. 2014;16(6):652–661. doi:10.1111/bdi.12195
17. Xin L-M, Chen L, Su Y-A, et al. Risk factors for recent suicide attempts in major depressive disorder patients in China: results from a National Study. *Front Psychiatry*. 2018;9:300. doi:10.3389/fpsy.2018.00300
18. Chellappa SL, Araújo JF. Sleep disorders and suicidal ideation in patients with depressive disorder. *Psychiatry Res*. 2007;153(2):131–136. doi:10.1016/j.psychres.2006.05.007
19. O'Donovan A, Rush G, Hoatam G, et al. Suicidal ideation is associated with elevated inflammation in patients with major depressive disorder. *Depress Anxiety*. 2013;30(4):307–314. doi:10.1002/da.22087
20. Abiola T, Udofia O, Zakari M. Psychometric properties of the 3-item oslo social support scale among clinical students of Bayero University Kano, Nigeria. *Malaysian J Psychiatry*. 2013;22(2):32–41.
21. Whittier AB, Gelaye B, Deyessa N, et al. Major depressive disorder and suicidal behavior among urban dwelling Ethiopian adult outpatients at a general hospital. *J Affect Disord*. 2016;197:58–65. doi:10.1016/j.jad.2016.02.052
22. Wonde M, Mulat H, Birhanu A, Biru A, Kassew T, Shumet S. The magnitude of suicidal ideation, attempts and associated factors of HIV positive youth attending ART follow ups at St. Paul's hospital Millennium Medical College and St. Peter's specialized hospital, Addis Ababa, Ethiopia, 2018. *PLoS One*. 2019;14(11):e0224371. doi:10.1371/journal.pone.0224371
23. Kessler RC, Üstün TB. The world mental health (WMH) survey initiative version of the world health organization (WHO) composite international diagnostic interview (CIDI). *Int J Methods Psychiatr Res*. 2004;13(2):93–121. doi:10.1002/mpr.168
24. Subramaniam M, Abidin E, Seow E, Picco L, Vaingankar JA, Chong SA. Suicidal ideation, suicidal plan and suicidal attempts among those with major depressive disorder. *Ann Acad Med Singapore*. 2014;43(8):412–421.
25. Nock MK, Borges G, Bromet EJ, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry*. 2008;192(2):98–105. doi:10.1192/bjp.bp.107.040113
26. Beyene A, Taddese M, Getachew Y, Kumara P, Birkie M. Suicidal Attempt and Associated Factors among Patients with Depressive Disorder Visiting Psychiatric Unit. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*. 7(1):62–66. doi:10.9790/1959-0701106266
27. Molla A, Mengesha A, Derajew H, Kerebih H. Suicidal ideation, attempt, and associated factors among patients with tuberculosis in Ethiopia: a cross-sectional study. *Psychiatry j*. 2019;2019:1–10. doi:10.1155/2019/4149806
28. Organization WH. *Scaling up mental health care: a framework for action*. World Health Organization. Regional Office for the Eastern Mediterranean; 2015.
29. Tóth MD, Ádám S, Zonda T, Birkás E, Purebl G. Risk factors for multiple suicide attempts among Roma in Hungary. *Transcult Psychiatry*. 2018;55(1):55–72. doi:10.1177/1363461517731703
30. Guintivano J, Brown T, Newcomer A, et al. Identification and replication of a combined epigenetic and genetic biomarker predicting suicide and suicidal behaviors. *Am j Psychiatry*. 2014;171(12):1287–1296. doi:10.1176/appi.ajp.2014.14010008
31. Hussien Z, Solomon H, Yohannis Z, Ahmed A. Prevalence and associated factors of suicidal ideation and attempt among people with schizophrenia at amanuel mental specialized hospital Addis Ababa, Ethiopia. *J Psychiatry*. 2015;18(1):184. doi:10.4172/psychiatry.1000184
32. McKinnon B, Gariépy G, Sentenac M, Elgar FJ. Adolescent suicidal behaviours in 32 low-and middle-income countries. *Bull World Health Organ*. 2016;94(5):340. doi:10.2471/BLT.15.163295

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