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# Socioeconomic status and psychiatric comorbidity associated with suicidal behavior among a sample of Egyptian patients who attended Tanta University emergency hospital for suicide-related problems

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## Abstract

**Background** Many studies found association between psychosocial factors and suicidal behavior; this association differs from one community to another, and this difference could affect the risk assessment and the management of suicidal behavior. The aim of this work was to evaluate the role of socioeconomic, cultural, and psychosocial profile including psychiatric comorbidity on individuals with suicidal behavior who attended Tanta University emergency hospital.

**Results** Family troubles were the commonest cause of suicidal behavior (28%), and drug overdose was the commonest method of attempt (38%). Positive correlation is between age and score of Beck scale for suicidal ideation ( $p = 0.000$ ) which indicates that suicidal ideation increases with age. Significant association is between psychiatric comorbidity and Beck's scale for suicidal ideation ( $p = 0.019$ ), with size of association ( $\eta = 0.58$ ).

Regression analysis showed that older age, female sex, illiterates, widows, cases with psychiatric illness, and low socioeconomic status when act altogether are the significant predictor of suicidal ideation of our studied sample.

**Conclusions** Our study demonstrated that studying psychosocial factors in individuals who came to emergency hospital of Tanta University could be a reflection of the community visiting this hospital asking for medical emergency service; the comprehensive and multifactorial assessment we have been adopted in this work could help in better understanding of the suicidal risk factors in this community and consequently help in part in tailoring the clinical service for this sector of patient.

**Keywords** Psychosocial profile, Suicidal behavior, Emergency, Psychiatric comorbidity

## Background

Recent reports of the World Health Organization showed that about 800,000 persons commit suicide annually, and more than that number attempt suicide. This made suicide the second leading cause of death in people aged 15–29 years old in 2016 [1].

Men are more common to commit suicide than women worldwide except for China where women have

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more suicidal rates; also, men mostly choose shooting, hanging, or jumping for suicide, while women mostly choose pharmaceutical agents [2].

Research found that the socioeconomic status has significant impact on increasing suicide rate regardless the economic status of the country. And this notion is supported by the increase in suicidal rates with the recent global economic recession [3].

High suicide rates were also related to cultures with less social integration and less social regulation level (in which the desires and behaviors of people are not regulated by rules and customs of the society). So, suicide was more in divorced, immigrated, alcohol drinkers, and less religious-committed people [4].

The failed suicide attempt is the significant risk factor for complete successful suicide. It is estimated that 10–15% of attempters die by suicide at the end [5]. A long-term follow-up study has found a relation between the suicide and coexisting psychiatric disorder. The authors found that the interval between the suicide ideation and complete suicide differs according to the disorder (the shortest is in depressive disorder). They also found that people with schizophrenia, bipolar or unipolar disorders who attempted suicide, complete suicide after a period of 1 year compared to 5 years for people without psychiatric disorders [6].

People with religious beliefs are more protected from suicide than those without religious affiliation, as they have moral ideas about suicide rejection and they are more connected to family and children [7].

Alcohol and substance use were found to increase the risk of suicide [8].

Physical or sexual abuse was also found to be a psychosocial risk factor for suicide, especially the sexual abuse [9].

Furthermore, an older Dutch cross-sectional study had revealed that sexual abuse increases the suicide rate by 5 times in women and 20 times in men [10].

Professional effective intervention for the patients with loss events and major depressive disorders was found to prevent suicidal behavior according to a study made by Cheng [11].

We hypothesized that sociodemographic, socioeconomic, cultural, and psychiatric comorbidity could contribute to suicidal behavior. The aim of this work was to evaluate the profile of sociodemographic, socioeconomic, cultural, and psychiatric comorbidity in individuals with suicidal behavior who attended Tanta University emergency hospital and the possible role of these variables in the suicidal behavior.

## Methods

This cross-sectional study was carried out on individuals who attended Tanta University emergency hospital for suicide-related problems (Tanta University emergency hospital is a hub for emergency cases that provides emergency medical care for all medical emergencies coming to Tanta University hospitals including those who come with psychiatric emergencies)].

## Sampling

The study targeted all patients who attended the emergency department for either medical or psychiatric reason and proved, after history and examination, that the emergency is related to a suicidal behavior (convenience sampling) in the period is from 1st of October 2019 to 30th of March 2020. Epi Info calculator software (<https://www.cdc.gov/epiinfo/mobile.html>) was used to calculate sample size based on the following:

1. An expected frequency of cases with suicidal behavior of 3% of all emergency case seeking medical care at Tanta University emergency hospital according to year 2016 hospital registry (personal communication)
2. Leaving the design effect to 1 and the confidence interval at 95%. According to this calculation, the number of valid cases was 45; we extended it to 50 cases for more reliable statistical analysis.

The study was done after approval from the Ethical Committee Tanta University. Oral consent was obtained from all the subjects of the study.

The selected group was subjected to sociodemographic, socioeconomic, and general psychiatric evaluations including assessment of suicidal behavior.

## Evaluation of socioeconomic status

Using the updated socioeconomic status scale for health research in Egypt, the Arabic version [12], this scale included 7 domains with a total score of 84 that included education and cultural domain, occupation domain, family possessions domain, family domain, home sanitation domain, economic domain, and healthcare domain. The scale is also divided into four levels calculated as follows: very low-level score < 25, low level score = 25–45, moderate level score = 46–65, and high-level score = 66–84.

## Psychiatric evaluation

In data collected by Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) clinical version [13],

we used Arabic version (El Missiry et al., 2003) [14] for data collection

#### Assessment of suicidal behavior using Beck scale for suicidal intention (BSS) [15]

The items of BSS were partly clinically derived and partly rationally derived. Systematic observations and interviews of suicidal patients yielded a list of salient pre-occupations, concerns and wishes, and thinking and behavioral patterns.

Those areas were then selected which seemed to reflect the spectrum of suicidal preoccupations most frequently observed in the patients' verbalizations and behaviors. Previously reported research studies yielded additional content areas.

Initially, it devised a 30-item scale, which was administered to 35 suicidal patients and then eliminated those items that were found to overlap other items, that were unwieldy, or that were difficult to score. Based on this selection process, the clarity and wording of the remaining items were improved and constructed on a 19-item scale.

Each item consists of three alternative statements graded in intensity from 0 to 2. The total score was computed by adding the individual item scores. Thus, the possible range of scores was 0–38. The items assess the extent of suicidal thoughts and their characteristics as well as the patient's attitude towards them; the extent of the wish to die, the desire to make an actual suicide attempt, and details of plans, if any; internal deterrents to an active attempt; and subjective feelings of control and/or "courage" regarding a proposed attempt. The BSS was completed by a clinician based on the patient's answers in a semi-structured interview. Depending on the psychiatric status of the patient as well as the degree to which he or she was articulated, the clinician has the option to follow different lines of inquiry. By employing this format, the clinician can elicit specific information needed to complete each item of the scale.

The scale was found to have a strong correlation with suicidal rates, and it also has a sensitivity to depression and hopelessness over time. Factor analysis revealed 3 important factors: active and passive suicidal desires and specific plans for suicide. We used the Arabic translation of the scale that was translated and validated by Alsalman and Alansari [16].

#### Statistical analysis

The SPSS v25 statistical analysis program was used (IBM Inc., Chicago, IL, USA). The mean and standard deviation (SD) of quantitative variables were reported, and they were compared for the same group using a paired Student's *t*-test. Qualitative variables were presented as

frequency and percentage (%). Spearman rank correlation coefficient (*r<sub>s</sub>*) was calculated to indicate strength and direction of association between two numerical variables; both were continuous but not normally distributed, or at least one of them was ordinal. A two-tailed *p*-value < 0.05 was considered significant. Regression analysis was done using general linear model analysis to test if sociodemographic, socioeconomic, and psychiatric morbidity (as independent variables) could predict BSS score (as dependent variable)

#### Results

The mean age of the participants was  $35.1 \pm 14.99$ , males represented 80%, of cases. The majority of the sample has general education (52%), and the unemployment was 74%, single and married cases equally (20%) and low socioeconomic status (72%). Comorbidity with depression represented 34% of the sample (Table 1).

Family troubles were the commonest cause of suicidal behavior (28%), and drug overdose was the commonest method of attempt (38%) (Table 2). There was a significant positive correlation between age and score of Beck scale for suicidal ideation ( $p = 0.000$ ) which indicates that suicidal ideation increases with age. Also, the results showed an association between the age and the immediate cause of current suicidal incident ( $p = 0.001$ ). Young person usually think of suicide after family troubles, gender dysphoria, or exposure to violent acts, while suicidal behavior in older persons was triggered by financial troubles, death of close person, anticipation of life failure, or hopelessness, and the size of association between age and suicidal behavior was significant ( $\eta = 0.74$ ) (Table 3). Significant association is between psychiatric comorbidity (as represented by SCID-I scale) and Beck's scale for suicidal ideation ( $p = 0.019$ ); the peak associations are shown with bipolar, psychosis, and depression mixed with anxiety domains. The size of association between psychiatric comorbidity and suicidal ideation is moderate ( $\eta = 0.58$ ) (Table 4).

Regression analysis is using general linear model analysis to test if sociodemographic, socioeconomic, and psychiatric morbidity (as independent variables) could predict the score of Beck scale for suicidal ideation (as dependent variable) (Table 5). The model showed ( $R^2 = 0.66$ ) which means that these independent variables when pooled together contribute with 66% effect size to score of BSS.

With regard to the contribution of each individual variable in the model, the analysis showed the following:

- The male sex predicted lower score of Beck scale for suicidal ideation than female sex.

**Table 1** Results of socioeconomic status and psychiatric comorbidity in the studied sample

Variables		<i>n</i> = 50
Age (mean ± SD)		35.1 ± 14.99
Sex [number (%)]	Male	10 (20.0%)
	Female	40 (80.0%)
Education [number (%)]	Illiterate	8 (16.0%)
	Read & write	2 (4.0%)
	General education	26 (52.0%)
	Above school education	14 (28.0%)
Occupation [number (%)]	Not working	37 (74.0%)
	Nonskilled workers	2 (4.0%)
	Skilled workers	5 (10.0%)
	Professional employee	6 (12.0%)
Marital status [number (%)]	Single	20 (40.0%)
	Married	20 (40.0%)
	Divorced	6 (12.0%)
	Widowed	4 (8.0%)
Score of updated socioeconomic scale (mean ± SD)	Education and cultural domain	11.40 ± 6.540
	Occupational domain	1.96 ± 2.070
	Economic domain	1.88 ± 0.961
	Home sanitation domain	8.24 ± 1.506
	Family domain	6.08 ± 1.904
	Family possessions domain	7.22 ± 2.053
	Healthcare domain	2.12 ± 0.328
Socioeconomic scale by levels [number (%)]	Very low	3 (6.0%)
	Low	36 (72.0%)
	Moderate	11 (22.0%)
SCID-I results [number (%)]	Clinical psychiatric symptoms	45 (90.0%)
	SCID-I scales scores	
	No psychiatric symptoms	5 (10.0%)
	Symptoms of depression	17 (34.0%)
	Symptoms of anxiety	1 (2.0%)
	Symptoms of psychosis	9 (18.0%)
	Symptoms of bipolar	3 (6.0%)
	Symptoms of substance use disorder	2 (4.0%)
	Symptoms of PTSD	1 (2.0%)
	Mixed symptoms of depression with psychosis	5 (10.0%)
	Mixed symptoms of depression with anxiety	7 (14.0%)

- Cases who just read and write were significantly predict lower score than illiterate. The other categories were excluded due to redundancy of the score.
- Nonskilled work predicted lower score than other jobs. However, this conclusion could not be reliable due to the small number and redundancy of cases.
- Widows were not predictor of lower score of Beck scale for suicidal ideation, while single, married, or divorce could.
- The absence of psychiatric morbidity was a predictor of low score ( $p = .005$ ).

## Discussion

This cross-sectional observational study demonstrated the association between psychosocial profiles including psychiatric comorbidity and suicidal behavior in a sample of cases and delivered medical and psychiatric care in the emergency hospital of Tanta University in Egypt. The results of this study will be discussed through the following items.

### Age and suicidal behavior

The results demonstrated significant positive correlation between age and score of BSS. The increasing

**Table 2** Suicidal behavior of the studied sample (N = 50)

<b>Causes of suicide [no. (%)]</b>	<b>Family troubles</b>	<b>14 (28.0%)</b>
	<b>Hopelessness</b>	<b>7 (14.0%)</b>
	<b>Feeling of failure</b>	<b>6 (12.0%)</b>
	<b>Financial trouble</b>	<b>6 (12.0%)</b>
	<b>Violence by husband</b>	<b>4 (8.0%)</b>
	<b>Death of a close person</b>	<b>4 (8.0%)</b>
	<b>Violence (not by family)</b>	<b>3 (6.0%)</b>
	<b>Romantic trouble</b>	<b>3 (6.0%)</b>
	<b>Physical illness</b>	<b>2 (4%)</b>
	<b>Not comfortable with gender</b>	<b>1 (2.0%)</b>
Methods of suicide [no. (%)]	Drug overdose	19 (38.0%)
	Self-poisoning	14 (28.0%)
	Wrist cutting	7 (14.0%)
	Self-burn	4 (8.0%)
	Drowning	3 (6.0%)
	Jumping from height	2 (4%)
	Electric shock	1 (2.0%)
BECK's scale score (mean ± SD)	14.6 ± 6.62	

responsibilities and negative life events with increased age could have impact on suicidal behavior in vulnerable persons. Events like financial difficulties (Zhon et al. [17]), being widowed (Lv et al. [18]), are examples of life events that represent risk factor in older individual. Anticipation of life failure or hopelessness was significantly associated with high score of BSS in our study; this finding was also reported in previous studies (Efstathiou et al. [19]), as they found that older age was associated with higher levels of hopelessness. In a study from Kuwait, Lotief et al. [20] found suicide attempts are more common at a young age, among women more than men. Financial problems, unemployment, mental illness comorbidity, and a past history of suicide are all predictive risk factors for suicide

**Gender and suicidal behavior**

Anticipation of failure was the most common cause associated with high score of BSS in males; Alston [21] found that men showed significantly higher rates of suicide attempts associated with failure to earn good income with consequent sense of burden of responsibilities or inability to achieve success; Al-Amin et al. [22] concluded that more expatriate single males are at risk to commit suicide in Qatar. In our study, gender dysphoria is shown to be a

**Table 3** Association between score of Beck's scale for suicidal ideation and psychosocial variables

	Variable	Score of Beck's scale for suicidal ideation					
		Correlation with age		ANOVA			
		<i>r</i>		<b>0.646</b>			
		<i>p</i>		<b>0.000</b>			
		Mean	SD	F	Df	<i>p</i>	Measure of association ( <i>η</i> )
Method of suicide	Self-poisoning	38.21	15.10	3.07	43.6	0.01	0.75
	Drug overdose	33.63	15.50				
	Wrist cutting	20.29	2.93				
	Self-burning	52.00	10.99				
	Drowning	43.00	2.65				
	Jumping from height	27.50	0.71				
	Electric shock	47.00	-				
Gender	Male	15.90	7.98	0.48	1.48	0.49	0.10
	Female	14.27	6.32				
Marital status	Single	10.35	5.61	8.13	3, 1, 46	0.00	0.59
	Married	16.60	5.02				
	Divorced	16.50	7.01				
	Widowed	23.00	5.23				
Occupation	Not working	14.51	6.48	2.82	3, 1, 2, 46	0.05	0.16
	Nonskilled worker	9.50	0.71				
	Skilled worker	21.20	6.06				
	Professional employee	11.33	5.65				

**Table 4** Shows association between SCID-I scale and Beck’s scale for suicidal ideation

SCID1	N	Mean	SD	F	df	p	η
No psychiatric symptoms	5	9.60	6.88	2.65	8.41	0.02	0.58
Anxiety	1	15.00					
Psychosis	9	19.44	4.33				
Bipolar symptoms	3	21.33	5.51				
Substance use disorder	2	11.50	0.71				
PTSD	1	11.00					
Depression	17	13.88	6.86				
Depression with psychosis	5	8.40	2.88				
Depression with anxiety	7	16.57	6.19				
Total	50	14.60	6.62				

**Table 5** Shows results of regression analysis to test the predictors of score of Beck’s scale of suicidal ideation

Independent variable		N	B	Std. error	t	Sig.	95% confidence interval	
							Lower bound	Upper bound
Intercept			45.34	13.13	3.45	<b>.002</b>	18.49	72.18
Age			0.273	0.122	2.23	<b>.034</b>	0.02	0.52
Total socioeconomic scale			−0.38	0.180	−2.10	<b>.044</b>	−0.75	−0.01
Gender	Male	10	−8.09	3.73	−2.17	<b>.039</b>	−15.72	−0.45
	Female	40	0a					
Education	Illiterate	8	−8.25	5.38	−1.53	0.14	−19.26	2.75
	Read and write	2	−25.29	10.27	−2.46	<b>0.02</b>	−46.29	−4.29
	General education	26	−1.57	2.45	−0.64	0.53	−6.57	3.43
	University	14	0a					
Occupation	Not working	37	−3.11	2.72	−1.14	0.26	−8.68	2.45
	Nonskilled worker	2	−16.48	5.16	−3.20	<b>0.00</b>	−27.05	−5.94
	Skilled worker	5	−3.17	3.75	−0.84	0.41	−10.84	4.51
	Professional employee	6	0a					
Marital status	Single	20	−16.79	6.51	−2.58	<b>0.02</b>	−30.11	−3.47
	Married	20	−11.74	4.96	−2.37	<b>0.03</b>	−21.87	−1.60
	Divorced	6	−16.40	7.06	−2.32	<b>0.03</b>	−30.83	−1.97
	Widowed	4	0a					
SCID-1	No psychiatric symptoms	5	−9.68	3.21	−3.02	<b>0.01</b>	−16.24	−3.12
	Depression	17	−5.40	2.52	−2.14	<b>0.04</b>	−10.56	−0.24
	Anxiety	1	−1.56	4.72	−0.33	0.74	−11.22	8.09
	Psychosis	9	−1.25	3.08	−0.41	0.69	−7.54	5.05
	Bipolar	3	−2.28	3.33	−0.69	0.50	−9.08	4.53
	Substance use disorder	2	−6.70	3.91	−1.71	0.10	−14.70	1.30
	PTSD	1	−11.85	5.14	−2.31	<b>0.03</b>	−22.36	−1.34
	Depression with psychosis	5	−7.61	3.36	−2.26	<b>0.03</b>	−14.48	−0.73
Depression with anxiety	7	0a						

<sup>a</sup> This parameter was set to zero because it was redundant. Dependent variable, score of Beck scale for suicide ideation, R-squared = 0.796 (adjusted R-squared = 0.66), P < 0.05 was significant

factor associated with high score of BSS in men. García et al. [23] reported association between suicidal ideation in males with gender dysphoria. Moreover, Toomey et al.

[24] found that suicidal ideation in transgender females is more (17.6%) than transgender males (9.8%). In our study, gender dysphoria was the 2nd most associated

risk. Dickey et al. [25] found that transgender youth were at greater risk for suicide attempts and self-injurious behaviors as compared to their cisgender peers. Regarding the association between gender and method of suicidal attempt in our study, 38% of the cases used drug overdose, and 28% used poisoning as a method of suicide. Memari et al. [26] found that 82.8% of suicidal attempts in women cases used medications (tablets) for suicide. Finkelstein et al. [5, 27] as they found intentional drug overdose and female sex were associated with suicidal attempts. On the other hand, jumping from height and electric shock were the commonly used methods for males. Hepp et al. [28] stated that jumping from heights was over-represented in young males.

### **Culture and suicidal behavior**

In our study, we found the score of BSS could be reflected on the method of suicide in which high score is associated with self-burning drawing, electric shock, and self-poisoning, while the lower score is associated with wrist cutting and jumping. Gunnell et al. [29] stated that self-poisoning by ingestion of pesticides was recorded in different regions. However, they found that a larger number was recorded in Africa, especially in the agricultural rural regions, and also in the Eastern Mediterranean countries. In contrast to our results, Lalwani et al. [30] found that the commonest method used for committing suicide was hanging (57%) in India, which could be attributed to the cultural differences. Cho et al. [31] found that most of the patients who had cut their wrists repeatedly were mainly young. Li et al. [18] in their study on the elderly in China found that drowning in rivers or wells (3.2–14.3%) was one of the most reported suicidal methods, and that was also reported in India. In our study, we found that those who used violent methods (drowning and burning) were mainly old females with mental illness, particularly psychosis. These finding should be regarded cautiously because it could be affected by small sample size and cultural differences; for example, Shojaei et al. [32] revealed that younger individuals most frequently adopt a highly violent method like firearms, while older persons more often use hanging and poisoning, which were considered less violent.

### **Marital status and suicidal behavior**

Our study revealed association between marital status and suicidal behavior. Kposowa [33] stated that marital status has a strong net effect on mortality from suicide. Family troubles were the commonest cause in single status cases. Yu et al. [34] reported similar results as they found association between single status and family-related stressful life events in suicidal cases. Regarding married women, we found anticipation of marital

failure is the most common factor associated with suicidal behavior; this could be because of their inability to fulfill the cultural model of marital perfectionism. Webster Rudmin et al. [35] found that married women in developing countries whose social culture emphasizes collectivism and inequalities were more prone to commit suicide.

Unlike our results, Memari et al. [26] results for causes of suicide in married women were as follows: 37.4% had been forced to marry, 50.5% had feared of their husband, 67.7% had experienced their husband's violence, and 74.7% did not find any supportive sources in the society. In our study, the death of a close person and financial troubles were the only causes associated with widowed cases. Luoma and Pearson [36] reported an increased rate of suicidal behavior among young widowed white women after spouse death, compared with their married counterparts.

In this study, a significant association is between marital status and the methods of suicide. Wrist cutting was the commonest method associated with single cases. Clendenin and Murphy [37] stated that wrist cutters were significantly younger and more often single.

We found that drug overdose was associated with married cases; Janghorbani and Sharifirad [38] stated that drug overdose was the predominant method of suicide attempts among married people compared to those who never married.

Divorced cases were associated with self-poisoning, and widows were associated with self-poisoning and drug overdose. That was similar to the findings of Carter et al. [39], who found that most cases of attempted intentional self-poisoning, in their study, were among divorced people.

### **Role of the family in suicidal behavior**

In our sample, the commonest provoking cause of attempted suicide was family trouble (28%). Memari et al. [26] also found that family violence and marital conflict were the most important etiology of suicide in women. The absence of family stability and support in countries, in cultures that the family cohesiveness and family support, works as shelter and shield against life stressors could explain these findings. In this case, the family becomes the source of stress and pressure on those attempters. In studying the association between the score of BSS and the cause of suicidal behavior, we found that family troubles, financial troubles, and violence by the husband were associated with high score of BSS in women; these findings were previously reported by Vijayakumar [40], who stated that wife abuse was one of the most significant precipitants of female suicide.

### Occupation and socioeconomic status

In the current study, we found a significant association between occupation and suicidal behavior. Gallagher et al. [41] found that occupation influenced suicide rates. We found a significant association between suicidal causes and occupation. Unemployed cases were associated with family troubles, financial troubles, and hopelessness. This is going with Gilchrist et al. [42] who found that the two most common causes of suicide in unemployed cases in their study were family problems and general stress. Also, poverty, money or financial problems, depression, and feelings of uselessness were detected as causes of suicide.

### Socioeconomic status and suicidal behavior

In our study, the correlation between socioeconomic scale and Beck's scale for suicidal ideation was negative but nonsignificant except for the very low socioeconomic level showed a higher association with suicidal ideation.

This finding was coping with Shojaei et al. [32], who stated that analyses at the community level are more likely to show significantly lower rates of suicide among higher socioeconomic areas, and measures of area poverty and deprivation were most likely to be associated with significant suicide rates.

In the current study, we found a significant correlation between socioeconomic levels and methods of suicide. The low socioeconomic level was associated mostly with self-poisoning, drug overdose, and self-burning.

### Psychiatric morbidity and suicidal behavior

Our results showed that 90% of the sample had clinical psychiatric symptoms as follows: psychiatric symptom of depression (34%) followed by psychotic symptoms (18%). Borges et al. [43] founded that two-thirds of all people who make a suicide attempt reported having a prior psychiatric disorder. This could be due to the hopelessness and loss of interest in life that accompany depression, pushing those patients to end their hopeless life. On the other hand, Page et al. [44] found that in suicide attempts, there were males anxiety disorders (28%), followed by substance use (25%) and affective disorders (14%), while in females, anxiety disorders (36%), followed by personality disorders (24%) and affective disorders 23%. We found a significant association between psychiatric disorders and suicidal behavior. The most common associations were with bipolar disorder, psychosis, and depression mixed with anxiety. Consistent with our results, Ribeiro et al. [45] stated that some psychiatric disorders (especially depression and bipolar disorder) were strong risk factors for suicide.

Regarding immediate causes of suicide and psychiatric disorders, we found a significant association. Depression associated the most with family troubles, death of a close person, romantic troubles, and physical illness, which was agreed by Sher et al. [46], who stated that affective disorders and suicide cause chronic physical illness particularly involving the brain, marital isolation, hopelessness, and interpersonal losses or conflicts. In this study, mixed depression and anxiety were associated with domestic violence exposure. This is similar to the findings of Pico-Alfonso et al. [47] that women exposed to physical/psychological domestic violence had a higher incidence and severity of depressive and anxiety symptoms, post-traumatic stress disorder (PTSD), and thoughts of suicide than control women.

We also found that psychosis was associated the most with hopelessness, which was consistent with Nordentoft et al. [48] who found that during the 1-year follow-up period among patients with first-episode psychosis, 11% attempted suicide. This was associated with the female gender and hopelessness.

We found psychosis to be associated with self-burning, drowning, and electric shock. Gauthier et al. [49] found that most of the cases who committed self-burning suffered from a psychotic disorder or schizophrenia. We also found depression with psychosis to be associated with jumping from a height. Loh et al. [50] found the same in their study about Singaporeans who committed suicide by jumping from a height, and that each age group was diagnosed with depressive disorders, and psychosis was diagnosed in 20–45.9% of the older 2 groups.

Finally, regression analysis showed that older age, female sex, illiterates, widows, cases with psychiatric illness, and low socioeconomic status when act altogether are the significant predictor of suicidal ideation of our studied sample. Similar findings were concluded by previous studies; for example, YEN et al. [51] found that suicidal ideation was more prevalent in those who were females, nonbelievers, unemployed, widowed, from a low-income family, and with depressive disorder.

### Conclusion

Our study demonstrated that in studying the trend of psychosocial factors in individuals who came to emergency hospital of Tanta University which could be a reflection of the community visiting this hospital asking for medical emergency service, the comprehensive and multifactorial assessment we have been adopted in this work could help in better understanding of the suicidal risk factors in this community and consequently help in part in tailoring the clinical service for this sector of patient.

Like any research work, the study has real limitations among this limitation, the small number of cases in the study, the observational nature of the study, and last but not least the fear and shame of the stigma of suicide makes significant number of cases with suicidal behavior seeks their medical consultations in private hospital and private clinic and even hides the suicidal nature of their problem. Efforts to overcome these limitations are through replication of similar studies on larger samples and controlled randomization, in addition to intensifying the public awareness of the suicidal risk. In this regard, Abuzaid et al. [52] stressed the need of implementation of prevention and management approaches that consider the complexity of the phenomena of suicidal behaviors among youth; these approaches target the youths themselves (mental health promotion and strategies for coping with stress) and the population (careful media coverage, limit access to suicidal methods, and raise the awareness about mental illness.

#### Abbreviations

BSS	Beck scale for suicide ideation
ICD	<i>International Classification of Diseases</i>
PTSD	<i>Post-traumatic stress disorder</i>
SCID-I	Structured Clinical Interview for DSM-IV Axis I
SD	Standard deviation

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#### Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by HE and FA. The first draft of the manuscript was written by ME and AM, and all authors commented on previous versions of the manuscript. The authors read and approved the final manuscript.

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#### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### Declarations

##### Ethics approval and consent to participate

This study was approved by the Research Ethics Committee of the Faculty of Medicine at Tanta in Egypt. Written informed consent was signed by all patients who participated in this study.

##### Consent for publication

All patients included in this research gave written informed consent to publish the data contained within this study. If the patient was less than 16 years old, deceased, or unconscious when consent for publication was requested, written informed consent for the publication of this data was given by their parent or legal guardian.

##### Competing interests

The authors declare that they have no competing interests.

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