

## Risk Factors Associated with Suicidality in Erbil City

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### ABSTRACT

**Background and Objectives:** Suicide is an intentional attempt to end someone's life that results in death. Suicidality comprises suicidal thoughts, plans, and actions. Knowing the risk factors associated with suicide may help in its reduction. The study's aims were to ascertain the sociodemographic characteristics of suicidal patients and suicidality-associated risk factors.

**Methods:** A retrospective case-control study recruited 60 participants aged between 18 and 53 years within eight months. Sociodemographic characteristics, risk factors associated with suicide attempts among the studied samples such as personal, maltreatment during childhood, community-associated risk factors, and suicide methods used. The data was analyzed through binary logistic regression.

**Results:** In total, there were (26.6%) cases in the age group 18-29; the majority of the recruits were female (38.3%); most of the participants had a university degree (23.33%), and (26.6%) had never married. Regarding their occupational status, most of the patients had paid work, and populated urban areas. Among positive suicide cases, (89.3%) had experienced previous suicide attempts, mental illness; such as depression, was present in (57.1%). About 50% (of the suicidal participants experienced physical abuse and maltreatment during childhood. Binary logistic regression analysis showed that previous suicide attempts, mental illnesses such as depression, job problems or loss, and barriers to health care access  $P$ -value < 0.040, 0.008, 0.023, 0.043 had a highly significant association with suicide.

**Conclusions:** There was no association between the sociodemographic characteristics of suicidal and non-suicidal individuals. Individuals with associated characteristics, such as a history of repeated suicide attempts and generalized anxiety disorders, require special consideration. Mental illnesses, such as depression, job loss or problems, a previous suicide attempt, and barriers to health care were the highest risk factors.

**Key words:** Suicidality; Suicidal Attempt; Risk Factors; Suicidal Ideation.

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## INTRODUCTION

Suicidality is the umbrella word for suicidal ideation, plans, and actions (SI, SP, and SA) (1). According to Posner et al. (2007), SI stands for "thoughts or wishes about terminating one's own life," SP for "making preparations to end one's own life" (2), and SA for "taking acts to terminate one's own life" (3). Suicide has elevated to a global health concern in the twenty-first century. Over 700,000 people take their own lives each year, according to estimates from the World Health Organization (WHO) (4). Regarding the age, gender, and socioeconomic condition of the people, differences exist between areas and nations. The most popular methods of suicide include hanging, self-poisoning with drugs and pesticides, and using weapons. Most suicides globally are caused by psychiatric disorders (4). In Korea, the most common suicide techniques varied between those who attempted suicide and those who succeeded, the most common means of suicide completion was hanging, whereas the most common way of suicide attempt was drug poisoning, and it was determined that drug poisoning, stabbing, and other chemical poisoning were less fatal than other suicide techniques (5). The suicide rate in Iran varies between 2.2 and 19.53 per 100,000 individuals, with an average of 5.3 per 100,000. Men commit suicide more frequently than women (6). The most common method of suicide in Iran is hanging, followed by drug overdose (7). At an estimated 1.7 per 100,000 individuals, Iraq's suicide rate is still far lower than that of Western countries. The most common methods of suicide are poisoning, burning, hanging, and using weapons. Although suicide and suicidality are likely underreported, they are on the rise in Iraq. Suicidal ideation, attempts, and behavior can be influenced by several demographic, psychological, and environmental factors (8). The

effects of various sociodemographic factors on suicide have been examined in a few studies (9). Generally, suicide deaths are more common in older males, but suicide attempts are more frequently reported in women (10). In adolescents, depression is considered a significant risk factor for suicidality. For instance, one study (11, 12) indicated that depression is linked to a fivefold increased risk for suicidal attempts (SA), even after adjusting for gender, age, race, and socioeconomic level. Anxiety is a risk factor associated with suicide (3). According to Frey et al. (2023), there were over 47,000 suicide deaths in the United States in 2019, with over 37,000 of those suicides occurring among people of working age 16–64 years (13).

(SI) suicidal ideation

(SP) suicidal planning

(SA) suicidal attempt

The study was done by Amin and Malhasian in 2019 revealed that the prevalence of suicide in Erbil was 3.96 per 100,000 in the years from 2015-2016, while in Kurdistan overall it was 3.83 per 100,000. They stated that the total number of deaths due to unnatural causes of homicide and suicide was 1888 in the years 2015-2017, and suicide consisted of 43% of these deaths, which makes it one of the leading causes of unnatural deaths (14).

This study acknowledges the possibility of generalizability limitations beyond Erbil City and sensitivity-related challenges such as underreporting and recall biases, and the possibility of underexplored relevant factors. Future research could expand the study's scope to include multiple locations, utilize diverse data sources, and facilitate collaboration among researchers, mental health professionals, and policymakers to resolve these disparities. Filling in these gaps will contribute to our understanding

of suicidality, provide direction for interventions, and support efforts to reduce suicide rates and promote mental health in Erbil City and beyond. The aim of this study is to investigate the demographics of suicidality in Erbil City and to identify the complex risk factors associated with an increased likelihood of suicide attempts. By examining the interplay of variables such as age, gender, socioeconomic status, mental health conditions, social isolation, adverse life events, and access to mental health services. Additionally, the study aims to shed light on the intricate dynamics underlying suicidal behavior. The findings will inform targeted prevention strategies, early intervention programs, and individualized mental health services in Erbil City to alleviate the burden of suicidality and promote overall mental health.

## METHODS

The present study was a retrospective case-control study that recruited 60 participants aged between 18 and 53. Informed consent was obtained from all the participants. The tool is a standard questionnaire, and the method is a direct questionnaire (face to face), which was filled out by the researcher and designed by the authors of the study on sociodemographic characteristics such as age, sex, level of education, marital status, occupational status, residency area, and socioeconomic status, which was known by giving them a questionnaire and then asking the participants orally, and risk factors associated with suicide attempts among the studied samples, such as personal maltreatment during childhood, community-associated risk factors, and suicide methods used. It has been attempted to incorporate all the characteristics identified in the literature as potential risk factors for suicidality into the questionnaire. The time frame for this study was eight months. Upon receiving the surveys,

the participants were notified that they were allowed to get expert assistance. The research followed the most recent version of the Declaration of Helsinki (the Declaration of Helsinki is a fundamental document establishing principles for conducting scientific research involving humans). Following the World Medical Association (WMA) published the first version of the declaration in 1964 (15), and the study received ethics approval from the Human Research Ethics Committee at the Hawler Medical University/ College of Nursing. Inclusion criteria included agreement to be the subject of the study, good personal communication, age  $\geq 18$  years, both sexes, and people with previous suicide attempts whereas the exclusion criteria were being children, nonverbal communication patients, anybody who refused participation, psychosis and substance abuse. The questionnaire of this study includes sociodemographic characteristics of the patients, risk factors associated with suicidality among the studied samples, Methods of suicide attempts that the study sample used, Assessment of the level of suicide risk (Colombia Suicide Severity Risk Scale). The sociodemographic characteristics included age group, sex, level of education, marital status, occupational status, and residency area (Appendix N 1). Risk factors associated with suicidality among the studied samples were used to determine the risk factors associated with suicide. It is a tool of three questions that each of them has specific questionnaires and the main questions are about (personal, abuse, maltreatment during childhood, and community). The higher the numbers of cases associated with suicide, the worse the condition is (Appendix N 2). The methods of suicide attempts that the study sample used as a tool comprised a set of nine questionnaires, whereas respondents provided

responses of "YES" or "NO" to assess their engagement with specific methods associated with suicidal attempts (Appendix N 3). Assessment of the level of suicide risk (C-SSRS) was used to determine the level of suicidal risk. This tool comprised a set of eight questionnaires, whereas respondents provided responses of "YES" or "NO". A positive C-SSRS is a "YES" response to items 3, 4, 5 and 8. This tool has been used in many research studies with good reliability and validity (16) (Appendix N 4).

Regarding validity and reliability, the questionnaire used in this study was in the Kurdish language. Firstly, the English version of this questionnaire, which had good reliability and validity, was translated into the Kurdish language. Then, for the validity and reliability of the Kurdish version, it was given to 10 professors. Moreover, two questionnaire tools were used (risk factors associated with suicidality among the studied samples, methods of suicide attempts that the study sample used, and assessment of the level of suicide risk (Colombia Suicide Severity Risk Scale)), and they have been used in many research studies with good validity and reliability (16).

- The official approval and licenses were obtained from the general director of health/ Kurdistan Region Governorate (KRG).
- The letter of the introduction and the permission obtained to enter the research environment.
- The aims of the study for all units were explained for all participants.
- The freedom of the participants to participate in the study or to leave was considered.
- Oral informed consent from the participants to participate in the study was taken.
- Observing the principle of confidentiality of the information of the participants and using the code instead of the names of the

participants in the questionnaire.

- The official permissions were obtained from the ethics committee at the School of Nursing /Hawler Medical University on 7/10/2021 the code number is ;137

There was not any barrier or limitation in the study. Data are summarized and reported with the Statistical Package for Social Sciences (SPSS Version 25.0) were used for data analysis. Descriptive statistical analysis (frequency and percentage) and inferential statistical analysis of Binary Logistic Regression (BLR) were used to know the risk factors associated with suicide. By utilizing BLR, the study aimed to create a predictive model, accounting for various categorical and continuous variables, to determine the relative importance and contribution of each risk factor in predicting suicidality in the population under study. A P-value was considered significant at the level of  $P \leq 0.05$

## RESULTS

Of the 60 cases, there were 16 males and 44 females. The subjects were divided into suicidal  $n= 32$  and non-suicidal  $n=28$  groups. Among the suicidal group, 82.1% were female, and 17.9% were male. Further details are presented in table (1). There was no significant difference between different age groups, male and female, level of education, marital status, occupational status and residency area of the suicidal and non-suicidal groups. A total of 64.2% controls, and 50% cases in the age group 18-29, more than half of the study samples were females 75% controls, and 71.8% cases, most of the participants had university degrees 75% controls, and 43.7% cases, 60.7% controls, 50% cases had never married. Regarding their occupational status, 50% control, 31.2% cases had paid work, and  $n=29$  control,  $n=22$  cases inhabited urban areas. \*Not a comparable group and the sample size is small.

(As for the sample size, we highly appreciate the comment but we chose 60 because of the limited cases that we get in this society because there are not a lot of cases who can truly say that they had

planned or suicidal thoughts). Furthermore, the time was so limited that getting a high number of cases was impossible in that determined time)

**Table 1:** Socio demographic characteristics of the studied samples

Sociodemographic Characteristics	Suicidal Groups		P-Value		
	Negative (n=32)			Positive (n=28)	
	F.	(%)		F.	(%)
<b>Age Group (years)</b>					
18-29	18	(56.3)	16	(57.1)	<b>0.882</b>
30-41	8	(25)	8	(28.6)	
42-53	6	(18.7)	4	(14.3)	
<b>Sex</b>					
Male	11	(34.4)	5	(17.9)	<b>0.149</b>
Female	21	(65.6)	23	(82.1)	
<b>Level of Education</b>					
Cannot read and write	2	(6.3)	6	(21.4)	<b>0.143</b>
Can read and write	2	(6.3)	5	(17.8)	
Primary school graduated	0	(0)	1	(3.6)	
Secondary school graduated	3	(9.4)	1	(3.6)	
High school graduated	4	(12.5)	1	(3.6)	
Under-graduated	21	(65.5)	14	(50)	
<b>Marital Status</b>					
Never married	17	(53.1)	16	(57.1)	<b>0.400</b>
Married	13	(40.6)	11	(39.3)	
Divorced	2	(6.3)	1	(3.6)	
<b>Occupational Status</b>					
Paid work	14	(43.8)	10	(35.7)	<b>0.729</b>
Self-employed (own business or farming)	7	(21.9)	6	(21.4)	
Non-paid work (volunteer or charity)	1	(3.1)	1	(3.6)	
Student	3	(9.4)	2	(7.1)	
Keeping house/homemaker	4	(12.5)	6	(21.4)	
Retired	1	(3.1)	0	(0)	
Unemployed (health reason)	0	(0)	2	(7.1)	
Unemployed (other reason)	2	(6.3)	1	(3.6)	
<b>Residency Area</b>					
Urban	29	(90.6)	22	(78.6)	<b>0.286</b>
Rural	1	(3.1)	4	(14.3)	
Suburban	2	(6.3)	2	(7.1)	

The job has been classified according to (WHO).



Table (2) presents the risk factors associated with suicide attempts among the studied samples. Among positive suicide cases, 89.3% had experienced previous suicide attempts, while mental illness, such as depression, was present in 57.1%. About 50% of the suicidal participants experienced

physical abuse and maltreatment during childhood. Other risk factors associated with suicide among suicidal participants were easy access to lethal means such as firearms or medications, as well as unsafe media portrayals of suicide, which occurred in 64.3%, and 67.9%.

**Table 2:** Risk factors associated with suicidality among the studied samples

Risk factors associated with suicide attempts among the study sample	Suicidal Groups			
	Negative (n=32)		Positive (n=28)	
	No F. (%)	Yes F. (%)	No F. (%)	Yes F. (%)
<b>Personal:</b>				
Previous suicide attempt	12 (37.5)	20 (62.5)	3 (10.7)	25 (89.3)
Mental illness, such as depression	25 (78.1)	7 (21.9)	12 (42.9)	16 (57.1)
Social isolation	22 (68.8)	10 (31.3)	13 (46.4)	15 (53.6)
Criminal problems	29 (90.6)	3 (9.4)	28 (100)	0 (0)
Financial problems	21 (65.6)	11 (34.4)	15 (53.6)	13 (46.4)
Impulsive or aggressive tendencies	22 (68.8)	10 (31.3)	24 (85.7)	4 (14.3)
Job problems or loss	22 (68.8)	10 (31.3)	22 (78.6)	6 (21.4)
Legal problems	28 (87.5)	4 (12.5)	27 (96.4)	1 (3.6)
Serious illness	30 (93.8)	2 (6.3)	28 (100)	0 (0)
Substance use disorder	29 (90.6)	3 (9.4)	24 (85.7)	4 (14.3)
<b>Abuse maltreatment during childhood like:</b>				
Emotional	27 (84.4)	5 (15.6)	22 (78.6)	6 (21.4)
Physical	24 (75)	8 (25)	14 (50)	14 (50)
Sexual	30 (93.8)	2 (6.3)	26 (92.9)	2 (7.1)
Bullying	24 (75)	8 (25)	19 (67.9)	9 (32.1)
Family history of suicide	28 (87.5)	4 (12.5)	23 (82.1)	5 (17.9)
Relationship problems such as a break-up, violence, or loss	24 (75)	8 (25)	23 (82.1)	5 (17.9)
Sexual violence	32 (100)	0 (0)	28 (100)	0 (0)
<b>Community:</b>				
Barriers to health care access	29 (90.6)	3 (9.4)	18 (64.3)	10 (35.7)
Cultural and religious beliefs such as a belief that suicide is good of a personal problem	26 (81.3)	6 (18.8)	21 (75)	7 (25)
Stigma associated with mental illness or help-seeking	25 (78.1)	7 (21.9)	20 (71.4)	8 (28.6)
Easy access to lethal means such as firearms or medications	14 (43.8)	18 (56.3)	10 (35.7)	18 (64.3)
Unsafe media portrayals of suicide	17 (53.1)	15 (46.9)	9 (32.1)	19 (67.9)
Someone in the community encourage for suicide	29 (90.6)	3 (9.4)	24 (85.7)	4 (14.3)

Binary logistic regression analysis for the risk factors associated with suicidal thoughts and ideas was performed to identify risk factors of suicidality. Eighteen covariates were selected as shown in table (3). Of these, having previous suicide

attempts, mental illness such as depression, job problems or loss, and barriers to health care access P-value <0.040, 0.008, 0.023, 0.043 were highly significant and considered as main risk factors for suicidality.

**Table 3:** Binary Logistic Regression analysis of risk factors associated with suicidal thoughts and ideas

Risk factors	B	S.E.	Wald	df	P-value	Odds Ratio	95% C.I.	
							Lower	Upper
Previous suicide attempt	3.232	1.575	4.211	1	0.040	25.330	1.156	555.022
Mental illness, such as depression	4.609	1.737	7.043	1	0.008	100.394	3.337	3020.004
Social isolation	0.147	1.298	0.013	1	0.910	1.158	0.091	14.760
Criminal problems	-17.062	19839.3	< 0.001	1	0.999	< 0.001	< 0.001	
Financial problems	0.044	1.316	0.001	1	0.973	1.045	0.079	13.801
Impulsive or aggressive tendencies	-2.451	1.622	2.283	1	0.131	0.086	0.004	2.071
Job problems or loss	-5.991	2.640	5.150	1	0.023	0.003	< 0.001	0.442
Legal problems	-3.608	7.356	0.241	1	0.624	0.027	0.000	49491.93
Serious illness	-24.416	26836.6	< 0.001	1	0.999	< 0.001	< 0.001	
Substance use disorder	-2.680	2.095	1.637	1	0.201	0.069	0.001	4.163
Barriers to health care access	1.525	2.226	0.469	1	0.493	4.593	0.059	360.249
Cultural and religious beliefs such as a belief that suicide is good of a personal problem	1.855	1.949	0.906	1	0.341	6.393	0.140	291.614
Stigma associated with mental illness or help-seeking	-0.424	1.525	0.077	1	0.781	0.655	0.033	13.017
Easy access to lethal means such as firearms or medications	-2.725	1.521	3.210	1	0.073	0.066	0.003	1.292
Unsafe media portrayals of suicide	0.807	1.299	0.386	1	0.534	2.242	0.176	28.605
Someone in the community encourage for suicide	1.366	1.638	0.696	1	0.404	3.920	0.158	97.111
Barriers to health care access	4.880	2.416	4.079	1	0.043	131.69	1.155	15008.75
Constant	-2.435	1.451	2.816	1	0.093	0.088		

## DISCUSSION

Despite the fact that suicide is a complex human behavior, a variety of socio-demographic characteristics have been linked to a higher risk of suicidal behavior in various social and cultural contexts (17). Regarding the sociodemographic characteristics of the participants of the present study, there were no significant differences  $P\text{-value} > 0.05$  between different age groups, male and female, level of education, marital status, as well as occupational status and residency area of the suicidal and non-suicidal groups. These findings concur with those of a separate study conducted in Erbil City, Iraqi Kurdistan, in which the level of suicide ideation was not significantly correlated with nearly all sociodemographic factors  $P\text{-value} > 0.05$  (18). Drawing upon these findings, it can be inferred that socio-demographic characteristics alone may not be strong predictors of suicidality in the context of Erbil City. The current results were also in concordance with the results of Jha et al., (2023), in their study also, there were no significant relationships between being unmarried or low family income and suicide (19). This suggests that factors beyond sociodemographic, such as psychological, cultural, and social factors, might play a more prominent role in contributing to suicidality in this population. This is consistent with the findings of a similar study from Iran (20) in which younger subjects account for a greater proportion of suicide cases. Their results also showed that almost all the sociodemographic characteristics were non-significantly associated with suicide ideation  $P\text{-value} > 0.05$ . This study's findings, together with those from the current literature, highlight the need for gaining a deeper appreciation for the complexity of suicidality and the

many factors that contribute to it. It emphasizes the need to delve further into the phenomena by investigating risk variables outside sociodemographic, such as mental health, access to mental health treatments, cultural attitudes, and social support networks. The type of society and culture of the studied sample in my research would be the society and culture of Erbil City itself. The studied sample refers to the individuals or participants from Erbil City who was included in my study. Therefore, the focus is on understanding the risk factors associated with suicidality within the specific societal and cultural context of Erbil City and the individuals comprising the studied sample from that population.

In this investigation, the constructed binary logistic regression models determined the risk factors associated with suicidality. Almost three-fifths of percentage of suicide cases aged from eighteen to twenty-nine. This is in line with the findings of a related Iranian study (20) which found that suicide rates are higher among younger subjects. These results suggest that younger age groups may be more vulnerable to suicide, potentially influenced by various risk factors and adverse life events. Numerous risk factors have been identified, and it is thought that poor life events contribute to the emergence of suicide tendencies in young individuals (17).

The present investigation discovered a statistically significant correlation between previous suicide attempts  $P\text{-value} = 0.040$  and the suicidal ideas among the suicidal positive group. This result is consistent with that of a previous study (21) which reported the severity of suicidal ideation as a significant risk factor for suicide attempts. Moreover, another study conducted in Sulaimani City, Kurdistan, Iraq found that participants with a history of suicide attempts had a high incidence of suicidal ideation; thus the previous



attempts, if not managed, probably will lead to more aggressive actions (22). However, these results underscore the importance of addressing and managing previous suicide attempts to mitigate the risk of further escalation. Depression is strongly related to both suicidal ideation and attempt, but little is known about the characteristics that increase the risk of suicide among people with depression (23). The current study found a highly statistically significant relationship between mental illness, such as depression ( $p= 0.008$ ) and suicidal thoughts and ideas. Therefore, more attention should be paid to people with mental illnesses, especially depression. This outcome is in line with those of Dazzi et al. (2014), who found that suicidal thought is more substantially associated with depression severity than with its absence (24). The present study's findings are also in line with those of (21), showing that people who reported the highest levels of depression also had the highest rates of severe suicidal thoughts by four fifths of a percentage. Thus, these findings emphasize the critical importance of addressing mental illness, particularly depression, as part of suicide prevention efforts. In addition, another analysis looked at how despair can lead to actions of self-harm. These findings are similar to previous ones showing that the degree of depression is a strong predictor of suicidality (25).

A statistically significant correlation between job issues or loss was discovered in the current investigation  $p$ -value= 0.023, and the risk of suicidality. Generally, this could be attributed to the difficulties and struggles that someone will face in their effort to live a good life. In the absence of a job, family problems will also increase, which may lead to suicidal ideation, attempt and a suicidal act. This result is similar to the previous studies that discovered a link between unemployment and

suicide (26). For both men and women, a significant increase in the risk of suicide following a job loss was found to be associated with a prior dread of job loss (27). People who commit suicide are more likely to have died from job-related stress or financial difficulties than those who attempted suicide. (28). Another study indicated that a reduction in work protection laws (29) and job loss increased the probability of suicide death among men (30). According to our knowledge, no previously published studies have examined the relationship between job loss and suicidality in our region. This is due to not taking suicide as an actual problem and not taking into great consideration. According to the study of Cooper et al., (2015), only seventeen percent of those individuals who had lost their job took their lives within a month of job loss, and fifty percent died six months or longer after job loss. Only two five percent of the 'recession-related' suicides were related to fears of job loss (31) which disagrees with our results.

## CONCLUSION

The present study results show that there was no correlation between the sociodemographic characteristics of the suicidal and non-suicidal groups. People who exhibit related symptoms, such as a history of repeated suicide attempts, need to receive extra care. Mental illness, including depression, troubles at work or job loss, prior suicide attempts, and barriers to accessing health care, were the top risk factors.

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