

Suicide Attempts among Male Prisoners with Substance Use and Non-Users: The Role of Depression and Hopelessness

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ABSTRACT

Objective: Suicide attempt(s) are common among prisoners. Some studies highlight the effect of substance use, depressive symptoms, and sense of hopelessness on suicide attempt(s), but still there is a paucity of research on this issue among prison population. To address this gap this study aims to examine the effect of the depressive symptoms and sense of hopelessness on suicide attempts, and which variable are more effective on suicide attempt(s) among prisoners with and without substance use before incarceration.

Method: For the current study, 139 male prisoners with substance use and 132 non-user prisoners were recruited. Beck Depression Inventory was used to measure symptoms of depression and The Hopelessness Scale was used to measure of sense of hopelessness.

Results: 37.4% of prisoners with substance use and 10.6% of prisoners without substance use have a history of suicide attempt(s). It was found that the relationship between suicide attempt(s) and substance use is statistically higher than the relationship between suicide attempt(s) and symptoms of depression, and sense of hopelessness. Logistic regression analysis showed that the sense of hopelessness was a significant predictor of suicide attempt(s) among prisoners who used substance before incarceration. Otherwise, depressive symptoms was a significant predictor of suicide attempt(s) among prisoners who did not use substance before incarceration.

Conclusion: Based on the current results, it is recommended that psychosocial studies should be conducted, and social policies should be developed to prevent suicide attempt(s) among prisoners.

Keywords: Depression, hopelessness, suicide attempt, substance use, prisoners.

ÖZ

Madde Kullanan ve Kullanmayan Erkek Mahkumlarda İntihar Girişim(ler)i: Depresyon ve Umutsuzluğun Rolü

Amaç: Mahkumlar arasında intihar girişimleri yaygındır. Çalışmalar madde kullanımı, depresyon ve umutsuzluk duygusunun intihar girişim(ler)i üzerindeki etkisine işaret etmektedir, ancak konuyla ilgili mahkumlarla yapılmış sınırlı sayıda çalışma vardır. Bu nedenle, bu çalışmanın amacı depresif semptomların ve umutsuzluk duygusunun intihar girişimleri üzerindeki etkisini incelemek ve ceza infaz kurumuna girmeden önce madde kullanımı olan ve olmayan mahkumlarda hangi değişkenin intihar girişim(ler)i üzerinde daha etkili olduğunu ortaya koymaktır.

Yöntem: Bu çalışmada, 139 madde kullanmış ve 132 madde kullanmamış erkek mahkumla çalışılmıştır. Depresif semptomları ölçmek için Beck Depresyon Envanteri, umutsuzluk duygusunu ölçmek için Umutsuzluk Ölçeği Kullanılmıştır.

Bulgular: Madde kullanımı olan mahkumların % 37,4'ünde, madde kullanmamış olan mahkumların ise % 10,6'sında yaşam boyu intihar girişim(ler)i olduğu bulunmuştur. Ayrıca madde kullanım davranışı ile intihar girişimleri arasındaki ilişkinin, intihar girişimleri ile depresif semptomlar ve umutsuzluk duyguları arasındaki ilişkiden istatistik olarak daha yüksek olduğu görülmüştür. Lojistik regresyon analizi sonucuna göre, cezaevine girmeden önce madde kullanımı olan mahkumların intihar girişim(ler)i riskinde umutsuzluk duygusunun önemli bir yordayıcı değişken olduğu bulunmuştur. Diğer yandan, cezaevine girmeden önce madde kullanımı olmayan mahkumların intihar girişimlerinde ise depresif semptomların önemli bir yordayıcı değişken olduğu görülmüştür.

Sonuç: Çalışmanın sonuçları göz önüne alınarak, mahkumlarda intihar girişimlerini önlemeye yönelik psikososyal çalışmaların yapılması ve önleyici politikaların geliştirilmesi gerektiği önerilmektedir.

Anahtar Sözcükler: Depresyon, umutsuzluk, intihar girişimi, madde kullanımı, mahkum.

INTRODUCTION

Suicide and suicide attempt(s) have been increasing and an average of one million people die by suicide worldwide every year. According to the statistics, suicide rates have increased by 30% in the last two decades and it is the tenth leading overall cause of death for all of ages.^{1,2} Suicide attempt(s), which means self-harm behavior with an intention to kill oneself are more common than suicidal behavior. Accordingly, suicide attempts are 10 to 20 times higher than suicide. People with suicidal tendencies tend to have multiple suicide attempts during their lifetime. Nearly 50% of suicide attempters make another suicide attempt(s) in five years following their first attempts. Also, about 10 to 15% of suicide attempters die by suicide.^{3,4}

Studies on the epidemiology of suicide attempt behavior have demonstrated that suicide attempt behavior cannot be explained by a single factor, but multiple risk factors affect this behavior.⁵ Incarceration is an important risk factor for suicide attempt(s). Statistics suggest that suicide is the third leading cause of death in prison and the rate of suicide is seven times higher than in the general population.⁶ The suicide rates in prisons ranged from 18 to 40 per 100,000 according to the data in the past three decades.⁷ The studies on suicide attempt(s) among prisoners have also shown that, the lifetime suicide attempts among prisoners are seven to eleven times higher than the general population.^{8,9} There are several risk factors for suicide attempt(s) among prisoners. Suto and Arnaut¹⁰ showed that mental health problems including depression, hopelessness, paranoid thoughts, impulsivity, relationship issues such as family problems as well as problems in relations with other inmates, threats from other inmates, and prison factors such as moves within the prison, unemployment, or difficulties in activities in prison are the among most important risk factors for suicide attempt(s) among prisoners.

Most of the studies reveal that substance use behavior is another important risk factor for suicide attempts.^{11,12} According to the cohort studies and psychological autopsy studies, drug use and alcohol use behaviors are strongly associated with suicidal behaviors.¹³⁻¹⁵ Especially when considering the prison population, most criminals have substance use problems, and those problems increase the suicide risk.¹⁶

Although substance use behavior is an important risk factor for suicide, several studies have shown that some mental problems like depression seem to be substantially important indicator of suicide attempts among prisoners.¹⁷⁻²⁰ Mostly substance use and depression are comorbid and potential risk factors for suicide attempts. Those studies showed that depression and depression subtypes are associated with suicide attempts among substance users.^{21,22} Balázs and colleagues²⁵ studied with 100 suicide attempters and found that the majority of those attempters had major depression and alcohol-drug abuse/dependence problems. Another studies conducted by Connor and his colleagues²³ demonstrated that people with substance use who died by suicide are more likely to have mood disorders than their control group.

Another explanation about suicide attempts comes from the studies on sense of hopelessness. Many studies claim that sense of hopelessness is more important risk factor of suicide attempts than depression.^{17,24} Especially for prisoners, feeling of stress and vulnerability may be operating of suicide attempt(s) and feelings of hopelessness also seem to be an important pathway for this behavior.²⁵ When hopelessness is comorbid with substance use behaviors, suicide attempts seem to be the only way for a solution. Undoubtedly suicide intentions have a critical role in suicidal behavior. Wetzel and colleagues²⁶ found out that hopelessness is a critical variable when a person has an intention for suicide attempt(s). They demonstrated that

hopelessness emerged as a mediating variable between depression and suicide in people with an intention to suicide. Wetzel and his colleagues also pointed out that when the effect of hopelessness was removed statistically, there was no relationship between intention and depression.

It is known that prison life is a very stressful life, and prisoners have depressive symptoms and substance use problems. The inmates also reported to feel hopeless than the general population.^{9,27} Studies have shown that depression, hopelessness, and substance use have a robust relationship with suicide attempt(s) by prisoners.^{19,27} Whereas some studies have shown that depression is the major risk factor for suicide attempts among substance users,²¹ the other studies have revealed that hopelessness is a more important determinant than depression in suicide and suicide attempts.^{17,24} Unfortunately, there are only few studies describing the risk factors, e.g., depression and hopelessness on suicide attempts among substance users and non-substance users

Table 1. Characteristics of Adult Prisoners of Substance Users and Non-Users

Characteristics	Prisoners with Non-Use N (%)	Prisoners with Substance Use N (%)
Age		
18 to 24	28 (21.2)	47 (33.8)
25 to 35	66 (50.0)	69 (49.6)
36 to 47	13 (9.8)	12 (8.6)
48 and over	18 (12.6)	4 (2.9)
Marital Status		
Single	69 (52.3)	91 (65.5)
Married	47 (35.6)	30 (21.6)
Divorced	10 (7.4)	16 (11.5)
Widowed	6 (4.5)	2 (1.4)
Education (Years)		
< 8	88 (66.7)	91 (65.5)
9-12	40 (30.3)	30 (21.6)
>13	4 (3.0)	16 (11.5)
Type of Crime		
Burglary	15 (11.4)	27 (19.4)
Homicide	41 (31.1)	28 (20.1)
Robbery	24 (18.2)	32 (23.0)
Sexual Assault	27 (20.5)	21 (15.1)
Assault	25 (8.9)	31 (22.3)
Recidivism		
First Crime	93 (70.5)	49 (33.1)
Second Crime	11 (8.3)	30 (21.6)
Third Crime and over	27 (20.5)	30 (43.2)
Duration in Prison		
< 1 year	56 (42.4)	46 (33.1)
2-3 years	35 (20.5)	43 (30.9)
> 4 years	17 (12.9)	25 (18.0)

N = 271; 132 non-users, 139 substance users

in prisons. Moreover, it is unclear whether depression or hopelessness is a stronger predictor of suicide attempts among substance users or non-users in prison. For this reason, the purpose of this study was to determine; a) the effect of depression and hopelessness on suicide attempt(s) among substance users and non-users before incarceration in prison population, b) how much depression symptoms and sense

of hopelessness effect on suicide attempt behavior among substance users and non-users before incarceration. Also, it is hypothesized that hopelessness confers greater risk for suicide attempt than depression among substance users in prison population.

METHOD

Participants

Of the 271 prisoners recruited for this study, 139 were substance users and 132 were either non-users before incarceration or who undergo substance use treatment in prison. The participants were 18 years and older ($M_{age} = 30.35$, $SD = 9.11$). When the characteristics of prisoners are compared, the mean of age of the participants who use substance before incarcerated was 29.3 ($M_{age} = 29.3$). Majority of them were single/never married ($N = 91$, 65.5%). Participants reported 0-8 years of education ($N = 91$, 65.5%). They had committed a crime for the first time ($N = 49$, 33.1%), most of them were incarcerated because of robbery ($N = 32$, 23%), and they were in prison less than one year ($N = 46$, 33.1%).

The participants who do not use substance before incarceration, the mean age of the participants was 32 years ($M_{age} = 32$). Majority of them were married ($N = 69$, 52.3%). They reported 0 to 8 years of education ($N = 88$, 66.7%). Most of them committed a crime for the first time ($N = 93$, 70.5%), and they were convicted for homicide ($N = 41$, 31.1%). This group also, at the time of the study, had been in prison for less than one year ($N = 56$, 42.4%).

Measures

Beck Depression Inventory (BDI):

Depression was assessed by Beck Depression Inventory (BDI). BDI has 21 items which assess the intensity of depressive symptoms, on a three-point Likert scale²⁸ Originally BDI was designed to be administered by professionals but it is mostly self-administered and it takes about 5-10 minutes to administer. The cut-off score of the inventory for none or mild depression is < 10, for mild to moderate depression is 10-18, and for moderate to severe depression is 19-29 and for severe depression is 30-63. BDI has a robust validity and reliability scores. Internal consistency of the scale has coefficients of 0.86 for psychiatric populations and 0.81 for nonpsychiatric populations. The concurrent validity of the BDI with Hamilton Psychiatric Rating Scales for Depression was 0.72 for psychiatric patients, 0.73 for nonpsychiatric patients.²⁹ The Turkish adaptation study was conducted with a sample of university students. Accordingly, the validity of the scale with MMPI was calculated as 0.50 for students, the reliability is calculated as 0.80.³⁰ In current study, the internal consistency of BDI was computed as 0.83 for prisoners with substance use and as 0.85 for prisoners who did not use substance before incarceration.

Hopelessness Scale:

The Hopelessness Scale, which is a subscale of the Suicide Probability Scale, has 12 items. It was developed to measure the individuals' sense of hopelessness. The scale is a self-assessed scale. It is based on how often (never, sometimes, often, or always) individuals feel hopeless themselves. The scale consists of items such as "I think I have too much responsibility" or "I feel so lonely that I cannot bear it". As the scores obtained from the scale increase, it is accepted that the individual's sense of hopelessness also increases. The internal consistency coefficient of the scale was calculated as $\alpha = 0.85$.³¹ The validity study of the scale with similar scales was conducted with Beck Hopelessness Scale and the correlation coefficient was $r = 0.81$.³² In the current study the internal consistency of the scale was calculated as $\alpha = 0.79$ for the substance user prisoners and $\alpha = 0.82$ for non-users.

Suicide Attempt History:

A lifetime history of suicide attempts was assessed by a self-report

yes/no-question. The participants were asked that "Have you ever tried to kill yourself or attempt suicide?" This question was asked in the National Comorbidity Survey in the US.³³ It was shown that the question has a robust test-retest reliability.³⁴ In the current study of the participants who used substance ($N = 52$, 37.4%) and those who do not use substance ($N = 14$, 10.6%) reported a lifetime suicide attempts.

Substance Use Behavior:

Substance use behavior was assessed by self-report dichotomous yes/no questions. The prisoners were asked the following questions "Have you ever been diagnosed as substance dependence/substance user by a psychiatrist?" or "Have you ever had a substance use treatment in prison?"

Procedures

A brief announcement was made about the study in Ankara L Type Close Prison. The participants who were at least 18 years old, able to speak and read in Turkish were included in the study. Before commencing the study, participants were informed about the study. Individuals who were interested in participating provided their informed consent and completed the self-report scales. The participants were told that if they did not want to participate or were disturbed during the study, they could withdraw from the study any time they would like. The study was approved by the Ministry of Justice and ethics approval was obtained.

Data Analyses

The data were excluded that exceed than ± 3.29 SD score. Therefore, of the 273 participants, 2 cases were excluded because total score greater than ± 3.29 SD from the mean. Therefore 271 participants were included in the analyses. Logistic regression analyses were conducted to find out the predictive variables of suicide attempt³⁵ and Hosmer-Lemeshow Goodness-of-fit-test (HL) were used to assess model fit.³⁶ All statistical analyses were performed using SPSS 20 (IBM).

RESULTS

Univariate and Bivariate Analysis

Bivariate correlations were conducted to determine the relations among the variables. As seen in Table 2, the independent variables and covariates were significantly associated with suicide attempt history. There was not any problem with respect to multicollinearity. Accordingly, there was a relationship between feeling of hopeless and suicide attempt history ($r = 0.15$), between depression and suicide attempt(s) history ($r = 0.11$), and there was a significant relationship between suicide attempts and substance use behavior ($r = 0.41$).

Table 2. Bivariate Correlations and Descriptive Statistics

	1	2	3	4
1. Hopelessness	1			
2. Depressive Symptoms	0.50**	1		
3. Substance Use	0.43**	0.38**	1	
4. Suicide Attempt	0.15***	0.11**	0.41**	1
M	23.91	20.01	----	----
SD	5.79	10.34	----	----
Min.	9	0	----	----
Max.	39	46	----	----

Note. Hopelessness = Hopelessness Scale total scores, Depressive Symptoms Scores = Beck Depression Inventory total score, Substance Use = (coded 0 = Non-user, 1 = User), Suicide Attempt = (coded 0 = No history, 1 = Suicide Attempt History); * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Main Analysis

Logistic regression analysis was conducted to find out the best predictive variables of suicide attempt(s) among prisoners with substance use. It is seen that in Table 3, the results were significant ($\chi^2 [2, N = 139] = 14.27, p < 0.001; \beta = 0.08; \text{Nagelkerke } R^2 = 0.14$), and the HL test showed that the data fits the model ($\chi^2 = 5.7, p = 0.68$). According to the results the explained variance ratio was 14%. There was a significant effect of hopelessness ($OR = 0.93, p = 0.03$) on suicide attempt(s) among substance users. But there was no a significant effect of depression on suicide attempt(s) among prisoners with substance use was observed. This result indicates that the prisoners with the sense of hopelessness who used substances before incarceration are more likely to report suicide attempt history than those who did not use substance.

Table 3. Logistic Regression Analysis of Depression and Hopelessness on the Suicide Attempt among Prisoners with Substance Use

Dependent Variable	Predictor Variable	Logit	SE	Wald χ^2	P value	OR	OR 95% CI
	Constant	3.36	0.92	13.28	<0.001	28.8	
Suicide Attempt	Depression	0.03	0.02	2.88	0.08	0.97	0.92 1.0
	Hopelessness	0.08	0.03	4.52	0.03*	0.93	0.86 0.99

Note. Depression = Beck Depression Inventory; Hopelessness = The Hopelessness Scale; Suicide Attempt = (coded 0 = No History, 1 = Suicide Attempt History); * $p < 0.05$; ** $p < 0.01$. *** $p < 0.001$

The other result was about prisoners who did not use substance. According to the logistic regression analysis, the results were significant ($\chi^2 [2, N = 132] = 17.20, p < 0.001; \beta = .87; \text{Nagelkerke } R^2 = 0.26$), and the HL test showed that the data fits the model ($\chi^2 = 10.85, p = 0.21$). According to the result, the explained variance ratio was 26% and there was a significant effect of depressive symptoms ($OR = 0.92, p = 0.01$) on suicide attempts among non-user prisoners. This result indicates that, the prisoners with depression symptoms who do not use substance are more likely to report suicide attempt(s) behavior than those who used substances.

Table 4. Logistic Regression Analysis of Depression and Hopelessness on the Suicide Attempt among Non-User Prisoners

Dependent Variable	Predictor Variable	Logit	SE	Wald χ^2	P value	OR	OR 95% CI
	Constant	6.13	1.44	18.15	<.001		
Suicide Attempt	Depression	0.87	0.03	7.95	0.00***	0.92	0.86 0.97
	Hopelessness	0.08	0.05	2.38	0.12	0.92	0.84 1.02

Note. Depression = Beck Depression Inventory; Hopelessness = The Hopelessness Scale; Suicide Attempt = (coded 0 = No History, 1 = Suicide Attempt History); * $p < 0.05$; ** $p < 0.01$. *** $p < 0.001$

DISCUSSION

This study examined the relationship between depression, hopelessness and suicide attempt(s) among prisoners who used and who did not use substances before being incarcerated. The first aim of the study was to determine the effect of depression and hopelessness on suicide attempt(s) among prisoners who use substances before incarceration. According to the results, hopelessness was found to be a more effective risk factor than depression for suicide attempts among prisoners who used substance before incarceration. The results showed that as the feeling of hopelessness increases, suicide attempts also increase, but depression did not a significant risk factor among prisoners who used substance before incarceration. Studies on prisoners have shown that the prisoners are prone to feel more hopeless, lonely, and worthless.³⁷ This situation increases the risk of suicide attempts.³⁸ Also, studies have shown that substance use

behavior is common among prison population³⁹ and they feel more hopeless because of the incarceration.³⁸ These results highlight the importance of the psychosocial rehabilitation studies and programs for substance users. For this reason, rehabilitation studies on prevention of substance use behavior in prison is one of the most important studies to reduce feelings of hopelessness hence the prevention of suicide attempt and risk of death in prisoners.

In this study, the prisoners with depression symptoms who do not use substance were found to be more likely to report a history suicide attempts. This result indicates that the prisoners with depressive symptoms but who do not use substance before incarceration are more likely to report suicide attempt behavior(s). Undoubtedly, the prison experience is a risky process for depression and other mood disorders.^{27,49} Studies point out that, the symptoms of depression are high among prisoners and inmates. Görgülü and Tutarel-Kışlak²⁷ showed that prisoners have a high suicide risk and majority of them have several depressive symptoms. Especially homicidal offenders have more symptoms of depression than the others.⁴⁰ Côté and Hodgins⁴⁰ also showed that about 14.9% of offenders have major depressive disorder. Considering about the sample of this study, majority of participants were homicidal offenders, and they were in the prison more than one year (57.6%). For this reason, this type of crime and conditional factors may have exacerbated their depressive symptoms and made it more important than the sense of hopelessness. For this reason, depressive symptoms should be examined and focused on especially in individuals who were sentenced for a violent crime. Considering the results, it is thought that determining the risk factors for the suicide attempt(s) and conducting individual therapy with the inmates with depressive symptoms are important for the prevention of suicide attempts.

There are some debates on whether depression or hopelessness are more affective risk factors for suicidal behavior. One of the aims of this study to determine how much depression symptoms and feeling of hopeless effect on suicide attempts behavior among substance users and non-users before being incarcerated. Studies on suicidal behavior show that depression is one of the most important risk factors for suicidal behavior and suicide attempts.⁴¹ Those studies pointed out that 15% of depressive patients die by suicide and half of them have self-harm behavior.^{42,43} Studies also show that depression is common among offenders and prisoners. For example, Eyestone and Howell⁴⁴ showed that 25% of prisoners have major depression and Chiles and his colleagues revealed that 30% of inmates had a lifetime diagnosis of major depression.⁴⁵ Another important view on suicidal behavior is about hopelessness. Although most researchers think that hopelessness is a diffuse feeling, and it is unquantifiable to make a decision.⁴⁶ But Beck opposed this argument and claimed that hopelessness could be measured and an important explanatory variable for suicidal behavior than depression.⁴⁷ According to him and his colleagues, hopelessness is the most important factor for suicide, and people with a sense of hopelessness are prone to attempt suicide to escape from their unsolved problems. Suicide may seem the only solution for them.⁴⁸ In this study, the prisoners who use substance before getting into prison tend to have a sense of hopelessness, and hopelessness is the only important variable for suicide attempts. This may be because of the characteristic of the sample in this study. Most

of participants who use substance before incarceration have had a lifetime suicide attempts (37.4%) when we compare to participants those who do not use before incarceration (%10.6). This factor may result in triggering their feeling of hopeless and this factor may result in suicide attempts.

This study has some limitations. One of the limitations is about gender. Only male participants were recruited in the study. Therefore, the gender differences in hopelessness, depression and suicide attempt(s) cannot be determined. It is recommended for the future research should investigate these variables in both male and female prisoners. Another limitation is that there are many risk factors for suicide and suicide attempt(s). It was just evaluated depression and sense of hopelessness in this study. Many risk factors and depression are comorbid and they all may have potential risk factors for suicide attempts. So, it is suggested that other important risk factors that affect suicide attempts should be studied in the future studies.

On the other hand, this study has significant strengths. The literature on suicide attempts and its risk factors among risky groups such as prisoners is still scarce. This study is one of the first studies examining depression and hopelessness regarding suicide attempts among prisoners. The current results shed light on the variables of concern in risk factors in attempted and committed suicide in the inmate population. This is a particularly important in the forensic literature in that it will help close an important gap of knowledge. Also, there are limited studies on suicide attempts among justice-involved population. This study will shed a light on issues pertaining to the justice-involved population and the future prevention studies on suicide and suicide attempts among prisoners.

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