

The Moderating Effects of Accurate Expectations of Lethality in the Relationships between Suicide Intent and Medical Lethality on Suicide Attempts

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Objective: The purpose of this study was to explore the accuracy of expectation of medical lethality and to identify characteristics related to high medical lethality in suicide attempters.

Methods: A total of 370 suicide attempters (173 men, 197 women) who visited the emergency department at one university hospital were interviewed.

Results: Using the Lethality Scale, 103 (27.8%), 114 (30.8%), and 153 (41.4%) suicide attempters were assigned to the low, medium, and high medical lethality groups, respectively. The medium and high medical lethality groups were older, and reported poorer socioenvironmental conditions, compared with the low lethality group. Higher levels of suicide intent were associated with more lethal attempts but only for those attempters who had accurate expectations of the medical lethality of their attempts.

Conclusion: The accuracy of expectations about the likelihood of dying was found to moderate the relationships between suicide intent and medical lethality.

KEY WORDS: Suicide attempt; Medical lethality; Suicide intent; Accuracy; Expectation.

INTRODUCTION

Suicide is a major public health problem. Despite the overall decrease in the global suicide rate, the rate in Korea remains the highest among all Organization for Economic Cooperation and Development (OECD) countries, and has been particularly alarming in recent years [1]. Suicide is categorized into three broad domains: completed suicide, suicide attempts, and suicidal ideation [2]. A suicide attempt is defined as a potentially self-injurious behavior with a nonfatal outcome, for which there is evidence that the person intended, at some level, to kill him/herself [2,3]. Understanding the characteristics of suicide attempters whose acts have high medical lethality as the likely outcome, and the relationship between lethality

and suicide intent, will help in the design of suicide prevention strategies. Although it has been assumed that higher levels of suicide intent would result in more lethal attempts [4,5], several studies have reported low correlations between suicide intent and the observed medical lethality of attempted suicide [6,7]. Several variables may moderate the relationship between suicide intent and the degree of medical lethality. A previous study reported that higher suicide intent was correlated with more lethal attempts, but only for attempts with more accurate expectations about the likelihood of dying [7]. However, this finding has not been replicated.

The aims of this study were to examine differences in demographic, suicide-related, and clinical variables according to the severity of observed medical lethality in suicide attempters. In addition, we explored the relationships between suicide intent and medical lethality and the moderating effects of accuracy of subjects' expectations about the likelihood of dying from their self-injurious behaviors.

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METHODS

All suicide attempters admitted to the emergency department at university hospital between October 2014 and September 2018 were approached for participation in the study. Of 536 eligible participants, 73.1% ($n = 392$) agreed to participate in the study, while 26.9% ($n = 144$) declined. Data from 22 participants were excluded because the assessments of suicide intent and medical lethality were incomplete; therefore, data from 370 participants were included in the final analysis. In keeping with the hospital's standard practice, all patients were assessed by a trained, on-duty psychiatric resident when their medical condition had stabilized. Psychiatric diagnoses were made with reference to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) [8]. This study was reviewed and approved by the Institutional Review Board of Jeju National University Hospital (approval No. JNUH 2014-09-007). All subjects provided informed consent after the study procedure had been fully explained to them.

We measured observed medical lethality using the Lethality Scale (LS) [2]. The score on the LS is used to determine and classify observed medical lethality, as follows: low (0–1 points), moderate (2–3 points), or high (4–10 points) [2]. Suicide intent was evaluated using the Suicide Intent Scale (SIS) [3]. The SIS has 15 items scored from 0–2, thus yielding total scores of 0–30. The subject's expectation of the lethality of the suicide attempt was assessed using Item 11 of the SIS: (1) "Did less to self than he or she thought would be lethal?"; (2) "wasn't sure whether what he or she did would be lethal?"; and (3) "equaled or exceeded what he or she thought would be lethal."

To identify the characteristics of subjects differing in medical lethality level, we divided them into three categories (low, medium, and high) based on their LS score [2]. The chi-square test (or Fisher's exact test), t test, and analysis of variance (ANOVA) were used to compare the proportions and means of the independent variables versus dependent variables. In addition, an index of the accuracy of the expectation of lethality was constructed based on previous studies [7]. This index assessed the discrepancy between the subject's expectations about the outcome or lethality of the suicide attempt and the observed medical lethality. As in a previous study [7], we defined the expectation as accurate when it matched the

classification of the observed medical lethality of the attempt, as follows: high expected lethality and attempts with high medical lethality; uncertain about the lethality of the attempt and attempts with medium medical lethality; and low expected lethality and attempts with low lethality. Lastly, correlations between SIS scores and LS scores were evaluated using Pearson's correlation coefficient. The statistical analyses were performed using SPSS software for Windows (ver. 21.0; IBM Corp., Armonk, NY, USA), and p values < 0.05 were considered significant.

RESULTS

The subjects were 370 suicide attempters (173 men, 197 women). According to their LS scores, 103 (27.8%), 114 (30.8%), and 153 (41.4%) participants were assigned to the low, medium, and high medical lethality groups, respectively. The demographic and clinical characteristics of the three groups are shown in Table 1. The numbers of women in the three groups were 58 (56.3%), 59 (51.8%), and 80 (44.6%), respectively; the proportions did not differ significantly among the groups. Significant differences among groups were found in age ($\chi^2 = 15.785$, $p = 0.003$), with the proportion of subjects aged above 66 years increasing as the level of medical lethality increased. The medium and high medical lethality groups had significantly higher proportions of people who lived alone ($p = 0.016$), had a low monthly income ($p = 0.010$), and were unemployed ($p = 0.009$) compared with the low-lethality group. And, there were significant group differences in suicide attempt methods ($p < 0.001$). There were no significant differences in SIS score among three groups, and there was minimal correlation between the SIS total score and LS total score ($r = 0.110$, $p = 0.035$). No significant differences among three groups were observed in psychiatric diagnosis; the most frequent psychiatric diagnosis in all three groups was depressive disorder (low lethality, 77.7%; medium lethality, 62.3%; high lethality, 73.2%), followed by adjustment disorder (low lethality, 10.7%; medium lethality, 26.3%; high lethality, 17.0%). Large proportions of subjects in all three groups had no history of psychiatric treatment (low lethality, 43.7%; medium lethality, 48.2%; high lethality, 60.3%), and there was no significant difference among the groups.

The accuracy of subjects' expectations about the likelihood of dying from their self-injurious behaviors was

Table 1. Characteristics of suicide attempters and medical lethality of suicide attempts

Variables	Medical lethality of suicide attempts			<i>p</i> values
	Low	Medium	High	
Total	103 (27.8)	114 (30.8)	153 (41.4)	
Gender, women	58 (56.3)	59 (51.8)	80 (52.3)	0.761
Age (yr)	36.4 ± 16.0	37.4 ± 17.0	44.0 ± 17.5	0.001**
Age (yr)				0.003**
≤ 17	14 (13.6)	7 (6.1)	5 (3.3)	
18–65	84 (81.6)	100 (87.7)	128 (83.7)	
≥ 66	5 (4.9)	7 (6.1)	20 (13.1)	
Marital status				0.537
Never married	51 (49.5)	56 (49.6)	64 (41.8)	
Married	37 (35.9)	37 (32.7)	56 (36.6)	
Divorced/bereaved	15 (14.6)	20 (17.7)	33 (21.6)	
Education (yr)				0.271
≤ 6	9 (8.8)	9 (8.3)	22 (14.5)	
7–12	71 (69.6)	73 (67.0)	105 (69.1)	
≥ 13	22 (21.6)	27 (24.8)	25 (16.4)	
Living alone	13 (13.1)	32 (28.6)	40 (26.3)	0.016*
Low monthly income (< 1,000 USD)	23 (22.5)	36 (32.4)	62 (40.8)	0.010*
Unemployed	37 (36.3)	53 (47.3)	85 (55.9)	0.009**
Chronic medical illness	39 (37.9)	36 (31.9)	65 (43.0)	0.180
Suicidal attempt methods				< 0.001***
Ingestion	60 (58.3)	55 (48.2)	84 (54.9)	
Cutting	23 (22.3)	22 (19.3)	59 (38.6)	
Hanging	5 (4.9)	24 (21.1)	2 (1.3)	
Inhalation	13 (12.6)	5 (4.4)	2 (1.3)	
Jumping	2 (2.6)	0 (0.0)	5 (3.3)	
Others	0 (0.0)	8 (7.0)	1 (0.7)	
In a drunken state	42 (46.7)	47 (45.6)	72 (52.2)	0.548
Left a suicide note	10 (9.7)	3 (2.6)	9 (5.9)	0.089
Past history of suicide attempts	48 (47.1)	58 (50.9)	58 (38.9)	0.136
Current psychiatric diagnoses				0.218
Depressive disorder	80 (77.7)	71 (62.3)	112 (73.2)	
Adjustment disorder	11 (10.7)	30 (26.3)	26 (17.0)	
Alcohol use disorder	3 (2.9)	3 (2.6)	2 (1.3)	
Bipolar disorder	6 (5.8)	6 (5.3)	7 (4.6)	
Psychotic disorder	3 (2.9)	4 (3.5)	6 (3.9)	
History of psychiatric treatment				0.066
None	45 (43.7)	55 (48.2)	93 (60.8)	
In treatment	33 (32.0)	30 (26.3)	34 (22.2)	
Previous history of treatment	25 (24.3)	29 (25.4)	26 (17.0)	
Suicidal intent scale	8.56 ± 3.89	9.71 ± 4.33	9.77 ± 4.85	0.073

Values are presented as number (%) or mean ± standard deviation.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

examined. A total of 34.6% attempters ($n = 128$) had accurate expectations, that is, their expectations of lethality matched the observed medical lethality classification. Conversely, 65.4% of attempters ($n = 242$) had inaccurate expectations of the lethality of their attempts. Higher SIS total scores were associated with higher LS total scores among subjects with accurate expectations ($r = 0.488$, $p < 0.001$), but not among those with inaccurate expectations

($r = -0.118$, $p = 0.066$) (Fig. 1).

DISCUSSION

These findings regarding the characteristics of suicide attempters and predictors of high medical lethality could serve as a theoretical foundation for the development of effective suicide prevention strategies. In the present study,

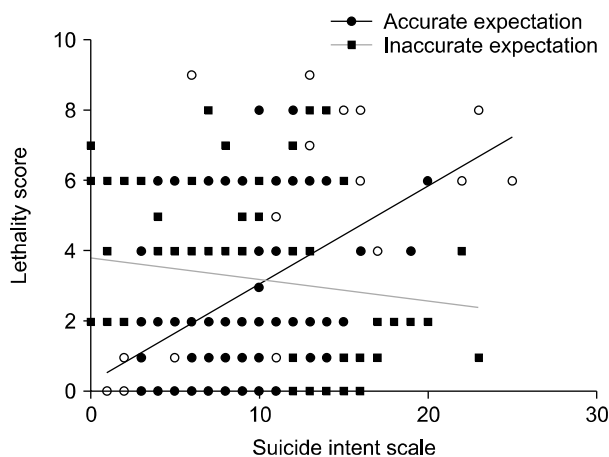


Fig. 1. Association between suicide intent and observed medical lethality.

the proportion of subjects aged above 66 years increasing as the level of medical lethality increased. And, suicide attempters with high medical lethality reported poorer socioenvironmental conditions, consistent with the findings of previous studies [9-11]. In our results, a minimal association between the degree of suicide intent and the level of medical lethality was found. The present study suggests that suicide intent and the severity of the self-injury are independent dimensions of suicidal behavior and the assessment of medical lethality is not necessarily indicative of the strength of suicide intent. The actual medical outcome of an act of self-injury may be influenced by the lethal methods that are available at the time of the attempts [12]. Specifically, 65% or more of suicide attempters reported inaccurate expectations about their self-injurious behaviors. More importantly, we found a significant association between the degree of suicide intent and extent of medical lethality only among subjects with accurate expectations of the lethality of their method. These findings provide some explanation of why suicide intent has not been associated with the medical lethality in suicide attempts. Our findings suggest that the accuracy of expectations about the likelihood of dying have the moderating effects in the relationships between suicide intent and medical lethality. The present study had several limitations. First, it was conducted in the emergency departments of one university hospital and did not include suicide attempters who had died following emergency medical treatment or did not provide consent to participate. Therefore, the findings might not generalize to all suicide attempters. Second,

we did not evaluate the severity of psychiatric symptoms such as depression, impulsiveness, anxiety, and hopelessness. Notwithstanding these limitations, the present report suggesting the moderating effect of the accuracy of expectations on medical lethality by suicide attempts has implications for effective assessments of suicide attempters. This study implies that both the specific expectations about death by suicide and the strength of suicide intent should be examined to predict the extent of medical lethality of suicide attempts.

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■ Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

■ Author Contributions

Conceptualization: Young-Eun Jung. Data acquisition: Young-Eun Jung, Hyun-Ju Yang. Formal analysis: Young-Eun Jung. Funding: Young-Eun Jung. Writing—original draft: Hyun-Ju Yang. Writing—review & editing: Young-Eun Jung, Joon Hyuk Park, Moon-Doo Kim.

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