



Research report

Feelings of worthlessness, traumatic experience, and their comorbidity in relation to lifetime suicide attempt in community adults with major depressive disorder



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ABSTRACT

Background: Major depressive disorder (MDD) and traumatic experience are independent risk factors for lifetime suicide attempt (LSA). However, the relationships between trauma history and depressive symptomatology as they relate to LSA are not fully understood.

Methods: A total of 12,532 adults, randomly selected through one-person-per-household method, completed a face-to-face interview using the Korean version of Composite International Diagnostic Interview (K-CIDI) and a questionnaire for LSA (response rate 80.2%).

Results: Among 825 subjects with MDD, 141 subjects reported an LSA (17.1%). LSAs were significantly greater in those who had experienced any trauma than in those who had not ($\chi^2 = 34.66$, $p < 0.0001$). Multivariate logistic regression showed that only feelings of worthlessness were significantly associated with LSA among 20 depression symptoms in individuals with MDD (AOR = 3.08, 95% CI 1.70–5.60). Feelings of worthlessness was associated with LSA in those who had experienced serious trauma (AOR = 5.02, 95% CI 3.35–7.52), but not in those who had not. Serious traumas associated with LSA included military combat, witnessing a violent crime, rape or sexual assault, a bad beating, being threatened by others, and learning about traumas to others. Serious trauma showed no significant association with LSA in those who did not have feelings of worthlessness. PTSD was a comorbidity that showed the highest odds ratio with LSA in individuals with MDD.

Conclusions: Feelings of worthlessness are more strongly associated with LSA than other depression symptoms in individuals with MDD, and it is significantly associated with LSA in those who experienced serious trauma but not in those who did not.

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1. Introduction

Suicide is a major public health problem worldwide, and approximately one million people died of suicide in the year 2000 (World Health Organization, 2013). An estimated 11 suicide attempts (SA) occur per every suicide death in the U.S. (Centers for Disease Control and Prevention, 2013). More than 90% of people who die by suicide have depression and mental disorders (Mościcki, 2001). Major depressive disorder (MDD) and Posttraumatic Stress Disorder (PTSD) are important risk factors for completed suicide and SA (Dumais et al., 2005; National Institute of

Mental Health, 2013). Many studies have investigated factors associated with SA in MDD patients, such as psychiatric comorbidities (Dumais et al., 2005; Stevens et al., 2013a), genetic factors (Lopez de Lara et al., 2007, 2006), melancholic features (Agargun et al., 2007; Jeon et al., 2013b), biomarkers (Kim and Myint, 2004), environmental factors (Jeon et al., 2013a), and traumatic experience (Jeon et al., 2009; Sarchiapone et al., 2007).

MDD is a heterogeneous disorder which consists of nine symptoms of diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (DSM-5) (American Psychiatric Association, 2013). Feelings of worthlessness are prevalent depression symptoms in MDD patients and one of nine symptoms of diagnostic criteria for MDD. Cognitive behavioral therapy (CBT) for MDD which is based on Beck's cognitive model and is one of the most extensively applied forms of psychotherapy

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for MDD, focuses on patients' cognitions and schemata, such as seeing themselves as 'worthless' (Beck, 1983). Although previous studies revealed that feelings of worthlessness may play an important role in the development of LSA (Liu et al., 2006; Robins et al., 1957), no previous study has investigated on the basis of large general population.

On the other hand, traumatic experience, according to the DSM-IV criteria for PTSD, is defined as direct exposure to or witnessing of death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence, for example, military combat, life-threatening accidents, natural disaster, and witnessed someone being killed or seriously injured (American Psychiatric Association, 1994). Although individuals who experienced traumatic events do not always develop PTSD, partial or subthreshold forms are commonly found among the victims (Jeon et al., 2007). Traumatic experience is another important risk factor associated with LSA. From the study of Robins et al. (1957) which mentioned the interrelationships between social difficulties, diagnosis of depression and suicide attempt (Robins et al., 1957), individuals who had MDD with a history of trauma showed more depressed (Cook et al., 2001), atypical features (Withers et al., 2013), and more frequent LSA (Jeon et al., 2009).

Previously mentioned two factors, feelings of worthlessness and traumatic experience, as we already know, both are independent risk factors for suicide. Feeling of worthlessness is commonly found in individuals who experienced serious traumas. However, as far as we know, no previous studies have focused on the interaction between feelings of worthlessness, traumas, and individual MDD symptoms as they affect LSA. We hypothesized that feeling of worthlessness may be more strongly associated with LSA than other specific depression symptoms, and their comorbidity with traumas may be more strongly associated with LSA in MDD patients.

2. Materials and methods

2.1. Data sources, data collection, and study sample

A nationwide study of Korean adults, named the Korean Epidemiologic Catchment Area Study Replication (KECA-R), was conducted from July 2006 to April 2007 (Cho et al., 2010). The KECA-2011 was conducted from July to September 2011, with the same study design (Seoul National University College of Medicine, 2011). This study included both populations which consisted of independent samples.

Subjects were selected using multi-stage and cluster sample designs that were based on data from the Korean Population Census (Statistics Korea, 2006). In KECA-R and KECA-2011, subjects were sampled across 12 catchment areas: three metropolitan districts, five districts of mid-sized cities, and four rural counties. One adult who was 18 years or older per selected household was chosen at random, and face-to-face interviews were conducted using the Korean version of Composite International Diagnostic Interview (K-CIDI) (Cho et al., 1999). A total of 12,532 adults were included from the KECA-R and KECA-2011 populations (overall response rate 80.2%) and 825 were assessed as having a lifetime history of MDD. The institutional review board of Seoul National University College of Medicine approved this study. All subjects were fully informed about the aims and methods of the study prior to completing the interview, and informed consent was obtained prior to participation.

A total of 160 interviewers were recruited from the catchment areas, including psychiatric nurses, social workers, and medical students with experience in psychiatric epidemiologic surveys. All interviewers received a 5-day training with didactic sessions covering general interviewing skills and the instrument content;

mock interviews and role-playing exercises were utilized to facilitate the generalization of new knowledge, and live interview with psychiatric patients and group discussion to check their inter-rater reliability (World Health Organization, 1997a,b).

2.2. Measures

2.2.1. Assessment of DSM-IV disorders

DSM-IV diagnoses are based on the K-CIDI (World Health Organization, 1990), a fully structured diagnostic interview designed to make psychiatric diagnoses (American Psychiatric Association, 1994). The K-CIDI has been validated by Cho et al. (1999), according to the World Health Organization guidelines (World Health Organization, 1997c). Furthermore, clinical diagnosis with blind clinical re-interviews, using the Structured Clinical Interview for the DSM-IV (SCID), showed modest concordance with the K-CIDI diagnoses (κ values between 0.50 and 1.00) (Cho et al., 2002). Finally, the K-CIDI was used in the Korean Epidemiologic Catchment Area (KECA) study, conducted between June and November, 2001 (Cho et al., 2007).

2.2.2. Assessment of traumas

The PTSD section of K-CIDI was used to evaluate lifetime traumatic events and DSM-IV PTSD criteria from A to F. For the beginning of the section, respondents were asked about traumatic events and experiences. They were handed cards on which were printed eleven kinds of traumas including 'military combat', 'life-threatening accidents', 'natural disaster', 'witnessed someone being killed or seriously injured', 'rape', 'sexual assault', 'badly beaten', 'threatened with a weapon', 'held captive, kidnapped, tortured and terrorism', 'any other extremely stressful or upsetting event' and 'learning about traumas to others'. If 'any other extremely stressful or upsetting event' and 'learning about traumas to others' were related to bereavement, chronic illness, business loss, or marital or family conflict, they were not regarded as traumatic events. If they checked any traumatic events, the interviewers continued the PTSD section.

2.2.3. Assessment of lifetime suicide attempt

Interviewers asked all subjects about suicidal ideation, plans, and attempts in a standard and consistent way using the following questions. The questions were 'Have you ever seriously thought about committing suicide?' for suicidal ideation, 'Have you ever made a plan for committing suicide?' for suicidal plan, and 'Have you ever attempted suicide?' for suicide attempt (Jeon et al., 2009; Lee et al., 2007). The participants responded to dichotomous questions with "YES" or "NO", and then provided their age at first suicide attempt and number of suicide attempts. The questions showed strong validity between psychiatrists and interviewers of this study, as well as inter-rater and test-retest reliability with kappa values between 0.74 and 1.00 and 0.84 for MDD in a preliminary study for the KECA-R (Cho et al., 2005). Suicidal behavior was defined as suicidal ideation, plan, and attempt. After each question, the age of onset and last suicidal ideation, plan, and attempt was assessed through an open question format.

2.3. Statistical analyses

We divided the MDD subjects into two groups according to history of LSA. We compared the demographic profiles of the two groups. To reduce the chances of obtaining false-positive results (type I errors) when multiple pairwise tests were performed on a single set of data, Bonferroni corrections were applied by multiplying the p -value by the number of comparisons being made. Chi-square test was performed for the comparative analysis of gender, age groups, marital status, monthly income, residence, and experience of trauma (two-tailed). Student's t -test was performed for

age, years of education, age at first suicide attempt, and the number of lifetime suicide attempts (two-tailed), which were normally distributed and fulfilled assumptions for parametric testing. Multivariate logistic regression models were used to evaluate associations between LSA and 20 depression symptoms after controlling for age, gender, years of education, monthly income, every other depression symptom, and total number of depression symptoms, and between LSA and each type of trauma after controlling for age, gender, and years of education. Then, we performed another multivariate logistic regression to evaluate odds ratios of four groups; significant specific depression symptoms and no symptom with and without experience of serious trauma after controlling for age, gender, and years of education. Chi-square test was performed to compare the rates of subjects who experienced LSA for each depression symptom, trauma, and psychiatric comorbidities (two-tailed). The adjusted odds ratios and 95% confidence intervals were estimated for depression symptoms, types of traumas, and psychiatric comorbidities after adjusting for age, gender, and education years. All analyses were performed with SPSS 11.0.

3. Results

3.1. Demographic profiles of MDD subjects with and without suicide attempt

Among the 12,532 subjects, 825 were assessed as having MDD (6.58%). Of these 825 MDD subjects, 141 reported an LSA (17.09%) and 684 did not (82.91%). As shown in Table 1, history of LSA was significantly associated with experience of any trauma in MDD subjects after Bonferroni correction ($\chi^2=34.66$, $p < 0.0001$),

whereas it showed no significant associations with age, gender, education years, marital status, monthly income, or residence. Mean age at first suicide attempt was 29.33 years in MDD subjects, and their number of lifetime suicide attempts was 2.26.

3.2. Feelings of worthlessness and LSA

Table 2 shows the frequency and adjusted odds ratios for each depression symptom in MDD subjects. Among 20 depression symptoms, LSA was significantly more frequent in subjects with two specific depression symptoms including feelings of worthlessness ($\chi^2=26.90$, $p < 0.0001$) and feelings of inferiority ($\chi^2=10.33$, $p=0.0013$) after Bonferroni correction. In contrast, history of LSA showed no significant difference in MDD subjects with and without the other 18 depression symptoms. Multivariate logistic regression analysis indicated that feelings of worthlessness (AOR=3.08, 95% CI 1.70–5.60) were the only significant depression symptoms significantly associated with LSA among 20 symptoms after adjusting for age, gender, years of education, monthly income, every other depression symptom, and total number of depression symptoms.

3.3. Experience of trauma and LSA

Table 3 shows the frequency of adjusted odds ratios for each type of trauma in MDD subjects. Of the eight types of traumas, LSA was significantly more frequent in MDD subjects who experienced six types of traumas including military combat ($\chi^2=9.50$, $p=0.0021$), witnessing a violent crime ($\chi^2=27.40$, $p < 0.0001$), rape or sexual assault ($\chi^2=18.03$, $p < 0.0001$), badly beaten ($\chi^2=45.01$, $p < 0.0001$), threatened by others ($\chi^2=15.91$, $p < 0.0001$), and learning of trauma

Table 1
Demographic profiles of MDD subjects with and without suicide attempts in a nationwide sample of Korean adults.

Variables	MDD (n=825)					
	With suicide attempt (n=141)		Without suicide attempt (n=684)		Statistics	
	n	%	n	%	χ^2	p-Value
Female gender	113	80.1	520	76.6	0.84	.36
Age (years)						
18–29	28	19.9	104	15.3	3.07	.55
30–39	31	22.0	152	22.4		
40–49	27	19.1	159	23.4		
50–59	33	23.4	143	21.1		
≥ 60	22	15.6	121	17.8		
Marital status						
Married	70	49.6	398	58.6	3.84	.15
Divorced/widowed/separated	40	28.4	157	23.1		
Unmarried	31	22.0	124	18.3		
Monthly income (\$)						
< 2000	76	65.5	298	52.7	8.09	.018
2000–3000	22	19.0	115	20.3		
≥ 3000	18	15.5	153	27.0		
Residence						
Urban	116	82.3	541	79.7	0.49	.48
Rural	25	17.7	138	20.3		
Experience of any trauma	87	61.7	238	35.1	34.66	< .00011;‡
Experience of PTSD	32	22.7	49	7.2	31.42	< .00011;‡
	Mean	SD	Mean	SD	t	p-Value
Age (years)	43.98	14.36	45.16	14.20	0.90	.37
Education (years)	10.90	4.14	11.46	5.46	1.15	.25
Age at first suicide attempt	29.33	13.87	–	–	–	–
No. of suicide attempts in lifetime attempters	2.26	1.99	–	–	–	–

SD, standard deviation.

Bonferroni correction.

‡ $p < 0.0056$.

Table 2

Multivariate logistic regression analysis of depression symptoms for lifetime suicide attempt in MDD subjects.

Depression symptoms	MDD (n=825)			
	With lifetime suicide attempt			
	n ^a	% ^b	AOR	(95% CI)
Depressed mood	754	17.8	1.51	(0.58–3.89)
Loss of interest	695	18.0	1.34	(0.69–2.59)
Fatigue	756	17.2	0.70	(0.30–1.63)
Loss of appetite	676	17.3	1.04	(0.55–1.99)
Loss of weight	370	17.3	1.04	(0.64–1.68)
Increase appetite	107	22.4	1.47	(0.67–3.23)
Weight gain	84	22.6	0.86	(0.36–2.02)
Insomnia	689	17.4	1.09	(0.56–2.14)
Hypersomnia	192	21.4	1.26	(0.72–2.19)
Psychomotor retardation	485	18.4	1.12	(0.68–1.84)
Psychomotor agitation	389	18.8	0.91	(0.55–1.48)
Feelings of worthlessness	498	22.71; [‡]	3.08	(1.70–5.60)***
Feelings of inferiority	570	20.01; [‡]	1.03	(0.56–1.89)
Loss of confidence	486	20.0	0.82	(0.47–1.44)
Concentration difficulty	634	18.1	0.92	(0.48–1.75)
Feelings of confusion	505	18.2	0.95	(0.54–1.67)
Indecisiveness	548	18.1	0.87	(0.47–1.60)
Morning worsening	363	20.1	1.26	(0.78–2.05)
Loss of sexual interest	508	19.5	1.54	(0.90–2.65)
Loss of pleasure	615	18.4	1.13	(0.63–2.02)

AOR, adjusted odds ratio; CI, confidence interval.

Adjusted for age, gender, years of education, monthly income, every other depression symptom, and total number of depression symptoms.

Bonferroni correction.

[‡] $p < 0.0025$ for Chi-square test; ** $p < 0.01$.

*** $p < 0.001$.

^a Number of subjects who have each depression symptom among 825 MDD subjects.

^b Percent of subjects who experienced lifetime suicide attempt among those who had each depression symptom.

to others ($\chi^2=9.32$, $p=0.0023$), whereas LSA showed no significant differences in life-threatening accident ($\chi^2=1.80$, $p=0.18$) and natural disaster with fire ($\chi^2=0.10$, $p=0.75$). Multivariate logistic regression analysis produced the same results of significant traumas as the chi-square test: LSA showed significant association with military combat, badly beaten, threatened by others, witnessing a violent crime, rape or sexual assault, and learning of trauma to others, but not with life-threatening accident and natural disaster or fire, after adjustment for age, gender, and years of education.

3.4. Feelings of worthlessness, experience of trauma, and LSA

Table 3 also shows that LSA was reported in 38.7% of MDD subjects who had feelings of worthlessness and any serious trauma, compared with 10.9% of subjects with no trauma history. Multivariate logistic regression analysis showed that LSA was significantly associated with serious trauma with feelings of worthlessness (AOR=5.02, 95% CI 3.35–7.52) and multiple serious traumas with feelings of worthlessness (AOR=5.20, 95% CI 2.98–9.08), whereas LSA showed no significant association with serious trauma without feelings of worthlessness (AOR=1.35, 95% CI 0.76–2.40) or feelings of worthlessness without any serious trauma (AOR=0.74, 95% CI 0.51–1.08) in MDD subjects. Fig. 1 illustrates that MDD subjects who experienced serious trauma and feelings of worthlessness showed higher suicide rates than those with serious trauma or feelings of worthlessness alone in all age groups: less than 30 years ($\chi^2=247.5$, $p<0.0001$), 30–39 years ($\chi^2=201.7$, $p<0.0001$), 40–49 years ($\chi^2=218.5$, $p<0.0001$), 50–59 years ($\chi^2=177.4$, $p<0.0001$), and 60 or more ($\chi^2=145.4$, $p<0.0001$).

3.5. Psychiatric comorbidities and LSA

As shown in Table 4, psychiatric comorbidities were significantly associated with LSA in individuals with MDD. Posttraumatic stress disorder (PTSD) was the most strongly associated comorbidity with LSA (OR=3.82, 95% CI 2.31–6.30). The odds ratio of anxiety disorder was 2.96 for LSA in individuals with MDD.

4. Discussion

This is the first study to investigate associations between depressive symptoms and LSA in MDD subjects according to experience of trauma. This study presents two important findings: first, feeling of worthlessness is more strongly associated with LSA than other depression symptoms in individuals with MDD. Second, feelings of worthlessness are significantly associated with LSA only in those who have experienced serious trauma and vice versa in individuals with MDD.

This study revealed significant differences in depression symptoms that were associated with LSA, and feelings of worthlessness were the only significant depression symptom associated with LSA among 20 depression symptoms. Although only a few published studies have addressed this issue, our findings are consistent with previous reports that feelings of worthlessness were the depressive symptom most strongly associated with LSA with 4- or 5-fold increase of SA risk in a community population with MDD in the USA from the findings of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) (Bolton et al., 2008), and recurrent MDD in Chinese population (Bi et al., 2012). Bolton et al. (2008) stressed that although feelings of worthlessness are associated with a high increase in risk for SA, only a quarter of depressed individuals endorsing feelings of worthlessness will attempt suicide during their lifetime and three-quarters will not.

An important finding of this study is that feelings of worthlessness are a strong predictor for LSA in those who had experienced serious trauma, and serious trauma became a strong predictor for LSA in those who had feelings of worthlessness in individuals with MDD. Those who had feelings of worthlessness and experienced trauma showed higher LSA among individuals with MDD in all age groups. Suicide is a complex outcome of multiple, inter-related factors. The generally accepted model of suicide risk is the stress-diathesis risk factor model (Moscicki, 1997). Proximal, or trigger, risk factors such as depression or substance abuse are more closely related to SA and act as precipitants. Suicidal individuals differ from nonsuicidal individuals in distal risk factors such as traumatic experiences (Sarchiapone et al., 2007). According to this model, this study showed that feelings of worthlessness are a proximal risk factor for LSA and experience of trauma is a distal factor for LSA in individuals with MDD. Previous studies have also revealed that traumatic experience, depression, and suicide, through gene by environment interaction (Heim et al., 2008; Roy et al., 2007).

Feelings of worthlessness are symptoms of MDD and, at the same time, symptoms of posttraumatic stress disorder (PTSD). In the DSM-5 of PTSD, the three clusters of DSM-IV symptoms are divided into four clusters in DSM-5: intrusion, avoidance, alterations in arousal and reactivity, and negative alterations in cognitions and mood, which are defined as persistent and often distorted negative beliefs and expectations about oneself or the world (e.g., “I am bad”) (American Psychiatric Association, 2013). Although this study also reported that LSA was significantly associated with psychiatric comorbidities in individuals with MDD such as panic disorder, agoraphobia, generalized anxiety disorder, specific phobia, alcohol abuse and dependence, PTSD showed the highest odds ratio among psychiatric comorbidities,

Table 3

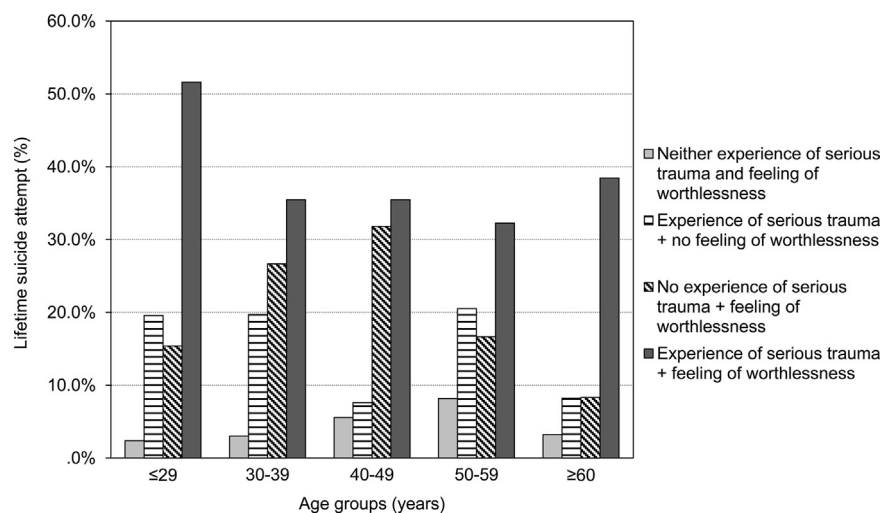
Multivariate logistic regression analysis of each trauma and feelings of worthlessness for lifetime suicide attempt in MDD subjects.

Types of trauma	MDD (N=825)			
	With lifetime suicide attempt			
	N ^a	% ^b	AOR	(95% CI)
Military combat	25	40.01; [‡]	6.10	(2.27–16.36) ^{***}
Life-threatening accident	154	20.8	1.45	(0.92–2.78)
Natural disaster or fire	59	18.6	1.16	(0.58–2.31)
Witness ^c	122	33.61; [‡]	3.41	(2.17–5.37) ^{***}
Rape or sexual assault	59	37.31; [‡]	3.41	(1.88–6.15) ^{***}
Badly beaten	66	47.01; [‡]	5.47	(3.20–9.35) ^{***}
Threatened by others ^d	43	39.51; [‡]	3.43	(1.78–6.62) ^{***}
Learning about traumas to others	48	33.31; [‡]	2.62	(1.38–4.98) ^{**}
No trauma	495	10.91; [‡]	0.49	(0.30–0.79) ^{**}
Any serious trauma ^e	243	32.91; [‡]	4.35	(2.97–6.38) ^{***}
Multiple serious traumas	81	42.01; [‡]	4.45	(2.71–7.31) ^{***}
Feelings of worthlessness without experience of serious trauma	335	14.9	0.74	(0.51–1.08)
Experience of serious trauma without feelings of worthlessness	80	21.3	1.35	(0.76–2.40)
Both feelings of worthlessness and experience of serious trauma	163	38.71; [‡]	5.02	(3.35–7.52) ^{***}
Both feelings of worthlessness and experience of multiple serious traumas	60	46.71; [‡]	5.20	(2.98–9.08) ^{***}

AOR, adjusted odds ratio; CI, confidence interval.

Adjusted for age, gender, and years of education.

Bonferroni correction.

[‡] $p < 0.0033$ for Chi-square test.^{**} $p < 0.01$.^{***} $p < 0.001$.^a Number of subjects who have each depression symptom among 825 MDD subjects.^b Percent of subjects who experienced lifetime suicide attempt among those who had each depression symptom.^c Witness someone being killed or seriously injured.^d Threatened with a weapon, held captive, kidnapped, tortured, or terrorized.^e Military combat, witness, raped or sexually assaulted, badly beaten up, threatened by others and learning about traumas to others, which showed significant odds ratios in Table 2.**Fig. 1.** Age and lifetime suicide attempt in MDD subjects with and without experience of serious trauma, (Military combat, witnessing a violent crime, rape or sexual assault, badly beaten, threatened by others, and learning about traumas to others, which showed significant odds ratios in Table 2) and feelings of worthlessness ($n=825$).

which was similar to that of individuals with both feelings of worthlessness and any serious trauma. Feelings of worthlessness for themselves may result from negative alterations in their cognition and mood according to Cognitive Theory of Depression (Beck et al., 1979).

This study suggested that feelings of worthlessness may be long-term sequelae of serious trauma that did not fulfill full criteria of PTSD in individuals with MDD who had experienced serious trauma (Jeon et al., 2007). Individuals who had both history of PTSD and feelings of worthlessness showed higher odds ratios for LSA, compared with those who had no history of serious

trauma. Although Stevens et al. (2013a) reported that neither assaultive nor nonassaultive trauma without PTSD significantly predicted subsequent suicide attempt in individuals with MDD (Stevens et al., 2013b), MDD with feelings of worthlessness is important to predict LSA in individuals who experienced serious trauma.

Military combat and a bad beating were the most strongly associated with LSA in individuals with MDD, whereas life-threatening accidents and natural disasters or fires showed no significant associations. The results suggested that types of trauma may be important to evaluate LSA in individuals with MDD. In

Table 4

Multivariate logistic regression analysis of psychiatric comorbidities for lifetime suicide attempt in MDD subjects.

Types of comorbidities	MDD (N=825)			
	With lifetime suicide attempt			
Posttraumatic stress disorder	81	39.51; [‡]	3.82	(2.31–6.30) ^{***}
Panic disorder	37	37.81; [‡]	3.16	(1.57–6.37) ^{***}
Agoraphobia	28	35.7	2.70	(1.21–6.04) [*]
Generalized anxiety disorder	131	26.71; [‡]	2.14	(1.35–3.38) ^{***}
Specific phobia	141	26.21; [‡]	1.91	(1.23–2.97) ^{**}
Any anxiety disorders	313	26.51; [‡]	2.96	(2.02–4.34) ^{***}
Alcohol abuse	129	30.21; [‡]	2.82	(1.78–4.49) ^{***}
Alcohol dependence	105	26.71; [‡]	1.99	(1.21–3.28) ^{**}

AOR, adjusted odds ratio; CI, confidence interval.

Adjusted for age, gender, and education years.

Bonferroni correction.

[‡] $p < 0.0062$ for Chi-square test.

^{**} $p < 0.01$.

^{***} $p < 0.001$.

contrast, multiple serious traumas had a similar odds ratio compared with any serious trauma. On the other hand, the capability for suicidal behavior emerges, via habituation and opponent processes, in response to repeated exposure to physically painful and/or fear-inducing experiences (Van Orden et al., 2010). Also, there is a study that panic attacks characterized by prominent morbid catastrophic cognitions may mediate the transition to suicidal ideations and SA in subjects with MDD (Yaseen et al., 2013). Those findings tell us that there should be an interaction between interpersonal trauma and one of the few explicitly interpersonal symptoms of depression assessed in predicting SA.

There are several limitations in the present study that should be considered when interpreting the findings. First, this is a cross-sectional survey, in which information about LSA, depressive symptom, and their diagnosis was based on retrospective reports. Therefore, a recall bias might have affected the accuracy of the data (Patten, 2003). The results showed association rather than causality between traumas and LSAs. Second, false negatives on the questionnaires could result in underestimation of the real prevalence of LSA or depression symptoms. Third, non-responsiveness to the interview may also have impacted these results, as it has been previously reported that non-respondents have higher rates of mental disorders than respondents (de Graaf et al., 2000; Eaton et al., 1992). Fourth, the causes of feelings of worthlessness were not fully evaluated in this study. There needs to be a differentiation between MDD and other causes of feelings of worthlessness such as personality disorders and occupational and economic problems, and further comparison to LSA in MDD subjects.

In conclusion, feelings of worthlessness are an important risk factor for LSA in individuals with MDD who have experienced serious trauma, with an odds ratio of 5.02 compared to those who have not. Even though individuals with MDD who have experienced serious trauma do not fulfill the diagnostic criteria for PTSD, careful attention should be given to their history of trauma and risk for suicide if they have feelings of worthlessness. If MDD subjects have a history of serious trauma, they should be evaluated for feelings of worthlessness. Feelings of worthlessness and history of serious traumas should be evaluated and managed during treatment of MDD to help identify suicide risk.

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analysis and interpretation of data; in the writing of the report; and in the decision to submit the paper for publication.

Conflict of interest

No conflict declared.

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