

Lifetime Prevalence and Correlates of Suicidal Ideation, Plan, and Single and Multiple Attempts in a Korean Nationwide Study

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Abstract: This was the first Korean national study to evaluate prevalence and correlates of suicidal behavior, and to compare multiple and single attempts. A total of 6510 adults completed face-to-face interviews (response rate, 81.7%) through randomly chosen one-person-per-households. Lifetime prevalence and correlates were evaluated with the Korean version of Composite International Diagnostic Interview (K-CIDI), and a questionnaire to inquire about suicidal behaviors. The lifetime prevalence of suicidal ideation, plan, and attempt in South Korea was 15.2%, 3.3%, and 3.2% (single 2.1% and multiple 1.1%), respectively. Younger age was associated with attempts and more strongly associated with multiple attempts. Attempts were the most strongly associated with mood disorders, especially bipolar disorder, which was more strongly associated with multiple attempts. In conclusion, suicidal behaviors are highly prevalent in Korea, especially in young adults. Bipolar disorder was the most strongly associated disorder with suicide attempts, more with multiple attempts.

Key Words: Korea, suicide attempt, multiple attempt, bipolar disorder.

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Suicide rate is markedly higher in Korea. According to the report compiled by the Korea National Statistical Office, 24.8 victims of every 100,000 in 2007 (Korea National Statistical Office, 2008), which is higher compared with 10.1 in the United States, 6.0 in the United Kingdom, and 19.1 in Japan (Organisation for Economic Co-operation and Development, 2008). Suicide is the leading cause of death in young adults aged between 20 and 30 years (Korea National Statistical Office, 2008).

However, there are few studies that have focused on populations with respect to suicidal behaviors in Korea. Some studies have focused on adolescents, reporting that depression was an important predictor for suicidal behavior (Kim, 2008; Park et al., 2006). To our best knowledge, the present study is the first to examine the

relationship between suicidal behaviors and mental disorders in a nationwide survey of Korea.

Multiple suicide attempts are usually believed to be more serious suicidal behavior than single attempts; however, few previous nationwide studies have compared these 2 groups in general population. It is said that multiple attempts predict later attempts more so than single attempts and ideation (Miranda et al., 2008). In addition, among clinically referred teens, those who attempt suicide multiple times have more than 3 times higher odds of making another suicide attempt within 1 year as compared with those who had only 1 attempt (Hulten et al., 2001).

One of the aims of this study was to investigate the lifetime prevalence of suicidal behaviors such as suicidal ideation, plan, and single and multiple attempts. Another was to evaluate the factors associated with each suicidal behavior, including demographic variables and lifetime DSM-IV disorders.

METHODS

Data Source, 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. Subjects were selected using a stratified, multistage, cluster sample design, which was based on the 2005 community registry office population census (Korea National Statistical Office, 2006). The sampling of the subjects was carried out across 12 catchment areas, which consisted of 3 metropolitan districts, 5 districts of mid-sized cities, and 4 rural counties. One person per selected household, with the earliest birthday, was chosen at random, without consideration of month or year of birth. From the initially selected 7968 individuals aged between 18 and 64 years, a total of 6510 face-to-face interviews (response rate, 81.7%) were completed using the K-CIDI. The institutional review board of Seoul National University College of Medicine approved this study. All of the subjects were fully informed about the aims and methods of the study before completing the interview. Informed consent was obtained prior to participation.

Measures

Assessment of Lifetime DSM-IV Disorders

The KECA-R diagnoses are based on the K-CIDI (World Health Organization, 1990), which is a fully structured diagnostic interview designed to make psychiatric diagnoses using the definitions from the DSM-IV (American Psychiatric Association, 1994). The K-CIDI was validated by Cho et al. (1999), according to the World Health Organization guideline (World Health Organization, 1997). Blind clinical reinterviews with the Structured Clinical Interview for the DSM-IV (SCID) and clinical diagnosis were generally in good concordance with the K-CIDI diagnoses (Cho et al., 1999). The K-CIDI was previously used through the Korean Epidemiologic Catchment Area (KECA) study, conducted between June and November 2001 (Cho et al., 2007).

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Assessment of Lifetime Suicidal Behaviors

The questionnaire for suicidal behaviors was added after the K-CIDI (Lee et al., 2007). The question used to test for suicidal ideation was, “Have you ever seriously thought about committing

suicide?” The question used to examine suicidal plans was, “Have you ever made a real plan for committing suicide?” The question used to examine suicide attempts was, “Have you ever attempted suicide?” The question used to examine the number of suicide

TABLE 1. Lifetime Prevalence^a of Suicidal Ideation, Plan, and Attempt in a Nationwide Sample of Korea

Categories	Male (N = 3281)		Female (N = 3229)		Total (N = 6510)	
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)
Suicidal ideation	419	12.9 (11.8–14.1)	563	17.6 (16.3–19.0)***	982	15.2 (14.3–16.1)
Suicidal ideation without plan or attempt	321	9.9 (8.9–11.0)	386	12.1 (11.0–13.3)**	707	11.0 (10.3–11.8)
Suicide plan	70	2.2 (1.8–2.8)	144	4.5 (3.8–5.3)***	214	3.3 (2.9–3.8)
Suicide plan without attempt	24	0.7 (0.5–1.0)	56	1.8 (1.4–2.3)***	80	1.2 (1.0–1.5)
Suicide attempt	81	2.5 (2.0–3.1)	128	4.0 (3.4–4.7)***	209	3.2 (2.8–3.7)
Single suicide attempt	56	1.7 (1.3–2.2)	78	2.4 (1.9–3.0)*	134	2.1 (1.8–2.5)
Multiple suicide attempts	23	0.7 (0.5–1.0)	50	1.6 (1.2–2.1)*	73	1.1 (0.9–1.4)
Any suicidal behavior	424	13.1 (12.0–14.3)	570	17.8 (16.5–19.2)***	994	15.4 (14.5–16.3)

^aAdjusted for age and gender distributions according to the Korean National Statistical Office’s 2005 census.

Chi square test for each category between genders.

*p < 0.05.

**p < 0.01.

***p < 0.001.

TABLE 2. Adjusted Odds Ratios of Each Lifetime Suicidal Behavior for Demographic Variables, Compared With Participants With No Previous History of Behavior (N = 6510)

Variables	Suicidal Ideation Without Plan or Attempt (N = 707) OR (95% CI)	Suicide Plan Without Attempt (N = 80) OR (95% CI)	Single Suicide Attempt (N = 134) OR (95% CI)	Multiple Suicide Attempt (N = 73) OR (95% CI)
Gender	—	—	—	—
Female	1.4 (1.2–1.7)***	1.9 (1.1–3.2)*	1.5 (1.0–2.3)*	2.0 (1.1–3.5)*
Male	1	1	1	1
Age				
18–29	1.0 (0.6–1.5)	1.6 (0.4–6.6)	3.7 (1.3–10.8)*	6.2 (1.5–26.4)*
30–39	0.9 (0.6–1.3)	0.8 (0.3–2.1)	3.1 (1.3–7.0)**	2.4 (0.8–7.4)
40–49	1.1 (0.8–1.5)	0.6 (0.3–1.5)	2.0 (0.9–4.3)	1.4 (0.5–4.0)
50–59	1.1 (0.8–1.6)	1.4 (0.7–2.9)	2.2 (1.1–4.2)*	1.7 (0.6–4.4)
≥60	1	1	1	1
Marital status	—	—	—	—
Married	1	1	1	1
Divorced/separated/widowed	1.4 (1.0–1.9)	2.6 (1.3–5.1)**	2.4 (1.4–4.1)**	4.2 (2.0–8.3)***
Unmarried	1.3 (1.0–1.7)	0.6 (0.2–1.7)	1.0 (0.5–1.9)	0.7 (0.3–1.9)
Years of education	—	—	—	—
≤11	0.8 (0.6–1.0)	0.7 (0.3–1.6)	2.5 (1.3–4.8)**	1.1 (0.4–2.7)
12 (high school)	0.9 (0.8–1.2)	1.1 (0.6–2.1)	1.4 (0.8–2.3)	1.0 (0.5–2.0)
≥13 (college)	1	1	—	1
Economic status	—	—	—	—
≤\$1000	1.2 (1.0–1.6)	1.8 (0.9–3.6)	1.4 (0.8–2.5)	2.7 (1.3–5.9)*
\$1000–\$2000	1.0 (0.8–1.2)	0.8 (0.4–1.6)	0.8 (0.5–1.3)	1.0 (0.5–2.1)
≥\$3000	1	1	1	1
Regions of growth				
Metropolitans	1.2 (1.0–1.5)	1.3 (0.7–2.2)	1.3 (0.9–2.1)	2.6 (1.3–5.1)**
Mid- or small-sized cities	1.1 (0.9–1.4)	1.1 (0.5–2.1)	0.9 (0.5–1.6)	2.1 (1.0–4.5)*
Rural counties	1	1	1	1

Adjusted for all variables listed above.

*p < 0.05.

**p < 0.01.

***p < 0.001.

attempts was, “How many times have you attempted suicide in your lifetime?” Finally, the question used to examine the age of first suicide attempt was, “How old were you when you first attempted to commit suicide?”

Statistical Analyses

The weight values of the KECA-R were calculated for the respondents and used to adjust the data to approximate the national population in terms of age and gender for each catchment area, as defined by the Korea National Statistical Office’s 2005 census (Korea National Statistical Office, 2006). We calculated the lifetime prevalence of suicidal behaviors including suicidal ideation, plan, and single and multiple suicide attempts in Koreans by gender. To evaluate the sole effect of each suicidal behavior, we made subgroups of suicidal ideation into those without a plan or attempt and those with a suicidal plan but without an attempt. Multivariate logistic regression analyses were performed to evaluate odds ratios (OR) of demographic variables and DSM-IV disorders after controlling for age, gender, years of education, and other variables. The statistical analyses were performed with Statistical Package for the Social Sciences (SPSS) 11.0.

RESULTS

Lifetime Prevalence and Gender Differences of Suicidal Behaviors

Table 1 summarizes the lifetime prevalence of suicidal ideation, plan, and attempt was 15.2%, 3.3%, and 3.2%, respectively. Lifetime prevalence of a single suicide attempt was 2.1%, and that of multiple attempts was 1.1%. As a result, 15.4% (95% confidence interval [CI] = 14.5–16.3) of the total population experienced some kind of suicidal behavior including suicidal ideation, plan, or attempt in their lifetime, a finding which was significantly higher in females (17.8% vs. 13.1%, $\chi^2 = 28.1, df = 1, p < 0.0001$).

Demographic Correlates of Lifetime Suicidal Behaviors

Table 2 showed that the only factor significantly associated with suicidal ideation was female gender (OR = 1.4, 95% CI = 1.2–1.7). Female gender was also associated with suicidal plan, and single and multiple suicide attempts. Younger age (18–29 years old) was strongly associated with a single suicide attempt (OR = 3.7, 95% CI = 1.3–10.8), and even more strongly associated with multiple suicide attempts (OR = 6.2, 95% CI = 1.5–26.4) than single attempts.

DSM-IV Disorder Correlates of Lifetime Suicidal Behaviors

Table 3 showed that suicidal ideation was the most strongly associated with obsessive compulsive disorder (OR = 5.0, 95% CI = 2.2–11.2). Suicidal plan was the most strongly associated with major depressive disorder (OR = 8.2, 95% CI = 4.7–14.4). Bipolar disorder was the most strongly associated with single (OR = 15.7, 95% CI = 3.6–69.0) and multiple suicide attempts (OR = 30.6, 95% CI = 6.1–153.5).

DISCUSSION

This study provides the first data regarding the prevalence and risk factors of suicidal behaviors in a nationwide sample of Korea and for multiple suicide attempts in a large population.

Although there is substantial variability in the prevalence of suicidal behaviors cross-nationally (Nock et al., 2008), there are also important cross-national consistencies in that Korea has a higher rate of suicidal behaviors than that of other countries. Korea was the highest country in lifetime prevalence of suicidal ideation, compared with both Western and other Asian countries ranged from 3.0% to 13.5%, compared with a value of 15.2% from this study (Kessler et al., 1999; Lee et al., 2007; Nock et al., 2008; Ono et al., 2008;

TABLE 3. Adjusted Odds Ratios of Each Lifetime Suicidal Behavior for DSM-IV Disorders, Compared With Participants With No Previous History of Suicidal Behavior (N = 6510)

Disorders	Suicidal Ideation Without Plan or Attempt (N = 707) OR (95% CI)	Suicide Plan Without Attempt (N = 80) OR (95% CI)	Single Suicide Attempt (N = 134) OR (95% CI)	Multiple Suicide Attempts (N = 73) OR (95% CI)
Alcohol use disorder	1.6 (1.3–1.9)***	2.8 (1.6–4.9)***	2.4 (1.6–3.7)***	1.7 (0.9–3.1)
Alcohol dependence	1.5 (1.1–2.0)*	4.9 (2.7–8.7)***	2.6 (1.5–4.5)***	1.7 (0.8–4.0)
Alcohol abuse	1.6 (1.3–2.1)***	0.7 (0.2–2.4)	2.2 (1.2–3.9)**	1.9 (0.7–4.7)
Mood disorders	4.5 (3.5–5.8)***	7.7 (4.4–13.4)***	7.4 (4.7–11.6)***	9.5 (5.4–16.6)***
Major depressive disorder	4.3 (3.3–5.6)***	8.2 (4.7–14.4)***	6.5 (4.0–10.6)***	7.9 (4.1–15.0)***
Dysthymia	2.9 (1.3–6.6)*	—	0.7 (0.1–5.0)	0.5 (0.0–5.9)
Bipolar disorder	3.2 (0.9–11.3)	—	15.7 (3.6–69.0)***	30.6 (6.1–153.5)***
Anxiety disorders	1.8 (1.3–2.3)***	2.9 (1.6–5.1)***	2.4 (1.4–3.9)***	8.3 (4.8–14.2)***
OCD	5.0 (2.2–11.2)***	4.5 (0.9–21.9)	3.5 (0.8–15.9)	2.9 (0.5–16.9)
PTSD	2.1 (1.0–4.1)*	3.3 (1.1–9.7)*	4.5 (1.8–11.4)**	17.6 (7.4–41.9)***
Panic disorder	2.2 (0.5–9.7)	—	2.8 (0.2–35.6)	2.2 (0.1–53.2)
Social phobia	1.7 (0.6–5.5)	4.0 (0.8–19.3)	3.2 (0.7–14.8)	4.2 (0.8–22.8)
GAD	1.7 (1.0–2.9)	1.9 (0.7–5.2)	2.0 (0.8–4.8)	5.7 (2.3–14.0)***
Specific phobia	1.3 (0.9–1.9)	1.9 (0.9–4.3)	1.2 (0.5–2.5)	2.5 (1.1–5.7)*
Any DSM-IV disorders	2.6 (2.2–3.1)***	6.2 (3.9–9.7)***	5.6 (3.9–8.0)***	13.3 (7.7–23.2)***

Adjusted for age, gender, education years, and the variables listed above.

*p < 0.05.

**p < 0.01.

***p < 0.001.

OCD indicates obsessive compulsive disorder; PTSD, post-traumatic stress disorder; GAD, generalized anxiety disorder; DSM-IV, Diagnostic Statistical Manual of Mental Disorders, Fourth Edition; CI, confidence interval; OR, odds ratio.

Scocco et al., 2008; Weissman et al., 1997). Additionally, lifetime prevalence of suicidal plans and attempts were also more numerous in Korea than in other countries, except in the United States (Kessler et al., 1999). Few previous studies have focused on the prevalence of multiple or repetitive suicide attempts in the general population. This study found that 1.1%, or one-third of Koreans who attempt suicide, did so multiple times.

Korean young adults showed a higher rate of a lifetime history of suicide attempts, especially multiple suicide attempts. Although previous studies commonly found that the first onset of suicidal behaviors began as a young adult (Kessler et al., 1999; Lee et al., 2007), young adults did not show a significantly higher rate of a lifetime history of suicide attempt than older ages (De Leo et al., 2005; Fortuna et al., 2007).

The association of a prior or current mental disorder with a significantly increased risk of suicidal behaviors, particularly with mood disorders, is a consistent with previous literature (Kessler et al., 1999; Lee et al., 2007; Nock et al., 2008; Ono et al., 2008; Scocco et al., 2008; Weissman et al., 1997). The current study shows that bipolar disorder is the most strongly associated with both single and multiple suicide attempts in the general population, and that it was more strongly associated with multiple suicide attempts.

It is interesting that posttraumatic stress disorder showed a strong association with suicide attempts. It was 4 times more strongly associated with multiple attempts than a single attempt after controlling for mood disorders. Those with posttraumatic stress disorder were at higher risk for multiple suicide attempts than those with major depressive disorder. Another previous study revealed that higher impulsivity was found in groups with lifetime posttraumatic stress disorder (Oquendo et al., 2005).

Limitations of the Study

This is a cross-sectional study in which information about lifetime suicidal behaviors and symptoms of psychiatric disorders is based on retrospective reports. Therefore, recall bias may have affected the accuracy of prevalence and illness duration data (Patten, 2003). Nonresponsiveness to the interview may also have impacted these results, as it is reported that nonrespondents have higher rates of mental disorders than respondents (de Graaf et al., 2000).

CONCLUSIONS

This study revealed that Koreans showed higher rates of suicidal behaviors. Younger age group (18–29 years) was associated with suicidal attempts and more strongly associated with multiple suicide attempts in Korea. Suicidal attempts were significantly associated with mood disorders such as major depressive disorder and bipolar disorder. Especially, bipolar disorder was the most strongly associated disorder with suicide attempts, more with multiple attempts.

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