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Original Article

Relationship Between Predictors of Incident Deliberate Self-Harm and Suicide Attempts Among Adolescents

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A B S T R A C T

Purpose: Data on the incidence of deliberate self-harm (DSH) and suicide attempts (SAs) are lacking in non-Western adolescents, and no studies have investigated differences in incident DSH and SA worldwide. This study aimed to investigate the incidence rates and relationships between predictors in DSH and SA.

Methods: The Taiwanese Adolescent Self-Harm Project was a longitudinal study of DSH among adolescents. We recruited 5,879 students from 14 senior high schools in northern Taiwan. Online questionnaires on sociodemographic data, suicidality, depressive symptoms, self-esteem, social support, family discord, impulsivity, and alcohol and tobacco use were assessed at baseline (T1) and at 1 year of follow-up (T2). Logistic regression analyses were performed to evaluate the predictors of incident DSH and SA.

Results: The mean age was 16.02 years, and 56.73% of the cohort was female. At T1, the lifetime prevalence rates of DSH and SA were 25.04% and 3.50%, respectively. At T2, 4,331 (73.67%) students had completed follow-up assessments. The 1-year incidence rates of DSH and SA were 4.04% and 1.53%, respectively. The predictors of incident DSH included perceived family discord and more depressive symptoms at T1. The predictors of incident SA were lifetime suicide ideation, more depressive symptoms, and tobacco use at T1.

Conclusions: The incidence rates of DSH and SA were similar to those reported in Western countries. The predictors of incident DSH and SA were similar but not identical. Our results highlight the risk factors which should be considered in terms of early identification and intervention among adolescents to prevent suicidality.

IMPLICATIONS AND CONTRIBUTION

Baseline depressive symptoms predicted both incident deliberate self-harm and suicide attempts. Family discord predicted incident deliberate self-harm, whereas lifetime suicide ideation and baseline tobacco use predicted incident suicide attempts.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

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Deliberate self-harm (DSH) and suicide attempts (SAs) are major public health concerns among adolescents [1]. DSH is defined as intentional self-harmful behavior with or without suicidal intentions [2]. Adolescent DSH is often repeated [1] and is an independent risk factor for multiple substance dependence syndromes in adulthood [3]. Suicidal behavior is the most important risk factor for youth suicide [4]. Although SA is less common among adolescents than DSH, they have been reported to be interrelated. In addition, many adolescents with SA also engage in self-harm [5].

Only three studies have investigated the incidence rate of adolescent DSH. One study from England reported a 6-month incidence rate of DSH of 6% [6]. Another study from Norway reported a 1-year incidence rate of adolescent DSH of 3.3%–5.3% [7]. One study conducted in both Australia and the U.S. reported a 1-year incidence rate of DSH of 3.47% in grade 9 boys and 8.18% in grade 9 girls [8]. Only two studies have reported the incidence of adolescent SA in the community. One from the U.S. reported a 1-year incidence rate of adolescent SA of 1.3% [9], and the other from Norway reported a rate of .9%–1.7% [7].

Recognizing the predictors of incident DSH and SA among adolescents is essential, as it may allow for early identification and initiation of interventions, thereby preventing DSH and SA and their negative impacts. It may also help policy makers to allocate resources more appropriately. Nevertheless, only two studies have investigated the predictors of incident DSH. In one of them, incident self-harm was associated with depressive and anxiety symptoms; antisocial behavior; and the use of alcohol, cannabis, and tobacco [10]. In another study, risk factors for incident DSH included being female, depressive symptoms, antisocial behavior, and alcohol use [8]. However, to the best of our knowledge, no study has investigated the predictors of incident SA, which is important because SA result in high medical lethality and may lead to death.

Literature on incident self-harm behavior, with or without suicidal intent, is especially scanty in non-Western populations. Therefore, the aim of this study was to investigate the incidence rates and predictors of incident adolescent DSH and SA. Based on previous prevalence studies on the risk factors of DSH and SA, we postulated that these predictors may have factors in common such as depression [11–13] but may also differ in terms of suicide ideation [14] and substance abuse [15–17].

Methods

Procedures

The Taiwanese Adolescent Self-Harm Project was undertaken at 14 senior high schools in the Taipei area in northern Taiwan. These schools accounted for 11.7% of all high schools in the Taipei area. Nine schools were in urban areas, three in suburban areas, and two in rural areas according to the Taiwan-Fukien Demographic Fact Book [18]. All of the participating schools were equipped with classroom computing facilities which were used by the students to complete online anonymous questionnaires.

A research worker with master's degree assisted in recruitment, which was conducted without any involvement of school staff. The research assistant carefully explained the study, emphasized the confidentiality (except for those at immediate risk of suicide who were reported to the school), and obtained written informed consent from the participants. Parental permission was obtained by a letter to the parents. The Institutional Review Board of Mackay Memorial Hospital approved this study prior to recruitment.

From October 2008 to March 2010, 5,879 students were recruited. The following information was obtained each year for 2 consecutive years, baseline (T1) and 12 months later (T2): socioeconomic status (SES) data (parents' jobs, whether they lived with their biological parents or the basic needs of the family were satisfied), school district, school ranking, whether there was family discord, self-harm and suicidal experiences, substance abuse and physical illness, the Chinese version of the Patient Health Questionnaire-9 item (PHQ-9) [19], the Rosenberg Self-Esteem Scale (RSES) [20,21], Multi-Dimensional Support Scale [22], Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) [23], and the Barratt Impulsiveness Scale (BIS-11) [24]. The data from the online questionnaires were collected by a computer engineer. The research team also provided counseling for the high-risk adolescents by a child psychiatrist or a psychologist at their schools.

Measurements

Suicidality: suicide ideation, suicide planning, deliberate self-harm, suicide attempt. At T1, the subjects were asked if they had ever thought about killing themselves. On the same scale, they were also asked "Have you ever deliberately (not accidentally) hurt yourself?" and, if so, "How many times have you deliberately self harmed?" The participants who responded positively to the main question were then asked to describe the self-harm act (multiple choices including drug overdose, hanging, burning charcoal, jumping from a height, cutting themselves, hit by a car, and others: provide a description of the act), the number of episodes, and the time of the first and last episode. The respondents were also asked the consequences of the act (e.g., need for a medical intervention). SAs were identified for all reports of self-harm from the response "Have you ever really tried to kill yourself?" We also collected the number of SAs and the time of the first and last SAs. The subjects who reported having self-harmed with/without suicidal intent were classified as "DSH," and SA was defined as an intentional action to kill themselves. The same questions were repeated at T2. We then identified incident DSH in those who had reported DSH at T2 but not at T1 and incident SA in those who reported SA at T2 but not at T1.

Patient Health Questionnaire-9 item. The PHQ-9 consists of nine items evaluating the presence of one of the nine Diagnostic and Statistical Manual of Mental Disorders (Fourth edition) criteria of major depressive episodes in the past 2 weeks, with higher scores indicating an increased likelihood of major depressive disorder (MDD). The Chinese version of the PHQ-9 has good internal consistency ($\alpha = .84$) and acceptable test–retest reliability (.8) among Taiwanese adolescents. Tsai et al. [19] reported that a PHQ-9 score $\geq$15 had a sensitivity of .72 and a specificity of .95 in recognizing MDD.

Rosenberg Self-Esteem Scale. The RSES consists of 10 items that refer to self-respect [21]. The reliability and validity of the Chinese version have also been demonstrated in Taiwanese children [20].

Barratt Impulsiveness Scale. The BIS-11 is a 30-item self-reported questionnaire designed to measure impulsivity [25]. The 25 items of the Chinese version of the BIS-11 have been reported to