

Suicidal Ideation in Long-Term Adult Cancer Survivors: Findings of a Nationwide Cross-Sectional Study

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ABSTRACT

Background: Cancer survivors suffer substantial psychologic distress, but little is known about their vulnerabilities to suicidal ideation more than 5 years after diagnosis.

Methods: We compared suicidal ideation among 1,033 adult cancer survivors, who had received a diagnosis of cancer more than 5 years previously, with that among individuals without a cancer history using nationwide survey data. Logistic regression models were used to evaluate suicidal ideation in cancer survivors.

Results: Cancer survivors did not have a significantly higher suicidal ideation rate than those without a cancer history, regardless of depressive mood.

Conclusions: A cancer history of 5 years or greater is not associated with suicidal ideation.

Impact: A large Korean study considering depressive mood affirm no association between long-term cancer survivorship and suicidal ideation.

Introduction

Cancer survivors experience emotional distress on a spectrum that extends from financial worries to facing death (1); suicide is a critical psychologic outcome. A growing body of evidence indicates adult cancer survivors have a higher risk of suicide than the general population (2). However, vulnerability to suicide tends to normalize over time (2). The early phase after a cancer diagnosis is critical, but little is known about such vulnerabilities during later phases (3). Furthermore, factors related to suicide have seldom been considered in this patient population, although it has been previously established that depression is more common in patients with cancer than in the general population (4). Our aim was to confirm the association between long-term cancer survivorship and suicidal ideation after adjusting for potential confounders.

Materials and Methods

The Institutional Review Board of Gachon University Gil Medical Center approved the study protocol (GFIRB2021-481). Detailed methodology information was reported elsewhere.

We used Korean National Health and Nutritional Examination Survey (KNHANES) data collected in 2007 to 2013, 2015, 2017, and 2018 that included information on suicidal ideation and age at cancer diagnosis. Initially, we identified 56,247 subjects ages 19 to 79 years who had provided data on suicidal ideation (in people \geq 80 years of age, age at cancer diagnosis was not specified). Cancer survivors were defined as individuals who had received a cancer diagnosis more than 5 years in the past. The time from cancer diagnosis was calculated by subtracting the age at diagnosis from the age at survey completion.

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After excluding patients recruited within 5 years of their cancer diagnosis, 55,128 subjects were included in the final analysis.

The primary outcome of our study was suicidal ideation, which was addressed using the self-reported yes/no question: "Have you thought about committing suicide within the last 12 months?" The following were included as covariates: demographics (age, sex, economic status, highest education level, marital status, and current job status), health-related habits (smoking status and drinking frequency), comorbidities (obesity, hypertension, type 2 diabetes, and major cardiovascular diseases such as myocardial infarction and stroke), and depressive mood. To assess depressive mood, we used responses to the yes/no questionnaire item: "Have you experienced sadness or despair continuously for more than 2 weeks during the past year?" Patients who were currently being treated for depression were considered as having depressive mood regardless of their response. Suicidal ideation is associated with depressive mood, though sometimes it can occur without depressive mood. Given the significant collinearity between cancer history and depressive mood, logistic regression models for evaluating suicidal ideation in cancer survivors were applied among depressed or nondepressed individuals. All analyses were performed using STATA MP software, version 17.0 (STATA Corp.), and *P* values <0.05 were considered statistically significant.

Results

The characteristics of participants according to their cancer history are summarized in **Table 1**. Approximately 1.9% of the 55,128 study subjects were long-term cancer survivors, who were more likely to have comorbidities and to be older, female, poorer, less educated, and unemployed, but had healthier habits than subjects without a cancer history. Higher proportions of survivors reported experiences of depression but not of suicidal ideation. In unadjusted models, cancer survivors did not experience suicidal ideation significantly more often than subjects without a cancer history, both in depressed and nondepressed individuals (**Table 2**).

Discussion

Many factors, such as catastrophic reactions to a diagnosis or treatment responses, aggravate the risk of suicide among adult cancer survivors during the early phase after a cancer diagnosis (2, 3). Nonetheless, it remains unclear whether this increased risk persists

Table 1. Participant characteristics according to a 5-year or greater history of cancer.

	General population (n = 54,095)	Cancer survivors (n = 1,033)	P
Demographics			
Age (years)	48.9 ± 15.9	62.0 ± 11.2	<0.001
Female gender	30,629 (56.6)	703 (68.1)	0.005
Low education level ^a	17,765 (33.4)	573 (55.6)	<0.001
Low income level ^b	23,411 (43.8)	583 (57.2)	<0.001
Unmarried	15,041 (27.9)	263 (25.5)	0.087
No current job	20,607 (38.8)	576 (55.8)	<0.001
Health-related habits			
Current smoker	11,181 (20.7)	96 (9.3)	<0.001
Frequent drinker ^c	11,793 (24.9)	146 (18.3)	<0.001
Comorbidities			
Obesity	17,980 (33.2)	333 (32.2)	0.498
Hypertension	11,178 (20.7)	359 (34.8)	<0.001
Type 2 diabetes	4,323 (8.0)	172 (16.7)	<0.001
Major cardiovascular disease ^d	1,484 (2.7)	59 (5.7)	<0.001
Mental health			
Depressive mood	7,921 (14.6)	205 (19.9)	<0.001
Suicidal ideation	6,301 (11.7)	134 (13.0)	0.189

Note: Data are presented as the mean ± SD or number (percentage).

^aLess than 9th grade.

^bLess than median household income.

^cMore than twice per week.

^dIncludes myocardial infarction and stroke.

beyond 5 years. Demonstrating that this is the case has been difficult because few data are available on suicide rates of cancer survivors 5 years or more after a cancer diagnosis. Some researchers (5) have reported suicide rates among long-term survivors and the general population are not significantly different, while others (6) have reported significantly higher suicide rates for cancer survivors. However, these studies did not consider important confounders, especially depression. In addition, most studies focused on actual suicide rates, rather than on suicidal ideation, which is one of the most accurate determinants of the intention to commit suicide (7).

This study has several limitations. First, given the cross-sectional nature of the KNHANES, causal and longitudinal relationships

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Table 2. Relationships between cancer survivors and suicidal ideation in depressed and nondepressed individuals.

Cancer survivors (vs. general population)	OR (95% confidence interval)	P
Depressed (n = 8,126)	0.94 (0.71–1.25)	0.689
Nondepressed (n = 46,998)	0.93 (0.69–1.25)	0.628

between independent variables and mental health cannot be determined. Future longer-term prospective studies are required to evaluate the risks of psychological distress caused by a diagnosis of cancer. Next, our results focus on the general Korean population and may not be applicable to Western cultures, in which suicide rates are lower, strategies for dealing with distress are better, and less stigma is attached to cancer (2, 8). Despite these limitations, our findings suggest that long-term adult cancer survivors do not have higher rates of suicidal ideation than members of the general population without a cancer history.

Authors' Disclosures

No disclosures were reported.

Authors' Contributions

I.C. Hwang: Conceptualization, data curation, funding acquisition, methodology, writing—original draft, writing—review and editing. **H.Y. Ahn:** Data curation, formal analysis, supervision, writing—review and editing. **H.S. Suh:** Supervision, investigation, writing—review and editing.

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