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## Short Report

# The effect of cancer on suicide in ethnic groups with a differential suicide risk

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This study examined the suicide risk among persons with cancer in ethnic groups with differential suicide mortality in the general population. We calculated the suicide standardized incidence ratios (SIRs) among Europe–America and Asia–North Africa-born Israelis with cancer, relative to the respective rates in the general population. The SIRs were higher in the European–American group [men: 1.96, 95% confidence interval (CI) 1.62–2.30; women: 2.03, 95% CI 1.51–2.56], but not significantly different in the Asian–North African group (men: 0.86, 95% CI 0.52–1.20; women: 0.80, 95% CI 0.10–1.50). Assessment of suicide risk must consider the ‘suicide culture’ of the person with cancer.

## Introduction

During their disease trajectory, persons with cancer are at risk of psychiatric morbidity and suicide. Approximately one-third develop mood and anxiety disorders resulting from the dreaded diagnosis, treatment side effects, pain and mutilation.<sup>1</sup> Studies have identified an increased suicide risk,<sup>2</sup> especially following diagnosis.<sup>3</sup> The suicide risk varies as a result of clinical factors (e.g. cancer stage and site) and socio-demographic variables (e.g. gender, social supports and religiosity<sup>4,5</sup>), including ethnicity.<sup>6</sup> With regard to ethnic differentials in suicide, a question does arise: Do they remain even when the person faces cancer? Surprisingly, research on this subject is limited.<sup>3</sup>

### *Ethnic differences in health- and suicide-related factors*

Israel is a mosaic of ethnic groups. Typically, the Jewish population is grouped by the continent of origin: Asia and North Africa (mostly from Islamic countries, where suicide is relatively low<sup>7</sup>), and Europe and America (from countries with higher suicide rates<sup>7</sup>). These groups differ in educational level (higher among the European-Americans), family size (larger among the Asian–North Africans) and degree of religiosity (European-Americans are more often secular<sup>8</sup>). Also, the rates of treated mood disorders are higher in the Asian–North African group than in its counterpart.<sup>9</sup>

Cancer morbidity and mortality differ between these groups. The age-standardized incidence rates per 100 000 of all malignancies in 2008 were higher among the European-Americans than among the Asian–North Africans (men: 379 and 275, respectively; women: 311 and 298, respectively).

Suicide rates also differ between these ethnic groups. Age-specific rates per 100 000 among the European-Americans aged ≥45 years were higher than among Asian–North Africans (2006–08; men, 18.7 and 10.8, respectively; women: 4.6 and 2.6, respectively).

## Objective

The objective of this study was to explore the suicide risk among persons with cancer in ethnic/cultural groups with differential suicide rates in the general population. To maximize the contrast and to secure an adequate number of cases for statistical power, we selected Europe–America-born (high suicide rate) and Asia–North Africa-born (low suicide rate) people.

## Methods

The Israel National Cancer Registry (INCR), which provided the information on cancer morbidity, is fed by all medical services. These are subjected to mandatory reporting. The national identity number enables cumulative entries and linkage to other databases, e.g. the linkage between the INCR and the National Population Registry enables retrieval and validation of the demographic data on individuals with cancer.

The data in INCR include socio-demographic variables (e.g. age; sex; country of birth; dates of birth and death), primary site and histological type of the tumours according to the Standard International Classification of Diseases for Oncology (ICD-O, third version), and the time of diagnostic confirmation. Also, data from autopsy and death certificates are collected. The INCR completeness is higher than 93% for solid tumours.

In the current study, we included all malignant tumours, including malignant melanoma of skin and benign central nervous system tumours (ICD-O topography: C00.0–C80.9). The period we covered, 1999–2007, follows further upgrades made in the system.

The Central Bureau of Statistics runs the nationwide database of causes of death, which are recorded according to the ICD-10th edition since 1998. The records with causes of death for the studied years were linked with the INCR using the personal identification number and other demographic information.

Confidentiality was strictly observed since the INCR analysts had no access to the personal identification of the deceased.

**Table 1** SIRs and 95% CIs of suicide among persons with cancer by age, sex and continent of origin (1999–2007)

Continent of birth	Sex	Age group 40–64 years			Age group >65 years		
		Observed suicides	Expected suicides	SIR (95% CI)	Observed suicides	Expected suicides	SIR (95% CI)
Asia–North Africa	M	13	12.06	1.08 (0.49–1.66)	9	15.14	0.59 (0.21–0.98)
	W	2	4.28	0.47 (0.00–1.11)	1	2.84	0.35 (0.00–1.04)
Europe–America	M	20	9.26	2.16 (1.21–3.11)	103	54.79	1.88 (1.52–2.24)
	W	24	6.79	3.53 (2.12–4.95)	28	20.65	1.36 (0.85–1.86)

M: Men; W: Women

## Analysis

We calculated the rates of suicide in the general population (1999–2007) by sex, age groups 40–64 and  $\geq 65$  years, and continent of birth and compared them with those in the respective groups with cancer. The expected number of deaths was taken from the general population and applied to those with a malignant disease, and standardized incidence ratio (SIR) and 95% CIs were calculated. There were few people below 40 years of age, with cancer, and who committed suicide. Therefore, we excluded them from the analysis.

## Results

The mean years from entrance into the INCR to suicide was similar between both groups (European-American: men,  $M=2.03$   $SD=1.98$ ; women:  $M=2.44$   $SD=2.21$ ; Asian-North African: men,  $M=2.40$   $SD=2.26$ ; women:  $M=2.40$   $SD=1.55$ ).

The SIRs were higher for the European-Americans with cancer compared with the general population of the same age, sex and origin [men: 1.96, 95% confidence interval (CI) 1.62–2.30; women: 2.03, 95% CI 1.51–2.56]. In contrast, there were no statistically significant differences among the Asian-North Africans (men: 0.86, 95% CI 0.52–1.20; women: 0.80, 95% CI 0.10–1.50). European-Americans aged 40–64 years had the highest risk relative to their comparison group (women:  $SIR=3.53$ , 95% CI 2.12–4.95; men:  $SIR=2.16$ , 95% CI 1.21–3.11). Also, the SIR for European-American men aged  $\geq 65$  years was significantly higher compared with the general population of the same origin (1.88, 95% CI 1.52–2.24) but not among women (1.36, 95% CI 0.85–1.86). No statistically significant differences in risk were found in the Asia–North Africa group (table 1).

## Discussion

We investigated the suicide risk differentials among people, with cancer, of differing ethnicity. Our findings showed that among those of European-American origin, the risk was higher than among their counterparts in the general population. This risk was present in both genders and varied by age group. In contrast, Asian-North African individuals with cancer showed no statistical enhanced suicide risk.

As it was hypothesized, the ethnic differences in suicide risk among persons with cancer reproduced the risk differential in the general population. We surmise that a possible reason may be the degree to which suicide is more (Europe–America) or less (Asia–North Africa) silently tolerated as part of the cultural group.<sup>7,10</sup> Persons affiliated with groups with a higher risk may have their suicidal behaviour facilitated when facing cancer, in contrast to groups with a lower risk.<sup>6</sup> Also, differences in social support (stronger among Asian-North Africans<sup>8</sup>) and religiosity (higher among Asian-North Africans<sup>9</sup>) may operate as protective factors.<sup>4,5</sup>

This study has several limitations. Due to statistical power constraints, analyses were performed on aggregated cancer types, which may have concealed differences. Also, no information was available

on cancer stage. Lastly, in more religious groups (e.g. Asian- and North African groups), and despite checks, the death certificate may not record ‘suicide’, thus leading to unknown under-estimations.

In conclusion, health practitioners should attend to both the psychiatric conditions that frequently develop after cancer diagnosis and treatment, and the ‘suicidal culture’ of the affected person.

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*Conflict of interest:* None declared.

## Key points

- The differential suicide risk of persons with cancer by their ethnic group affiliation should be assessed in the presence of psychiatric comorbidity and relevant cancer-related factors.
- Ethnic differentials in suicide risk among persons with cancer may reproduce the differential risk in the general population.

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