

Risk factors for suicide in cancer patients and preventive measures: a literature review

Subtitle: Cancer patient's suicides and prevention

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Abstract

The aim of the study is to identify the main risk factors for suicide and review aspects of suicide prevention. Evidence shows that suicide is higher among cancer patients than in the general population. Lithuania has been in a leading position in suicides worldwide. It is very important to care about cancer patients' emotional status because advances in health care offer great promise for patients' physical health.

Material and methods: This review was conducted using data sources from the PubMed electronic bibliography published over the past ten years. Articles were selected using the keywords "the risk factors", "suicides", and "the patients with cancer". After selection, seventy-two articles were suitable for the analysis.

Results and discussion: The main suicide risk factor was depression; a less frequent factor was other mental pathology. Symptoms such as pain, weakness and decreased physical capacity play an important role in the risk of suicide. Suicide was also affected by the localization of the tumour; a short time elapsed since diagnosis was also important. As in the general population, social, economic, and demographic factors such as male gender, loneliness, age, and low income are important risk factors for suicide among cancer patients.

To reduce the risk of suicide in cancer patients, it is appropriate to create a united, practice-friendly suicide risk assessment system and develop psychoeducational training and psychological assistance for medical staff and family members.

cancer; prevention; risk factor; suicide

INTRODUCTION

Suicide (Latin *sui* – self, *caedere* – kill) is a deliberate act intended to end one's own life [1].

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Suicide is caused by many risk factors and is a complex, multifaceted phenomenon. As early as 1993, P. O'Carroll defined the multicausal aetiology of suicide and its risk factors; the sequence, periods and connections of the latter are unique [2]. Mortality due to suicide is two to three times higher in Lithuania than in many developed countries of the world [3,4]. In our country, all indicators of self-harm are very high, including excessive consumption of alcohol and tobacco products, careless driving, and trauma

in the workplace [5], and suicide is one of the most common external causes of death. The Organization for Economic Co-operation and Development notes that high suicide rates in Lithuania are related to many factors, including rapid social and economic changes that increase psychological and social insecurity [6]. It should be noted that the situation in Lithuania is changing and suicides are decreasing. While the suicide rate per 100,000 people in 2000 was 50.7; in 2005, it was 43.9; in 2010, it was 37.3 [4]; in 2015, it was 30.8; and in 2019, it was 23.5 [7]. This favourable trend in Lithuania may have been influenced by various factors: the development of prevention programmes, the establishment of mental health centres that made help more available to the population, and the changing public attitude, as a person with a mental illness is less stigmatized and viewed as more courageous [8].

Cancer diseases are the second most common causes of mortality in Lithuania and other European Union countries [9,10]. Due to the most significant achievements of oncology in recent years both worldwide and in our country, cancer diseases are diagnosed earlier and more successfully controlled; more cancer patients live five or more years after the diagnosis of the disease. Cancer patients face bothersome clinical aspects of cancer and its treatment, such as pain, weakness, fatigue, exhaustion, sexual and psychological dysfunction, and body image problems [11]. Studies show that more than forty percent of cancer patients also have mental health problems [12]. In addition to severe somatic diseases such as cancer, the risk of suicidal behaviour increases up to 2.4 [13], thus further deepening this painful issue in Lithuania.

The aim of this article is to analyse data from the literature, highlight the main risk factors for

suicide and review the aspects of suicide prevention.

METHODS

This review was conducted using data sources from the PubMed electronic bibliography published over the past ten years. Articles were selected using the keywords “the risk factors”, “suicides”, and “the patients with cancer”. One hundred and six full-text articles meeting these criteria were found in the preselection process. Secondary selection excluded articles related to children and youth, case studies, articles with the term “noncancer” in the title, and articles dealing not only with cancer but also with other lethal diseases. After secondary selection, seventy-two articles were suitable for the analysis.

RESULTS

The study conducted by J.M. Bolton and colleagues indicated that cancer is the only somatic disease that greatly increases the risk of suicide [14]. Similarly, other authors reported that suicides are more common among patients with cancer than in the general population [15–18]. A study in the United States (USA) found that patients with pancreatic cancer aged sixty-five to seventy-four years had an up to 11-fold higher risk of suicide, with a standardized mortality rate of 10.8 (95% confidence interval (CI), 9.2–12.7) [19]. We can see this by analysing the results of epidemiological studies based on data from population cancer registries (Table 1). It is worth noting that according to the data from the Lithuanian Cancer Registry, the risk of suicide among cancer patients was higher in our country than in the general population.

Table 1. Risk of suicide in cancer patients based on data from population cancer registries collected during epidemiological studies.

Author	Country	Period of diagnosis	Study group size	Number of suicides	Risk identified* (CI)
Vyssoki et al., 2016 [64]	Austria	1983–2010	915 303	2877	1.23 (1.19-1.28)
Lin et al., 2017 [31]	Taiwan	1985–2007	916 337	2543	2.47 (2.38-2.57)

Kaceniene et al., 2017 [23]	Lithuania	1993-2012	273 511	654	1.31 (1.21-1.41)
Henson et al., 2018 [17]	England	1995-2015	4,722,099	2491	1.20 (1.16-1.25)
Zaorsky et al., 2019 [26]	USA	1973–2014	8,651,569	13311	4.44 (4.33-4.55)

*Risk indicator – standardized mortality rate

Suicide risk factors in cancer patients

According to a study in Canada, 6 percent of patients with cancer think about suicide [20], and in China, 15.3 percent think about suicide [21]. In a Swedish population study of patients with late-stage cancer, the figure was even higher at 25.2% [22]. A study conducted in Lithuania, which examined data from cases diagnosed in the period of 1993 to 2012, found that there was a significantly increased risk of suicide in the male population among patients with respiratory and gastrointestinal cancer and in the female population among patients with gastric, colorectal, genital, haematopoietic and breast cancer, and the population of women with breast cancer did not differ from the general population in this respect [23]. However, in a meta-analysis, Cerreira and co-authors found that studies conducted by foreign authors showed a higher risk of suicide among breast cancer patients than in the general population [24]. Breast cancer as a factor in suicide risk was also singled out in another study by U.S. researchers who analysed one million and one hundred and twenty-three thousand data points obtained from cancer patients [25]. The USA study revealed an increased risk of suicide in patients with lung, head, neck and testicular cancer [26]; in England, increased risk of suicide was found for patients with cancer of the lungs, pancreas, oesophagus and stomach [17].

Social factors have also been found to influence suicidal thoughts and intentions in breast cancer patients, the most relevant of which is loneliness [26–30]. This could be related to the fact that patients living with family have better living conditions. Often, the family provides better social support and financial guarantees and helps the patient receive proper treatment faster.

The higher risk of suicide in cancer patients has usually been associated with the male sex, both in the general population and among cancer patients in many countries, with men committing suicide three to four times more often than women [17,26,29,31]. However, a study of patients with Hodgkin's lymphoma found that men were up to eight times more likely to commit suicide [32]. There are also contrasting studies: in a USA study of patients with stomach cancer, women were at higher risk of suicide [33].

Contradictory data have been obtained by analysing the influence of age on suicidal intent. A study conducted in Austria showed that age did not affect suicidal behaviour [34]. A study conducted in Canada revealed that suicide was more common in senior persons [35]. In China, analysis of data from patients with lung cancer showed that patients aged sixty years and older were more likely to commit suicide [28]. Older patients were also at higher risk of suicide in a USA study of brain cancer patients [36]. Young breast cancer patients were found to be at increased risk of suicide in a study conducted by Greek researchers [37]. Young patients with Kaposi's sarcoma also had a higher risk of suicide in China [38] and in a study of cancer patients in South Korea [39]. The risk of suicide in cancer patients may depend on the ability to adjust to the disease (mental adjustment). In England, elderly patients with cancer were found to tolerate stress better and adapt more easily to life with cancer. The results of the study showed that ageing was inversely proportional to patients' grief and anxiety and proportional to patients' emotional quality of life [40]. However, there are studies that show that the increase in suicide in the elderly is not necessarily related to cancer, as the overall prevalence of suicide in this age group is also greater [7].

Cancer causes economic changes and problems associated with social guarantees. Lithuania, like other post-Soviet countries, has great cultural peculiarities. Over the past two decades, our country has undergone many economic, social and political changes that have had a significant impact on the psychosocial spheres of life in the population and the role of women in society. The difficult economic situation in Lithuania has been caused by the declining overall participation rate of the labour force; the apparent at-risk-of-poverty rate of certain population groups; high income inequality; large regional differences in living standards, quality of life, and social status; an increasing demand for social and health care services; and insufficient availability and quality of services [41]. Unemployment and low income are socioeconomic risk factors for suicide both in the general population and among individuals with cancer [27,42].

Clinical factors are also very important in assessing the risk of suicide in cancer patients. Various literature sources describe more than fifty suicide risk factors, the main and most common of which is mental pathology [22,40,43,44]. Most suicidal people have a history of mental disorders, most commonly depression [45–47] and somewhat less often psychosis and specific personality disorders [20]. Cancer is one of the leading causes of mortality in Europe and Lithuania, and mental health problems are one of its clinical aspects [48]. Patients who become diagnosed with cancer experience severe shock [49], which may include anxiety, guilt, fear of death, changes in self-esteem, insomnia, loss of appetite and other symptoms [50,51]. The onset of this disease may be one of the most traumatic experiences ever experienced by the patients [52]. Mental health problems are more common among cancer patients than in the general population, and depression is particularly significant [12,47]. Both depression [30] and posttraumatic stress disorder experienced by cancer patients may increase the risk of suicidal ideation [46,53,54]. In Korea, a study showed that the risk of suicide was four times higher among those with advanced cancer who reported being depressed and sad than among those who did not report sad mood [55]. There are other opinions; a study conducted by Leung and co-authors in which four thousand eight hundred and twenty-

two patients answered the Tool for Distress and Response Assessment (DART) questions found that 30% of patients with suicidal thoughts or intentions did not have depression [20]. A similar trend was observed in a general population study in the United States of nine thousand two hundred eighty-two individuals, which showed that depression leads to suicidal thoughts but does not lead to a suicide plan or suicide attempt [40]. After investigation by US researchers with data from 474128 cancer patients, 773 of whom committed suicide, it was found that the risk was increased by the surgical treatment of cancer [37]. Chinese researchers studying patients with lung cancer have also obtained related results [28]. Chinese researchers found in patients with Kaposi's sarcoma that chemotherapy is a protective factor against suicide [38]. It should be noted that patients have fewer suicidal thoughts during the acute treatment period [22]. This may be because actively treated patients tend to be hospitalized more often, and such patients who agree to radical treatment have more active participation in the treatment process and a more optimistic approach [46]. Suicidal behaviour is particularly exacerbated by severe pain caused by somatic disease [56,57], other physical complaints [58] and dysfunction [25,34,56,59]. Patients with the most pessimistic prognosis are the most vulnerable [22,23,46,55]. As the pain worsens, the patient's condition worsens: depression sharpens, the chances of chronic depression increase, physical activity deteriorates, daily activities and work capacity suffer, and more opium-containing painkillers are used [17,55]. When Kim and co-authors examined the factors influencing the risk of suicide, they were different for two measurements: suicidal ideation was associated with depression and physical disability in the early treatment period and loneliness, exhaustion, and later-stage cancer after one year [46]. Somatic diseases often increase the incidence of mental disorders, not only depression, anxiety, and psychosis but also drug and alcohol abuse [60], and this creates a "vicious cycle". Dependence on alcohol and abuse of the substance have been found in more than half of suicides. High consumption of alcohol both directly and through traumatic interpersonal relationships in the family negatively affects mental health and has a direct impact

on suicidal ideation [61,62]. One of the risk factors that increases the risk of suicide in patients with cancer is the time elapsed since the diagnosis was made. Among cancer patients, there is a higher risk of suicide in the first months after cancer is diagnosed [33,34,63,64]. A particularly severe crisis occurs during diagnosis and in the first weeks after confirmation [65]. According to a Swedish study, the risk of suicide was 12.6 (95% CI: 8.6-17.8) in the first week, 4.8 (95% CI: 4.0-5.8) at 12 weeks and 3.1 (95% CI: 2.7-3.5) in the first year [66]. Studies conducted in Lithuania have also shown that the first three months are the most dangerous [23], especially in patients with poor prognosis [67]. In the USA [68] and England [20], the highest suicide mortality rate was found in the first year after diagnosis of cancer. An analysis of data from 284 breast cancer patients by Kim and coauthors revealed a prevalence of suicidal ideation of 10.9% one week after surgery and 11.4% after one year [46], which was slightly increased. USA researchers who have studied 93 young cancer patients reported that the high risk of suicide persists for up to five years [69]. There is also a higher risk of suicidal thoughts when one leaves the hospital. According to a study conducted in China, nearly half of all suicides are committed by cancer patients two weeks after hospitalization. This may be affected by the social assistance the patient receives during hospital treatment. Patients and staff around the patient help them not feel isolated [21].

The management of the risk of suicide in cancer patients

Most patients with suicidal ideation require medical treatment, but psychological support also has a significant effect on health and well-being. Psychological counselling must be immediate and uninterrupted [70]. According to some authors, psychotherapy is most effective in the first year. A study in the United Kingdom examined the effects of psychological interventions on women with metastatic breast cancer. One-year survival was found to be statistically significantly higher in the group of women who received psychological interventions than in those who were normally supervised, but no

positive effect of psychological interventions was found on five-year survival. Psychological interventions have been shown to reduce pain rates, but no statistically significant relationship has been found between psychological interventions and mood [71,72]. Predicting suicide is difficult. There is no one-size-fits-all method for reliably predicting which patient is suicidal [73]. As already mentioned, depression among cancer patients is one of the risk factors for suicide, so assessment of depression is important for assessing the risk of suicide. However, the assessment of depression alone is not a sufficient tool for assessing clinical suicide in cancer patients [74]. Kelly M. Trevino and co-authors demonstrated that patient-physician collaboration was the most effective factor in reducing suicidal thoughts and intentions and was even more effective than psychiatric interventions, including medication [69]. Good psychological support knowledge and counselling skills of medical staff are important in reducing the risk of suicide in patients with cancer. It is, therefore, important for each physician to be able to individually assess the likelihood of suicide and respond appropriately [44].

DISCUSSION

It should be noted that most of the psychological and psychiatric problems in these patients remain unidentified, and they do not receive help in addressing these issues [75]. One reason may be that patients themselves are reluctant to name their troubles, believing they are not worthy of medical attention. On the other hand, suicidal thoughts and intentions may go unnoticed due to the lack of self-confidence of healthcare professionals in identifying such problems in cancer patients [75].

According to a study conducted in Sweden, nursing staff do not have sufficient skills to talk to patients about death. When determining why the nurses chose one style or another, it was found that most of them had behaved intuitively to find the easiest way out of the situation. Most of the nurses in the study were not sure how to talk to patients about death, in which cases and what tactics to use. Thus, behaviour and communication were not determined by the

situation or the needs of the patient but by the nurse's values, experience, and attitudes [76]. The most common barrier in disclosure of truth stated by registered nurses is fear after truth telling of patients' negative emotions or their suicide attempts [77].

Oncology is a unique field in this respect. If a patient mentions suicide in primary care, he or she is usually referred to a psychiatrist for consultation or even hospitalized, and the cancer patient responds relatively passively to the desire for early death. The dilemma arises because cancer in itself can be a cause of death [70,74]. It is important to focus on the fact that there is no need to be afraid to ask the patient questions about intent to commit suicide [75]. It is a mistake to think that asking about suicide can encourage a patient to take such a step. The most obvious warning signal is an open expression or hint of suicidal thoughts. Two-thirds of those who have committed suicide have previously spoken to someone about their intentions. At the same time, it must be remembered that the denial of suicidal thoughts does not yet indicate that the patient will not do so. Sometimes patients hide their experiences and intentions [74].

According to research conducted by foreign and Lithuanian researchers, suicides are more common among oncology patients than in the general population [17,23,26,64,78]. It is known that the problem of suicide is relevant in Lithuania, but there are still many unexplored aspects of this problem among oncology patients. The main, most common risk factor for suicide in oncology patients is depression, and a less frequent factor is other mental pathology. Symptoms such as pain, dyspnoea, and reduced physical capacity play an important role in the risk of suicide, so more pronounced attention should be paid to the prevention of this problem in the clinic. Tumour localization also affects the suicide of oncology patients, and more attention should be paid to the prevention of this problem in patients with lung, bronchial, and gastrointestinal tumours, and especially in advanced cancer.

However, according to many authors, the staff is not yet ready to work in this area and should receive professional help on how to work with patients at risk of suicide. It is appropriate to develop a common, easy-to-apply oncology patient suicide risk assessment system. It is expedient to

purposefully involve the patients' family members and relatives in the patient health care process in order to strengthen the help and support from the social environment closest to the patient. We suggest developing psychoeducational training, providing psychological/psychotherapeutic assistance to family members and establishing an easy-to-apply oncology patient suicide risk assessment system.

In conclusion, future research is needed to achieve these goals. Doing so would help purposefully involve the patients' family members and relatives in the patient health care process in order to strengthen the support from the social environment closest to the patient. Additionally, it is appropriate to develop and offer psychoeducational training and psychological/psychotherapeutic assistance to medical staff.

Limitations

The literature search was limited to the PubMed database and to English articles, potentially missing relevant non-English articles. Reviewed articles lacked research analysing which training for staff would be most effective in preventing suicide, particularly in cancer patients.

Ethical considerations

Ethical approval was not required for this article.

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Conflict of interest

The authors declare no conflicts of interest pertaining to the preparation of this manuscript or its contents.

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