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Suicidal Behavior Risk factors in Cancer Patients

A Nursing Perspective

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Approximately 800 000 people commit suicide worldwide every year. It is a global phenomenon in all regions of the world including low, middle, and high-income countries. However, people commit suicides due to different reasons including chronic pain and illness like cancer. In the United States, the number of cancer patients from 1973-2014 was 8,651,569, and 13,311 have committed suicide. One of the nurses' roles is to provide holistic care which could help patients with chronic illness to sustain a good quality of life.

This study aims to present evidence-based knowledge of risk factors associated with suicidal behavior in cancer patients. And the purpose of this is to provide evidence-based information on risk factors of suicidal behavior among cancer patients and provide suggestions to healthcare professionals so that they can raise awareness and benefit to provide holistic care which will prevent suicidality among patients.

The study was implemented as a literature review. 2 databases were used to search articles: Cinahl and Medline. Overall, 9 articles were chosen to be reviewed. The content analysis method was applied for data analysis.

3 main risk factors were found: sociodemographic, psychological, and physical risk factors. The applicability of these results might vary according to individuals. Therefore, the results indicated need extensive evaluation in the nursing assessment of cancer patient's suicidal behavior according to their distinctive characteristics such as age, comorbidities, and personal health record.

Keywords
Nurse, oncology patient, suicidal behavior, risk factor

Miscellaneous

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1 Introduction

Addressing suicide means facilitating prevention through the identification of high-risk individuals (Parekh 2018). This literature would perhaps include findings of different risk factors associated with suicidal behavior in cancer patients. With this purpose of study, early identification of suicidal behavior among cancer patients would be possible which could lead to deeper and accurate nursing care. Also, acknowledging the most vulnerable patients and identification, the early preventive method can be applied for patients in need. It is important to find out risks with different aspects because nurses cannot notice all the risks as they might not be seen through the patient's physical and verbal expression and some patients commit suicide without any warning (Granek 2017).

To achieve the best possible care, it is important as nurses to recognize the signs of suicidal behavior. In this example, results focus on the risks of suicidal behavior in cancer patients and are closely nursing related. It is necessary to understand what the patients are going through to be able to care for them holistically. As a nurse, it is important to assess the psychological/emotional well-being of the patients, to care for them holistically. (Granek 2017.) The results would focus on finding the risk factors of suicidal behavior for cancer patients. Also, this literature review would improve the quality of living for those patients experiencing suicidal behavior driven from low quality of life due to illness like cancer.

This study aims to conduct a literature review is to find out all aspects of risks that are associated with suicidal behavior in cancer patients. The purpose of this research is to provide information about risk factors of suicidal behavior among cancer patients and provide evidence to healthcare professionals so that they can raise awareness and help them provide holistic care to prevent suicides.

2 Suicide

2.1 Suicidal Behaviours

Suicidal behavior is consisted of suicidal ideation, suicide attempt, and completed suicide. Suicidal ideation is when someone frequently thinks about ending his or her own life. A suicidal attempt is when a person tries to kill him or herself. And completed suicide is when death has occurred after the suicide attempt. Intense feelings of hopelessness, depression, or self-destructive behavior are often attended with suicidal behavior. (Castle & Kreipe 2007, 544-545.)

Suicide

The American Psychological Association (APA n.d) defines suicide as an act of killing himself that is often derived from depression or other mental illness. Suicide is the most extreme result of suicidal behavior and suicidal behavior range from having suicidal ideation to non-fatal self-inflicted suicide and suicide (Spicer & Miller 2000, 1885). For death to be categorized as suicide, it needs to fulfill 3 criteria. The death needs to be unnatural, it was the result of the victim's action, and the victim intended to kill himself. However, the criteria for recording suicide can vary between countries. (Cavanagh and Smyth 2010, 693-713.)

Suicide ideation

Suicide ideation is defined as having thoughts about wanting to be dead or active thoughts of killing oneself, that is not accompanied by preparation towards imminently attempting. (Posner, Oquendo, Gould, Stanley and Davies 2007, 1035-1043.) According to psychological autopsy studies have demonstrated that a majority of suicide occurs on the individual's first attempt (Suominen, Isometsä, Suokas,

Haukka, Achte and Lönnqvist 2004, 562-563). Thus, it shows the importance of early intervention of suicidal ideation as a preventive measure to suicide.

Self-harm

Self-harm is categorized as a behavior rather than a diagnosis. It means self-poisoning or self-injury regardless of the intended purpose of the act. The severity of self-harm can range from trivial to life-threatening, and a clear intent to die to attempts to escape intolerable symptoms and attempts to communicate or manage distress. Patients who attempt self-harm are at high risk of repetitive acts of self-harm and completed suicide. Moreover, the risk of various mental disorders pointedly rises with self-harming patients. (Cavanagh and Smyth 2010, 693-713.)

2.2 Risk factors of suicide in general

A RIsk factor is medically defined as something that increases a person's chances of developing a disease or condition (Shiel 2018).

Demographic and social risk factors

Suicides occur more frequently in older and males with the highest rate occurring among older men in almost every European country. Even though the mechanism is not fully understood, suicide is more common among the unemployed as well. It may be due to demoralization, depression, and poorer health with jobless over a prolonged period. Besides, the suicidal risk increased excessively in the 4-5 years after the loss of a spouse or parent, especially in males. (Cavanagh and Smyth 2010, 693-713.)

Mental disorder

Several studies have found out that mental disorder as the greatest risk factor for suicide, especially the depressive disorder. About 10% of patients with schizophrenia die by suicide and risk factors include previous depressive disorders, previous suicide attempts, drug misuse, agitation or motor restlessness, fear of mental disintegration, poor adherence to treatment, and recent loss. A quarter of suicides occur after absconding within the first week of admission in the psychiatric ward. Patients that are male or have a history of self-harm or diagnosed with an affective disorder or unemployed or on long-term sick leave are independent predictors of inpatient suicide. Also, the highest number of suicide occurs on the first day after discharge from the psychiatric ward and found to be most frequent in the following 2 weeks. (Cavanagh and Smyth 2010, 693-713.)

Physical Illness

Having a physical illness is recognized as a risk factor for suicide. For instance, oncology patient has twice the incidence of suicide compared to the general population. This risk is likely to be the outcome of higher rates of depression in patients with physical illness. (Raskind 2008.) Also, married elderly patients that have a psychiatric illness and diagnosed with cancer, prostatic disorder, chronic pulmonary disease presented associated with suicide (Quan, Arboleda-Flórez, Fick, Stuart, and Love 2002, 190-197).

2.3 Prevalence of suicide worldwide

Approximately 800 000 people die from suicide every year and there are many more people who attempt suicide. It is a global phenomenon in all regions of the world and does not only occur in high-income countries. In 2016, more than 79% of global

suicides occurred in low and middle-income countries. In high-income countries, the link between suicide and mental disorders such as depression and alcohol use disorders is well established. However, people commit suicides impulsively when there is a breakdown in their ability to cope with life stresses, such as financial problems, relationship break-up, or chronic pain and illness. Suicidal behavior is strongly associated with experiencing conflict, disaster, violence, abuse, or loss, and a sense of isolation. Suicide rates among refugees, migrants, LGBTI (lesbian, gay, bisexual, transgender, intersex) persons, and prisoners are high due to the vulnerability of discrimination experience. (WHO, 2019)

About 20% of suicides that occur globally are due to pesticide self-poisoning that takes place in rural agricultural areas in low and middle-income countries and other common methods are hanging and the firearm. Suicide and suicidal prevention measures are taken at population, sub-population, and individual levels. Despite the effort of applying prevention methods globally, there are still obstacles and challenges. Due to a lack of awareness, people with mental illness or suicidal ideation or people who have attempted suicide are not seeking help and not receiving proper help as it is taboo in many societies to openly discuss it. Also, an availability and quality data on suicide and suicide attempt are poor all around the globe. (WHO, 2019.)

2.4 Prevalence of suicide among patients with somatic pain and chronic disease

In South-Korean studies with 12 532 randomly selected participants, more than 858 had multiple somatic pain. They were distributed into 3 groups with no pain, single pain, and multiple somatic pain. Group of people that had multiple somatic pain had 4 times higher rate of single suicide attempts and 6 times higher rate of multiple suicide attempts than the group with no pain. (Park, Choi, Na, Hong, Cho, Fava, Michoulon and Jeon 2019, 43-48.)

Another study was done in Korea to find out the association of chronic disease prevalence and suicide ideation (SI) and suicide attempt (SA) among Korean adults. A total of 35 075 adult participants were selected and 5 773 participants had suicide-related ideation and 331 with a suicide attempt. The study has found a significant positive association with the selected chronic disease including cardiovascular disease (CVD), stroke, ischemic heart disease (IHD), cancer, diabetes mellitus, renal failure, and depression were likely to have suicide ideation. On the other hand, participants diagnosed with CVD, IHD, renal failure, and depression were at greater risk of SA. (Joshi, Song and Lee 2017, 352-358.)

3 Suicides in Patients with Cancer

3.1 Prevalence of cancer worldwide

Cancer treatment centers of America (n.d) defines cancer as an uncontrolled growth of cells in the body that occurs when the body's normal control mechanism stops working. The old cells grow out of control instead of dying and form abnormal cells that can become a tumor. (Cancer treatment centers of America N.d.)

According to WHO (2020), approximately 9.6 million deaths have been recorded in 2018 due to cancer which is the world's second leading cause of death. Moreover, around 70% of deaths due to cancer occurred in low- and middle- income countries. There are different types of cancer and the number of death cases varies according to the category of cancer. This information is illustrated in table 1. Each type of cancer is treated different way and the finest treatment can be given when a correct cancer

diagnosis is made. For instance, surgery, radiotherapy, and chemotherapy can be used as cancer treatment and one or more methods may be used at the same time. (WHO, 2020)

Table 1. Common types of cancer globally in 2018 (WHO, 2020)

2018	Types of cancer	Number of cases (million)
Common types of cancer	Lung	2.09
	Breast	2.09
	Colorectal	1.80
	Prostate	1.28
	Skin cancer (non-melanoma)	1.04
	Stomach	1.03

Table 2. cancer with most death rates in 2018 (WHO, 2020)

2018	Types of cancer	Numbers of cases
Cancer with most death rates	Lung	1.76 million
	Colorectal	862,000
	Stomach	783 000
	Liver	782 000
	Breast	627,000

3.2 Prevalence of suicides among patients with cancer worldwide

A population-based study using data from the National Cancer Registration and Analysis Service in England done by Henson, Brock, Charnock, Wickramasinghe, Will, and Pitman (2018) showed the result that from 1995 to 2017, 2491 patients (1719 men and 772 women) died from suicide from the total of 4,722,099 cancer patients. Patients were aged between 18-99 years and 50.3% were men and 49.7% were women. A total of 74.3% were aged 60 years or older when the diagnosis was made. The group that had the highest risk of suicide was among patients with mesothelioma. The risk was followed by pancreatic, esophageal, lung, and stomach cancer. Patients in the first 6 months following cancer diagnosis showed the highest standard mortality rate. (Henson et al 2018.)

A retrospective,population-based study conducted using nationally representative data from Surveillance, Epidemiology, and End Result Program, 1973-2014 by Zaorsky, Zhang, Tuanquin, Bluethmann, Park, and Chinchilli (2019) states that from 8,651,569 cancer patients in the US, 13,311 have committed suicide. The highest SMR of death from suicide was a group of 1753 patients that had metastatic or distant disease at diagnosis. (Zaorsky et al, 2019, 2-6.)

In Italy, out of 127 042 participants, 66 919 were male and 60 123 were female. And 158 patients (135 male and 23 female) died of suicide. A 50 % increased risk was found for cancer patients in both male and female patients Patients with good prognosis showed a moderate increase in risk that is 40% whereas patients with poor prognosis showed a 2.5 times increase. (Ravaioli, Crocetti, Mancini, Baldacchini, Giuliani, Vattiato, Bucci and Falcini 2020, 104-113)

A nationwide cross-sectional study was done to find out risk factors for feeling sadness and suicide attempts among cancer survivors in South Korea. Using the data obtained from the Korean National Health and Nutrition Examination Survey (2007-2013), 1285 and 33 773 participants who had been and never been diagnosed with cancer, respectively, were examined. Patients that had passed 10 years or more after cancer diagnosis showed the borderline significance of the higher risk of a suicide attempt when compared with a group that has been 2-10 years after the diagnosis. (Choi, Lee, Ki, Lee, Song, Kim, Lee, Park & Lim 2017.)

All of the 4 studies above that was done in different parts of the world showed the significant result that male patients were at higher risk of suicide than female. Also, studies from the United States, Italy, and South Korea agreed that patients that are diagnosed at a younger age had a higher suicide rate than patients diagnosed at an older age.

4 Aim, purpose and research question

This research aims to present the risk factors of suicidal behavior among cancer patients. The purpose of this research is to provide evidence-based knowledge on risk factors of suicidal behavior in cancer patients and acknowledge the healthcare professionals which will enable the prevention of suicide and the provision of holistic care.

Research Question:

What are the risk factors of suicidal behavior among patients with cancer?

5 Methods and implementation of the study

5.1 Literature Review

A literature review method was chosen to conduct this thesis because it aims to answer a focused question to give information to professionals and patients with the finest available evidence when it comes to making decisions in the healthcare environment. (Smith & Nobel 2016, 2-3.) A literature review is a suitable method for this thesis because carrying out a literature review mean identifying, critically appraising, and synthesizing several articles and present evidence-based answer that would enable nurses to implement evidence into practice. (Smith & Nobel 2016, 2-3.) Through this literature-based study, evidence-based findings of risk factors of suicidal behavior in cancer patients were analyzed.

The literature review has characteristic of reviewing published literature which means included materials shows some level of permanence and materials have been peer-reviewed. (Grant & Booth 2009, 91-108). The first stage of the literature review includes having a ground for the review. Before starting the review, a clear reason why it is important and relevant should be established. When the main concept that is relevant to the topic including the challenges are identified, a clear research question would be formulated accordingly with clear aim and objectives. This was done in the *Suicide and Suicides in patients with cancer* paragraph. After all the stages above, a

clear research question was determined. Then aim and purpose were established in relevance to the research question made. (Smith & Nobel 2016, 2-3.) The second stage is to have clear inclusion and exclusion criteria for the material search. Then, a database should be chosen with a clear reason why a certain database is used as a search method. Besides, keywords are used to search certain materials, and information gathered from a keyword search will be analyzed. (Smith & Nobel 2016, 2-3.)

Importance of a literature review in nursing care is that contribution to the science of nursing and health care are often considered in the heart of clinical nurse who forefront and provide care to patients. The discoveries of research and clinical investigation done by nurses enhance the professional practice of nursing. Only with a clear understanding of what others have contributed to the scientific literature, correct and useful research question can be asked, actual quality improvement project can be done, and application into genuine evidence-based practice. (Bernhofer 2015, 191-196.)

5.2 Article Selection Process

The articles that were used in this literature review were attained using two different databases, CINAHL (EBSCO) and Medline (EBSCO). The articles were chosen according to predetermined inclusion and exclusion criteria shown in table 3.

Table 3. Inclusion and exclusion criteria

Inclusion Criteria	**Exclusion Criteria**
Language of publication in English	Publications that are literature review
The publication is from years between 2013-2020	Duplicate studies
Publication is a science-based study	Participants that are cancer survivors
Publication is peer-reviewed	
Publication is relevant to the subject	
Publication answers the research question	
Publication has full-text access online to JAMK's student	

The search terms used within the search for articles that answer the research question were the following: cancer or neoplasms or oncology or tumor or malignancy AND suicide or suicidal behavior or suicidal ideation or suicidality or suicide attempts. A boolean search was used. Peer-reviewed articles, scientific research articles, conducted between the years 2013 and 2020, and published in English were searched. Duplicates from two databased were excluded. Based on the final search outcome, a total of 9 articles were chosen to be thoroughly reviewed. Table 5 present the data search method. The 9 reviewed articles can be found in Appendix 1.

Table 4. PICOS table

Patient/Problem	Suicidal behavior
Interview/Interest	Risk factors
Comparison	Patients with cancer
Outcome	Identification of high-risk individuals and the prevention of suicide
Study Design	Literature review

The PICOS table (Table 4) was utilized to obtain an article that is closely related to the research question (Beecroft, Booth & Rees, 2013.)

Table 5. Data search

Database	**Search Terms**	**Result**	**After Duplicates excluded**	**Chosen based on Title**	**Chosen based on Abstract**	**Relevant studies**
Cinahl	cancer or neoplasms or oncology or tumor or malignancy AND suicide or suicidal behavior or suicidal ideation or suicidality	71	49	16	12	8

	or suicide attempts.					
Medline	cancer or neoplasms or oncology or tumor or malignancy AND suicide or suicidal behavior or suicidal ideation or suicidality or suicide attempts.	57	30	6	3	1

5.3 Data Extraction and Synthesis

The articles (N=9) used in this study, were published in the years 2014 (4), 2016 (2),2017 (1), 2018 (1), and 2019 (1). The countries where the articles were published are USA (2), Sweden (2), Spain (1), Israel (1), and Lithuania (1), Taiwan (1), and India (1). The data collection methods used in the selected articles (N=9) were qualitative (6) and quantitative (3). Out of 9 selected articles, 5 articles were research based on suicide ideation and 4 articles were about suicide.

5.4 Method of Analysis

Content analysis is a research method used to describe and quantify phenomena (Krippendorff 1980; Downe-Wamboldt 1992; Sandelowsk 1995). Content analysis allows the researchers to examine theoretical ideas to facilitate comprehension of the date (Cavanagh 1997). The purpose of content analysis is to provide knowledge, new insights, a representation of facts, and a practical guide to action (Krippendorff 1980).

It aims to acquire a condensed and broad perspective and analyzed the categorization of phenomena. (Elo & Kyngäs 2008, 107-115.)

The inductive content analysis method was used to analyze in this thesis as it is recommended if there is not enough previous knowledge about the phenomenon. (Lauri & Kyngäs 2005)The process of inductive content analysis includes the organization of qualitative data that includes open coding, creating categories, and abstraction (Elo & Kyngäs 2008, 107-115). For open coding, many notes and headings that are necessary that describes all aspect of content will be written down after reading material thoroughly again and again. (Burnard 1991; 1996, Hsieh; Shannon 2005). After this open coding, the list of categories is created which can enhance understanding to produce knowledge (Cavanagh 1997). Abstraction means forming a general description of the research topic with creating categories (Robson 1993, Burnard 1996, Polit & Beck 2004). Each category is named the main characteristic of the grouped concept. Similar events into subcategories and incidents that are similar into categories and categories are grouped as main categories (Dey 1993, Robson 1993, Kynga¨s & Vanhanen 1999). This abstraction process can continue as long as it is rational (Elo & Kyngäs 2008, 107-115).

After the articles were critically selected using inclusion and exclusion criteria, it was read thoroughly repeatedly. Data and findings were familiarized in this process.
Then, a table was created to briefly note down findings and important ideas from the articles. When similarities and differences of results from each article were found in the table, they were colored in groups that clustered related data. This process helped to identify the main them of sub-categories. After this was done, the sub-categories were further synthesized, that allowed formation of theoretical concept and conclusion. The example of content analysis can be found in Figure 3.

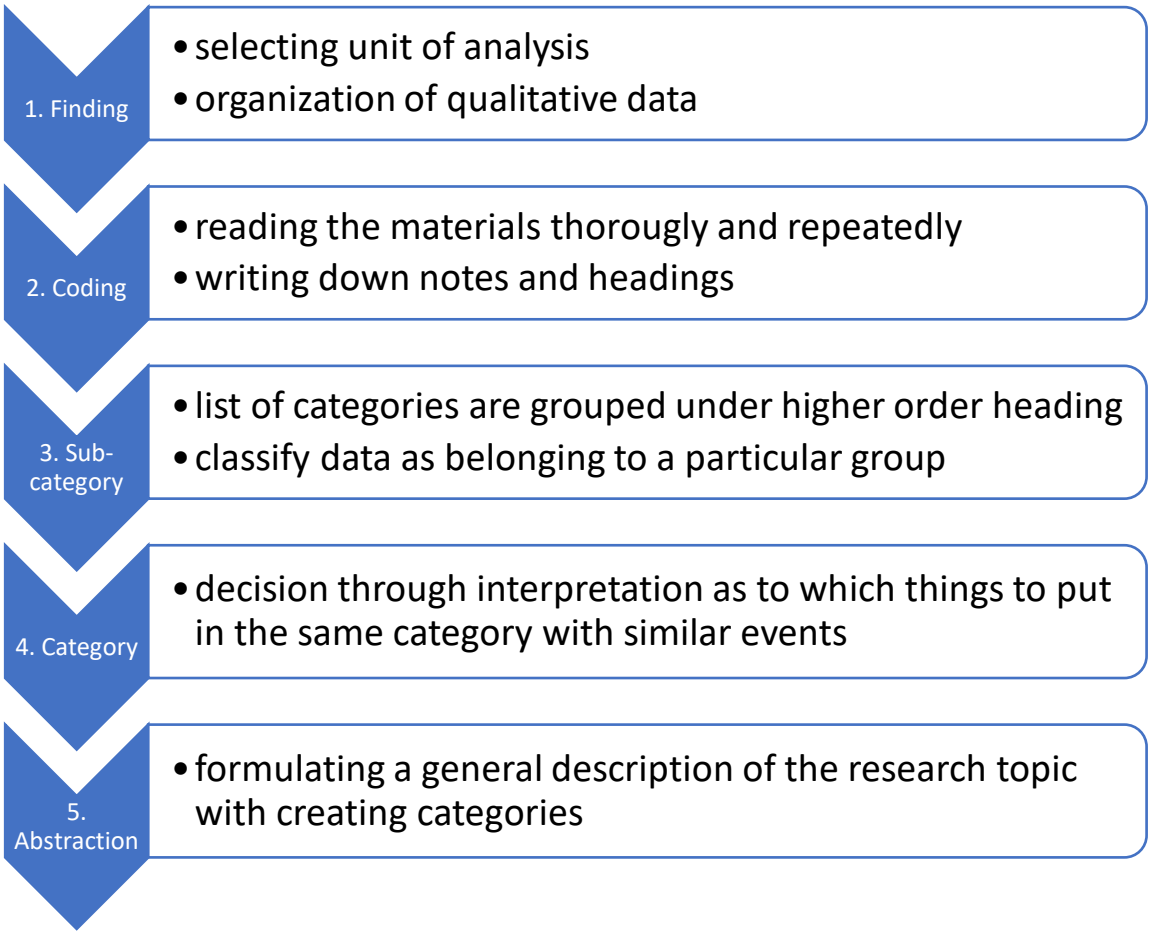

Figure 1. The six main stages within the process of performing a content analysis (Elo & Kyngäs 2008, 107-115)

6 Results

After the database search, 128 articles were identified using keywords related to suicide and cancer. However, when the inclusion and exclusion criteria were applied, 9 articles were selected at the end. Among the 9 articles reviewed, 5 reported risks of suicide ideation, and 4 discussed suicide risks for patients with cancer. Major findings associated with suicidal behavior risks included 3 main categories: demographic and social factors, psychological factor, and physical factor. Figure 2 illustrates the categories and sub-categories. The results are further explained in the text.

The result is further presented in 3 main categories: demographic and social factors, psychological factor, and physical factor. Figure 2 illustrates the categories and sub-categories. The results are further explained in the text.

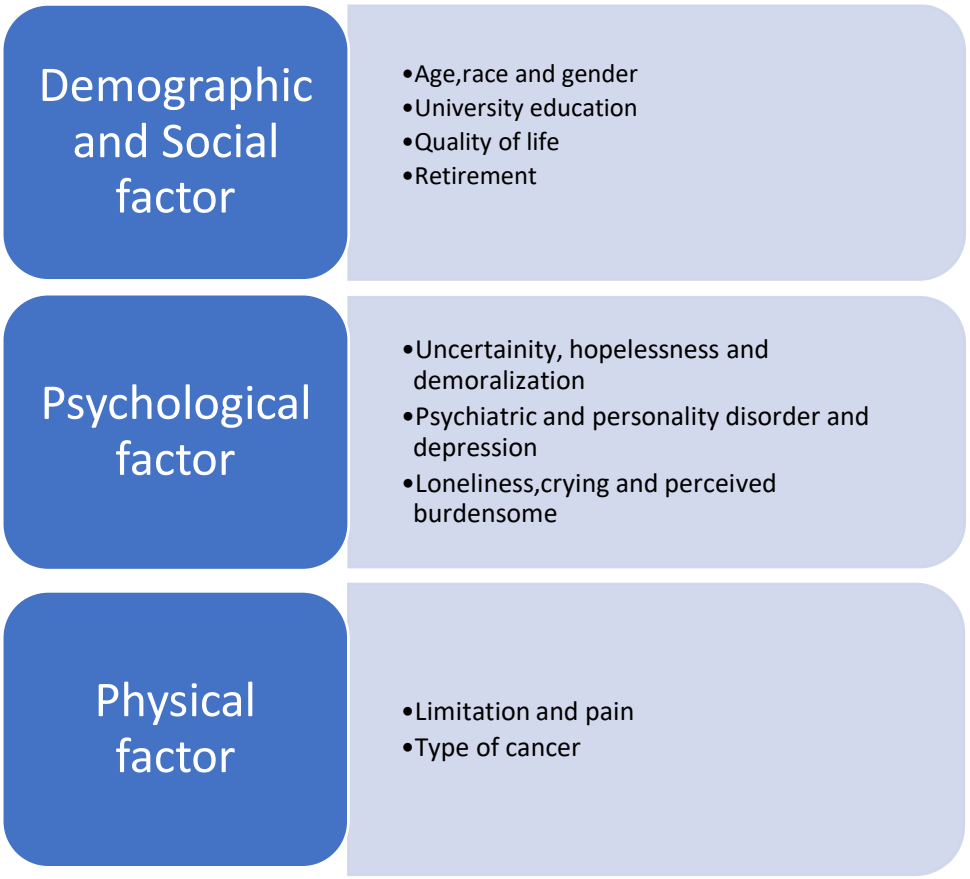

Figure 2. Categories and sub-categories

6.1 Demographic and social factor

Advanced age & White & Male An article reviewed describes an advanced age as a risk factor for suicidal behavior (Frutos, Garcia, Fernandez, Foncillas & Castroman 2016). 202 Spanish oncology patients who were going through curative or palliative treatment were interviewed and only patients over 60 years old showed high risk in suicidal ideation. Age-related factors influence suicidal tendencies in older populations.

A major reason is a depression. Depression is a key determinant for suicide in old age because of various underlying predisposing medical comorbidity associated with illness and limited functional disability during old age. (Fructos et al 2016.) Also, Pham et al (2019) had research on patients who were diagnosed with colorectal cancer between 1988-2010 and found the majority of patients who committed suicide were over 80 years old (Pham et al 2018).

Pham et al (2019) indicated in their study that, among colorectal patients diagnosed between 1988-2018, the ethnic group of white was the highest suicidal rate among all other races such as African-Americans, other and unknown (Pham et al 2019). Also, a population case study was done in the state of North Carolina and compared with the Piedmont health study of the Elderly. And they have found out that the risk is higher in the ethnic group of 'white' than 'black'. (Cole, Bowling, Patetta & Blazer 2014)

Kaur (2014) and Cole (2014) found out the higher prevalence of suicidal ideation and behavior was significantly higher among male patients than females. The study highlights that males have a higher morbidity rate than females. Suicide cases were statistically more likely than controls to have had a stressful life event in the past year. (Kaur 2014; Cole 2014.)

University education A study from 2008-2011, through a questionnaire, was done towards 3930 patients who had a radical prostatectomy in Sweden. 24% of patients answered that they had suicidal ideation before the surgery. On the other hand, only 17% of participants replied that they had thought of their death after the surgery. Out of the 3930 study population, the majority of the patients who had thought about suicidal ideation before and after the surgery were with higher education. This could indicate that more awareness due to higher education increases the vulnerability of suicidal ideation. (Thorsteinsdottir, Valdimarsdottir, Stranne, Wilderäng, Haglind & Steineck 2018.)

Low quality of life 61 personnel from Israelwase interviewed who are oncologists, nurses, and social workers. in-depth, an interview was done to identify their

experience in identifying risk factors for suicide among oncology patients. They found out that patients that are at high risk of suicide were found to be when they hear the bad news from healthcare professionals. They said that patients showed suicidal behavior when they heard about the bad prognosis of their disease or that they are nearing the end of life. (Granek, Nakash, Ariad, Chen, Cohen, Shapira & David 2017)

Moreover, low quality of life due to stress in life even in past 1 year was considered as a risk factor for suicide. For example, incidents such as hospitalization, missing usual, work, or activities due to illness, death, or serious illness of close family members or family were considered as a stress factor in life. Older patients with cancer that had the above incidents in the past 1 year showed a high risk of suicide. (Cole et al 2014.)

IAlso Fang et al (2014) have mentioned marriage status has an effect to risk on suicidal behavior. Patients that are not married, divorced, or widowed are lack of important source of social support including emotional and material support which can affect as a preventive factor. (Fang et al 2014.)

Retirement Most patients who were recruited for the study were receiving curative or palliative care. When the study population was divided into 2 groups with low and high suicidal ideation, a retired group of patients was showing significant association with high suicidal ideation. (Frutos et al 2016.) Besides, a study by Thorsteinsdottir et al (2018) has found outpatients that had suicidal ideation before the surgery had high rates of retirement. (Thorsteinsdottir et al 2018.)

6.2 Psychological factor

Uncertainty, hopelessness and demoralization Prostate cancer patients were having a high risk of suicidal ideation when they were uncertain about the future and cure before the surgery (Thorsteinsdottir et al 2018). Also, the patients showed high-level hopelessness among those who had a high risk of suicide ideation. (Fructos et al 2016.)

Fang et al (2014) have found out that demoralization that shows loss of meaning was the strongest factor that affects increase risk in suicide ideation. The patient who participated in the study was having lung cancer or leukemia or lymphoma. 200 participants completed questionnaires and DS-MV (Demoralization scale of mandarin version was used) to evaluate, PHQ-9 (Patient Health Questionnaire-9) for the depression scale and distress thermometer. Tobit regression analysis shows that compared with psychological distress and depression, demoralization was a more significant predictor of suicidal ideation. (Fang et al 2014.)

Psychiatric disorder Pranckeviciene et al (2016), Granek et al (2017), Kaur (2014), and Fructos et al (2016) have concluded that patients with psychiatric disorders show a higher risk of suicidal behavior and worse mental health is associated with suicidal ideation independently from clinical and psychological factors. According to Grank et al (2017), health care professionals were interviewed and mentioned patients that had severe psychiatric disorder such as schizophrenia, post-traumatic stress disorder, etc showed an active will to die. For example, the patient who had schizophrenia told a healthcare professional that she heard voices that told her to commit suicide. Besides, the patient who had combat PTSD denied treatment for PTSD and the family member of the patient told that he was threatening the family member to commit suicide. (Granek et al 2017.)

Also, Fructos et al (2016) has performed a semi-structured interview with questionnaires and used HADS-S(Hospital anxiety and depression scale was used. And

groups of people that showed a high risk of suicide ideation showed high value for the HADS-S method and dimensional aspects of anxiety. Moreover, Kaur (2014) has performed the study to find out the suicidal ideation among terminally ill patients and found out depression has a positive correlation with suicidal ideation.

Loneliness, crying and perceived burdensome According to Thorsteindottir et al (2018), loneliness and crying was a significant predictor for prostate cancer patients before surgery of radical prostatectomy. Out of 3154 patients who answered questionnaires, suicidal ideation was higher before the surgery than after. 24% of patients had suicidal ideation at least once a week before the surgery whereas 17% of patients had after the surgery. They have reported that patients were cried once a week or more often. Loneliness, crying and the feeling of being a burden is associated with suicidal ideation that can represent emotional isolation. (Thorsteindottir et al 2018.) According to Frutos et al (2016), oncologic patients feel detached from their social background, particularly during persistent hospitalizations (Frutos et al 2016) which may enhance loneliness and crying symptoms.

6.3 Physical factor

Physical limitation and pain Impairment in physical, social, and emotional functioning and role limitation due to the physical problem were another risk factor of suicidal ideation. These physical limitations caused impairment in daily activity including dressing, bathing, feeding, grooming, mobility, bladder and bowel control, toilet use, and climbing stairs. Patients with suicidal ideation reported greater role limitations due to physical problems, severe pain, and worse mental health. (Pranckeviciene et al 2016.) Besides, another prostate cancer patients who had radical prostatectomy were asked before and after the surgery about suicidal ideation and a low sense of control of their own life due to illness was a significant predictor. (Thorsteindottir et al 2018.)

Studies from Granek et al (2017) from Israel found out that pain caused patients to show suicidality. For instance, a patient at their terminal phase of illness would say that they would rather commit suicide than go on with their life due to great distress and pain (Granek et al 2017.) Patients who had prostate cancer showed statistically significant relation to suicidal ideation when they had physical pain, pain during miction, and low rated physical energy. (Lehuluante & Fransson 2014).

Types of cancer Patients with distal lesions, of either the rectosigmoid junction or rectum, were more likely to commit suicide than those with proximal cancers. This could potentially be related to differing symptoms between distal and proximal lesions, which in turn affect the quality of life. (Pham et al 2019.)

7 Discussion

7.1 Ethical considerations, validity, and reliability

Valid research is defined as research that is free of bias, credible and specific (Buckingham, Fisher & Saunders 2008). This literature review is the scientific research in the field of nursing science that aims to present evidence knowledge of risk factors of suicidal behavior in cancer patients. The 3 main categories of sociodemographic, psychological, and physical factors existed as a key point in risks towards suicidal behavior and therefore, a valid subject.

The research articles selected for this study were obtained from two databases: CINAHL (EBSCO) and MEDLINE (EBSCO). These 2 databases are available to all students

of JAMK University of Applied Sciences and provide reliable, scientific, and peer-reviewed information. Both databases were selected regarding their reliability and accessibility. To obtain valid and reliable information that needs to be used in this study, publication year setting was set between 2013-2020 that shows recent studies. Predetermined inclusion and exclusion criteria from table 3 support the reliability and validity of this study.

Plagiarism and fabrication (Price 2014, 46) were avoided by appropriate referencing and correct presentation of other author's works as their own. The result and its presentation of data that was used for this research were done carefully and honestly. To avoid any claims of falsification, the research process was documented in the form of a table.

The articles used for this study were from only 2 databases. Thus, this limits the material available for the search. Moreover, many valid articles were excluded, and they were chargeable which gives limitation to the quantity of the materials. As this study is not funded financially by any organization, chargeable articles were excluded from data selection.

Also, collected articles were from studies done in several countries like the USA, Lithuania, Taiwan, Spain, Israel, India and Sweden. And population group was considering different types of cancer like colorectal, prostate and brain cancer. Therefore, the findings are not limited to a certain geographical group or type of cancer. On the other hand, articles that are published only in English were utilized.

This study was carried out to collect risks of suicidal behavior in patients with cancer. Although studies that had a population of cancer survivors were excluded from the result, findings of this study could still be beneficial for all patients who had been cured and cancer-free. Also, as having a spouse or partner was found to be a preventive

factor for suicidal behavior by giving social, emotional and physical support, adequate nursing education that could be given for close family members can be researched which will benefit the patient and their families.

7.2 Discussion of the results

The previous studies show similarities of suicidal behavior risks in Cancer patients for the findings above. For instance, A study from Anguiano, Mayer, Piven and Posenstein (2012) suggested that the risks of suicide in cancer patients were due to cancer type, gender difference, advanced age, depression and hopelessness, sadness, and recent cancer diagnosis. Another study suggested that severe pain and depression as a risk factor of suicide for advanced cancer patients (Park, Chung, Lee 2016, 4837- 4836). A most recent study done by Yang, He, Chen, Pan, Zhang, Li and Lyu (2019) have said in the article that age, Caucasian, and not receiving surgery was a significant risk factor for suicide death in the United States. The study from Yang et al (2019) has said that being unmarried, divorced, or separated or widowed is related to an increased risk of a suicide death. It showed a difference with the result from Pham et al (2019) as they showed marital status did not play a major role in suicidal behavior risk. Thus, the result of this literature review corresponds to previously reported risks of suicidal behavior in cancer patients.

The main findings of this literature are sociodemographic, psychological, and physical risk factors that increase suicidal behavior in patients with cancer. For instance, male patients showed notable relation with increased suicidal behavior risk. Thus, nurses could provide an assessment that targets male patients' psychological status.

Findings from different articles showed 3 main categories of risk factors of suicidal behavior in a Cancer patient. Thus, all healthcare professionals, especially nurses can utilize illustrated factors to identify an increase in suicidal behavior in cancer patients. It is essential to early identify the risk factors of suicidal ideation that can prevent

patients to attempt suicide and completed suicide. Selected articles from the database have pointed out the need for psychosocial intervention for all during the entire cancer treatment and not only at patients that are diagnosed with mental illness. (Granek et al 2017; Pranckeiciene et al 2016.) Thus, it is important to take this research a step further to promote well-being and quality of life and investigate if these interventions can prevent suicidality in patients with suicidal behavior (Granek et al 2017.) A study from Pranckeviciene et al (2016) pointed out that patients with the history of psychological illness were not taking psychiatric medications at the time of suicidal ideation assessment which suggests that severe mental disorders are often undiagnosed and untreated. Thus, it highlights the importance of adequate management of previous or currently diagnosed with mental illness in oncology patients to minimize the risk of worsening of mental health that could affect coping with cancer. (Pranckeviciene et al 2016.)

As far as finding is concerning, I would like to focus future research on nurse assessment tools to specifically evaluate suicidal behavior risks for cancer patients. As it is ruled out that there are different types of risk existing for cancer patients, to find out what assessment method can be used or developed for improved quality of holistic care.

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No.	Author(s), Year, Country	Title	Aim(s) and Purpose	Participants, Sample size	Data collection and Analysis	Key results
1	Cole, Bowling, Patetta, Blazer; 2014; USA	Risk factors for suicide among older adults with cancer	To determine whether the increased risk of suicide for individuals with cancer may be explained by functional limitations, lack of social support, or other factors.	217 primary informants for suicides in the state of North Carolina were compared to interviews with participants in the Piedmont Health Study of the Elderly.	population-based case-control study	There was a statistically significant association of suicide and cancer.
2	Fang, Chang, Chen, Lin, Chen, Lin, Chen, Lin, Hsieh, Chang, Chen, Wu, Lin, Chiu, Li; 2014; Taiwan	A correlational study of suicidal ideation with psychological distress, depression, and demoralization in patients with cancer	To investigate the effects of depression and demoralization on suicidal ideation and to establish a model screening process for suicide prevention.	Two hundred participants with lung cancer, leukemia, and lymphoma	Purposive sampling	Demoralization influenced suicidal ideation more than depression did.
3	Frutos, Garcia, Fernandez, Foncillas,	Suicide ideation among oncologic	A correlational study of suicidal ideation with psychological distress, depression,	interviewed 202 inpatients receiving curative or palliative treatment in a medical	A logistic regression model was constructed to examine the	Depression, hopelessness and advanced age as the

	Castroman; 2016; Spain	patients in a Spanish ward	and demoralization in patients with cancer	oncology ward of a Spanish hospital during the period 2012–2014.	relationship between the significant factors retained after the univariate analyses.	main risk factors for high suicidal ideation.
4	Granek, Nakash, Ariad, Chen, Cohen, Shapira, David; 2017; Israel	From will to live to will to die: oncologists, nurses, and social workers identification of suicidality in cancer patients	To examine how oncologists, nurses, and social workers identify suicidality in cancer patients.	Sixty-one healthcare professionals (23 oncologists, 18 social workers, and 20 nurses) at two academic cancer centers were interviewed using an in-depth interview guide.	A qualitative study based on grounded theory methodology.	Oncology patients shows higher risk of suicidal behavior than general population.
5	Kaur; 2014; India	Study to assess the Depression and Ideation of Suicide among Terminally Ill Patients, in Selected Hospitals, Ludhiana, Punjab	To find out the relationship of depression and ideation of suicide with variables like age, gender, family income per month, duration of terminal illness, education and diagnosis.	100 terminally ill patients diagnosed with end stage renal disease and cancer.	An exploratory study	A significant association of ideation of suicide with variables was found with gender, and family income per month.

6	Lehuluante, Fransson; 2014; Sweden	Are there specific health-related factors that can accentuate the risk of suicide among men with prostate cancer?	To explore if there were some specific factors pertinent to health-related quality of life that could affect self-experienced suicide ideation in men with prostate cancer.	3,165 members with prostate cancer	Questionnaires containing 45 items	Significant relationships between suicidal ideation with lower self-rated health-related quality of life, physical pain ,pain during miction and low-rated mental/physical energy was found.

7	Pham, Talukder, Walsh, Lawson, Jones, Bishop, Kruse; 2018; USA	Clinical and epidemiological factors associated with suicide in colorectal cancer	This study aims to examine suicide rates and factors associated with suicide specifically in patients with colorectal cancer.	1381 patients diagnosed with CRC and died due to suicide.	Comparisons with the general population were done using the National Center for Disease Control registry.	No statistically significant difference in suicide rate was found with respect to age, marital status, socio-economic status, surgical intervention, histologic subtype, or stage at diagnosis. Within the CRC population, whites and male, cancer at distal lesion area were significantly more likely to commit suicide.

8	Pranckeviciene, Tamasauskas, Deltuva, Bunevicius, Tamasauskas, Bunevicius; 2016; Lithuania	Suicidal ideation in patients undergoing brain tumor surgery: prevalence and risk factors	The prevalence rate and correlates of pre-operative SI in brain tumor patients was investigated.	211 patients scheduled for brain tumor surgery	Beck Depression Inventory-II), Hospital Anxiety and Depression scale, health-related quality of life and psychiatric histories and treatments	Patients with SI were more likely to have a history of psychiatric disorders, anxiety subscale, and reported worse health-related quality of life across physical and mental health domains. Mental health was associated with increased risk for SI.
9.	Thorsteinsdottir, Valdimarsdottir, Stranne, Wilderäng, Haglind, Steineck; 2018; Sweden	Thinking about one's death after a prostate cancer diagnosis	Studied the prevalence and predictors of thoughts about own death among men with prostate cancer.	3154 prostate cancer patients' men aged between 37 to 79 years old who had open VS robot-assisted laparoscopic radical prostatectomy	Two study-specific questionnaires, before and three months after surgery. Multivariable prognostic models were built with stepwise regression	Predictors of suicidal ideation were worry about extra-prostatic tumor growth, university education, the uncertainty of the treatment, low control of oneself, being a burden to the family, and crying.

					and Bayesian Model Averaging.	

Table 6. Summary of the selected articles

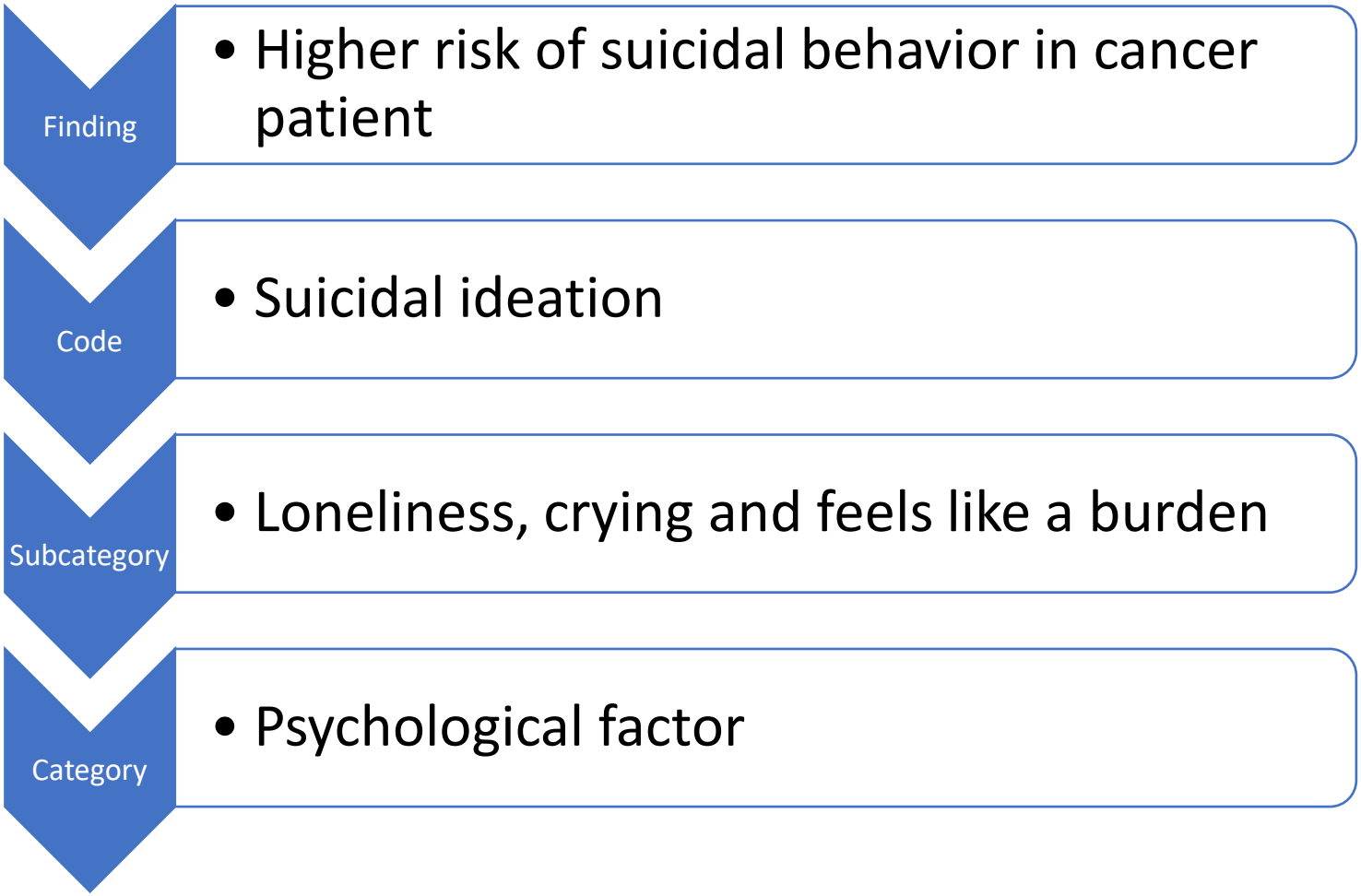

Figure 3. Sample of content analysis