Health and Psychosocial Self-Care Needs in Off-Therapy Childhood Cancer: Hybrid Model Concept Analysis

**Purpose:** The self-care concept is a complicated and multi-dimensional phenomenon. There are different opinions about self-care needs; therefore, this study was conducted to clarify the self-care needs of the off-therapy childhood cancer survivors based on the hybrid model.

**Patients and Methods:** There are three phases in the hybrid model including literature review, fieldwork, and final analysis. At the theoretical phase, 119 articles in databases were evaluated without time limits up to August 2019. At the fieldwork phase, 19 participants were selected with purposive sampling and interviewed through unstructured interviews. Then, the data were analyzed by qualitative content analysis approach. In the final phase, the overall analysis of the two previous phases was carried out and the ultimate definition of self-care needs was presented with the integration of the results of two previous phases.

**Results:** Theoretical results showed that self-care needs are those that need to be performed by off-therapy childhood cancer in everyday life in order to maintain health and well-being through the practice of healthy behaviors and activities. Also, fieldwork results indicated that self-care needs are increased due to the physical, mental, and social vulnerability of the disease. Following that, the need for protective self-care behaviors to prevent against physical and psychosocial side effects arises. If the patients are unable to implement protective behaviors, the need for support from others is created. Therefore, by synthesizing findings of literature review and fieldwork, self-care needs are two-dimensional concept: (1) need for changing in behavior to protect themselves against physical and psychosocial distress and (2) need for supporting to implement care.

**Conclusion:** Taking into account the self-care needs, healthcare providers can support childhood cancer survivors in gaining and maintaining independency in self-care. On the other hand, the results of this study by creating a basic knowledge in the field of self-care needs can be used in the development of policy and standards of care to meet the needs of this group.

**Keywords:** self-care needs, children, adolescents, off therapy, cancer, concept analysis

**Introduction**

The survival rate of childhood cancer has been increased in recent years, which is the result of development in treatments. The average survival rate of 5 years in childhood cancer has been increased up to 80% in developed countries. Consequently, as the number of off-therapy childhood cancer survivors increases; because of their needs such as medical follow-ups, the side effects of treatment, chronic disabilities, psychosocial problems, and other long-term problems exacerbate. As a result, the American Cancer Society believes that to provide...
desired and high-quality care for these patients, it is required to identify and recognize their care needs. This viewpoint results in the “need” concept in the care of survivors. This concept included the needs, which were not considered previously or meeting them required more support.

Supporting and reinforcing patients’ roles, especially in self-care, could lead to better disease-specific clinical outcomes. Identifying patients’ needs are one of the first steps in the nursing process to plan and implement health interventions and prevent complications. A comprehensive investigation of the needs helps the healthcare providers and nursing systems to identify the aspects of needs to be met so that they could provide high-quality health care.

Self-care needs in off-therapy childhood cancer survivors are affected by their developmental stages.

Children between 5 and 12 are developing the capacity to think logically and to consider other points of view, including differentiating between themselves and the outside world. Bares and Gelman (2008) compared the beliefs about colds and cancer in children ages 5, 7, and 10. This study illustrates the cognitive developmental progression of knowledge of illness during this period. Results showed that 5-year-old children had similar reasoning about cancer and colds; specifically that they were both contagious illnesses, caused by contact with contaminants, and similar in their length and severity. By age seven, the children began to discriminate between cancer and colds on some of the dimensions, demonstrating an appreciation that cancer is more serious than a cold and lasts longer. At age ten, the children were also able to understand that cancer would not go away on its own and that it was not transmitted through contagion.

In young adult children, adolescence is a start of changes during which the individuals attempt to become independent and create a positive self-concept and relationships. Consequently, facing a disease or its side effects in this period of life is challenging. Autonomy, relationship with peers, and uncertainty about disease recovery or recurrence make the condition more complicated. Childhood cancer survivors could have problems to accept the follow-ups and this difficulty could be worsened in the absence of relationship with the health professionals. Their perceived quality of life could be exacerbated if they underwent Hematopoietic Stem Cell Transplantation compared with their healthy peers.

Despite the well-documented high risk of late arising complications in survivors, up to 77% do not access any regular cancer-specific follow-up care or adhere to their recommended follow-up program. Optimal childhood cancer survivorship care is characterized by high-quality, safe, individualized and risk-based care that is economically feasible and accessible to patients.

Self-care concept is a complicated and multi-dimensional phenomenon. The World Health Organization (2009) similarly defines self-care as: “the ability of individuals, families, and societies to promote health, prevent diseases, maintain health and cope with disabilities and illnesses”. Nursing researchers and professionals have some different opinions about the self-care concept. Self-care is associated with some individual factors such as independence, self-efficacy, authority, self-esteem, and individual responsibility and is influenced by socio-economic and political factors. Over the past decades, several approaches have been developed and applied in nursing, each with their philosophical fundamentals. This variety in perspectives resulted from the performance, education, experiences, role, and scope of each discipline.

Children go through four recognizable stages of development from birth to adulthood that are typically conceptualized as infant, toddler/preschool, school age, and adolescence. In this study, we selected end school-aged children and adolescence that have been off treatment to be able to participate in face-to-face interviews and express their self-care needs. Given the importance of investigating and identifying the problems or needs in health care after cured cancer, the multidimensional aspect of “self-care needs after cured cancer”, and cultural differences in the definition of the concept, the present study was carried out to clarify the concept of self-care needs in off-therapy childhood cancer.

Materials and Methods
The hybrid model is one of the methods of conceptualization and theory development. This model consists of three stages including the theoretical, fieldwork, and final analytical stages. This study was conducted according to these stages, to clarify the concept of self-care needs. Each of these three steps is explained below.

Theoretical Stage
The theoretical phase begins with carefully selecting a concept and then examining the available literature related to the concept in other fields. In this stage, review of the literature was conducted with searching all creditable
databases such as Google Scholar, Elsevier, Science Direct, PubMed, Sage, Scopus, Web of Science, ProQuest, and Blackwell using the keywords “concept analysis”, “children cancer survivors”, “young adult children cancer survivors”, “self-care needs”, “cancer needs”, “survivors care needs”, “off-therapy of cancer”, “childhood cancer”, “hybrid model”, and “qualitative study”. Next, all the collected qualitative and quantitative studies which had been published up until 2019 which described aspects of self-care needs for cancer survivors were reviewed. The searches were carried out independently by the first and second authors and verified by the third author. In total, 339 articles were identified, 234 through PubMed, 78 through Scopus, 18 from Ovid, 9 through ProQuest. After irrelevant and duplicate papers had been eliminated, 119 abstracts were left, and then unrelated articles, which were issued on general self-care or care for healthy people, were excluded. Ultimately, 35 related articles were identified and used considering the references of this study (Figure 1). All the selected articles were read and re-read for essential elements that are required for definition and measurement of “self-care need after cured cancer”. The careful readings shed light on the different aspects of self-care need.

Fieldwork Stage
The qualitative content analysis approach and consolidated criteria for reporting qualitative research (COREQ) were used for this stage.25 Purposeful sampling was conducted until data saturation occurred. Samples were selected from Children teaching hospitals and Charity institutions of Tabriz, Iran. At last, 19 individuals were included in the study. Regarding the variety, there were 12 off-therapy childhood cancer survivors between 10 and 19 years old, two parents of these children, two oncology nurses, one oncologist, one teacher, and one staff from a cancer charity institution. To collect the data, the individual face-to-face interviews were used. Interviews were implemented in an unstructured manner; however, they were changed to semi-structured interviews gradually after the emergence of categories to collect comprehensive data. This is called a combined approach in an interview. In this approach, an informal conversational interview can be used with a semi-structured interview or a semi-structured can be combined.

Figure 1 Procedure of literatures identification and selection of articles.
with a standardized interview. This combination strategy gives the interviewer flexibility and can be used on specific topics that require more depth. Sampling and interviews continued until the data saturation was achieved. Saturation is defined as the stage in which by continuing data collection, no new information is obtained and the collected data are repeated. In the present study, according to the research team, after conducting 16 interviews, data saturation was achieved, and to ensure that no new data would be obtained, three more interviews were conducted. The interview guide was used to ensure that all subjects were informed. Interview guide questions can vary based on the interview process and the answers given by the participant. For example, in this study, after the emergence of the “Supportive Self-Care Needs” category, to further complete subcategories details, participants were asked to explain their experience about sources of support that they need to receive for better care. All interviews were done with prior arrangements in the hospitals or the participants’ workplace. Before the interviews started, the aim of the study, participation in the interview, and recording their voice were explained to the participants and the informed consent was obtained from them. At the beginning of each interview, the participants’ demographic information, cancer history, and the way of getting aware of disease were asked from the participants. Following that, the interview started with general questions of “How do you spend your daily time (24 hours) since your disease has been cured?”, “What self-care experiences do you have after treatment?”, “What problems in self-care did you have after treatment?” Some questions were asked from the physician, the nurse, families, teacher, and charity institution staff including “What is your perception of self-care in off-therapy childhood cancer?”, “What are the most important needs and priorities in off-therapy childhood cancer?” The data analysis was performed using the qualitative content analysis method. The steps proposed by Graneheim and Lundman were used to carry out content analysis. Immediately after each interview, its content was transcribed verbatim and typed. Later, the transcribed statements were read several times and primary codes were extracted. Following that, the codes were combined and sorted based on their similarities. Finally, implicit meaning and concept in the data were extracted. MAXQDA 10 software was used for the management of data. Methods proposed by Lincoln and Guba (credibility, confirmability, dependability, and transferability) were used to promote validity and trustworthiness. To ensure the credibility of the data, long-term engagement with data, indirect participants’ perspectives, immediate transcription of interviews, and participants’ confirmation on the accuracy of the transcription were used. For confirmability of coding that is stability and reliability of data at a similar time and conditions, two external researchers holding the nursing Ph.D. degree with qualitative research experience were requested to evaluate the interviews, initial coding, and categories until agreement was achieved. In this study, the interrater agreement between the two judges was calculated using Holsti method. A coefficient of 0.7 and higher indicates good agreement between coders. For example, the level of agreement with 25 codes (14 codes for the researcher, 11 codes for the other researcher, and 10 common codes) equal to 0.8. According to the minimum coefficient of agreement, the coding method seems appropriate.

To ensure dependability, the raw data, initial codes, and categories were kept for the audit purposes. For transferability, sampling with maximum diversity was used.

Final Analytical Stage
In this phase, the findings of the fieldwork stage were compared with the theoretical stage data, all obtained data were put together to identify their content meaning. According to the research team’s opinions, the differences and similarities of the first and second stages were assessed, and concept definition with additional and clear interpretation was extracted. Finally, a refined definition of self-care needs in off-therapy childhood cancer was provided, which is supported by both literature and childhood cancer survivors’ perspective.

Ethical Approval
The protocol for this study was approved by the Ethics Committee of Tabriz University Medical Sciences, Iran (approval number: IR.TBZMED.REC.1396.114), and conducted with permission from Children Teaching Hospitals and Charity Institutions administrative authorities under the Helsinki Declaration. Before the interviews started, the purpose of the study was explained to participants and the written consent to participate in the study was taken (including interview and audio recording). Also, a written informed consent for research involvement was obtained from the parent/legal guardian of any participant under the age of 18 years. Participants were assured that their recorded voice would be used
Results

Findings of Theoretical Stage
Review of the Concepts and Related Definitions
Definitions of “needs” and “self-care needs” were found in various informative databases and sources. The studies had mainly issued “healthcare needs” and almost none of them had investigated and defined “self-care needs” in cancer survivors. Self-care needs means anyone meeting them requires a specific level of activities services or support to provide the desired welfare.34

According to Orem’s opinion on the self-care need, three important needs are created when the health is violated and the disease breaks out. These needs include 1) the needs related to the patient’s physical changes, 2) the needs related to the individual’s performance, and 3) the needs related to the changes in behavior. Therefore, every individual has some self-care needs that must be met to maintain their health and wellbeing.35 Self-care is a process through which individuals take their health responsibility, perceive the way to improve it, and identify the things that damage it. The process of health promotion occurs in individuals’ daily lives to maintain their life, health, and wellbeing through implementing healthcare behaviors and activities.35–38 Accordingly, one of the areas obtained in reviewing the concept and definitions of self-care need was “need for changing in behaviors and activities” (Table 1).

Self-care is not only confined to the individual who cares himself but also includes the cares provided by others as well. The care might be provided by the family members or other people until the patient is enabled to take care of himself.39 Self-care is implemented when an individual is healthy or ill. All individuals implement some levels of daily self-care; however, when they become ill, the priority is to manage the disease and the need for self-care is raised to maintain the health. Therefore, self-care implementation is feasible in both health conditions and when an illness occurs; however, they do not follow a similar process.36 However, the psychological and sexual self-care will not be considered as well as physical care in cancer survivors. Olsson et al (2019) showed that adolescent and young adult childhood cancer survivors feel less attractive due to scars from the cancer operation. The feeling of attractiveness was negatively related to the size of the scar.40 Another study showed that cancer survivors had a lower satisfaction concerning sexual function compared to controls. Female cancer survivors had a lower frequency of orgasm during sexual activity than the controls. Male cancer survivors had a lower sexual desire than controls. The lower frequency of orgasm may depend on sensual loss due to the previous chemotherapy in childhood.41 Therefore, one of the obtained domain in the concept and definitions in the literature review was “supportive care needs” (Table 1).

Review of Related Themes
The available and related databases were reviewed using the following questions: “What are off-therapy childhood cancer problems concerning self-care?”, “What are off-therapy childhood cancer self-care needs?”, “What strategies do the off-therapy childhood cancer need to implement self-care?”. Regarding to these questions, the related themes were extracted from the literature.

After ending the primary treatment, survivors are exposed to a variety of long- and short-term effects of cancer and its treatment. These may include physical problems, undesired quality of life, psychosis, sexual problems; trouble in social relationships, finance-related anxiety, living a life accompanied by uncertainty and fear of disease recur, lack of balance, and self-changes.57,59 Besides, more than half of the survivors suffer from some restrictions in physical activities and one-third of them have constraints in doing their daily chores50,61 and fatigue might persist in these patients for years after curing the disease.52,63 These problems and anxiety result from the unmet needs in these patients.46

Literature review on the information-related needs of off-therapy childhood cancer survivors showed that they need information about the treatment and precautions, rehabilitation, future cares for personal and interpersonal health, social and financial adaptation, legal agents, physical and sexual image.52,53 It should be noted that these needs vary from the moment of the disease recognition to active treatment and end of treatment. During the treatment, the needs are mainly focused on the treatment and its side effects, but then health promotion is important.51,58,64

Literature has indicated that most of the off-therapy childhood cancer survivors have at least one unmet need in the first year following the treatment, which includes the need for emotional, social, and religious support, the need for managing the side effects, the need for obtaining the knowledge about dieting, exercising, fertility, and the need
for help to reduce the stress. Some themes acquired from qualitative study and systematic reviews are presented in Table 2.

Findings of the Fieldwork Stage
The 19 eligible participants included 12 off-therapy childhood cancer survivors, two parents, two nurses, one physician, one teacher, and one staff from a cancer charity institution. In this research, 13 subjects with off-therapy childhood cancer were enrolled in the study. However, the parents of one child did not allow to interview with their child due to the child’s unawareness of the illness and were excluded from the study; therefore, the response rate to the interview was 0.94. The mean current age of children was 13.8 (SD = 2.57) years, 58.69% of them were female, the mean age at cancer diagnosis was 7.89 (SD = 3.78) years, the mean length of treatment was 3.25 (SD = 1.29) and the mean length of off therapy was 1.38 (SD = 0.84) years. Data
analyzing about off-therapy childhood cancer self-care needs indicated two themes of 1) protective self-care needs and 2) supportive self-care needs (Table 3).

**Protective Self-Care Needs**

Based on the participants’ point of view, protective self-care was their main need after treatment. In other words, participants try to hinder the recurrence of cancer by protecting themselves against the risk factors. The two important subcategories were the “need for protection against physical distress” and the “need for protection against psychosocial distress”.

One of the off-therapy childhood cancer survivors said about the importance of physical protection:

| Authors                          | Sample                                      | Method                        | Purpose                                                                 | Themes                                                                                   |
|----------------------------------|---------------------------------------------|-------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Campbell and others, (2010)⁷⁷   | Cancer survivors                            | Qualitative study (mixed method) | Psychometric properties of cancer survivors’ unmet needs survey         | Emotional health needs, accesses to continues care, relationships, financial concerns, informational needs |
| Patterson and others, (2010)⁸⁸   | Young adults sibling with cancer             | Qualitative study (content analysis) | Developing an instrument to assess the unmet needs of young people who have a sibling with cancer | Informational needs, peer supporting (friends), peer supporting (similar experience), family support/relationship, expressing/coping with feelings, accessing to supportive services, sleep/entertainment, knowledge/self-attention, instrumental support, involving with cancer experiences. |
| Cox and others, (2013)⁹⁹        | Cancer survivors                            | Qualitative study (mixed method) | Developing a comprehensive health-related needs assessment for adult survivors of childhood cancer | Psycho-emotional needs, health system concerns, survival information, general health, survival care and support, coping, financial concerns, relationships |
| Rocha and others, (2014)⁷⁰      | elderly cancer patients undergoing outpatient treatment | Qualitative study (content analysis) | Exploring self-care independency in elderly cancer patients undergoing outpatient treatment | Clarifying nutritional concerns, information about physical problems, coping with changes due to living with cancer, family support |
| Hoekstra, and others, (2014)⁷¹  | Cancer survivors                            | Systematic review             | Assessing health care needs of cancer survivors in general practice     | Psychological needs (support, talking about psychological effects of cancer, talking about relationship problems), medical outcomes (nonrelated medical problems, long term effects of cancer), informational needs (general information and response to questions, management of long term effects), support of peer groups, contact with physician, other needs (financial, caring for care provider and family) |
| Wang and others, (2016)⁷²       | Cancer survivors                            | Qualitative study (content analysis) | Exploring unmet psychosocial rehabilitation needs of cancer survivors | Need for better information, psychosocial support, family support of survivors, improving health and medical services, help for financial problems |
| Berg, and others, (2016)⁷³      | Cancer survivors                            | Qualitative study (content analysis) | Exploring young adult cancer survivors’ experience with cancer treatment and follow-up care | Information about diagnosis or treatment, receiving survivors healthcare program, physical, social, psychological and school or academic effects, follow up care problems (limitation in insurance coverage and time, transportation problems, life changing) |
| Mayer, and others, (2017)⁷⁴     | Cancer survivors                            | Systematic review             | Assessing needs and perspectives on survivorship health care            | Communicational barriers, coordination between survivors and care providers, need for health care or oncologist support, coping with long term effects of cancer treatment, coping with uncertainty life, fear of recurrence, coping with changes in relationship with others, conservation of self-concept and roles. |
I must be careful not to catch a cold, but even though I adhere my health, I always get sick more than my classmates; therefore, I must be wear mask in crowded places and eat the foods that are rich and good for me. (Participant 7)

Also one of the children reported: Most of my teeth are broken, oral health and hygiene is important for me, so my mother reminds me to use mouthwash and fluoride twice or three times a week. I also use soft tooth brush every morning, noon and night. (Participant 4)

Another child said,

Our family is worried about the possibility of returning the disease, every four-month I refer to the hospital to be checked and they do some diagnostic experiments such as CBC, or ESR. I get lung CT or MRI annually. (Participant 3)

Regarding the protection against psychosocial distress, one of the off-therapy childhood cancer survivors said, I’m always upset when my family or other people talking about my disease. I try to uplift my spirits. For example, I may take a trip with my friends to a place where the weather is nice and think about good events in my life. (Participant 7)

Some young adults’ children tried to prevent family distress in addition to protecting themselves against psychological distress. For example, one of the young adult said, my mother and brother are always anxious about my coughs. They count them and ask me why I coughed more that day. It bothers me when I see my parents’ sadness, so I try to hide my physical symptoms not to make them sad. (Participant 5)

Supportive Self-Care Needs
According to the participants’ point of view, supportive self-care need is another need. Off-therapy childhood cancer tries to implement self-care activities and when they do

| Characteristics                                           | Subthemes                                      | Themes                          |
|-----------------------------------------------------------|-----------------------------------------------|---------------------------------|
| Protective needs against nutritional risk factors         | Protection against physical distress           | Protective self-care needs      |
| Protective needs against infection                        |                                               |                                 |
| Protective needs against physical damage                  |                                               |                                 |
| Control over cancer recurrence                            |                                               |                                 |
| Searching information about the disease                   |                                               |                                 |
| Pain control                                              |                                               |                                 |
| Releasing negative feelings                               | Protection against psychosocial distress       |                                 |
| Returning to a normal life                                |                                               |                                 |
| Avoidance the effect of the disease on the family         |                                               |                                 |
| Mental support from the family                            | Empathetic care                                | Supportive self-care needs      |
| Healthcare companionship                                  |                                               |                                 |
| Communication with friends and community                  |                                               |                                 |
| Family support for follow-up cares                        | Cooperation in physical care                   |                                 |
| Family help in doing daily routines                       |                                               |                                 |
| Educating physical care during survival period            | Providing information about survival period    |                                 |
| Awareness about long-term effects of cancer               |                                               |                                 |
| Providing facilities for the follow-up cares              | Instrumental support                           |                                 |
| Helps from governmental and non-governmental organizations|                                               |                                 |
| Providing specific educational facilities in schools      |                                               |                                 |

Table 3 Finding of Data Analysis in Fieldwork Phase

I must be careful not to catch a cold, but even though I adhere my health, I always get sick more than my classmates; therefore, I must be wear mask in crowded places and eat the foods that are rich and good for me. (Participant 7)

Also one of the children reported: Most of my teeth are broken, oral health and hygiene is important for me, so my mother reminds me to use mouthwash and fluoride twice or three times a week. I also use soft tooth brush every morning, noon and night. (Participant 4)

Another child said,

Our family is worried about the possibility of returning the disease, every four-month I refer to the hospital to be checked and they do some diagnostic experiments such as CBC, or ESR. I get lung CT or MRI annually. (Participant 3)

Regarding the protection against psychosocial distress, one of the off-therapy childhood cancer survivors said, I’m always upset when my family or other people talking about my disease. I try to uplift my spirits. For example, I may take a trip with my friends to a place where the weather is nice and think about good events in my life. (Participant 7)

Some young adults’ children tried to prevent family distress in addition to protecting themselves against psychological distress. For example, one of the young adult said, my mother and brother are always anxious about my coughs. They count them and ask me why I coughed more that day. It bothers me when I see my parents’ sadness, so I try to hide my physical symptoms not to make them sad. (Participant 5)

Supportive Self-Care Needs
According to the participants’ point of view, supportive self-care need is another need. Off-therapy childhood cancer tries to implement self-care activities and when they do

| Characteristics                                           | Subthemes                                      | Themes                          |
|-----------------------------------------------------------|-----------------------------------------------|---------------------------------|
| Protective needs against nutritional risk factors         | Protection against physical distress           | Protective self-care needs      |
| Protective needs against infection                        |                                               |                                 |
| Protective needs against physical damage                  |                                               |                                 |
| Control over cancer recurrence                            |                                               |                                 |
| Searching information about the disease                   |                                               |                                 |
| Pain control                                              |                                               |                                 |
| Releasing negative feelings                               | Protection against psychosocial distress       |                                 |
| Returning to a normal life                                |                                               |                                 |
| Avoidance the effect of the disease on the family         |                                               |                                 |
| Mental support from the family                            | Empathetic care                                | Supportive self-care needs      |
| Healthcare companionship                                  |                                               |                                 |
| Communication with friends and community                  |                                               |                                 |
| Family support for follow-up cares                        | Cooperation in physical care                   |                                 |
| Family help in doing daily routines                       |                                               |                                 |
| Educating physical care during survival period            | Providing information about survival period    |                                 |
| Awareness about long-term effects of cancer               |                                               |                                 |
| Providing facilities for the follow-up cares              | Instrumental support                           |                                 |
| Helps from governmental and non-governmental organizations|                                               |                                 |
| Providing specific educational facilities in schools      |                                               |                                 |
not have the ability and facilities to do that, the necessity of supportive self-care is created.

This category includes four subcategories: “the need for empathetic care”, “cooperation in providing physical care”, “providing information about the survival period”, and “the need for instrumental support”.

Regarding the necessity of empathetic care, one of the off-therapy childhood cancer survivors said:

My family supports me, but they mostly consider my diet. For example, they do not know much about my annoyance of the disease when I am with my friends because they cannot support me emotionally. (Participant 17)

Another child said about cooperation in physical care: “I take my medicines, but my mom always worries about forgetting them and brings the drugs exactly on time. Or, she remembers the exact date of the next doctor visit and cancels all her schedule on that day”. (Participant 7)

The oncologist told about providing the patients with information:

most of the adolescents survivors and their family are worried about puberty, marriage and having babies in the future, I believe that if they are provided with the correct information about body systems or get consultations, a big amount of worries will be removed. (Participant 15)

Instrumental support was one of the emerged sub-themes that included tangible aids such as services, financial aids, and other facilities and specific goods. This kind of support includes the helps that are created when there is a need for or shortage in financial resources.75

One of the off-therapy childhood cancer survivors said about the effect of instrumental support of self-care:

I have to go to another city for follow-up treatments and it costs a lot and takes much time. If these facilities were available in my city, I wouldn’t waste my time and I wasn’t at risk on the road. It was also economic. (Participant 5)

Another participant said:

I couldn’t keep up with my classmates because of too many absences from school. I have to study in adults’ school now. If there were facilities in my school and teachers helped me, I wouldn’t go to adults’ school. (Participant 18)

Findings of Final Analytic Stage

Theoretical results showed that it is necessary changing in daily behaviors and activities in cancer survivor. Following that, fieldwork results indicated that self-care needs should be met for cancer survivors to maintain a healthy life. These needs are perceived due to the physical, mental, and social vulnerability of the disease. In other words, the need for change in healthcare behaviors arises to prevent and protect against physical and psychosocial side effects. If the patients are unable to implement protective self-care behaviors, the need for support from others is created.

Although the results of the literature review were in agreement with the results of fieldwork, in some cases, the findings of the fieldwork stage were different. The results of the fieldwork analysis show self-care is a preventive action, and there are different levels of prevention that include increasing people’s awareness, improving lifestyle and avoiding risk factors, psychological control, and health screening strategy. The results of fieldwork analysis in the category of “the need for protection against psychosocial distress” showed that off-therapy childhood cancer survivors tried to protect not only themselves but also their families from mental distress. In this study, the protection against family mental distress was noticed mainly in young adults’ children since they could feel the mental burden in their family; therefore, they tried to prevent the mental effects of their disease on their families.

Another finding that emerged from the fieldwork analysis was “the need for supportive self-care” that was consistent with the results of the literature review. In this process, off-therapy childhood cancer survivors, their families, healthcare providers, and other organizations interact with each other, cooperate in cares, and support the children and families financially, to achieve the maximum rate of health.

Therefore, by synthesizing the findings of literature review and fieldwork, the following definition might be given. Self-care needs in off-therapy childhood cancer survivors is a two-dimensional concept that is perceived as vulnerability because of the physical, psychosocial, and developmental effects of the disease; consequently, the child needs various strategies and activities to protect themselves against physical, psychological distress, and mental distress of their family. If childhood cancer survivors become unable to meet their self-care needs, the need for support in implementing the care is created. Such a need is
presented as “empathetic care”, “cooperation in physical care”, “providing information during survival period”, and “need for instrumental support”. In the other words, off-therapy childhood cancer survivor has three areas for self-care need: the need for controlling the recurrence of disease, the need for better quality of life along with the complications of the disease and the need for normalizing family and social everyday processes. Hence, in addition to self-care activities that a person conducts, the need for support of professional health care such as physicians, nurses, family, government, and charity support is felt by the individual.

Discussion

Nowadays, the concept of self-care is considered as a patient’s right as well as personal responsibility. Individuals are expected to apply some changes in their healthcare behaviors to prevent the disease or to cure it.

The results of the present study showed that children and adolescents need to use some strategies and activities to protect themselves. Besides, protecting the family against mental distress was addressed. Protection is considered as a behavior to prevent potentially harmful incidents such as illness to reduce the negative outcomes resulted from that disease. In this regard, NANDA explains that “ineffective protection” is defined as reducing the ability of individuals coping with internal and external threats. The term is in the class of “health promotion” and “health control”. Protection creates a line of defense against invading physical diseases and improving one’s adaptability. In nursing, protection refers to the fifth basic psychological needs known in the Roy Adaptation Model. This theory focuses on the individual and his relationship with the environment, and the mutual impact between them. Therefore, the protection component is an important adaptation process because through the life defense process the integrity of the body is maintained.

Similarly, Riegel and Dickson (2008) believe that protective self-care is a constructive decision-making process in which applied behaviors might maintain physiological and mental balance and manage any symptoms of the disease. Self-care is the protection of the family, society, and individual against a disease.

In this study, participants considered the need for supportive self-care as a factor to improve their health during the period of survival. Supporting the patient refers to a set of helping activities that underlie the patient’s condition and position as a human being and the response to physical, mental, and social needs through providing information, honoring, respecting, supporting physically, mentally, and emotionally, also protecting, providing, and managing the follow-up cares. According to the World Health Organization (2009), self-care activities are established based on the knowledge and skill of professionals and non-professionals. They are also implemented personally or with participatory or supportive cooperation with the professionals.

As healthcare professionals, the authors intend to empower cancer survivors for self-care or co-care (eg, by enriching the anamnesis and seeking care for sexual dysfunction or fear of recurrence). Therefore, in this study, one learns anything concerning cancer survivors’ empowerment. For example, the internet-based programs developed by psychologists in Aarhus are a step towards empowerment. The age-appropriate and flexible psychological care as well as physical interventions, for example, yoga or dance would be more helpful for this group.

Strengths and Limitations

One of the limitations of the present study is the problem of access to off-therapy childhood cancer survivors because cancer survivors usually go to different health centers to follow-up the disease. Some off-therapy childhood cancer survivors were unaware of their illness; therefore, they could not share their experiences in interviews, so the researchers selected participants who were aware of their illness. The number of qualitative interviews, especially for health professionals, was imitated and it could be interesting to involve other health centers to obtain more information. The strengths of this study were sampling with maximum diversity, which contributes to the richness of data.

Conclusion

Literature review and analysis of the fieldwork stage showed that self-care needs included “need for protective care” and “need for supportive care”. Consequently, analyzing this concept might help the healthcare providers to be aware of off-therapy childhood cancer survivors’ needs and enable them to support the children and their families in implementing the self-care programs by getting knowledge about the nature of these needs. Nursing educators could emphasize the importance of self-care in promoting patients’ health and utilize the definitions in teaching the characteristics of the concept. In the field of management, healthcare officials might take effective steps to institutionalize self-care and
meet the needs. Also, the results of this study could provide a foundation for further studies and researchers might utilize the results to lead their studies on other diseases.

Acknowledgments
The authors appreciate the children, their parents, oncology physicians and nurses of the children hospitals and charity institutes in the city of Tabriz, for their support and consistent cooperation, without which this study could not have been accomplished.

Author Contributions
M.A., L.V., and A.Gh. conceived the study and study design. M.A. and H.M. were responsible for data collection and management. M.A., V.Z., and H.M. contributed to data analysis. L.V. was responsible for writing the original drafts and preparation. V.Z. and A.Gh. helped in the review and editing of the manuscript. All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

Disclosure
The authors declare no conflict of interest.

References
1. Miller KD, Siegel RL, Lin C, et al. Cancer treatment and survivorship statistics. CA Cancer J Clin. 2016;66(4):271–289. doi:10.3322/caac.21349
2. Kaatsch P. Epidemiology of childhood cancer. Cancer Treat Rev. 2010;36(4):277–285. doi:10.1016/j.ctrv.2010.02.003
3. Foster C, Wright D, Hill H, Hopkinson J, Roffe L. Psychosocial implications of living 5 years or more following a cancer diagnosis: a systematic review of the research evidence. Eur J Cancer Care. 2009;18(3):223–247. doi:10.1111/j.1365-2354.2008.01001.x
4. Campbell HS, Sanson-Fisher R, Taylor-Brown J, Hayward L, Wang XS, Turner D. The cancer support person’s unmet needs survey: psychometric properties. Cancer. 2009;115(14):3351–3359. doi:10.1002/cncr.24386
5. American Cancer Society. Cancer Facts and Figures. Atlanta: American Cancer Society; 2011.
6. Harrison JD, Young JM, Price MA, Butow PN, Solomon MJ. What are the unmet supportive care needs of people with cancer? A systematic review. Support Care Cancer. 2009;17(8):1117–128. doi:10.1007/s00520-009-0615-5
7. Matin H, Nadrian H, Jahangiry L, Sarbakhsh P, Shaghaghi A. Psychometric properties of the Persian HealthCare Climate Questionnaire (HCCQ-P): assessment of type 2 diabetes care supportiveness in Iran. Patient Prefer Adherence. 2019;13:783–793. doi:10.2147/PPA.S21400
8. Waller A, Girgis A, Lecathelinais C, et al. Validity, reliability and clinical feasibility of a needs assessment tool for people with progressive cancer. Psycho-oncology. 2010;19(7):726–733. doi:10.1002/pon.1624
9. Brand S, Wolfe J, Samuel C. The impact of cancer and its treatment on the growth and development of the pediatric patient. Curr Pediatr Rev. 2017;13(1):24–33. doi:10.2174/1573396363666161116094916
10. Bares CB, Gelman SA. Knowledge of illness during childhood: making distinctions between cancer and colds. Int J Behav Dev. 2008;32(5):443–450. doi:10.1177/0164029508315663
11. Harju E, Roser K, Dehler S, Michel G. Health-related quality of life in adolescent and young adult cancer survivors. Support Care Cancer. 2018;26(9):3099–3110. doi:10.1007/s00520-018-4151-z
12. Tremolada M, Bonichini S, Basso G, Pillon M. AYA cancer survivors narrate their stories: predictive model of their personal growth and their follow-up acceptance. Eur J Oncol Nurs. 2018;36:119–128. doi:10.1016/j.ejon.2018.09.001
13. Tremolada M, Bonichini S, Taverna L, Basso G, Pillon M. Health-related quality of life in AYA cancer survivors who underwent H SCT compared with healthy peers. Eur J Cancer Care. 2018;27(6):e12878. doi:10.1111/ecc.12878
14. Wilson CL, Cohn RJ, Johnson KA, Ashton LJ. Tracing survivors of childhood cancer in Australia. Pediatr Blood Cancer. 2009;52(4):510–515. doi:10.1002/pbc.21907
15. Glaser A, Levitt G, Morris P, Tapp J, Gibson F. Enhanced quality and productivity of long-term aftercare of cancer in young people. Arch Dis Child. 2013;98(10):818–824. doi:10.1136/archdischild-2013-304348
16. World Health Organisation. Self-Care in the Context of Primary Health Care. Report of the Regional Consultation. Bangkok, Thailand; 2009.
17. Qian H, Yuan C. Factors associated with self-care self-efficacy among gastric and colorectal cancer patients. Cancer Nurs. 2012;35(3):E22–31. doi:10.1097/NCC.0b013e31822d7537
18. Coetzee SK, Klopper HC. Compassion fatigue within nursing practice: a concept analysis. Nurs Health Sci. 2010;12(2):235–243. doi:10.1111/j.1442-1815.2010.01052.x
19. Lapanche V, Daroc N, Soudre D, et al. Health-related quality of life in AYA cancer survivors who underwent HSCT compared with healthy peers. Eur J Cancer Care. 2018;27(6):e12878. doi:10.1111/ecc.12878
20. Koch T, Jenkin P, Kraus D. Chronic illness self-management: locating the ‘self’. J Adv Nurs. 2004;48(5):484–492. doi:10.1111/j.1365-2648.2004.03237.x
21. Chodosh J, Morton SC, Mojica W, et al. Meta-analysis: chronic disease self-management programs for older adults. Ann Intern Med. 2005;143(6):427–438. doi:10.7326/0003-4819-143-6-200509200-00007
22. Rolita L, Freedman M. Over-the-counter medication use in older adults. J Gerontol Nurs. 2003;29(8):24–30. doi:10.3928/00989134-20030805-12
23. Schwartz-Barcott D, Kim HS. An expansion and elaboration of hybrid model of concept development. In: Rodgers BL, Knaff KA, editors. Concept Development in Nursing: Foundation, Techniques, and Application. 2nd ed. Philadelphia, London, Toronto, Sydney: W. Saunders Company; 2000:129–159.
24. McEwen M, Wills EM. Theoretical Basis for Nursing. Philadelphia: Lippincott Williams & Wilkins; 2002.
25. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research: exploring its conceptualization and operationalization. Qual Quant. 2017;51(1):1–15. doi:10.1007/s11135-017-0574-8
26. Holloway I, Galvin K. Qualitative Research in Nursing and Healthcare. Edition F. editor. Wiley –Blackwell; 2017.
27. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: exploring its conceptualization and operationalization. Qual Quant. 2004;38(2):159–169. doi:10.1023/B:QUAL.0000015105.14116.bf
28. Lincoln YS, Guba E. Naturalistic Inquiry. London, New Delhi: Sage, London, New Delhi: Sage, Philadelphia, PA; 1985.
29. Speziale HS, Carpenter DR. Qualitative Research in Nursing: Advancing the Humanistic Imperative. 5th ed. Philadelphia, PA; Lippincott Williams & Wilkins; 2011.
32. Yi M, Lee SW, Kim KJ, et al. A review study on the strategies for concept analysis. Taehan Kanho Hakhoe Chi. 2006;36(3):493–502. doi:10.4040/jkan.2006.36.3.493
33. Declaration of Helsinki. World medical association declaration of Helsinki: ethical principles for medical research involving human subjects. Bull World Health Organ. 2001;79(4):373–374. PMID: 11357217.
34. Molassiotis A, Yates P, Li Q, et al. Mapping unmet supportive care needs, quality-of-life perceptions and current symptoms in cancer survivors across the Asia-Pacific region: results from the international STEP study. Ann Oncol. 2017;28(10):2552–2558. doi:10.1093/annonc/mdx350
35. Orem DE. Nursing Concepts of Practice. 6th ed. St Louis: Mosby; 2001.
36. Riegel B, Jaarsma T, Strömberg A. A middle-range theory of self-care of chronic illness. Adv Nurs Sci. 2012;35(3):194–204. doi:10.1097/ANS.0b013e318261b1ba
37. Hoy B, Wagner L, Hall EOC. Self-care as a health resource of elders: an integrative review of the concept. Scand J Caring Sci. 2006;21(4):456–466. doi:10.1111/j.1471-6712.2006.00491.x
38. Levin LS, Idler EL. Self-care in health. Annu Rev Publ Health. 1998;4(1):181–201. doi:10.1146/annurev.publhealth.04.050183.001145
39. George JB. Self-care in health. Annu Rev Publ Health. 1998;4(1):181–201. doi:10.1146/annurev.publhealth.04.050183.001145
40. Olsson M, Enskär K, Steineck G, Jarfelt M. Sexual function in adolescent and young adult cancer survivors: analysis of open-ended responses to the American Cancer Society’s Cancer Survivorship Questionnaire. JBTW.01030403
41. Olsson M, Enskär K, Steineck G, Jarfelt M. Self-perceived physical attractiveness in relation to scars among adolescent and young adult cancer survivors: a population-based study. J Adolesc Young Adult Oncol. 2018;7(3):358–366. doi:10.1097/jayao.2017.0089
42. Silva IJ, Oliveira MIF, Silva SED, et al. Care, self-care and caring for yourself: a paradigmatic understanding thought for nursing care. Rev Esc Enferm USP. 2011;45(3):690–695. doi:10.1590/S0080-62432009000300028
43. Ataee M, Ahmadi-Jouybari T, Hosseini SN, et al. Self-care in cardiovascular patients: a cross-sectional study in Hamadan County, the west of Iran. J Biol Today’s World. 2014;3(4):89–93. doi:10.15412/JBTW.01030403
44. Hammer MJ, Cartwright-Alcarea F, Budin WC. Current Trends in Oncology Nursing. Chapter 1 - Theoretical Frameworks and Philosophies of Care. 2nd ed. Pittsburgh, Pennsylvania, USA: Published By Oncology Nursing Society; 2019.
45. Sanson-Fisher R, Carey M, Paul CH. Measuring the unmet needs of those with cancer: a critical overview. Cancer Forum. 2009;33(3):200–203. doi:10.1177/0898264309317533
46. Boyes AW, Clinton-McHarg T, Waller AE, Steele A, Dorey FJ, et al. Patient Educ Couns. 2015;95(8):527–535. doi:10.1016/j.pediatr.2015.03.005
47. Burg MA, Adorno G, Lopez ED, et al. Current unmet needs of cancer patients. J Cancer Surviv. 2015;9(4):567–575. doi:10.1007/s11764-015-0434-2
48. Willems RA, Bolman CA, Mesters I, Kanera IM, Beaulen AA, et al. Parent-reported and self-reported physical activity and fitness among pediatric cancer survivors: a meta-analysis of observational studies. Support Care Cancer. 2019;27(9):3185–3194. doi:10.1007/s00520-019-04788-z
49. Sarkar S, Sautter L, Schilling G, Bokemeyer C, Koch U, Mehnert A. Anxiety and fear of cancer recurrence and its association with supportive care needs and health-care service utilization in cancer patients. J Cancer Surviv. 2015;9(4):567–575. doi:10.1007/s11764-015-0434-2
50. Vanderpool RC, Nichols H, Hoffer FF, Swanson JE. Cancer and employment issues: perspectives from cancer patient navigators. J Cancer Educ. 2017;32(3):460–466. doi:10.1007/s13187-015-0956-3
51. Geller BM, Vacek PM, Flynn BS, Lord K, Cranmer D. What are cancer survivors’ needs and how well are they being met? J Fam Pract. 2014;63(10):17–6.
52. Scarlata LA, Fiol GD, Oakley-Givan I, Gibson B, Logan R, Workman TE. Understanding cancer survivors’ information needs and information-seeking behaviors for complementary and alternative medicine from short- to long-term survival: a mixed-methods study. J Med Libr Assoc. 2018;106(1):87–97. doi:10.1595/jmla.2018.200
53. Fletcher C, Flight I, Chapman J, Fennell K, Wilson C. The information needs of adult cancer survivors across the cancer continuum: a scoping review. Patient Educ Couns. 2017;100(3):383–410. doi:10.1016/j.pec.2016.10.008
54. Davy C, Bleasle J, Liu H, Tchan M, Ponniah S, Brown A. Effectiveness of chronic care models: opportunities for improving healthcare practice and health outcomes: a systematic review. BMC Health Serv Res. 2015;15(1):194. doi:10.1186/s12913-015-0854-8
55. Riegel B, Jaarsma T, Lee CS, Christopher A. Integrating symptoms into the middle-range theory of self-care of chronic illness. ANS. 2019;42(2):206–215. doi:10.1097/01.ans.0000000000000237
56. Nekhlyudov L, Mollica MA, Jacobsen PB, Mayer DK, Shulman LN, Geiger AM. Developing a quality of cancer survivorship care framework: implications for clinical care, research, and policy. JNCI. 2019;111(11):1120–1130. doi:10.1093/jnci/djy089
57. Riegel B, Dickson VV. A situation-specific theory of heart failure self-care. J Cardiovasc Nurs. 2008;23(3):190–196. doi:10.1097/01.jcn.0000305091.35259.85
58. Hall A, Campbell HS, Sanson-Fisher R, et al. Unmet needs of Australian and Canadian haematological cancer survivors: a cross-sectional international comparative study. Psychooncology. 2013;22(9):2032–2038. doi:10.1002/pon.3247
59. Yeh JM, Hammner J, Ward ZJ, et al. Chronic conditions and utility-based health-related quality of life in adult childhood cancer survivors. J Natl Cancer Inst. 2016;108(9):djw046. doi:10.1093/jnci/djw046
60. Lown EA, Phillips F, Schwartz LA, Rosenberg AR, Jones B. Psychosocial follow-up in survivorship as a standard of care in pediatric oncology. Pediatr Blood Cancer. 2015;62(5):514–584. doi:10.1002/pbc.25783
61. Brewster DH, Clark D, Hopkins L, et al. Subsequent hospitalisation experience of 5-year survivors of childhood, adolescent, and young adult cancer in Scotland: a population based, retrospective cohort study. Br J Cancer. 2014;110(5):1342–1350. doi:10.1038/bjc.2013.788
62. Antwi GO, Jayawardene W, Lohrmann DK, Mueller EL, Physical activity and fitness among pediatric cancer survivors: a meta-analysis of observational studies. Support Care Cancer. 2019;27(9):3185–3194. doi:10.1007/s00520-019-04788-z
63. Wilson CL, Stratton K, Leisenring WL, et al. Decline in physical activity level in the childhood cancer survivor study cohort. Cancer Epidemiol Biomarkers Prev. 2014;23(8):1619–1627. doi:10.1158/1055-9965
64. Liu W, Cheung YT, Brinkman TM, et al. Parent-reported and self-perceived behavioral and psychiatric symptoms in long-term survivors of childhood acute lymphoblastic leukemia. Blood. 2016;128(22):3594. doi:10.1182/blood.2012.22.3594.3594
65. Bagur J, Massoubre C, Casagrande L, Faure-Conter C, Trombert-Paviot B, Berger C. Psychiatric disorders in 130 survivors of childhood cancer: preliminary results of a semi-standardized interview. Pediatr Blood Cancer. 2015;62(5):847–853. doi:10.1002/pbc.25425
66. Friend AJ, Feltbower RG, Hughes EJ, Dye KP, Glaser AW. Mental health of long-term survivors of childhood and young adult cancer: a systematic review. Int J Cancer. 2015;136(6):1279–1286. doi:10.1002/ijc.31337
67. Campbell HS, Sanson-Fisher R, Turner D, Hayward L, Wang X, Taylor-Brown J. Psychometric properties of cancer survivors’ unmet needs survey. Support Care Cancer. 2010;19(2):221–230. doi:10.1007/s00520-009-0806-0
68. Patterson P, Millar BM, Visser A. The development of an instrument to assess the unmet needs of young people who have a sibling with cancer: piloting the Sibling Cancer Needs Instrument (SCNI). *J Pediatr Oncol Nurs*. 2010;28(1):16–26. doi:10.1177/1043454210377174

69. Cox CL, Riley BB, Hudson MM, et al. Development of a comprehensive health-related needs assessment for adult survivors of childhood cancer. *J Cancer Surviv*. 2013;7(1):1–19. doi:10.1007/s11764-012-0249-3

70. Rocha LS, Beuter M, Neves ET, Leite MT, Brondani CM, Perlini NMOG. Self-care of elderly cancer patients undergoing outpatient treatment. *Texto contexto enferm*. 2014;23(1):29–37. doi:10.1590/S0104-07072014000100004

71. Hoekstra RA, Heins MJ, Korevaar JC. Health care needs of cancer survivors in general practice: a systematic review. *BMC Fam Pract*. 2014;15(1):94. doi:10.1186/1471-2296-15-94

72. Wang JW, Shen Q, Ding N, et al. Qualitative exploration of the unmet psychosocial rehabilitation needs of cancer survivors in China. *Psycho-Oncology*. 2016;25(8):905–912. doi:10.1002/pon.4023

73. Berg CJ, Stratton E, Esiashvili N, Mertens A. Young adult cancer survivors’ experience with cancer treatment and follow-up care and perceptions of barriers to engaging in recommended care. *J Cancer Educ*. 2016;31(3):430–442. doi:10.1007/s13187-015-0853-9

74. Mayer DK, Nasso S, Earp JA. Defining cancer survivors, their needs, and perspectives on survivorship health care in the USA. *Lancet Oncol*. 2017;18(1):11–18. doi:10.1016/S1470-2045(16)30573-3

75. Merluzzi TV, Philip EL, Yang M, Heitzmann CA. Matching of received social support with need for support in adjusting to cancer and cancer survivorship. *Psycho-Oncology*. 2016;25(6):684–690. doi:10.1002/pon.3896

76. Christensen M, Hewitt-Taylor J. Patient empowerment: does it still occur in the ICU? *Intensive Crit Care Nurs*. 2007;23(3):156–161. doi:10.1016/j.iccn.2006.03.002

77. Nunes MM, Lopes MV, da Silva VM, et al. Validation of clinical indicators of the nursing diagnosis of ineffective protection in adolescents with cancer. *J Pediatr Nurs*. 2018;42:e58-65. doi:10.1016/j.pedn.2018.05.001

78. Herdman TH, Kamitsuru S. *NANDA International Nursing Diagnoses: Definitions and Classification* 2018-2020. New York: Thieme; 2014.

79. Roy C. Extending the roy adaptation model to meet changing global needs. *Nurs Sci Q*. 2011;24(4):345–351. doi:10.1177/0894318411419210

80. Setoodeh N, Aghamolaei T, Bushehri E. Explaining the concept of self-care from the viewpoints of patients with diabetes type II: a qualitative research. *J Prev Med*. 2016;3(3):21–30.

81. Miller K, Merry B, Miller J. Seasons of survivorship revisited. *Cancer J*. 2009;14(6):369–740. doi:10.1097/PPO.0b013e31818edf60

82. Zachariae R, Amidi A, Damholdt MF, et al. Internet-delivered cognitive-behavioral therapy for insomnia in breast cancer survivors: a randomized controlled trial. *J Natl Cancer Inst*. 2018;110(8):880–887. doi:10.1093/jnci/djx293

83. Yang Y, Li W, Wen Y, et al. Fear of cancer recurrence in adolescent and young adult cancer survivors: a systematic review of the literature. *Psychooncology*. 2019;28(4):675–686. doi:10.1002/pon.5013