



Coping Strategies Used by Hospitalized Children With Cancer Undergoing Chemotherapy

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Abstract

Purpose: To analyze coping strategies used by children with cancer undergoing chemotherapy during hospitalization.

Design and Methods: This was an exploratory study to analyze qualitative data using an inductive thematic analysis. Semistructured interviews using puppets were conducted with 10 children with cancer, between 7 and 12 years old, who were hospitalized and undergoing chemotherapy.

Findings: The coping strategies to deal with chemotherapy were: understanding the need for chemotherapy; finding relief for the chemotherapy's side effects and pain; seeking pleasure in nourishment; engaging in entertaining activities and having fun; keeping the hope of cure alive; and finding support in religion.

Conclusions: Children with cancer undergoing chemotherapy need to cope with hospitalizations, pain, medication side effects, idle time, and uncertainty regarding the success of treatment. These challenges motivated children to develop their own coping strategies, which were effective while undergoing chemotherapy.

Clinical Relevance: By gaining knowledge and further understanding about valid coping strategies during chemotherapy treatment, health professionals can mobilize personal and material resources from the children, health teams, and institutions aiming to potentiate the use of these strategies to make treatments the least traumatic.

Child cancer cure rates have progressively and significantly increased since 1970 due to multicenter studies, advances in early diagnoses, and progress in examinations, treatments, and surgical techniques (American Cancer Society, 2013). Nevertheless, cure is achieved at the cost of patients and families' physical, social,

economic, and emotional exhaustion (Rollins, 2005), which lead to uncertainties, emotional instability, and anxiety already brought up by the diagnosis (O'Shea, Shea, Robert, & Cavanaugh, 2012).

The treatment of malignant childhood tumors is long and demands considerable hospitalization time, exposing

the child to physical and emotional invasive and unpleasant procedures (Aldiss, Horstman, O'Leary, Richardson, & Gibson, 2008; Cicogna, Nascimento, & Lima, 2010). Hospitals are places dedicated to curing; however, they are also where pain and suffering are experienced with different meanings by those admitted. Therefore, hospitalization is considered a potentially traumatic situation because it separates children from their natural environment and social life and exposes them to unknown people, inflexible routines, medical equipment, and aggressive treatments (McGrath & Huff, 2001), such as chemotherapy.

Chemotherapy is regarded as one of the most effective treatments against childhood cancer. It generally starts shortly after the diagnosis and even before the child has adapted to the disease condition and has understood the process he or she is experiencing (Cicogna et al., 2010). Chemotherapy can cause several side effects, such as nausea and vomiting, changes in taste and smell, fatigue, hair loss, weight loss or gain, dry mouth, constipation, and diarrhea. Moreover, it requires frequent venipuncture, which is challenging for children (Baggott et al., 2010).

Due to the complexity of the disease and its effects, the treatment offered to pediatric cancer patients should be focused on human dimensions, including a set of actions that allow sick children to adapt physically and psychologically to their new condition. Children need to be considered in their singularity and have resources that are familiar to them in order to deal with the disease and hospitalization by developing coping strategies (Motta & Enumo, 2004).

Coping is considered as an emotional, behavioral, and cognitive process that contributes to the adaptation to changes in each phase of the disease (Peçanha, 2008). Children make constant efforts to cope with the disease and hospitalization; however, some occasionally have difficulties in finding effective coping strategies to deal with the treatment and make it less traumatic. Therefore, learning about the children's opinions and experiences regarding their health conditions can help guide healthcare professionals to intervene on behalf of these children and others who have not developed their own strategies (Motta & Enumo, 2004). Some studies investigated the coping strategies used by children with cancer without focusing on a specific treatment or specific treatment stage (Hildenbrand, Alderfer, Deatrck & Marsac, 2014; Hildenbrand, Clawson, Alderfer, & Marsac, 2011; Li, Chung, Ho, Chiu, & Lopez, 2011; Motta & Enumo, 2004). Rodgers et al. (2012) studied strategies used to cope with chemotherapy, focusing on those used to cope with medication-induced nausea and vomiting. Thus, the aim of this study was to identify and understand the

coping strategies used by hospitalized children with cancer undergoing chemotherapy.

Methods

Design

This was an exploratory study using a qualitative data analysis (Braun & Clarke, 2006). The study was approved by the institutional review board prior to starting. The children agreed to participate in the study, and their parents signed an informed consent prior to study start.

Participants and Setting

The study was performed in a pediatric oncology ward at a public teaching hospital in Brazil. Data were collected between April 2010 and May 2011, and all children eligible for the current study were invited to participate as volunteers and all of them accepted. The criteria for participation were established as (a) age between 7 and 12 years; (b) undergoing chemotherapy treatment for at least 3 months; and (c) ability to communicate in Portuguese.

A total of 10 children with a mean age of 9.8 ± 1.93 years were selected to participate in the study (5 boys and 5 girls). The age distribution was 7 ($n = 2$), 9 ($n = 3$), 10 ($n = 1$), 11 ($n = 1$), and 12 years ($n = 3$). The diagnoses were classified as osteosarcoma ($n = 3$), acute lymphoid leukemia ($n = 2$), non-Hodgkin's lymphoma ($n = 2$), Ewing's sarcoma ($n = 1$), rhabdomyosarcoma ($n = 1$), and medulloblastoma ($n = 1$). The period between diagnosis and data collection ranged from 4 to 33 months, with a mean of 11.4 ± 8.51 months.

The number of hospitalizations ranged between 2 and 39, with a mean of 14.9 ± 10.53 . Five children had been hospitalized in other institutions before beginning cancer treatment in the hospital where this study was conducted.

Procedures

The medical chart for each child was carefully reviewed to collect personal, clinical, and received treatment information. The data collected referred to birth, origin, diagnosis, current disease history, length of chemotherapy treatment, other current or previous treatments, number of hospitalizations, and comorbidities.

Data were gathered during individual semistructured interviews using a puppet, representing the child, made by each child prior to the interview. Other puppets made by the researcher were also used during the interviews. Puppets were chosen as an auxiliary strategy

for data collection based on previous studies showing that their use allowed researchers to enter into a world that was familiar to the child. Additionally, puppets were used to stimulate responses to the researchers' questions and did not require the participant to speak directly to the interviewer or maintain eye contact, which may be difficult for some children (Aldiss et al., 2008; Epstein, Stevens, McKeever, Baruchel, & Jones, 2008; Gibson, Aldiss, Horstman, Kumpunen, & Richardson, 2010). Therefore, the use of puppets promotes a trusting relationship in which children engage in interactions and expand their verbal expression, feeling more comfortable to talk about their thoughts and feelings (Sparapani et al., 2014; Sposito, Sparapani, Pfeifer, Lima, & Nascimento, 2013).

The first author performed the interviews wearing a colored apron, especially made as the scenario for the puppets, to enhance the playful nature of the interview and facilitate the children's expressions of thoughts and feelings. The interviewer is experienced in conducting research with children and has the skills required to perform interviews using puppets with this population, which increased the credibility of the results. The interviews lasted from 54 to 71 min; only one interview was needed with each child. All hospitalized children were accompanied by their mothers during the interviews, which was an option given to each child in respect to ethical procedures, and which was accepted by all participants. Even though the mothers did not come forward during the interviews, three of them reinforced or detailed the children's responses without influencing the children's accounts.

The first author worked at the institution where the study was performed. Hence, she consciously made an effort to only play the role of the researcher and avoid using preliminary knowledge regarding the participating children during the interviews. Self-reflexive practice was present from the conception and planning of this study and incorporated during the entire research process. To prevent the researcher's involuntary influence on the outcomes of interviews, each child's interview was discussed with the leading researcher to evaluate the impact of the first author on the scenario and to observe the children's reaction in her presence. Despite the limitations of these procedures, the researchers believe that the benefits of the study outweighed the difficulties, and the precautions taken contributed to ensuring quality in the collected data (Tracy, 2010).

The interviews began with a comprehensive guiding question to address the research problem with the children in the least threatening way: "Tell me what your treatment has been like here at the hospital." Depending on the children's responses, the researcher

questioned them about other issues, such as which hospitalization aspects they considered positive or negative. Based on the children's statements, the topic chemotherapy in the hospital was subsequently addressed followed by their coping strategies. For example, the children were asked: What helps you feel better during chemotherapy? And after chemotherapy? All the interviews were recorded on a digital recorder and captured for verbatim transcription.

Data Analysis

An inductive thematic content analysis was applied to the collected data, which is a form of data analysis driven by the data and identification of themes and not by the researchers' theoretical interests. The participants' testimonies were analyzed at a latent and nonexplicit level, which goes beyond the semantic content of the data, identifying and examining the underlying ideas, assumptions, and their meanings (Braun & Clarke, 2006). The steps indicated by Braun and Clarke (2006) were followed. The interviews were transcribed by the first author before the analysis of the data by all authors. The transcribed interviews were exhaustively read to acquire awareness of the whole scenario; codes were identified and grouped into themes. The validity of themes in relation to the initial code and data as a whole were verified to refine the specificities of each topic, defining them clearly and assigning names (titles) to each of them. According to Braun and Clarke, titles need to be concise for the reader's immediate understanding of the theme addressed.

The dependability and credibility of the analysis were achieved through the detailed report of this process and frequent peer debriefing sessions between the first author and an expert in qualitative methods, who also supervised the entire research process. All digital audio transcriptions of the interviews were checked for accuracy by at least two authors. Interpretations were supported by the use of verbatim interview quotes illustrating the discussion of findings.

Results

Hospitalized children with cancer developed coping strategies to minimize the impact of chemotherapy. The identified strategies were: understanding the need for chemotherapy; finding relief for the chemotherapy's side effects and pain; seeking pleasure in nourishment; engaging in entertaining activities and having fun; and keeping the hope of cure alive and finding support in religion.

Understanding the Need for Chemotherapy

Children demonstrated knowing the name of their disease, or at least that it was cancer. However, they did not know what the words really meant. Specifically regarding chemotherapy, the children indicated that it was a drug to fight cancer, although they sometimes presented mistaken knowledge about its action: "It's to kill the cancer" (7-year-old child). And: "Ah, it [chemotherapy] helps to kill the bacteria, right?" (9-year-old child).

The children who understood how chemotherapy acted in cancer treatment mentioned that this knowledge helped them to cope with the adversities and side effects of the treatment as they envisaged cure through these drugs: "Understanding why I take chemo helps me not to complain about the treatment" (11-year-old child). "I accept it because I know this treatment serves to kill the disease" (10-year-old child). And: "Chemotherapy is needed to reduce the tumor. Despite the treatment being so bad, I keep taking chemo because I'm afraid of getting something much worse" (12-year-old child).

Some children said that they preferred that their mothers were present when the healthcare team provided information regarding their diagnosis and treatment. Others expressed their desire to participate in their care process and get information directly from healthcare professionals. These different preferences regarding communication were more related to the children's maturity than to their chronological age. Regardless of how the diagnosis was communicated and explained by the health team or mothers, the children demonstrated that they wanted to have access to the information so they could understand the need for treatment and, thus, face it more easily: "The doctors talk to me, but when I don't understand, my mother explains it" (12-year-old child). "I know why I come here. So, any doubts I have, I ask, and the doctors answer me. . . . If they explain everything it becomes easier" (10-year-old child). And: "The doctor explains each procedure that I have to undergo, everything that I have to go through. I prefer knowing what's going to happen so that I can prepare myself" (11-year-old child).

Finding Relief for the Chemotherapy's Side Effects and Pain

The side effects most frequently mentioned by the children as the most difficult to cope with were nausea and vomiting: "Ah, vomiting it's the worst side effect of the treatment. . . . My stomach starts to get upset, then my mouth waters, and then I know when I'm gonna throw up" (12-year-old child).

Besides the antiemetic medication to relieve nausea, the children identified other strategies to help them

relieve this side effect: engaging in playful activities developed by the occupational therapist and exposure to a wind fan as a physical resource that improves well-being.

Participants also highlighted the importance of minimizing the impacts of alopecia, which was not as difficult to cope with as vomiting. According to their reports, the emotional impact of alopecia was stronger at the beginning of treatment but became bearable overtime. In general, they reported using caps, scarfs, hats, and wigs to cope with hair loss: "Before, when I used to go with a cap [to school], it was kind of difficult because people are very prejudiced. Now that I've put on the wig it's nice! They say that it's pretty, that it matches my skin tone" (12-year-old child).

In addition to nausea, vomiting, and alopecia, the participants highlighted the suffering caused by pain resulting from different sources, mostly from frequent venipuncture used for drug infusion.

Some of the children referred to the pharmacological strategies as the only effective resource to relieve pain. Others mentioned using nonpharmacological strategies to relieve pain, such as praying, massaging, and thinking about distracting issues as shown in the following records: Researcher: "[W]hen you're in pain, what helps you to get through it?" Participant: "[I pray] 'Our Father' to God, and God helps me!" (9-year-old child). And: "Ah, I think distraction helps relieve the pain" (12-year-old child).

Children can more easily cope with treatments after identifying and carrying out actions that help relieve the side effects of chemotherapy and pain, which make treatment less threatening and cause less discomfort: "The pain isn't so bad. It hurts a little, but then I already know it hurts, so I do some massage" (12-year-old child). "I think that in the beginning it is more difficult. Then you go through a situation and learn that it is bad. So, on the second time, you're already prepared" (12-year-old child). And: "In the beginning I got really sick. My stomach ached, and I didn't eat anything. Now I even ask for medication. It's much better!" (10-year-old child).

Seeking Pleasure in Nourishment

The children mentioned that they did not like the hospital food but acknowledged that eating well was extremely important for hospital discharge and treatment success in general: "But after I had the first chemotherapy cycle, I understood that, if I ate a lot, if I came here [to hospital] strong, I would not have to stay here!" (11-year-old child).

The children took in urgent requests from family members and healthcare staff to eat well and not lose weight despite the side effects of chemotherapy. According to the children, it was important to consume as much food as

possible without great concern about the quality of the food. Hence, when eating became difficult, they developed coping strategies such as buying food from the hospital's cafeteria or getting their favorite food from home, prepared by parents or relatives. The children also mentioned the need for special care with food hygiene, storage, and preparation, considering their increased risk for infection: "My fruit is all separated. They're all sterilized" (9-year-old child). And: "I cannot eat street food. It's not clean!" (9-year-old child).

Despite knowing their risk for infection and need for food hygiene, children are more prepared to face the adversities of treatment when they eat food that tastes good: "I do not like hospital food . . . ! Food from outside is much easier to eat!" (7-year-old child).

Engaging in Entertaining Activities and Having Fun

Entertainment and playful activities are coping strategies to deal with pain and the side effects of chemotherapy as outlined previously. Besides these adversities, these children have to spend several hours, during several days, attached to the drug infusion pump. Thus, they mentioned the need to cope with idle time during chemotherapy: "Ah, it's bad to stay in hospital because sometimes there is nothing to do" (12-year-old child).

According to the children, entertaining activities were the best way to help them cope with the idle time due to treatment; they would like to play games and have playful activities more frequently: "Ah, to keep myself busy, sometimes I read comics, I draw, I paint" (12-year-old child).

The children also mentioned that playful activities during hospitalization were the only good thing about chemotherapy. They reported that taking their own games and toys made the hospital environment similar to that at home; the toys available at the hospital helped them to minimize boredom and allowed choosing different games: Participant: "I bring the computer, it keeps me busy!" Researcher: "Ah, what's nice about what you do on that computer then?" Participant: "I listen to music and play. [I do everything] on the Internet" (11-year-old child).

The children's preference for video and computer games was observed, especially among the older ones. Access to the Internet enhanced their contact with people and the "world" outside the hospital, which was another effective coping strategy during hospitalization: "Ah, the computer really helps to keep me close to other people, because I know people on the Internet, and then I can talk to more people" (12-year-old child).

Keeping the Hope of Cure Alive and Finding Support in Religion

Despite the side effects from chemotherapy, the children thought it was worth going through the process because of their hope in a treatment that could cure them. Maintaining the hope of cure presents itself as an important strategy to face the adversities caused by the chemotherapy: "Sometimes I feel sad, but then I think that, if I want to get better, it's best to do the treatment correctly" (12-year-old child).

In some cases, the hope of cure was so strong that some children stated that they were already cured. Participants who had reached different stages in their treatment mentioned they were cured, which was not in agreement with the records in these children's medical charts. In the belief that they were cured, these children found meaning to keep up with their treatment and face adversities: "Ah, my cancer has already died!" (7-year-old child). And: "What is good about chemotherapy is that I'm cured, right?" (12-year-old child).

Even though the hope or certainty about the cure made some patients stronger to cope with chemotherapy, relapsing or treatment failure were the greatest fear mentioned by these children: "I'm afraid of it [the tumor], I'm really scared that it will come back, right? That it will turn into something much worse" (12-year-old child).

The children seek ways to strengthen their hope aiming at minimizing their fear of treatment failure. In this respect, religion becomes an important source of support. The interviewed children indicated they believed that their religion helped them coping with the treatment but in a way that cannot be explained in words: Researcher: "And does it help you in some way, having a religion?" Participant: "It helps." Researcher: "How?" Participant: "Ah, I can't explain how, but it helps" (10-year-old child)!

Sometimes the children accept their family's religious practices even if they do not understand the dimension of these actions. However, regardless of the children's overall understanding, they realized that religious practices are helpful and, somehow, religion was a source of support for them because it strengthened their hope of cure:

I believe, because when I go to church it seems that God speaks to me. Then I have more faith, because I know God is with me. To finish this treatment, I went to church, prayed and thank God everything is right! (12-year-old child)

Discussion

The interviewed children demonstrated the development of coping strategies that helped them undergo chemotherapy during hospitalization. These strategies were more concrete or more subjective according to the child's maturity and previous experiences; their complexities cannot be directly related to the children's chronological age.

Based on their contact with the disease and treatment, children with cancer could reproduce the names of the disease, drugs, and procedures, but often without understanding their illness (Cancer Council New South Wales, 2010). The results indicate that knowing not only the name of their disease and treatment, but also the meaning of these words, and especially understanding the need of undergoing chemotherapy, helped these children to cope with the treatment. Hildenbrand et al. (2014) also identified that "seeking understanding" about the situation experienced and adversities can be a valid strategy for coping with cancer treatment as a whole.

The children bear the side effects of chemotherapy and need for hospitalization more easily when they understand the importance of the treatment. The children's ultimate goal is the cure, and they acknowledge that all efforts are valid to achieve it.

Therefore, it is considered extremely important that multiprofessional healthcare teams implement systemized actions to reveal the diagnosis to pediatric cancer patients. The diagnosis should be explained individually and appropriately to the child's age and maturity level (Cancer Council New South Wales, 2010). It is important that family members be present during the explanation of the diagnosis. On this occasion, professionals could provide initial clarifications about the treatment and its main side effects. If the child does not understand, the parents can help by explaining in a way that the child will be able to understand. However, if the child is more autonomous and emotionally and intellectually mature, he or she can actively participate in the therapeutic process by asking questions and expressing opinions directly to the healthcare team.

Chemotherapy causes several side effects, such as nausea, vomiting, fatigue, and hair loss. Coping with these side effects should involve the use of pharmacological and nonpharmacological methods, adopting a comprehensive approach (Rheingans, 2008). In this study, the children considered nausea and vomiting as the most difficult side effects to cope with during the treatment process.

Because antiemetic medications do not fully control nausea during chemotherapy, nonpharmacological interventions, in addition to antiemetic medications, have been tested over the years with positive results in most

studies; these interventions include relaxation, imagery, and distraction techniques, as well as acupuncture and acupressure (Molassiotis et al., 2013).

In this study, although the children acknowledged the importance of pharmacological and nonpharmacological approaches to relieve nausea and vomiting and assist in coping with chemotherapy, they mentioned a limited number of nonpharmacological resources for this purpose, such as engaging in entertaining activities and having fun. Rodgers et al. (2012) indicated other strategies to cope with vomiting and nausea: emotional regulation, cognitive restructuring, social support, wishful thinking, social withdrawal, resignation, self-criticism, and blaming others. Hence, our data suggest that, besides the difficulties to control these side effects even when taking medications, some resources that could help minimizing the discomfort were not frequently used or were not available for all children. All hospitalized children undergoing cancer treatment could benefit if multiprofessional healthcare teams would make these nonpharmacological approaches available.

The participants demonstrated greater difficulty in coping with hair loss at the beginning of the treatment because it strongly affected their self-image, allowing everyone to notice their disease. However, as the children begin to become concerned with other treatment aspects, they accept the hair loss and realize that it is temporary and can be minimized by using accessories with satisfactory esthetic effects, which helps them to cope with the situation.

A comprehensive approach is recommended, including the combined use of pharmacological and nonpharmacological strategies when aiming at effective cancer pain control. The administration of analgesic medication interferes with the sensory dimension of pain, while nonpharmacological methods act on other components, including the patient's mood, behavior, emotional response, and perceived personal control over the painful situation (Kwekkeboom, Bumpus, Wanta, & Serlin, 2008). Techniques like relaxation and guided imagery; listening to music; playing games, watching television and playing with toys; using cold compresses and warm baths; and massaging specific spots have been reported in the literature as effective nonpharmacological strategies to help children with cancer to cope with pain (Fortier, Wahi, Bruce, Maurer, & Stevenson, 2014; Kwekkeboom et al., 2008). Therefore, multiprofessional healthcare teams can apply these techniques in pediatric cancer patients.

Hildenbrand et al. (2014) presented practical strategies that contribute to coping with the side effects of chemotherapy and pain, such as medications, relaxation, and massage. However, these strategies are

called “direct problem solving” and “problem-focused support.”

It is known that the patient’s nutritional condition influences cancer treatment. However, the acceptance of food among children undergoing chemotherapy is strongly reduced because of vomiting and tasting alterations, in addition to possible reduction of salivary secretion, oral mucosa inflammation, pain when swallowing, and inability to chew and swallow normally (Cheng, 2009). Therefore, these problems are minimized at home because parents prepare food prioritizing the children’s favorite meals, which include ice cream and soft drinks. These home benefits result in increased difficulties to accept hospital food on the part of these children. Although purchasing ready-made food or preparing them outside the hospital are alternatives that can reduce the children’s difficulties in eating, they can expose children to infection. Nevertheless, regardless of the health professionals’ recommendations about food from outside of the hospital, family members continue to bring food to the hospital. The present study shows that what matters for the parents is reducing the children’s nausea and that their children eat what they want to eat. Besides that, parents assured that the greatest concern is that the children eat regardless of their risks for infection. Thus, parents decide to break hospital rules and take food to the hospital with the main purpose of satisfying the sick child’s appetite, which indirectly and positively influences their coping with chemotherapy.

Despite the negative consequences of hospitalization, the hospital should not be regarded only as an environment of pain and suffering. Games and pleasurable activities should be created and incorporated in this context. Hildenbrand et al. (2014), Leukemia & Lymphoma Society (2012), Hildenbrand et al. (2011), and Li et al. (2011) reported that entertainment and playful activities help coping with cancer treatment. This study reinforces these findings and adds to the understanding that, beyond entertainment, the pleasure obtained in playful activities contributes significantly to the child’s ability to face the adversities of chemotherapy during hospitalization.

Li et al. (2011) reported that playful activities help coping with hospitalization for cancer treatment by allowing an “escape-avoidance” to the experienced situation. The Leukemia & Lymphoma Society (2012) indicated that besides being entertaining, playful and pleasurable activities help coping with cancer and its treatment by allowing entertainment and expression of feelings.

According to Aldiss et al. (2008) and the participants in this study, playing can fill idle time and relieve boredom because these activities are familiar and allow positive experiences. The children’s preference to use

computers and other electronic devices was observed. These options are considered appropriate for children undergoing chemotherapy because they do not cause any exacerbated symptoms such as fatigue. Electronic, board, and other similar games can be played even if the child is attached to the chemo infusion pump.

For these children, chemo represents a constant duality between pain, suffering, idle time, and the possibility of cure. Ångström-Brännström and Norberg (2014) have also identified that children with cancer endured discomfort during treatment; however, they recognize that it represents the only hope for a future without the disease. Thus, another strategy mentioned to support coping with treatment and hospitalization by the studied children was having hope of cure. Zelcer, Cataudella, Cairney, and Bannister (2010) also stated that in the opinion of interviewed parents, the children’s hope of cure depends on the belief that the treatment is successful, which helps coping with the situation.

According to Chi (2007), fear of the future often encourages patients to seek additional sources of support and, in this sense, hope is an effective coping strategy in stressful situations that result from cancer treatment. The concept of hope is important when studying disease. Generally, hope may be considered a desire that an individual anticipates for the future (Van Dongen, 1998). From a psychological perspective, hope may be a lifelong pursuit that is also considered a component of personal will power (Chi, 2007).

This study shows that the participants experience a constant dichotomy between hope of cure and treatment failure or relapse. At the same time, keeping up hopes and believing that they are cured grants them the sense and strength needed to remain in treatment despite all the suffering, fear of relapse, or treatment failure characterizing an emotionally stressful reaction (Hildenbrand et al., 2011). Hence, it is concluded that, when fear of treatment failure or relapse is stronger than hope of cure, it becomes more difficult to cope with the situation. In this study and in that of Zelcer et al. (2010), it was observed that children who are influenced by their families find support in religion and religious practices to sustain hope in the cure.

The terms religion and spirituality have different meanings. Chan et al. (2006) indicated that spirituality is an innate human component, which is extremely significant in people’s lives because it promotes emotional strength, health, hope, and well-being, allowing self-consciousness and favoring individuals’ transcendence. Hence, religion is a vehicle to express spirituality through a set of values, beliefs, practices, and rituals that are socially standardized. In this study, the data interpretation showed that religion is the main mean for the children to express their

spirituality through praying and participating in religious services.

In the children's process of coping with the disease, their family members find comfort and emotional strength in religion. Parents are responsible for transmitting their culture, beliefs, and practices to their children (Lordelo, Fonseca, & Araújo, 2000); religion is one among different traditions that perpetuate the family culture, habits, and beliefs related to religion. Children who develop their spirituality show more effective coping strategies and have greater resilience to cope with adversities (Mueller, 2010). In this study, it was observed that those children, who were influenced by their relatives and assimilated religious practices including prayers, also recognized these practices as a source of strength to their hope of curing cancer.

Limitations and Future Research

Because the number of children between 7 and 12 years of age undergoing chemotherapy was limited during data collection, we included participants who were at different moments during their oncologic treatments and conducted one interview with them. This was a limitation in the study.

Puppets were used in this study as a technique for data collection that is considered adequate to interview children up to 12 years of age. It is also vital to investigate coping strategies in adolescents with cancer. Therefore, attractive and appropriate methods could be developed for the adolescents' developmental stage.

This study focused on chemotherapy coping strategies during hospitalization. The investigation of strategies used by pediatric cancer patients to cope with chemotherapy is considered extremely important in other contexts, such as in outpatient clinics, at home, and at school, considering specific stages in the course of the disease, including the beginning and end of treatment, and in relapsing situations aiming to verify whether these strategies vary throughout the treatment.

Conclusions

Cancer treatment through chemotherapy requires repeated and sometimes lengthy hospitalization periods. In this environment, pediatric cancer patients experience many side effects, such as pain, mainly after invasive procedures; idle time; and uncertainty about the treatment. Conversely, these challenges motivate children to develop their own strategies to cope with chemotherapy, which are: understanding the need for chemotherapy; finding relief for the chemotherapy's side effects and pain; seeking pleasure in nourishment; engaging in

entertaining activities and having fun; and keeping the hope of cure alive and finding support in religion.

This study highlights the importance of healthcare professionals' welcoming actions toward the learned strategies from pediatric cancer patients focusing on all dimensions of sick human beings and heeding the needs that go beyond biological care. Through the delivery of comprehensive care, children with cancer can cope with their disease and treatment in the least threatening way possible.

By gaining knowledge and further understanding about valid coping strategies during chemotherapy treatment, health professionals can mobilize the personal and material resources from children, health teams, and institutions aiming to potentiate the use of these strategies to make treatments the least traumatic.

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Clinical Resources

- American Cancer Society: Learn about cancer: <http://www.cancer.org/cancer/index>
- Cancer Council New South Wales: <http://www.cancercouncil.com.au/16995/cancer-information/general-information-cancer-information/for-family-and-friends/talking-to-children-about-cancer/talking-to-kids-about-cancer-treatment-and-recovery/>

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