

ORIGINAL RESEARCH

Physical Well-Being Needs of Bone Cancer Patients during Treatment in the Hospital: A Qualitative Study



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Abstract

Background: Bone cancer patients undergoing hospitalization require support to manage physical challenges for optimal healing and recovery. The physical aspects experienced by the patients significantly affect their physical well-being. Addressing these aspects is essential for nurses in providing care. However, comprehensive assessments of bone cancer patients' physical needs have not been thoroughly explored.

Purpose: This study aimed to explore the physical well-being needs of patients with bone cancer undergoing hospitalization.

Methods: This qualitative study with a phenomenological approach was conducted among 14 bone cancer patients selected through purposive sampling. The criteria included patients with a primary cancer diagnosis, undergoing hospitalization at a cancer center, and having good orientation and verbal communication abilities. In-depth interviews were employed to delve into the patients' well-being needs. To triangulate the data, 12 cancer nurses were involved. Data analysis utilized the Creswell method.

Results: This study found chronic pain and bone lumps as fundamental physical challenges, leading to disruptions in physical movement, sleep disturbances, and dependency on others for self-care. Six themes emerged regarding the physical well-being needs of hospitalized bone cancer patients: goals and needs for physical well-being, need for pain management, need for physical mobility, need for sleep and rest, need for self-care, and the meaning of physical well-being for patients. Physical well-being provides a significant meaning in achieving nursing goals.

Conclusion: This study shows the significance of addressing pain management, physical mobility, sleep and rest, and self-care for the physical well-being of bone cancer patients. Nurses should be able to identify various physical complaints and help improve the physical well-being of bone cancer patients.

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1. Introduction

Bone cancer is a relatively rare disease, usually affecting the long bones of the arms and legs (Hernandez et al., 2018). According to the World Health Organization, the highest incidence of bone cancer is osteosarcoma, which occurs in around 4–5 per 1,000,000 inhabitants of all populations, and it is estimated that 1,072–1,340 new patients occur per year (Prabowo et al., 2020). The incidence of bone cancer continues to increase, reaching 8–11 cases per 1 million population per year in the age range of 15–19 years (Dewi, 2017; Kamal, 2020). Research shows that the incidence of primary malignant bone cancer in China reached 11,655 from 2000 to 2015 (Xi et al., 2023); meanwhile, the incidence of bone cancer of osteosarcoma type at Dr. Cipto Mangunkusumo Hospital, Indonesia, reached 219 cases (16.8 cases per year). Osteosarcoma is the most common type of bone malignancy (70.59%), followed by chondrosarcoma, Ewing's sarcoma, and chordoma (Kamal & Prasetyo, 2018).

The prevalence of cancer in Central Java, Indonesia, is higher than in other provinces, namely at 2.11% or 132,565 cases (Ministry of Health Republic of Indonesia, 2018). The comparison of

bone cancer in men and women is 3:2. Primary bone cancer occurs in adolescents in the second decade of life, and 60% more occurs in those under 25 years of age (Ferguson & Turner, 2018). The incidence of bone cancer increases at the age of 60 years with a bimodal distribution. Secondary bone cancer develops in adulthood due to the spread of cancer cells to bone tissue (Kamal, 2020; Prabowo et al., 2020).

The diagnosis and management of bone cancer require a multidisciplinary approach, including the role of nursing and medical oncology. Hospital health professionals are expected to play an optimal role in providing good healing (Kaasa et al., 2018). Treatment of bone cancer in medical care includes surgical amputation, chemotherapy, or radiotherapy using high-energy radiation (Bala et al., 2020; Ministry of Health Republic of Indonesia, 2018). Bone cancer patients experience various complaints that cause a decrease in well-being. This problem affects the emergence of further health complaints in various dimensions of life, affecting the patient's ability to be independent in daily activities (Keilani et al., 2019). Decreased physical condition is related to changes in daily activities and physiological responses to illness and its treatment (McManimen et al., 2019).

Bone cancer patients may experience limited self-care, resulting in decreased quality of life and impaired physical, psychological, and spiritual well-being (den Hollander et al., 2020). The physical problem most often felt by cancer patients is discomfort in the form of sensations like pain. The pain that the patients feel can impact impaired physical mobility, decreased self-care, and disturbed sleep and rest (Martins et al., 2019). Furthermore, impaired physical well-being can worsen the condition of cancer patients, leading to a decrease in life expectancy. Physical complaints can trigger psychological stress that interferes with thoughts and unpleasant feelings in dealing with illness, thus affecting psychological adjustment (Martins et al., 2019). Changes due to the inability to deal with stress can result in the development of disease and the complexity of problems. Various medical care efforts include the administration of analgesic drugs to reduce pain and symptoms (Coleman et al., 2020).

The oncology treatment requires optimizing the hospital nurses' role to identify patients' needs and improve their well-being during the treatment period (Hasselaar & Payne, 2016). Their role is crucial, especially in meeting the various needs of the patients. Likewise, doctors and healthcare teams, including nurses, also have an important role in improving the well-being of patients and families. As the healing concept approach is holistic and comprehensive, utilizing the basic principles of various sciences and involving the role of the healthcare team on an ongoing basis is necessary (Martins et al., 2019; Singer et al., 2017). Hence, efforts must be made to establish relationships between nurses and healthcare teams with individuals and families in identifying priorities and integrating possible therapies from various disciplines and traditions (Istambouly, 2021; Smith & Oeffinger, 2020).

A preliminary study conducted by the researchers in three cancer hospitals in Central Java, Indonesia, has established the foundation for understanding the challenges faced by bone cancer patients. This investigation revealed an average incidence of 1-4 bone cancer cases per month in these hospitals, comprising 25% primary cases with an average age of 10-30 years and 75% secondary cases with an average age exceeding 45 years. Notably, the majority of patients were males, Muslims, and worked in the private sector. The identified physical well-being problems included chronic and fluctuating pain, impaired physical mobility and self-care, and sleep disturbances. Pain was found to be a major problem that resulted in other physical complaints, and narcotic analgesics such as morphine were given to patients with moderate to severe pain. The non-pharmacological approach used relaxation and distraction techniques, such as deep breathing, taught by nurses without structured guidance, monitoring, or evaluation both before and after the procedure. If the pain were not treated in a special condition, it would be further referred to the pain management team, consisting of anesthesia consultants and nurses.

Despite the evident complexity of physical problems, assessments of physical needs have not been thoroughly and specifically explored in the existing literature. This gap in knowledge becomes a focal point, especially concerning the role of nurses in delivering comprehensive nursing care. The necessity for more concrete nursing interventions tailored to address the diverse life-dimensional problems threatening the physical well-being of patients, particularly those with bone cancer, emerges as a critical concern. Recognizing physical well-being as a principal indicator in nursing services emphasizes the urgency of obtaining patient-experience-based information. In light of this, a phenomenological study focused on the physical well-being needs

of hospitalized bone cancer patients becomes imperative. Such a study is essential to provide a comprehensive overview and a foundation for delivering optimal services that meet the specific physical needs of this patient population. Accordingly, this study was conducted to explore the physical well-being needs of patients with bone cancer undergoing hospitalization.

2. Methods

2.1. Research design

This study employed a qualitative descriptive design with a phenomenological approach, according to Vagle (2018). The study aimed to explore in-depth the physical well-being needs of bone cancer patients. The reporting of the results of this study used the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (Dossett et al., 2021).

2.2. Setting and participants

This study was conducted among bone cancer patients from three major referral hospitals in Central Java, Indonesia, who were selected using purposive sampling. The inclusion criteria were patients with bone cancer undergoing hospitalization in the adult care room at the hospital's cancer center, who had good orientation and could communicate verbally. Data saturation was reached in the 12th participant. However, the researchers added 2 participants to strengthen the data and confirm additional data in patients undergoing surgery, chemotherapy, and radiation therapy. Therefore, a total of 14 patients participated in this study.

2.3. Data collection

This study was conducted over four months, from November 2021 to February 2022, with 14 bone cancer patients. Before collecting data, the research team submitted research permits to the three research hospitals. The researchers also coordinated with the hospital's education and research divisions and presented the research feasibility test to the hospital ethics committee, the head of the medical and nursing services division, the doctors in charge, and the cancer nurses at the hospitals. After obtaining research permits from the hospitals, the researchers coordinated with the person in charge of cancer care for the data collection process.

The data were collected through in-depth interviews that lasted approximately 60 minutes for each participant. Interviews were conducted in bone cancer treatment rooms in three referral hospitals in Central Java. The researcher made audio recordings with MP4 during the interviews. Investigative questions were asked by the principal investigators (PP) during the interviews. Prior to data collection, the research team provided participants with written forms containing research information, written consent, and interview guidelines when they met at the hospital. All selected participants gave written informed consent. The in-depth interview guide utilized twelve open-ended questions developed by the researchers during the data collection (Table 1). Strategies suggested by Creswell and Creswell (2017) and Fain (2020) for producing qualitative research data through interviews, observation, narratives, and focused discussions were considered during data collection.

Table 1. Question guidelines

List of Questions for the Participants
<ul style="list-style-type: none"> ▪ Can you tell me about the physical complaints that you felt while in the hospital? ▪ Please tell me, how is your current physical condition? ▪ How was your physical well-being during your stay at the hospital? ▪ How do you currently feel your need for physical well-being? ▪ How will your strategy improve it? ▪ How does it impact the complaints you feel? ▪ Do you report physical complaints to the nurse? ▪ What is the nurse's response? ▪ Does the nurse meet your needs? ▪ What are your hopes for physical well-being while in the hospital? ▪ How do you think nurses should address the need for physical well-being for bone cancer patients? ▪ What does physical well-being mean to you?

2.4. Data analysis

Qualitative data analysis was carried out simultaneously with data collection based on findings. The researchers reviewed the results of the interviews and identified interview needs by developing, verifying, and adding descriptions of the phenomena. The interview data on the tapes were transcribed into a verbatim narrative accompanied by notes on nonverbal responses by the researchers (PP, BB). Other researchers (DB, AFK) analyzed significant statements, concluded the meaning, and developed essence descriptions. The researchers also identified important statements and made special notes on data management. Concerning the data interpretation, the researchers studied the data and read explanations of phenomena word by word. They extracted important statements by marking or shading with different colors based on the category, sub-theme, and theme, described and interpreted the meaning of statements in the context of the verbatim of each informant, as well as organized sets of meaning into theme groups (Bengtsson, 2016; Kenny et al., 2020).

2.5. Rigor/trustworthiness

In this study, the researchers built trust through credibility, transferability, dependability, and confirmability. In terms of credibility, the researchers ensured that the research steps were in accordance with the researchers' competencies. The primary researcher is a medical-surgical nursing specialist nurse who has specialized competencies in managing cancer cases. Regarding transferability, the data could be applied to larger population conditions. The researchers selected participants from three referral hospitals with bone cancer patients from different regions so that they could represent the population. In terms of dependability, if the same method is used with the same participants, the same results will be obtained. The researcher used the same method with each participant so that accurate information was obtained. In terms of confirmability, the researchers' objectivity recognized the confidence to make decisions; they objectively conducted the research without any conflict of interest with certain parties.

Furthermore, Creswell and Creswell (2017) state that to build trust in research results, source validation is needed through collecting data on topics from different sources. Nurses' experiences are very helpful in validating data findings from the participants because they have an important role in providing direct care to patients for 24 hours. They also understand various complaints and physical conditions of patients. In addition to bone cancer patients, the researchers involved 12 nurses and the person in charge of the cancer treatment room to validate the data. The collected data were validated through focus group discussions (FGDs) to obtain information from nurses' experiences in providing bone cancer care.

2.6. Ethical considerations

This study received ethical approval from the Ethics Committee of the Faculty of Nursing, Universitas Indonesia (No. Ket-239/UN2.F12.D1.2.1/PPM.00.02/2021) and also the Ethics Committee of the hospital where the study was conducted. Potential participants were informed about the study's objectives, and their participation was voluntary, with the right to refuse and maintain confidentiality. Those participating voluntarily were instructed to choose a pseudonym to protect their anonymity. The voluntary response implied continued consent to participate.

3. Results

3.1. Characteristics of the participants

As shown in Table 2, the majority of participants were males aged 18-65 years old, with high school education, and identified as Muslims. Most participants had primary bone cancer and underwent surgical management, with a history of being in the hospital three or more times.

3.2. Analysis of findings

The findings of this study revealed six themes: (1) goals and needs for well-being, (2) the need for pain management, (3) the need for physical mobility, (4) the need for sleep and rest, (5) the need for self-care, and (6) the meaning of physical well-being for the patients.

3.2.1. Theme 1: Goals and needs for well-being

The participants in this study stated that they wanted the disease to recover quickly, not get worse and stay healthy. The well-being needs that participants expected during hospitalization

were the basic needs, which included eating, drinking, and assistance from family and nurses. This can be seen from the expression of Participant P1: *Don't think too much about the illness you are experiencing so that it doesn't get any worse. Eat, drink, and get help from those closest to you* (P1). Similarly, another participant said: *Everyone is good here, providing help to be healthy* (P4). Furthermore, Participant 7 had the expectation as follows:

Get well soon and be able to return to your activities. There are complaints of being sick, complaints of being bored; why do you have a disease like this so that it doesn't have to be medically cured? I wish I didn't have to undergo medical treatment. I don't have to have surgery because I'm afraid of surgery. (P7)

Table 2. Demographic characteristics of the participants

Characteristics	f	%
Gender		
Male	11	78.6
Female	3	21.4
Age		
<18 years	4	28.6
18–55 years	9	64.3
>56 years	1	7.1
Education		
High School	12	85.7
University	2	14.3
Religion		
Moslem	14	100
Types of Bone Cancer		
Primary	13	92.9
Secondary	1	7.1
Treatment		
Surgery	10	71.4
Surgery and chemotherapy	2	14.3
Surgery, chemotherapy and radiation therapy	2	14.3
Hospitalization		
1 – 2 times	5	35.7
≥ three times	9	64.3

3.2.2. Theme 2: Need for pain management

Most patients required treatment due to complaints of pain, including details such as onset, pain quality, time of occurrence, and pain intensity. Pain predominantly occurred at night, triggered by activity and surgery. The perceived quality of pain ranged from the most potent pain, throbbing, to a decrease in pain when going to sleep and in cold air at night. On a scale of 5-7, the average pain level fluctuated until it began to interfere with sleep and rest. Patients expressed hope that pain could be alleviated and managed through their own efforts, as well as the efforts of their families and the healthcare team, including nurses. Some participants stated: *I feel the pain every night until I can't sleep, and it comes and goes..., given drugs and injections by nurses* (P1); *If the pain is excruciating, I compress it using warm water at home, and if I give a pain drug, it can heal* (P3); *When I was tired, I felt pain. After surgery, the pain was less severe and sedentary, and sometimes the pain increased due to fatigue* (P4); *I had night pain, I could not sleep anymore, and I was given painkillers from the hospital and traditional medicine from home. I can endure the pain by stroking the affected area* (P5); *Since the last 4 months, I have been complaining of pain. The lump got bigger, and the pain spread to my waist, so I had to be hospitalized. I was given painkillers and vitamins for the bones* (P6). Other participants also expressed the following:

I often feel pain from here to here (while pointing to the painful area). It started to swell a little, and now the swelling has been about six months. The pain has decreased. I took the herbal medicine for two months. (P7)

At first, it was painful, and then I had difficulty walking and limping, and over time, it got bigger. There was pain, tingling, and heaviness. Every night and morning, I suddenly felt pain. While in the hospital, I was injected with painkillers. (P8)

After surgery, the pain disappeared. When pain occurs, I go to the doctor and am given medicine such as capsules. The pain occurs in cold weather, in the morning, at night, and when I walk long distances. It is excruciating to sleep. (P10)

Additionally, two other participants stated: *I can't walk anywhere; when I lie down like this, when I want to stand up, I often feel like I am being electrocuted (P9); Pain is often felt in the morning or at night before going to bed; it is slightly less if I rub it (P11).*

3.2.3. Theme 3: Need for physical mobility

The participants stated that their physical movement was disrupted, so they needed the support of their families and nurses to improve their mobilization skills. Participants wanted help with daily activities, such as eating, drinking, walking, elimination, and personal hygiene, as well as reducing fatigue. This can be seen in the expression of Participant 1, as follows:

Moving is still possible but limited. Activities, such as sports, can be decreased. There was no problem at the hospital. If at the hospital, I often slept, ate, and went to the bathroom; thank God I could walk, but I had to be helped. (P1)

Meanwhile, some other participants revealed: *Before the big lump, the movement was not disturbed at all; now, I needed help from family and nurses because I couldn't move too much. (P4); If I bend my knee, it hurts; usually, I can squat, but now I can't; then, when I stand, I only use one leg, and I get tired because I only have one leg (P5); At the moment, I can't walk, and I have to use assistive devices, but it just so happens that I didn't bring them from home. Yesterday, I was advised to use a cane (P6). Other participants stated: Now, the movement is limited, less free to move; it was made to hold it beforehand, but now it's a bit difficult (P7); The legs are sometimes difficult to move, and it is a bit difficult to move for too long, so I have to use U-shaped crutches (P9); When it's cold, in the morning, at night, when I walk, my legs feel longer, it's sometimes difficult to move, and I have to ask my family for help (P11).*

3.2.4. Theme 4: Need for sleep and rest

The majority of participants needed adequate sleep and rest because they experienced sleep disturbances and wanted various efforts to be able to sleep. This can be seen in the expression of Participant 1 below:

Before the chemotherapy, the pain got worse every night, so I couldn't sleep. I was made to sit down, and then the pain disappeared. Then, when it was 12 o'clock onwards, the pain disappeared on its own. I could sleep because I was given drugs and injections. (P1)

This is almost the same as what Participant 12 said: *The pain started around 7 p.m. I woke up at 11 p.m. and stayed until 2 a.m., and I didn't sleep again. Often, I wake up because of sudden pain, I play my cell phone so that I can sleep quickly (P12). While some other participants revealed: When it hurts, I can't sleep. Sometimes, I cry and scream at night. I try to walk even in the middle of the night, so I forget. After I get tired, I can sleep (P3); I can't sleep because of pain, I can't sleep because of myself, not because of the environment, and I often use drugs from the hospital so I can sleep (P4); I can rarely sleep well at night, but if I take it, I can sleep at night (P9).*

3.2.5. Theme 5: Need for self-care

Most participants needed help with self-care and daily fulfillment of nutrition, fluids, hygiene, and elimination. They were unable to care for themselves, needing help from nurses, wanting to be independent, and not getting tired quickly. This can be seen from the participants' expressions, such as: *I am not disturbed, I am still able to take care of and care for myself, still*

able to wear clothes... They feel disturbed, maybe because they can't be free to do activities (P1); I can still be independent, I can still do things by myself, although not one hundred percent, like bathing. I can't clean it under certain conditions (P3). Other participants also stated: I can use my right hand, but it is now a little difficult to hold it. My ability to perform activities has decreased, and sometimes I need help (P7); I can still do activities but with support. I can still eat and drink alone (P8); I often ask for help from my family when going to the bathroom. My family has to prepare my clothes because I am not mobile (P13). Every day, I need help from my family to bathe, change clothes, and eat. Even now, I haven't bathed for two days (P14).

Furthermore, participant 2 also expressed the need for self-care as follows:

I have to use a wheelchair. I can't bathe, but I can eat by myself. However, I still need help from my family. After the second chemo, I don't vomit often, but my Hb has decreased, so I am weak and tired easily. (P2)

3.2.6. Theme 6: The meaning of physical well-being

The meaning of physical well-being, according to the participants, is being healthy and feeling comfortable, not experiencing complaints of pain, and being cared for and assisted with their physical needs. The participants expected to be given care and treatment so that the disease is resolved immediately, wounds heal quickly and no complaints arise that interfere with comfort. This can be seen from the participants' expressions, such as: *Hopefully, the problem of cancer will be resolved. I feel less prosperous. My family is less well-off, and there are no symptoms of the disease* (P5); *Well-being means no complaints of pain or comfort, because they have not achieved all their goals, this disease results in less activity and less income.* Participants 7 and 10 stated: *He recovered quickly and could return to his activities* (P7); *Well done, I've been treated. Suppose you take it before you are less prosperous. Everything is complete* (P10). Another participant also stated: *It wasn't as prosperous as it used to be. The wound was like blooming, so the bandage was often changed. Well-being was made to relax, and the staff took care of the patient. That was good, that was enough* (P9).

4. Discussion

This study explored the physical well-being needs of patients with bone cancer undergoing hospitalization. The findings revealed six themes, including the goals and needs for well-being, the need for pain management, the need for physical mobility, the need for sleep and rest, the need for self-care, and the meaning of physical well-being for patients. Each theme is discussed in the following section.

4.1 Goals and needs for well-being

The participants in this study expressed their aspirations for well-being, outlining specific goals and needs. Participants wanted food and drink and assistance from family and nurses. Conversely, when contemplating their needs during hospitalization, participants emphasized the importance of swift recovery, preventing deterioration, and maintaining overall health. Research by Nayak et al. (2017) underscores the challenges faced by cancer patients, one of which is due to the emergence of various complaints and worsening physical conditions. Participants expressed their desire to address the symptoms and complaints they experienced, such as pain, fatigue, and discomfort. This is in accordance with the suggestions of Martins et al. (2019) that having adequate food and drink needs is beneficial for maintaining health and energy, as well as attention and support from family and caregivers, and meeting physical needs and medical care. For individuals with bone cancer, the expressed need for proper nutrition during treatment underscores the critical role of adequate and nutritious food and drink intake. Adequate nutrition can help strengthen the immune system, speed recovery, and maintain overall health. This is in accordance with Fauske et al. (2015), who state that patients want a quick recovery so that their health condition does not worsen while in the hospital.

Therefore, nurses should pay attention to the patient's eating and drinking needs while undergoing treatment in the hospital. Forms of attention from families and nurses include emotional support, attention, and care provided by the family and health team. Participants stated

that the presence and assistance provided by those closest to them, including family and nurses, would provide a sense of comfort, reduce anxiety, and raise the spirit to recover. This is reinforced by Tønnessen et al. (2020) that health practitioners, including nurses, need to provide attention and support to patients and ensure that patients' food and drink needs are met. Therefore, help and support from family, friends, nurses, and other health workers can improve the patient's physical well-being.

4.2 The need for pain management

The findings showed that the main complaint of bone cancer patients is discomfort. Pain is the most common problem that patients complain about in the hospital. It is the most disturbing complaint in bone cancer patients. Several important aspects about this complaint include the onset of pain, the quality of the pain, the time it occurs, and the level of pain. Most participants stated that pain complaints often occurred at night and could be triggered by activities or the effects of surgery. Martins et al. (2019) in their research revealed that cancer pain is the worst pain experience in the lives of cancer patients. This finding is in accordance with research by Abbas and Rehman (2018), which states that the most common problem of cancer patients is discomfort, such as pain that comes from pressing cancer cells, surgery, chemotherapy, radiotherapy, and the possibility of infection.

Pain is caused by suppressing cancer cells in the bone tissue and its surroundings. Pain can originate from cancer itself as these abnormal cells grow and damage surrounding tissue (Wang et al., 2020). The pain that is felt gets worse and worse as the cancer grows. Cancer that continues to grow will cause pressure on nerves, bones, or organs, causing pain. Pain can come from chemicals released by cancer cells. Cancer pain is the most common source of pain, along with the spread of cancer in the bones and other organs (Zhu et al., 2015). The most common pain in bone cancer is that pain often occurs in multiple areas, which can be acute and chronic. Pain fluctuates from mild to severe to unbearable. Pain can appear suddenly, last a short time, or last longer. The pain that arises is also very diverse, ranging from a feeling of pressure, aching, soreness, burning sensation, or like being stabbed by a sharp object. There are various triggers for pain; some come and go intermittently, some are painful only during activities, and some arise continuously (Zajączkowska et al., 2019; Zhu et al., 2015).

Bone cancer pain often responds well to opioids, although doses are required to reduce pain. However, one difficulty in controlling this intermittent pain is that it produces various side effects and can reduce the quality of life (Mantyh, 2013). In addition, pain is an unpleasant sensory experience that can lead to other problems. Previous research shows that after recovery action, pain complaints can be felt to decrease. However, a combination of interventions/actions, such as chemotherapy, radiation therapy, administration of anti-inflammatory agents, narcotics, and drugs aimed at the central nervous system, often cannot eliminate pain permanently (Ahmad et al., 2018).

Cancer patients feel pain due to various factors, such as the location of the cancer and the cause of cancer, including the side effects of treatment. In addition, pain can arise due to side effects of cancer treatment, such as chemotherapy, healing, and drugs (Chu & Sartorelli, 2018). According to Ferguson and Turner (2018), pain in patients with bone cancer is the most common problem, and most complaints about the level of pain experienced by a person can vary because it is influenced by several factors, such as the type of cancer suffered, the stage and the patient's sensitivity to pain.

4.3 The need for physical mobility

The findings showed that most of the patients experienced impaired physical mobility. Bone cancer most often attacks the long bones in the body, and 95% of bone cancer occurs in the extremities, namely the feet and hands. Along with the increase in cancer mass, there will be changes in the shape and length of the bones, resulting in impaired movement function. That happens because of the growing mass, resulting in increased bone weight, joint space pressure, and decreased muscle strength (Heymann, 2014). Impaired physical mobility can be caused by decreased muscle strength, joint stiffness, musculoskeletal disorders, and pain (Biermann et al., 2013).

Physical movement is an individual's ability to move freely, quickly, and regularly to fulfill activity needs to maintain health. Participants stated that they had limited mobility, were unable

to walk, depended on mobility aids, lacked freedom of activity, and needed assistance or assistance with mobilization from family or caregivers. According to research by Martins et al. (2019), extensive surgery has a major impact on mobility, with reduced strength, instability, loss of flexibility, and poor balance. Therefore, they need to use technical aids for their mobility, such as crutches or canes or a wheelchair or mobility scooter. Functional disorders cause major disruption in every aspect of life. This is reinforced by Zhu et al. (2015), who explained that the cancer growth in the bones results in increased bone weight and space pressure in the joints, which can disrupt joint stability and reduce muscle strength. More flexible physical movement will increase self-reliance, improve health, and slow down disease processes, especially degenerative diseases, through homeostatic processes, both physiological and psychological (Heymann, 2014). Impaired physical mobility is a limited physical movement of one or more extremities independently. With conditions like this, patients tend to be bedridden more often, unable to carry out activities. In addition, patients often experience difficult situations moving, so they need help from other people in their activities (Tsuzuki et al., 2016). The impact of impaired physical mobility can affect body systems, such as changes in body metabolism, fluid and electrolyte imbalances, disturbances in nutritional requirements, impaired gastrointestinal function, changes in the respiratory system, changes in the musculoskeletal system, skin changes, changes in elimination (bowel and small bowel movements), and changes in behavior (Tsuzuki et al., 2016; Zajaczkowska et al., 2019).

4.4 The need for sleep and rest

The findings showed that most of the participants experienced sleep disturbances. Rest disturbances are often triggered by complaints of pain at night and in the morning. Sleep as a physical need is essential for patients because it allows muscles to rest. Participants revealed that they experienced sleep disturbances due to pain. They have difficulty getting to sleep and often wake up at night. These findings indicate that participants needed more effort to start sleeping and get a good quality of sleep.

According to Cheville et al. (2021), when the patient sleeps, it will positively impact the work of the body's organs, including muscles, given the opportunity to rest. Each patient has different habits of starting to sleep and waking up. Everyone has a sleep-wake cycle that determines the right time to sleep. Several factors, including the emergence of complaints of pain, can support this time (Ancoli-Israel, 2015). Participants revealed that they experienced sleep disturbances due to pain. They have difficulty getting to sleep and often wake up at night. These findings indicate that participants needed more effort to start sleeping and get a good quality of sleep. According to Mogavero et al. (2021), when patients sleep, it will positively impact the work of the body's organs. According to Jacobs et al. (2016), patients with regular sleep-wake patterns show more quality of sleep and better performance than those with irregular patterns who are given the opportunity to rest. Each patient has different habits of starting to sleep and waking up.

Pain can awaken a person from regular sleep, prevent sleep, and contribute to energy loss or fatigue. Quality of sleep is needed for bone cancer patients who are undergoing treatment at the hospital. Rest is necessary to regenerate and repair body cells. Non-rapid eye movement (NREM) sleep stimulates growth hormone production, which helps repair body tissues. Meanwhile, rapid eye movement (REM) sleep is needed to maintain brain tissue and is vital for cognitive recovery (Jacobs et al., 2016). Quality of sleep serves to help optimize disease healing for bone cancer patients. Sleep quality will affect natural and cellular immune function (von Moos et al., 2017). This is in line with Hermayanti and Setyorini (2018) that sleep disturbances can occur in cancer patients undergoing chemotherapy, namely insomnia and circadian rhythm disturbances. In Indonesia, research publications regarding sleep quality in bone cancer patients have not been found. It is hoped that this research can provide information about the need for sleep and rest to provide information for nurses in nursing services in the hospital (Liu et al., 2019).

4.5 The need for self-care

The findings showed that most patients experienced a decrease in their ability to do self-care. Disease progression and treatment can exacerbate functional status, described as an inability to perform self-care (Valizadeh et al., 2020). Progressive and treatment of bone cancer can cause various side effects that can affect the emergence of more complex physical complaints. Poor self-care ability in bone cancer patients is more involved due to decreased physical mobility. As a result

of the findings, patients experience difficulties preparing food and clothing when going to the bathroom. Movements that are not free result in difficulties in carrying out activities, including taking care of their selves (Coleman et al., 2020; Martins et al., 2019).

The management of treatment side effects requires appropriate nursing interventions. In providing interventions, nurses must involve cancer patients and their families in all aspects of care. In addition, patients must be ready and get support to participate in patient care. One of the needs to fulfill self-care for bone cancer patients is to encourage and empower families to fulfill self-care. Fulfillment of self-care depends on the dependent care agency, namely the ability to meet self-care needs. If the patient does not have an adequate dependent care agency, there will be a decrease in self-care or self-care deficit. Almost every hospitalized patient fulfills his self-care needs with assistance from nurses and their families. However, many families are hesitant or worried about fulfilling self-care needs and expect nurses to help carry out self-care (Cleantis, 2017; Rustøen et al., 2014). Participants expressed that they could not care for themselves, needed help from nurses, and wanted to be independent. This can be explained by the fact that the need for self-care is directly related to limited physical mobility and activity tolerance due to fatigue.

Suppose the patient requires better support from a dependent care agency to carry out self-care; in that case, a self-care deficit may occur. Factors influencing self-care behavior include the abilities and skills of nurses, contributing to the achievement of good self-care behavior. The patient's ability to carry out self-care must be continuously improved by increasing knowledge and providing motivation. Good self-care behavior is emerging based on willingness, inspiration, and sufficient expertise so that a person can carry out daily self-care (O'Regan et al., 2019). In cancer management, nursing interventions that involve patients and families in all aspects of care are needed. This is in accordance with the suggestions of Madsen et al. (2023) that the active role of nurses together with patients and families in every action will increase the success of nursing care.

Bone cancer patients are very susceptible to fatigue due to physical exhaustion because of the long therapy process, including the effects of surgery and chemotherapy. Fatigue is a common symptom that occurs in cancer patients, which can lead to decreased self-care abilities. Fatigue will generally disappear with rest, whereas fatigue in cancer patients will tend to persist even though the patient has rested. The breakdown of free fatty acids from adipose fatty tissue will lead to a buildup of ketones in the body. These metabolic changes cause a decrease in metabolism or interference in ATP regeneration, in which ATP is the primary energy source for muscle-bone contraction. That makes the body feel exhausted because the cells cannot get enough oxygen and nutrients, so they cannot produce enough energy. This condition can trigger a decrease in self-care. Therefore, the role of reasonable physical assistance and management of self-care in hospitals helps the healing process go faster (O'Regan & Hegarty, 2017). This can happen to elderly bone cancer patients, who are more susceptible to fatigue and self-care problems. Therefore, the role of nurses is to help fulfill self-care needs and make patients independent by providing support and health education about the importance of independence in self-care.

4.6 The meaning of physical well-being for patients

The analysis of these findings aimed to understand the participants' perceptions regarding the meaning of well-being and the meaning of well-being while undergoing treatment in a hospital. Several participants expressed their feelings of not being prosperous, less prosperous, not yet prosperous, and prosperous after having their cancer removed through surgery. Participants also expressed views about the meaning of well-being. Several participants stated that physical well-being is a state of health, comfort, no complaints, and physical needs that must be met during treatment at the hospital.

Participants stated that well-being includes all of life's needs having been fulfilled, handled, and supported by the care and medical team. This is in accordance with the study of Fancourt and Finn (2019), which states that the condition of well-being for patients is that they are managed and fulfilled in the medical care and support they receive. Participants gave the meaning of well-being using different terms but referred to the same hope: achieving an optimal level of welfare. Some participants had disturbing complaints and discomfort about their life experiences with the disease and the treatment process they underwent. Some participants stated that they had less well-being because they faced painful symptoms, changes in physical functions, and pain that did

not subside. This provides an overview of the poor conditions experienced by patients due to bone cancer (Martins et al., 2019).

5. Implications and limitations

The findings of this study provide new insights into the physical well-being needs of patients with bone cancer undergoing hospitalization. Individuals with cancer undergo a decline in physical health due to the progression of the disease. The decreased physical well-being becomes a burden for others during hospitalization. Therefore, the nurse's role is to understand and help meet the well-being needs of these patients. This study offers new insights for nurses to provide a basis for better involvement in cancer patients, especially bone cancer. It is recommended that nurses and other healthcare teams assess the main complaints of bone cancer patients. Then, it is necessary to choose the right action in treating bone cancer patients, such as reducing complaints of pain and increasing physical mobility and time to sleep. In addition, strategies need to be developed to increase self-care independence. This can be done to accelerate the patient's healing process to save costs. In addition, discussions are needed between doctors, nurses, and the health team at the hospital to improve the quality of treatment and care for bone cancer patients, including counseling, motivation, physical assistance, attention, and support.

This study was conducted among patients from three cancer referral hospitals of different classes and types, resulting in variations in diagnostic strategies and medical management. Consequently, it yielded distinct patient experiences during the hospital treatment period. At the beginning of treatment, invasive and non-invasive diagnostic examinations were performed, affecting the length of treatment and different experiences for patients. The choice of standardized treatments, whether single or combination therapies, may lead to diverse perceptions and physical responses throughout the course of therapy or treatment. However, this study is limited to the patient's specific views without incorporating the family's opinions. While the patients' experiences provide the most current information describing well-being needs, additional insights from the families are valuable, as they may have different experiences while accompanying the patients in the hospital.

6. Conclusion

Nursing care services are expected to enhance recovery and improve bodily function. The physical well-being needs of bone cancer patients include several aspects, such as the need for pain management, increased physical mobility, the need for sleep and rest, and the need for self-care. In addition, nurses must be able to identify various disturbing complaints that can cause complex problems. Therefore, efforts to enhance physical well-being become the focal point of health services during patients' hospitalization. The recommendations for future research involve exploring intervention strategies to address well-being needs in the hospital, aiming for a more optimal healing process. Research endeavors can be conducted utilizing an evidence-based approach through nursing interventions with the goal of enhancing life expectancy.

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Author contribution

All authors (PP, AFK, DD, BB) contributed substantially to the design, data collection, analysis, and interpretation of data. DD and BB contributed to the data coder. AFK contributed to performing data interpretation and discussion. All authors were also involved in drafting or critically revising the manuscript for important intellectual content and providing the final approval. Every author has participated sufficiently on the job to take responsibility for all aspects, and any part of the job was adequately investigated and completed.

Conflict of interest

The authors declared that there is no conflict of interest in this study.

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