RESEARCH ARTICLE

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The Influence of Online Self-Help Groups on Nutrition Management on the Nutritional Status of Cancer Patients Undergoing Chemotherapy

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ABSTRACT

Background: Chemotherapy can result in toxicity that can affect the nutritional status of cancer patients. Symptoms that are side effects of chemotherapy include anorexia, changes in taste, nausea and vomiting, diarrhea, stomatitis, and constipation, which can lead to inadequate food intake and consequently result in malnutrition in cancer patients. Therefore, this study aimed to investigate the influence of nutrition management of online self-help groups (SHGs) on the nutritional status of cancer patients undergoing chemotherapy.

Method: The research results indicated an increase in the number of patients with well-nourished status after the intervention, specifically from 42.9% to 54.3%, with a p-value of 0.046, signifying that there was an impact of the self-help group on the nutritional status of cancer patients.

Results: There was a significant influence of online SHGs intervention on the nutritional status of cancer patients undergoing chemotherapy. Therefore, this intervention can be considered as one of the alternatives for improving nutritional management in cancer patients.

Conclusion: The identification of CA-125 levels in diagnosing ovarian cancer in ovarian tumor patients with suspected malignancy was a promising test with high diagnostic accuracy levels.

INTRODUCTION

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts [1]. Cancer is a significant health problem worldwide and is one of the leading causes of morbidity and mortality [2]. It is estimated that in 2022, there were 20 million new cases of cancer and 9.7 million deaths caused by the disease [3]. Cancer rates will rise 75% by 2030 due to unhealthy lifestyles and the westernization of developing countries [4].

Individuals undergoing chemotherapy for cancer treatment may encounter various psychological challenges, such as stress, anxiety, and depression [5]. Additionally, they may experience physiological side effects like hair loss, pain, fatigue, nausea, and social consequences related to role and function changes [5]. A prior study revealed that chemotherapy leads to toxicity in cancer patients and significantly decreases their sense of smell and taste, resulting in a decline in their dietary consumption [6–8]. Other symptoms include anorexia, vomiting, diarrhea, stomatitis, and constipation [8]. This contributes to further deterioration in their nutritional condition [9–12].

The results of a previous study involving 465 lung cancer patients undergoing chemotherapy indicated that, after undergoing chemotherapy, 52.9% of the patients were categorized as moderately malnourished. In contrast, 33.8% were classified as severely malnourished [9]. Another study involving patients with various types of cancer revealed that 46% of the participants were experiencing malnutrition [13]. Cancer patients with malnutrition exhibit higher mortality (7.7%) and morbidity (18.2%) rates compared to patients with good

nutritional status [14]. Besides, inadequate nutrition plays a significant role and substantially impacts the survival of patients both during and after the conclusion of definitive treatments [15].

Self-help groups (SHGs) are informal groups that unite voluntarily to address issues [16]. SHGs serve as a platform for each member to share information and provide mutual emotional support [17]. Several studies indicate that SHGs can reduce levels of depression, anxiety, insomnia, post-traumatic stress disorder (PTSD), and psychosocial issues such as stress [18–20]. SHGs can also decrease isolation, strengthen hope, and assist members in developing knowledge, skills, and coping strategies [21]. Additionally, SHGs can enhance the quality of life for hemodialysis patients [22].

Currently, SHGs are widely implemented online (internet-based). Online SHGs have proven more effective in reducing pathology and improving the quality of life. Online SHGs have also contributed to increased motivation and exchanged knowledge about their experience in coping with their illness [23,24]. Other research findings also mention that social support through online or social media can enhance their care and health outcomes and influence the self-management of chronic diseases [25–28]. This study aimed to investigate the impact of online self-help groups nutrition management on the nutrition status of cancer patients.

METHODS

This study used a quantitative method with a quasi-experimental non-equivalent design without a control group. The population in this study consists of all cancer patients undergoing chemotherapy at Dr. Moewardi Hospital. The sampling technique used is consecutive sampling. The sample size in this study was 35 individuals with the inclusion criteria aged 18 years or older, diagnosed with cancer and undergoing chemotherapy, willing to participate as a respondent, and a smartphone user. The exclusion criteria for this study are respondents who leave the group.

The study instrument used is Patient Generated Subjective Global Assessment (PG-SGA). PG-SGA is a screening and nutritional assessment tool for cancer patients [29–32]. It can identify patients at risk of malnutrition and serves as a guide for providing appropriate dietary therapy [33]. The results of the instrument validity test show a sensitivity of 98% and specificity of 82%, with a Cronbach's alpha value of 0.64 [33]. Therefore, it can be concluded that the instrument is valid and reliable [33].

The PG-SGA is divided into two sections. The first section is self-reported and includes questions about current weight and any weight changes and alterations in food intake that might affect physical and functional abilities. This tool evaluates specific symptoms experienced by cancer patients, such as dry mouth (xerostomia), altered taste (dysgeusia), feeling full quickly (early satiety), and pain. The second section assesses the disease and its nutritional requirements through a physical examination and considers changes in metabolic demands (such as fever or corticosteroid use). The physical exam component evaluates fat stores, muscle mass, and the presence of edema through inspection and palpation. The PG-SGA scoring system ranges from 0 to 50 points. A score of 1 or less suggests the patient is well-nourished (PG-SGA ≤ 1, classified as PG-SGA A). Scores between 2 and 8 indicate risk or moderate malnutrition (2 ≤ PG-SGA < 9, classified as PG-SGA B). A score of 9 or higher signifies severe malnutrition (PG-SGA ≥ 9, classified as PG-SGA C) [34,35]. The patient's nutritional status has been assessed using PG-SGA twice, both before and after the administration of online SHGs.

In SHG programs where group contact occurred, one or more professional helpers were in a non-directive role [36]. SHGs were conducted eight times over four weeks, each lasting 40–60 minutes [22]. The implementation schedule of the SHGs was carried out according to the group's agreement. In this study, online SHGs were conducted through WhatsApp groups. Thirty-four respondents were divided into five groups, with each WhatsApp group comprising 6 to 7 respondents.

The online SHGs activities in this study were guided by Keliat [37] and comprised the following steps: (i) Step 1: Each respondent discussed and recorded their problems on a problem list; (ii) Step 2: Respondents shared information on addressing the issues based on the compiled problem list. If a solution was not found, the group requested the researcher to provide problem-solving methods; (iii) Step 3: Respondents discussed each proposed solution from the problem-solving list and selected one considering supportive and inhibiting factors in resolving the issue; (iv) Step 4: Each respondent engaged in role-playing the chosen problem-solving method; (v) Step 5: Discuss preventive measures, signs of relapse, and actions to be taken during a relapse.

In the first online SHGs meeting, the researcher assumed the role of a leader, explained SHG and the time contract for SHG implementation, and facilitated introductions among group members. In subsequent meetings, the researcher, along with group members, collaboratively established the SHG activity schedule, determined the topic for each session, designated a leader for each meeting (with leaders chosen from within the group, providing each group member an opportunity to take on the leadership role), executed the steps of the self-help group activities and recorded the group's capabilities. The details of the problems faced by respondents, especially those related to nutrition, were the effects of chemotherapy, which causes nausea, vomiting, and loss of appetite, difficulties

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in increasing hemoglobin, and sharing their respective experiences in solving these problems, and sharing information about what food they consume.

In addition to assessing patients' nutritional status, researchers also collected demographic data, which included gender, age, marital status, education, occupation, income, duration of illness, type of cancer, and comorbidities (hypertension, diabetes mellitus, kidney disease, etc.). The data in this study were analyzed using SPSS version 25. Descriptive statistics were conducted for all variables in this research, where numeric data were presented as mean and standard deviation. In contrast, categorical data were presented as frequency and percentage. The researcher employed the Wilcoxon test to assess online SHGs' impact on cancer patients' nutritional status.

RESULTS

The study involved 35 respondents. Most respondents were male, comprising 22 individuals (62.9%). The average age of the respondents was 56 years (±13.6). Most respondents were married, totaling 34 individuals (97.1%). The highest level of education attained by most respondents was primary school (SD), with 14 individuals (40%) having this level of education. Most respondents had jobs, namely 33 people (94.3%), and the majority had an income of less than IDR 1,500,000 **(Table 1).**

Table 1 also indicates that most respondents had been ill for ≥ 6 months, totaling 24 individuals (68.6%). The most common type of cancer among the respondents was lung cancer, with 11 individuals (31.4%) and 32 individuals (91.4%) having no comorbidities.

The nutritional status of respondents was measured twice, namely before and after the intervention. Before giving the intervention, it was known that the nutritional status of the majority of respondents was in the well-nourished category, namely 15 people (42.9%), and increased after being given the intervention, namely 19 people (54.3%) **(Table 2)**. Apart from that, **Table 2** also shows the influence of online SHGs on nutritional status in cancer patients undergoing chemotherapy, with a p-value of 0.046.

Table 1. Respondent characteristics (n = 35)

Characteristics	N (%)	Mean ± SD
Gender		
Male	22 (62.9%)	
Female	13 (37.1%)	
Age (years)		56 ± 13.6
Marital status		
Married	34 (97.1%)	
Widow	1 (2.9%)	
Education		
Have no education	2 (5.7%)	
Elementary school	14 (40%)	
Junior high school	9 (25.7%)	
Senior high school	7 (20%)	
Bachelor	3 (8.6%)	
Profession		
Not working	2 (5.7%)	
Working	33 (94.3%)	
Income (IDR)		
< 1,500,000	26 (74.3%)	
≥ 1,500,000	9 (25.7%)	
Long illness		
< 6 months	11 (31.4%)	
≥ 6 months	24 (68.6%)	
Cancer types		
Lung	11 (31.4%)	
Nasopharyngeal	9 (25.7%)	
Others (rectal, cervical, breast)	15 (42.9%)	
Comorbidities		
None	32 (91.4%)	
Have (hypertension, diabetes mellitus, and kidney stones)	3 (8.6%)	

Table 2. Respondent's nutritional status (n=35)

Nutritional status	Pretest N (%)	Posttest N (%)	p
Well-nourished	15 (42.9%)	19 (54.3%)	0.046
Risk or moderate-malnutrition	11 (31.4%)	7 (20%)	
Severity-malnutrition	9 (25.7%)	9 (25.7%)	

DISCUSSION

This study showed that the majority of respondents are male. This aligns with previous research indicating that males have a higher incidence of cancer compared to females [38,39]. However, other studies have found that females have a higher incidence than males [40,41]. Although there is a disparity in cancer incidence between males and females, the gender difference has only a minimal effect on disease diagnosis and management. This disparity in incidence rates is attributed to differences in screening and diagnosis timing [42].

The average age of respondents in this study is 56 years (SD 13.6). Approximately 80% of cancer patients are over 50 years old [43,44], and for cancer cases under the age of 50.8% were found to be due to family history [45]. Most respondents are married, have an elementary school education, are still working, and have an income of less than IDR 1,500,000. Socioeconomic factors, such as education and income levels, are key

social determinants of health that influence disease outcomes by impacting access to financial resources, neighborhood conditions, awareness of healthy behaviors, and psychological stress [46]. Studies have demonstrated that patients with lower income and education levels, as well as those residing in more socioeconomically disadvantaged areas, disproportionately face poorer lung cancer survival rates [47–50].

In this study, most respondents had been ill for 6 months or longer, and with lung cancer. Similar findings were observed in the research by Piotrkowska et al. [51], where most participants had cancer for up to 6 months (45%), and 39.16% had cancer for more than 6 months to 1 year, with the majority also having lung cancer. Furthermore, in this study, a majority of respondents were found to be without comorbid conditions, with only 3% having comorbidities such as hypertension, diabetes mellitus, and kidney stones. In their study, Fowler et al. [52] found that comorbidities were most common among lung cancer patients, especially those who were economically disadvantaged. Other research findings also indicate that the most common comorbidities among cancer patients are hypertension and diabetes mellitus [52–54]. Additionally, kidney stones are associated with malignancy [55].

The development of cancer is strongly associated with inadequate nutrition and can impact the recovery of patients both during and after receiving definitive treatments [56]. More than 50% of chemotherapy patients experience dysgeusia, nausea, vomiting, and mucositis, while complications related to radiotherapy are also common [57]. Decreased nutritional status in cancer patients is associated with anorexia and metabolic disorders [58,59]. In addition, the primary nutritional issue in cancer patients undergoing chemotherapy is the loss of muscle mass, which is recognized as a predictor of reduced quality of life, diminished functionality, surgical complications, and decreased survival [60–63]. Nutrition risk screening as early as possible allows patients to be identified as being at risk of experiencing malnutrition [64].

Different cancer types and locations have different impacts on patients' nutritional patterns, requiring tailored nutritional therapy. Providing proper nutrition can alleviate the burden of symptoms, improve health, and support the survival of cancer patients [65–68].

This study aims to determine the online SHGs' nutrition management effect on cancer patients' nutritional status. Before being given the intervention, the results of this study showed that 42.9% of people had good nutritional status, 31.4% were at risk or moderate, and 25.7% were severely malnourished. In contrast to previous research, it was found that after chemotherapy, 52.9% of the subjects were moderately malnourished, 33.8% of the subjects were severely underweight, and only 13.3% of the subjects were well-nourished [69]. Another study found that the malnutrition rate among newly diagnosed cancer patients was as high as 76%, with 59% of the patients being moderately malnourished and 17% being severely malnourished [70].

Well-nourished patients do not exhibit weight loss, reduced appetite, gastrointestinal symptoms, anorexia, decreased functional capacity, or deficiencies in fat and muscle [71]. Conversely, the majority of severely malnourished patients reported experiencing digestive problems, reduced food intake, and weight loss. Additionally, severe malnutrition is closely associated with a drop in muscle mass, either with or without a decrease in fat mass [72].

The results of this study show that nutritional status changed and improved after the online SHGs intervention, where the number of respondents with good nutritional status increased to 54.3%. Online SHGs were provided for four weeks with eight sessions, and during each session, cancer patients discussed and shared their experiences related to the nutritional issues they faced and their implementation.

Online SHGs or support groups comprise a community of individuals who share similar experiences [73]. Having support from fellow patients or cancer survivors can help them compensate for the patient's unmet social support needs and help them overcome their illness. Cancer patients are more likely to participate when they feel their family and friends do not understand their cancer experience [74,75]. Mutual identification and sharing of experiences can provide an experience of empathy, as well as emotional support and information for cancer patients [76].

SHG serves as a platform for patients to share information and provide each other with emotional support, with the assistance of skilled moderators to ensure effective and relevant communication [73,77]. The results of another study also show that most respondents (cancer patients) reported positive changes in problem-solving behavior, attitudes toward themselves, and interpersonal relationships [78].

Online SHGs in this research focus on cancer patients' nutritional management. Through this activity, cancer patients can ask questions and share information, and experience related to nutrition. This is in line with statements from several studies that suggest individual nutrition counseling is needed for cancer patients, taking into account the patient's clinical conditions and symptoms. Long-term positive effects are experienced with potential impacts on patient prognosis, supported by research findings stating that nutrition therapy impacts maintaining patients' nutritional status and function [79,80]. Several guidelines to date include nutrition counseling as a standard of care for malnourished patients or those at risk of malnutrition or during anti-neoplastic treatment for head and neck cancer (HNC), esophageal, and colorectal cancer. This is

because these patients are at risk of malnutrition due to the tumor location and areas affected by radiation [81–85].

There are several weaknesses in our study. First, the type of cancer was not specified, resulting in respondents receiving too much information that was not specific to their particular type of cancer. Second, the implementation of SHG was conducted online, so the monitoring of patient conditions during the intervention could not be done directly. Third, therapists from doctors and nutritionists were not directly involved, so respondents had to wait for unanswered questions in the group or by the researchers, who needed to seek references and consult with doctors and nutritionists.

CONCLUSIONS

The study results indicated that online SHGs for nutrition management can have an impact on the nutritional status of cancer patients undergoing chemotherapy. Through these activities, patients can share problems and solutions related to nutrition. Future research is expected to develop SHGs for more specific types of cancer and to implement them in face-to-face settings.

DECLARATIONS

Competing interest

The authors declare no competing interests in this study.

Ethics approval and consent to participate

This study has been approved by the Ethics Committee of Universitas Kusuma Husada Surakarta with ethical clearance number 011/UKH.L.02/EC/IX/2022

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