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Enhancing the Cancer Patients' Resilience and Motivation via the Nurse Educator Model Intervention

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Abstract

Cancer patients need health education as one of the important nursing interventions for adaptation to the deterioration in physical and psychological conditions associated with their quality of life. A quasi-experiment study with a post-test with control group design has been conducted aims to test the effectiveness of the Nurse Educator Model (NEM) on the motivation and resilience of cancer patients. A total of 38 people in the intervention group and 40 people in the control group (n=78) of stage III and IV cancer patients from five chemotherapy units were involved. Motivation and resilience were measured using questionnaires and data were analyzed by independent t-test ($\alpha<0.05$). The results showed a significant effect of NEM intervention on patient motivation (p=0.003) and no significant effect on resilience of cancer patients (p=0.323). Nurses need to ensure consistent application of NEM to increase cancer patients' motivation and consider other things that affect cancer patients' resilience.

Keywords: Cancer, health education, motivation, nurse educator model, resilience.

Introduction

Chronic diseases, one of which is cancer, are currently still a global problem faced by community, including in Indonesia. A chronic illness is an important factor to take into consideration because of its effects on one's physical, psychological, social, and spiritual well-being (ICN, 2010). Globally, cancer is one of the chronic diseases that has an increasing number of morbidity and mortality. Cancer is the leading cause of death from chronic disease worldwide, and it is estimated that the number will continue to grow to 12 million cancer deaths by 2030 (ICN, 2010). By 2022, there will be an estimated 20 million new cancer cases and 9.7 million cancer deaths worldwide. In addition,

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there is an estimated cancer prevalence of 53.5 million people who are still alive up to 5 years after being diagnosed with cancer. About 1 in 5 people develop cancer during their lifetime, and about 1 in 9 men and 1 in 12 women die from cancer (WHO, 2024). There were 21% cancer cases in America with 14.4% cancer deaths, while in Europe, 23.4% cancer cases with 20 deaths, 3% (Bray et al., 2018). There are 136.2 cancers per 100,000 population in Indonesia (YKI, 2019) and data from Basic Health Research of Ministry of Health in 2018 showed an increase in cancer prevalence from 1.4 per thousand population in 2013 to 1.79 per thousand in 2018 (Balitbangkes, 2018).
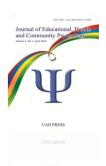
Cancer patients tend to experience various discomforts due to the diagnosis, illness and the condition of the disease, the length of care and the treatment process (Nic et al., 2024; Phan et al., 2024; Schultze et al., 2020). The decrease in physical and psychological conditions are often experienced by them. Physical changes include decreased appetite, weight loss, anemia, pain, weakness, and physical limitations that limit the daily activities of cancer patients. Psychologically can cause feelings of depression, helplessness, anxiety and fatigue, including becoming emotionally unstable (Iddrisu et al., 2020; Lize et al., 2020). The incidence of depression in cancer patients, is as much as 40% of all other chronic disease sufferers and this proportion ranks highest compared to other chronic disease sufferers (National Center for Chronic Disease Prevention and Health Promotion, 2012). Psychological responses of cancer patients experience helplessness 68%, anxiety 72% (Oetami et al., 2018). Fear of death and complaints that get worse will be generally found in cancer patients (Simard, et al, 2013). This condition causes frustration and loss of enthusiasm and quality of life, the motivation to take care and treatment decreases, individual resilience decreases.

Resilience is defined as an individual's ability to maintain or restore a relatively stable psychological state (Luo et al., 2023). Resilience is important for cancer patients because the various aspects associated with resilience in cancer patients that can be found in various studies point to what supports the formation of resiliency and how to build resistance in various situations for cancer patients. Resilience in cancer patients is related to individual characteristics, flexibility, positive attitudes, information processing, internal strengths, meaningful relationships, and the contribution of cancer patients during the treatment process as predictors of resilience and includes five key

features or components, namely: (1) striving to be normal; (2) seeking motivation to move forward; (3) utilizing external support; (4) adapting and managing themselves; and (5) redefining themselves (Luo et al., 2023; Opsomer et al., 2022). It is also important to understand that the immense pressure felt at the time of a cancer diagnosis causes long-term negative psychological impact on the sufferer and enhancing resilience is one of the most important things in cancer care (Seiler & Jenewein, 2019). Various clinical conditions in cancer patients related to the phenomenon of resilience that occurs need to be anticipated. Studies show that the more severe the symptoms, the lower the resilience, coping, and psychosocial adjustment felt by cancer patients and there was relatively low resilience scores in gynecologic cancer survivors in South Korea (Young et al., 2022). In addition, Padilla-Ruiz et al. (2019) found lower resilience scores in breast cancer survivors who did not receive chemotherapy until 6 years post-diagnosis compared to those who did.

Motivation is needed by cancer patients in line with how the quality of life of cancer patients can be maintained from the beginning of the cancer diagnosis delivered to cancer patients, even during the treatment process undertaken by cancer patients. This whole thing is supported by the findings of existing studies stating that motivation is needed to improve the psychosocial and behavioral conditions of cancer patients while undergoing chemotherapy (Ruiz-casado et al., 2023) and the process of cancer diagnosis activates psychologically dynamic processes that include adaptation to the higher acute stress of cancer compared to healthy people (Budisavljevic et al., 2024). In the context of cancer, studies suggest that motivation is needed, even from the beginning of the screening process to the long-term treatment process that cancer patients must undergo. Cancer, as one of the chronic diseases, requires behavioral changes in anticipation of its treatment efforts (Michaelsen & Esch, 2021). Meanwhile, adequate knowledge, fear of cancer stigma, and witnessing deaths that occur in cancer patients are sources of motivation for someone to carry out cancer screening. In the case of cervical cancer, motivation is needed to reduce the negative perception of women, who have a central role in the family, to undergo screening (Romli et al., 2024). Specifically, the motivation measured in this study includes both internal and external motivation in individuals to undergo cancer care and treatment.

Cancer patients need continuous and comprehensive health services to maintain their health and quality of life as cancer sufferers (Stolz-baskett et al., 2021). Cancer patients' physical and psychosocial impacts require more optimal management by nurses through supportive interventions provided for their physical and mental motivation and resilience against cancer (Luo et al., 2023; Seiler & Jenewein, 2019). High motivation and physical and mental resilience are needed to ensure the well-being and quality of life of patients with cancer (Cui & Wang, 2024; María Padilla-Ruiz et al., 2019; Ruiz-casado et al., 2023) and knowledge about the illness is essential to managing their present and future illnesses (Tiranda et al., 2019).

Preliminary studies conducted by (Muliyadi et al., 2022) found that the current phenomenon of health services for cancer patients about physical and psychosocial support provided by health workers is not yet optimal while it is need to increase the motivation and resilience of cancer patients. Services only focus on administrative management and treatment procedures and common physical problems. The fulfillment of physical and psychosocial aspects based on patient needs has not been appropriately managed. Currently, cancer patient education is not well organized and needs-oriented. Methods and strategies for patient education have not been developed (Muliyadi et al., 2022). International Agency for Research on Cancer (IARC) as the Cancer Agency, under the auspices of the World Health Organization (WHO), released its latest estimate of the global cancer burden. The WHO publication is based on the results of a survey of 115 countries (WHO, 2024) shows that most countries are unable to adequately fund cancer priority services as well as palliative care in universal health coverage (UHC). For this reason, interventions that are oriented towards fulfilling various personal aspects affected by cancer, one of which is the psychological aspect, are important to anticipate through the role of nurses as educators.

The development of nursing science should generate a wealth of evidence on effective and efficient interventions to prevent and manage the impact of cancer on patients and their families (ICN, 2023). Nurses should take the time to update their professional interventions, including finding evidence-based nursing practice and implementing some of the latest evidence in both hospital and community settings (Choperena, 2021; Mckenna et al., 2022; Nelwati et al., 2019). Nursing has a

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significant role in the care of cancer patients through the implementation of health education (Yousefi et al., 2019). Health education for cancer patients is needed to support improving physical and psychosocial conditions. The success of treatment programs for cancer patients cannot be separated from how nurse educators can educate patients about treatment programs to identify patients' learning needs, which can be capital in improving their health status (Muliyadi et al., 2022). WHO conveys the importance of changing the educational process, which was initially only a routine, to a more therapeutic approach to education (Arthurs et al., 2015).

Nurses need to optimize skilled care for individuals and families with cancer. Psychosocial, physical, social, economic, and spiritual problems experienced by patients and families with cancer are the focus of attention that underlies the importance of nurses developing interventions that can strengthen the professional care role of nurses (Geese et al., 2024; Iddrisu et al., 2020; Liebermann et al., 2023; Lize et al., 2020; Oakley & Ream, 2024). The interventions applied are based on the urgency of developing standards and tools for the implementation of interventions in palliative care in accordance with the WHO Response (WHO, 2022) which is the direction of global policy regarding cancer management in the world.

Previous studies have developed NEMs for cancer survivors based on qualitative research (Muliyadi et al., 2022), However, the educational model developed has not been tested for its impact through direct patient implementation. All of this underlies the study to find evidence of the effectiveness of the developed NEM on the motivation and resilience of cancer patients. Nurse Educator Model (NEM) used as a model for the approach of nurses in providing patient education in this study with a focus on (1) The stages starting from needs assessment, diagnosis, planning, implementation, and evaluation; (2) nurse-patient and family interactions; (3) manager support; (4) Patient education strategies. The model was implemented to shape the motivation and resilience of patients in treatment. Based on this background, the purpose of this study is to identify the effectiveness of the Nurse Educator Model on the motivation and resilience of cancer patients in hospital services.

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Method

Design

This study is a quasi-experimental study with a total of 78 participants, divided into two groups. The patients were obtained by a simple random sampling technique based on the inclusion criteria, namely patients from four type C hospitals in urban areas that have chemotherapy care units, and the determination of the control group and intervention group was carried out by drawing lots.
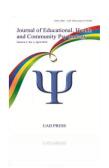
Sample and Setting

The NEM intervention was implemented by trained nurses responsible for patient care in the chemoteraphy unit. The participants were patients with stage III and IV cancer who were undergoing treatment in the chemotherapy unit at three public and private hospitals in urban areas. A total of 78 people were involved in the study, including 40 participants in the control group and 38 participants in the intervention group. A letter of intent based on informed consent and information provided on involvement in the full study was requested from participants, indicating their voluntary desire to participate in the model implementation program. The participants was determined by purposive sampling method with sample criteria such as: (1) Adult with stage III or IV cancer patients (17 to 65 years old) who have received chemotherapy at least 2 times (2) Willing to become respondents and follow the entire series of study.

Intervention

The Nurse Educator Model intervention implemented by nurses responsible for patient care in the chemotherapy unit is an intervention with a standardized protocol based on a health education model equipped with a curriculum, workbook and evaluation book designed by researchers and tested for content validity by three experts who have doctoral of nursing and master of nursing with a background of experience in nursing services for at least 5 years qualifications.

The NEM tested for its effectiveness on cancer patients' motivation and resilience in this study consisted of valid and reliable model components. The integration of two concepts, namely Chronic Care Model (CCM) and WHO Innovatif Care for Chronic Condition (WHO ICCC) Framework
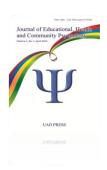
form the basis for the development of the essential elements and framework of the NEM for cancer patients. The valid and reliable components of the NEM consisted of the sources of three sub components i.e. (1) nursing care management of cancer patients (nursing process), (2) family and community support systems, (3) health service support systems (policy, management, nurses and other health workers, learning system support), and (4) nurse educator competencies as NEM outcomes. The NEM intervention module and guidance is as described in Table 1.

Table 1

The NEM Modules and Intervention Guidance for Nurse Educator

The NEM Components	The NEM Intervention Guidance
Module 1 Health Education for Cancer Patients **Module 2** Health Care System Support in Health Education for Cancer Patients in Hospitals **Module 3** Community Support in Health Education for Cancer Patients **Module 4** Cancer Patient Health Education through Nursing Process Approach	1. NEM training workbook for nurses to prepare for NEM competency 2. A NEM implementation workbook by nurse educators in the chemotherapy room, which includes educational needs assessment activities, problem determination, and educational actions relevant to the problem. 3. NEM implementation workbook to build family support systems, support groups, interprofessional support, managers, and learning tools.

Feedback from these experts was useful for refining the intervention module, ensuring its content was aligned with the intervention objectives. Input from the experts covered various aspects such as the curriculum and competencies as a nurse educator for cancer patients, the content of the education module that must be fulfilled, the time duration workbook, as well as the implementation techniques as written in the intervention guide. This study involved two trainers who had a postgraduate nursing background aged 44 to 49 years and were responsible for ensuring mastery of competencies by nurse educators of cancer patients. Furthermore, the NEM intervention activities for cancer patients who became participants involved nine nurse educators of chemotherapy units at three hospitals who had been trained, and the researchers ensured that the nurse educator

activities carried out were in accordance with the intervention guidelines provided. The activities of nurses in the intervention group and control group are as described in Table 2.

Table 2

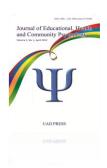*Nurses' Activities in the NEM for Cancer Patients*

Intervention Group	Control Group
(1) Nurses assess health education needs, diagnose, plan, implement, and evaluate health education. (2) Nurses implement therapeutic interactions with patients and families in health education. (3) Nurses collaborate with peers and other care-giving professionals in health education.	(1) The patient receives information from nurses about the required medication treatment.

The intervention sessions carried out were 4 sessions and each session was conducted for about 45 - 60 minutes.

Instruments

The data collected included demographic characteristics (age, length of time with cancer, gender, marital status, education, employment status, history of being treated), patient motivation, and resilience. The same questionnaire was used to measure motivation and resilience pre- and post-intervention in the intervention group and control group after participants in the intervention group were given the NEM intervention by nurses who had been trained to have the competence to implement NEM according to the guidelines.

Data collection on the resilience and motivation of cancer patients was done using the Motivation and Resilience Test questionnaire developed by the researcher. The motivation questionnaire consists of 15 statements with answer options using a Likert scale in the form of strongly agree, agree, disagree, and strongly disagree. The Resilience Questionnaire consists of 17 statements with answer choices using a Likert scale in the form of answers: very suitable, quite suitable, less suitable, and not suitable. The validity test results obtained the validity value of the motivation questionnaire with fair reliability, namely Cronbach's alpha coefficient of 0.87 with pearson correlation $(r) = 0.56 -$

0.90. The test results of the resilience questionnaire obtained a Cronbach's alpha coefficient of 0.85 and (r) = 0.4–0.86.

Data Collection

Data collection was carried out through the stages of measuring the motivation and resilience of cancer patients in the control group and the NEM training program for chemotherapy room nurses, which was carried out for two days of theory and three days of practice to understand and be able to intervene in the standard NEM intervention protocol as a benchmark for NEM competence in nurses. Furthermore, the motivation and resilience of cancer patients were measured before and after the NEM intervention by nurses who had been trained on cancer patients undergoing treatment in the chemotherapy unit in the intervention group.
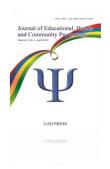
Data Analysis

Utilizing IBM Statistics SPSS Version 23.0, descriptive and inferential statistics were computed. The motivation and resilience scores of the cancer patients were determined using univariate analysis. The statistical significance of the data collected before and after the intervention was evaluated using a Paired T-test with a significance level of <0.05. All confounding variables, including individual characteristics and the NEM intervention, were examined using multivariate analysis and statistical tests such as Multiple Linear Regression. Prior to investigating the hypothesis, the assumptions of homogeneity and normalcy were verified.

Ethical Consideration

With certificate number 612 KEPK, Poltekkes Kemenkes Palembang, Indonesia, granted ethical approval for this study.

Result

In this pre-experimental context, the study aims to test the effectiveness of the NEM intervention on the motivation and resilience of cancer patients in the chemotherapy unit. The results of data
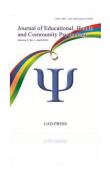
analysis through an independent t-test showed that NEM was effective in increasing motivation in the intervention group but not in increasing resilience. Below are the characteristics of the participants in Table 3 regarding demographic data.

Table 3

Demographic Characteristics of the Cancer Patients (n=78)

Variable	Category	Intervention Group		Control Group	
		Frequency	%	Frequency	%
Gender	Female	23	60.5	28	70
	Male	15	39.5	12	30
Education Level	Elementary School	11	28.9	14	35
	Junior High School	7	18.4	5	12.5
	Senior High School	16	42.1	13	32
	Bachelor	4	10.5	8	20
Employment Status	Civil Servants	5	13.2	5	12.5
	Armed Forces/Police	1	2.6	5	12.5
	Self-Employed	14	36.8	13	32.5
	Not Work	18	47.4	17	42.5
Marital Status	Married	38	100	40	100
	Not Married	0	0	0	0
History of Being Treated	2 – 3 times	20	52.6	26	65
	More than 3 times	18	47.4	14	35
		Mean	SD	Mean	SD
Age		51	7.55	50.5	8.77
Length of Time With Cancer		20.8	13.8	24.3	19.3

The results of the demographic data analysis showed that the average age of cancer patients in the intervention group was 51 years, while in the control group it was 50.5 years. The average length of cancer diagnosis was 38 months in the intervention group, while in the control group the average cancer diagnosis was 40 months. In addition, most participants were female: 23 (60.5%) in the intervention group and 28 (70%) in the control group; all were married (100%); the majority had high school education: 16 (42% in the intervention group) and primary school: 14 (35% in the control group). Furthermore, most patients did not work: 18 (47%) in the intervention group and

17 (42.5%) in the control group, and the largest proportion of participants in both groups had been treated 2-3 times.
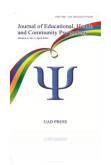
Table 4

Independent t-Test for Cancer Patients' Motivation and Resilience After NEM Intervention (n1=40; n2=38)

Variable	Group	N	Mean	Std. Deviation	Mean Difference	p
Motivation	Control	40	45.70	4.93	3.35	0,003*
	Intervention	38	49.05	4.75		
Resilience	Control	40	50.55	6.28	1.77	0.232
	Intervention	38	52.32	6.71		

*α 0,05

The independent t-test analysis revealed a significant difference (p=0.003) in motivation between the intervention and control groups. The average difference in motivation before and after the intervention in the intervention group was 49.05 (81.8% of the maximum value) and the control group was 45.70 (76.1% of the maximum value) with the difference in the average score of motivation in the intervention group and the control group was 3.35. This analysis indicated that the NEM intervention was effective in increasing motivation in the intervention group compared to the control group.

Additionally, an independent t-test analysis revealed that the mean resilience of the intervention group was 52.32 (76.9% of the maximum value) and that of the control group was 50.55 (74.3% of the maximum value), with no significant difference observed in resilience between the two groups (p=0.233). Only 1.77 points separated the intervention group's resilience scores from those of the control group. The study of resilience factors reveals that there is no significant impact of the NEM intervention on resilience growth within the intervention group.

Table 5

Dominant Factors Associated with Cancer Patients' Motivation and Resilience (n=78)

Variabel	B	Beta	Sig.	*R square*
Motivation				
Constant	39.997		0.000	
Length of Time With Cancer	0.085	0.280	0.009	0.187
Model Intervention	3.644	0.360	0.001	
Resilience				
Constant	40.040		0.000	
Age	0.173	0.216	0.052	0.133
Employment Status	1.855	0.290	0.010	
Model Intervention	2.112	0.163	0.138	

Dependent Variable: Motivation; Resilience

The results above show that the length of cancer and NEM intervention together can explain the motivation of cancer patients by 18.7%, while the rest are explained by other variables. The results of the analysis also show that age, occupation, and NEM intervention together can explain the resilience of cancer patients by 13.3%, while the rest are explained by other variables.

Discussion

Effect of the Nurse Educator Model on Cancer Patients' Motivation

The results showed that the Nurse Educator Model (NEM) intervention implemented by nurses in chemotherapy unit has significantly increased the motivation of cancer patients in treatment and care in hospital services. Motivation is a process that explains the intensity, direction and persistence of an individual to achieve his goals. Motivation is the underlying reason for an action performed by an individual. The condition of cancer pain requires strong patient motivation to make efforts related to treatment, patient care. Patients need the ability to adapt to the disease and health care procedures they undergo. Treatment that is long and takes time often makes patients become desperate and lose hope, leading to helplessness that will aggravate their condition. Strengthening motivation through the role of patient educator by nurses is an important component that determines the quality of patient care and treatment.

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Existing studies explain that most patients with cervical cancer and breast cancer have adequate psychological wellbeing. Age, cancer stage, feelings of gratitude, income, social support, acculturation/ethnicity, and the number of comorbidities are factors that play a role in the psychological wellbeing of cancer patients (Purnamasari, 2020). In a broader context, this study provides a basis for the importance of optimizing the role of nurses to fulfill their responsibilities in carrying out various health service efforts, one of which is related to palliative care for cancer patients. Palliative care is a treatment effort to help increase comfort, relieve symptoms and suffering, and improve the quality of life of patients and their families. Through palliative care, health workers provide support to more than 90% of people with advanced cancer (WHO, 2022). This emphasizes that, in line with the important role of nurses as professional caregivers with patients as the focus, nurses need to carry out various methods to optimize care management oriented towards fulfilling the psychological wellbeing of cancer patients.

Specifically, existing studies also point to the dynamic psychological aspects of wellbeing and its predictors in various cancer patients' conditions. Nurses need to identify and must be able to facilitate resilience in cancer patients, as well as be able to determine when it is appropriate for patients to get psychosocial support (Luo et al., 2023). In one study, it was also explained that appearance is the best predictor of the psychological wellbeing of cervical and breast cancer patients, and this can be caused by changes in living standards and stability (Purnamasari, 2020).

Nurses are the largest component in health services in hospitals that have an important role in producing quality nursing services. Nurses in health services play a role as caregivers; patient educators (educators), managers and researchers (Budiono, 2016). The role as a patient educator is a form of nurse implementation in order to provide information about the patient's condition, treatment and care that must be done so that patients can improve their knowledge, abilities in care. Nurses as health professionals have the authority as educators, counselors for patients (Permenkes No. 26 Tahun 2019, 2019).

The role of nurse educators for cancer patients is implemented in various efforts to provide information about the conditions experienced by patients, as well as efforts that can be made to improve patient abilities in care. Understanding and increasing self-care skills will encourage the growth of motivation and enthusiasm to continue treatment and care. The Nurse Education Model is a health education approach that encourages positive interactions between patients, nurses and family, group and community support through a good understanding of the conditions experienced and interactions for the process of conveying information on problems and efforts that patients can make to minimize their health problems. Patient education is a process in which health professionals provide specific and detailed educational activities and information to patients, caregivers, and family members so that they can actively participate in their health care and any treatment they may receive (Gruman et al., 2010).

Several studies have shown that health education influences motivation. Psycho-education increases self-efficacy and motivation of breast cancer patients (Nihayati et al., 2021). Cancer patients as a chronic health problem need information and health education sourced from health professionals. Through the use of their own resources and the assistance of their families and caregivers, people with chronic diseases can learn how to manage their own health through therapeutic patient education, an organized, person-centered approach (WHO European Region, 2023). Health education effectively increases the motivation of breast cancer patients (Surinati et al., 2020) and providing education on promoting healthy lifestyle behaviors has an effect on cancer prevention motivation (Hoseini et al., 2021).

In theory and research, health education developed through the interaction of health professionals with patients in a therapeutic manner can increase patient motivation in treatment and care. The education approach by recognizing psychological well-being issues of cancer survivors and providing information about efforts that can be made to overcome problems can provide confidence and awareness so as to encourage strong motivation for cancer patients in an effort to improve the conditions experienced.

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Effect of Nurse Educator Model on Resilience of Cancer Patients

The results showed no significant effect of nurse educator model intervention on resilience of cancer patients. However, statistically the average value of patient resilience increased. Southwick et al. (2014) make the meaning of resilience increasingly broad to be translated in various conditions related to psychosocial problems that arise in various circumstances including illness. Resilience is one of the psychosocial aspects needed by cancer patients (Molina et al., 2014). Resilience in cancer patients is the ability and resilience of patients to adapt to changes and pressures experienced due to illness and be able to show positive behavior in connection with healing, treatment and cancer care. The results of Baraqbah & Hatta (2017) showed that most cancer patients have an average category resilience of 46%, below the average of 27%.

Resilience is an individual's dynamic process of utilizing protective factors and resources to gain an advantage (Stainton et al., 2019). Resilience is an individual's ability to maintain or restore a relatively stable psychological state when faced with stressful life events and adversity (Ludolph et al., 2019). Resilience processes are also positively associated with improved health management and coping (Venetis et al., 2020). The three core components of resilience include the specific risk of mental illness, the influence of protective factors to compensate for this risk and the presence of more positive than expected outcomes (Stainton et al., 2019) . Resilience is the ability to maintain or quickly regain mental health during or after stressful life experiences, one of which is cancer, a health problem that is one of the main risk factors for stress-induced mental disorders (Ludolph et al., 2019). The meanings and components of resilience described illustrate the essence and complex processes of resilience that should generally be of concern.
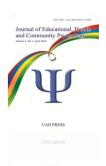
From a cancer survivor's perspective, being diagnosed with cancer and having to undergo treatment at the same time is a major stressor that will have a prolonged negative psychological impact (Ludolph et al., 2019). The interventions used in this study were designed and implemented with planned strategies to ensure that the nurses' competencies as educators are relevant to the educational needs of cancer patients. As explored in the previous preliminary study in the Muliyadi et al. (2022), the components used as the framework for the NEM pilot test have been based on

the experiences and expectations of cancer patients and other relevant studies. In addition, other studies also make it clear that adequate communication with patients and families with cancer, coping, self-direction to learn, and practical skills are competencies that oncology nurses need to have. Continuing education programs are effective in complementing the competencies of oncology nurses (Solera-g et al., 2022). Resilience and PTG are measurable and can be modified through psychological and pharmacological interventions, among others (Ludolph et al., 2019). Overall, this reinforces the urgency of meeting the educational needs related to the competencies of oncology nurses to optimize the independence and psychological well-being of cancer patients.

Behavior change is an aspect of resilience. Changes in the behavior of cancer patients are strongly influenced by various factors. Health education provided by nurses or health professionals is one of the factors that can change the behavior of cancer patients in treatment, care. Behavior change as a form of resilience requires time and effort that is more consistent and continuous. Wibawa (2020) says that changes in behavior and new habits generally take varying amounts of time, the average time required for behavior change and habits is 66 days or two months. For that, determining the reasons for the effectiveness or ineffectiveness of particular interventions as well as helping to build more efficient procedures for bringing about long-lasting behavior change depend on an understanding of these mechanisms (Volpp & Loewenstein, 2020). Nurse competence in educating patients leads to the need for training and evaluation of nurse educator competence in clinical settings (Ye et al., 2022)

A study describes positive and negative life changes associated with cancer experience (Ludolph et al., 2019). In addition, psychosocial support, time of first diagnosis, psychosocial time, and cancer treatment and cognitive decline due to cancer can affect changes in self-efficacy, happiness, life acceptance, and memory/concentration of cancer patients (Purnamasari, 2020). Promoting resilience by taking into account the post-traumatic conditions experienced by patients should be important in the care of people with cancer (Ludolph et al., 2019). All of this emphasizes that the need for resilience in cancer patients is an important one that cannot be ignored.

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Communication Theory of Resilience (CTR) states that resilience is not limited to the nature of the communicator but is an impact of the communication process developed. In the case of clients with cancer, resilience is an individualized process with others exclusively (Venetis et al., 2020). In accordance with the NEM intervention procedures that have been implemented in this study, the capacity and competence of nurse educators have been sought to be improved according to the needs of cancer patient care in the hospital. However, referring to the concept of CTR discussed earlier, increasing resilience has broader dynamics and dimensions, not only limited to patient and nurse interactions. The individualized process that occurs during the intervention process is one of the keys to achieving the impact of the NEM intervention on the resilience of cancer patients.

In addition, it is also worth considering the specific concept of five communication processes that facilitate resilience, including creating normalcy, affirming identity range, maintaining and using communication networks, putting alternative logics to work, and promoting productive action (Venetis et al., 2020). The resilience model has multimodal dimensions, so more empirical research is needed that explores the existence of specific protective factors and mechanisms in the resilience process. Understanding resilience must be in line with the core concept of resilience in order to obtain new relevant evidence related to resilience (Stainton et al., 2019). Most beneficial effects are achieved with interventions based on positive psychology concepts, expressive-supportive group therapy, behavioral therapy, or mindfulness interventions to produce effects of considerable variation for the individual (Ludolph et al., 2019).

The difference in resilience before after the NEM between the two groups did not occur because the dynamic and personal process of resilience is largely determined by how a person individually builds a process of adaptation to stressors and post traumatic growth that must be lived to encourage adequate resilience in cancer patients. Overall, the NEM intervention has been designed to fulfill the intervention aspects for resilience in cancer patients as the study, but the existence of other factors related to the existence of resilience in cancer patients also needs to be considered in line with the absence of the effect of NEM on the resilience of cancer patients as this study, one of which is PTG in cancer patients. Other studies explain that post-traumatic growth (PTG) is a

positive life change as a result of a crisis or stressful event in life, including in the context of cancer. PTG is needed for cancer patients to adapt and has become an important phenomenon for patients adjusting to cancer and cancer experiences associated with positive and negative life changes lead to resilience in line with PTG (Ludolph et al., 2019; Seiler & Jenewein, 2019).

Other studies have also described reflections of resilience and the usefulness of undergoing the gynecologic cancer process experienced by women. Individual resources are necessary and important to consider in interventions aimed at building resilience (Oruc et al., 2023). In addition, the study also mentioned that resilience within a single individual varies over time and circumstances and is also related to the diagnosis of the disease (Stainton et al., 2019). Another study even tested and found evidence related to the role of five communication processes in improving resilience, namely communication efficacy, relational quality, health management, and resilience process evaluation. This study states that improved communication efficacy positively predicts most resilience processes, and improved relational quality positively predicts all resilience processes (Venetis et al., 2020).

This whole explanation describes the psychological dynamics that exist in cancer patients related to their resilience. Nurses must be able to assess protective and risk factors for resilience in cancer patients based on relevant resilience frameworks, identify unique patient needs, and develop new approaches and interventions (Wang et al., 2024). Nurses are key in promoting resilience among cancer patients, and how nurses effectively facilitate adaptation and foster resilience in active cancer patients receiving treatment needs to be further explored. (Bernier, 2024). Supportive and consistent tangible interventions can help reduce psychological distress and improve quality of life, ultimately improving the physical and psychological health of people with cancer (Ma et al., 2024). This underpins the importance of remaining attentive to the impact of psychological interventions on aspects of resilience that are clearly crucial needs for cancer survivors.

The results of the NEM effectiveness test showed that there was no effect of NEM on resilience, but there was still an increase in resilience scores before and after the NEM intervention in the

intervention group, even though there was no significant difference in the mean resilience score between the intervention and control groups. Difference with other studies and the results of a review based on existing findings in various previous studies on resilience also led to an analysis of the contribution of the support role of the closest person with cancer as a support system that will facilitate the dynamic process of resilience. In addition, consideration of time and number of sessions can also be attributed to the absence of differences in resilience before and after the NEM in both groups. This study conducted 4 sessions in the intervention group with the minimum criteria of having undergone at least 2 chemotherapy treatment sessions because it was based on the consideration that the trust relationship had been built quite well and there had been an initiation and response process of physical adaptation to treatment in this condition. The study of contributing factors and multimodal dimensions of resilience leads to the need to continue to pay attention to the urgency and continue to innovate health education strategies and analyze their impact on cancer patients. The varying allocation of nurse-patient interaction time in the chemotherapy unit due to specific cancer patient treatment programs may be a consideration in building adequate resilience in cancer patients involved in this study. Values, personal needs, and experience of illness are also factors to consider when it comes to patient participation in a psychological intervention (Savioni et al., 2022). One study stated that interventions to enhance resilience should keep patients genuinely interested and motivated. Interventions should parallel somatic treatment, be delivered soon after the cancer diagnosis, and if possible, be delivered over 12 sessions (Ludolph et al., 2019).

The results of this study's hypothesis testing reveal variations when compared to those of earlier investigations. Since the multimodal dimension of resilience is a factor that needs to be taken into account and for which efforts to create sustainable communication networks must continue, the NEM intervention was developed based on prior exploratory research that is consistent with the communication process. As a result, the effect of the NEM intervention on resilience can actually be determined through additional research. To validate the effectiveness of the NEM as a resilience intervention in particular, better-designed trials are required. These trials should include long-term studies that are incorporated into regular care programs, as the study by Rong et al. (2023) by

involving the patient's closest support system. For this reason, future studies should consider implementing the intervention earlier, even from the time of diagnosis, to develop the NEM intervention into a minimum of 12 sessions. For that, the formation of resilience is related to behavior change which is influenced by many factors and requires a consistent approach and sufficient time, the implementation of the Nurse Educator Model as a health education approach needs to be refined with a more consistent approach and a long time in order to have an influence on the formation of resilience in cancer patients.

Limitation

While this study paints a picture of the circumstances surrounding cancer patients receiving chemotherapy in Indonesian hospitals, it's possible that the conclusions drawn from it won't hold true in other nations. This is due to the possibility that cultural variations and influences may have an impact on psychological phenomena, particularly motivation and resilience as reported by cancer patients receiving chemotherapy in various nations. Another limitation of this study was the challenge of finding control and intervention groups that could fairly represent a number of regions/islands in relation to the wide demographic areas of Indonesia, particularly with regard to the cost and feasibility of recruiting a sizable participant base. This is an especially big difficulty when you take into account the size and expense of finding a large number of participants. Future research should employ randomized controlled trials to get more precise data on the effects of the intervention, potential influencing factors for its effect, and potential influencing factors for the implementation of the NEM intervention.

Conclusion

The results of the study found that the implementation of the Nurse Educator Model can significantly increase the motivation of cancer patients in undergoing care and treatment, but is not significant for increasing the resilience of cancer patients. The Nurse Educator Model is a health education approach model that can be practically guided in hospital services to strengthen the motivation of cancer patients during treatment and care. Nurses as service coordinators can use the Nurse Educator Model as a method in strengthening their role and competencies as patient educators.

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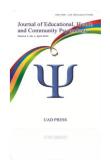
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