The Effect of Self –Care Guidelines on the Quality of Life for Patients with Leukemia and Undergoing Chemotherapy

ABSTRACT

Leukemia patients and undergoing chemotherapy have side –effects which affect their quality of life. This requires self-care guidelines for those patients to improve their quality of life. **Aim of the study:** to evaluate the effect of self-care guidelines on the quality of life for patients with leukemia and undergoing chemotherapy. **Research design:** A quasi experimental design. **Setting:** inpatients oncology ward and out patients' oncology clinic in the new medical complex affiliated to Health insurance in Fayoum. **Methods:** A purposive sample of 60 adult patients from previously mentioned setting, allocated randomly into two equal groups (30 patients in each). **Tools**: four tools were utilized, included: **ToolI** Patients Structured Interview Questionnaire, **Tool II** Patients Knowledge Assessment Questionnaire regarding leukemia disease, treatment and self-care, **Tool III**Self-care practices assessment Questionnaire, and **Tool IV** Quality of Life Cancer Survivors Questionnaire. **Results:** There was a statistically significant difference between the two groups in terms of knowledge, self-care practice, and quality of life (P-value <0.001).The control group had a larger percentage of impairments in these categories.**Conclusion:** Implementation of the self-care guidelines had a positive effect on quality of life of patients with leukemia and undergoing chemotherapy. **Recommendations:** Develop and implement standardized protocols for leukemia and undergoing chemotherapy patients care based on self-care guidelines to enhance knowledge, self-care practices and quality of care.

Keywords: Chemotherapy, Leukemia, Quality of Life, Self-care guidelines.

Introduction

Leukemia is a type of cancer that affects the blood and bone marrow, leading to an abnormal proliferation of immature white blood cells (also known as leukocytes). These abnormal cells, called leukemia cells, disrupt the normal function of healthy blood cells, impairing the body's ability to fight infections and control bleeding. A leukemia diagnosis is usually made by analyzing a patient's blood sample through a complete blood count (CBC) or microscopic evaluation of the blood or flow cytometry ***(OybekKizi, et al 2025).*** Leukemia remains a major global health problem, with over 500, 000 new cases annually ***(Zhang, et al 2025)***.

Leukemia can be broadly classified into four main types based on the speed of disease progression and the types of blood cells affected, as Acute Lymphoblastic Leukemia (ALL) this type of leukemia progresses rapidly, affecting lymphoid cells, a type of white blood cell that produces antibodies to fight infections. Chronic Lymphocytic Leukemia (CLL) CLL progresses slowly and affects mature lymphocytes, a type of white blood cell that helps the body fight infection. Acute Myeloid Leukemia (AML) AML progresses rapidly, affecting myeloid cells, a type of white blood cell that gives rise to red blood cells, platelets, and other white blood cells. Chronic Myeloid Leukemia (CML) CML progresses slowly and affects myeloid cells. It is characterized by an abnormal chromosome called the Philadelphia chromosome ***(OybekKizi, et al 2025).***

Chemotherapy is a therapeutic approach that uses chemical substances to eradicate cancerous cells. The term "systemic treatment" is used because the medication is administered

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into the circulation and circulates throughout the body. Originally, it was thought that chemotherapy medications would only destroy cancer cells. However, it is now commonly acknowledged that these medications also cause damage on normal cells ***(Ali & Ali 2024)***.

Chemotherapy is the main treatment for leukemia, According to relevant reports, the first remission rate of adult patients after chemotherapy is about 60–70%, and about 1/5 of patients can improve their survival time to 5 years or longer. However, due to the lengthy process of chemotherapy, various side effects may occur, leading to negative emotions such as anxiety, depression, and fear, reducing their compliance with chemotherapy, and posing a great physical and psychological challenge to patients. For the diagnosis and treatment of leukemia, there is a very close relationship between psychological status and treatment effectiveness. A good mentality is beneficial for patients to better cope with the disease and prolong their survival time ***(Yin, et al 2025).***

The side effects of chemotherapy treatment can appear as nausea, alopecia, tiredness, constipation, pyrexia, diarrhea, stomatitis or mucositis, dysuria, infection, dermatitis, gingival hemorrhage, odontalgia, cough, jaundice, edema, vertigo, and in severe instances, mortality. These side effects negatively impact the patient's ability to participate in social and professional activities, reduce quality of life, and adversely affect survival outcomes (***Gullu&Gulseven, 2025)***. However, patients undergoing chemotherapy might alter their self-care practices in order to meet the physiological and psychological wellness after treatment. Therefore, the nurse has a role in identifying the quantity and quality of self-care deficits for patients and providing the knowledge, skills, and support necessary to cope with their illness ***(Abu El-Kass, et al 2021).***

The World Health Organization (WHO) has emphasized that successful leukemia treatment must improve patients' survival rate and quality of life (QoL). QoL is a multidimensional concept and subjective experience determined by patients' physical, psychological, and social health***(Peng, et al 2023).***Furthermore, QoL defined as the perception of well-being that arises from an individual's satisfaction or dissatisfaction with those aspects of life those are important to the person. The patient's health status, beliefs, social relationships, environment, and psychological state are all important aspects of QoL ***(Maureen, et al2024).***

Quality of life is impacted by leukemia diagnosis and treatment, leading to physical, emotional, and financial burden. However, significantly less attention has been given to the burden experienced by family members and caregivers, despite their crucial role in providing both practical and emotional support throughout the course of the disease. Family members are often responsible for daily caregiving tasks such as transportation, managing finances, and personal care, and are deeply affected by the patient's psychological and physical state. Their perspectives are essential for delivering comprehensive, patient-centered care and for informing the development of effective support services***(Salek, 2025 and Oliva, 2025).***

Self-care guidelines are a vital component for patients with leukemia to adapt with the illness and chemotherapy treatment. Patients with leukemia must "learn" many aspects about living with chemotherapy and maintaining their way of life, practicing self-care in daily life" is the strategies to perform self-care to fit with the daily life ***(Mohamad, et al 2019)***. Self-care refers to the deliberate decisions and actions someone do to address an illness or facilitate

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their recovery. Chemotherapy patients may need to adapt their self-care habits to meet the physical and psychological side effects of the Chemotherapy treatment ***(Ali & Ali 2024).***

Nursing interventions play a major role in the improvement of the QoL of patients who undergo chemotherapy. These interventions frequently include solutions of how the chemotherapy induced side effects like nausea, fatigue, pain, neuropathy, anxiety, and depression can be addressed to a great extent to impede patient well-being.Furthermore patient education, emotional regulation, family communication, and self-care encouragement can mitigate the harsh impact of chemotherapy***(Ernest, et al2025).***

Significance of the study:

Leukemia comprises a group of hematological malignancies characterized by abnormal proliferation of hematopoietic stem cells in the bone marrow. In the United States (US) in 2021, leukemia accounted for approximately 3.2% of all new cancer incidence and similar values for mortality. Predominant subtypes include AML, ALL, CML, and CLL***(Chennamadhavuni, et al2024).***

In 2025, it is projected that there will be 66, 890 new cases of leukemia worldwide, accounting for an estimated 3.3% of all new cancer cases. This equates to approximately 23, 540 leukemia-related deaths, accounting for 3.8% of total cancer deaths ***(National Cancer Institute, 2025 and AbdElhamid, et al 2025).***

Leukemia is a common hematological malignancy with an increasing occurrence year by year, which seriously threatens human health. Leukemia is the 6th highest cause of cancer-related death in Egypt, as estimated by Global Cancer Observatory in December 2022, the incidence numbers for leukemia in Egypt in 2022 were 6194 new cases and 4371 deaths, and the prevalence of leukemia in Egypt are (5year prevalence of all ages) 18.537 ***(Ferlay, et al 2024).***

According to ***Jala, et al (2024)*** self-care interventions can significantly improve quality of life and reduce the side effect of chemotherapy (nausea and vomiting) in leukemia patients.***Sun, et al (2021)*** found that after nursing intervention there were significantly improve quality of life and reduce chemotherapy-related adverse reactionsof patients with leukemia under chemotherapy.

In light of this evidence, the current study aimed to evaluate the effect of the nursing self-care guidelines on the quality of life for patients with leukemia and undergoing chemotherapy.

Aim of the study

The present study aimed to evaluatetheeffectofself-careguidelines on thequalityoflifefor patients with leukemia and undergoing chemotherapy through the following:

1. Assessof the quality of life for patients with leukemia and undergoing chemotherapy.
2. Design self-care guidelines for patients with leukemia and undergoing chemotherapy.
3. Implement self-care guidelines for patients with leukemia and undergoing chemotherapy.
4. Evaluate the effect of self-care guidelines on the quality of life for patients with leukemia and undergoing chemotherapy.

Research question:

1. What is the effect of the self-care guidelinesonthephysicalstatus for patients with leukemia and undergoing chemotherapy?

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2. What is the effect of the self-care guidelinesonthepsychologicalstatusfor patients with leukemia and undergoing chemotherapy?
3. What is the effect of the self-care guidelinesonthesocialstatus for patients with leukemia and undergoing chemotherapy?
4. What is the effect of the self-care guidelinesonthespiritualstatus for patients with leukemia and undergoing chemotherapy?

Research Hypotheses:

At the end of the study:

H0: Patients who will receive self-care guidelines will not exhibit better physical, psychological, social andspiritualwell-beingmorethanthosewhowillnotreceivetheself-care guidelines.

H1: Patients who will receive self-care guidelines will exhibit better physical, emotional, social and spiritual well-being more than those who will not receive the self-care guidelines.

Operationaldefinition:

Quality of life: it is composed of four dimensions as following Physical, psychological, social andspiritualdimension.

Subject and Methods

Research Design:

The study was conducted using a quasi-experimental design.

Setting:

This study was conducted in the inpatients oncology ward and out patients' oncology clinic in the new medical complex affiliated to Health insurance in Fayoum.

Subjects:

A purposive sample of (60) adult patients from both genders. They were recruited from the previously mentioned setting and divided randomly into two equal groups study and control (30 patients for each group).

Study group: was received self-care guideline in additiontoroutine nursing care.

Controlgroup:wasreceivedhospitalroutinenursingcareonly.

$$n = \frac{N \times p(1-p)}{\left[\left[N-1\times\left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

$$60 = \frac{100 \times 0.5(1-0.5)}{\left[\left[100-1\times\left(0.08^2 \div 1.96^2\right)\right] + 0.5(1-0.5)\right]}$$

N= Community size

z= Class standard corresponding to the level of significance equal to 0.95 and 1.96

d= The error rate is equal to 0.08

p= Ratio provides a neutral property = 0.50 ***(Chow et al., 2007)***

Subjects criteria:

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Inclusion criteria:

- Adult patients from both genders, free from other chronic disease that may be interfere with self-care abilities and free from leukemia complication.
- Leukemia patients and undergoing chemotherapy who don't receive any self-care guidelines or educational instruction and agree to participate in the study.

Tools for data collection:

Four tools were used to collect the data according to the following:

Tool I: Patients Structured Interview Questionnaire:

This tool was developed by the researcher based on literature review ***Mohamad, et al (2019); Black & Hawks (2008) and Gates & Fink (2008).***

It includes two parts as following:

Part 1: Sociodemographic data for patients with leukemia and undergoing chemotherapy. It was concerned with patients' demographic data which include questions such as (patients `age, gender, Job, marital status, level of education, monthly income, treatment costs, place of residence).

Part 2: Medical Health Profile for patients with leukemia and undergoing chemotherapy. It was concerned with patients' medical history for patients with leukemia which included questions such as present and past history of the disease, family health history and treatment regimen.

Tool II-Patients Knowledge Assessment Questionnaire regarding leukemia disease, treatment and self-care.

This tool was adapted from***Mohamad, et al (2019); (Berger, et al (2013); Carpenito-Moyet&Canellos (2010)*** and modified by the researcher**.** This tool divides into three parts as the following:

Part 1: Patients' knowledge assessment regarding leukemia disease:

It was concerned with assessment of Patients' knowledge regarding leukemia such as definition, causes and risk factor of leukemia, signs and symptoms of leukemia, complication of leukemia and treatment methods for leukemia, It was composed of (7) multiple choice questions.

Part 2: patients' knowledge assessment regarding chemotherapy treatment:

It was concerned with assessment of patients` knowledge regarding chemotherapy and its effect such as definition, aims, routes of administration and side effects of chemotherapy. It was composed of (5) multiple choice questions.

Part 3: Patients' knowledge assessment regarding self-care:

It was concerned with assessment of patients' knowledge regarding self- care, including: physical aspect such as digestive system problems, preventing infection, anemia, avoid bleeding, skin problems, fatigue and stress, hair loss, pain control, nervous system changes, urinary system changes, reproductive system, follow up, psychological aspect, social and functional aspect, and spiritual aspect. It was composed of (131) items: the response for each item was yes or no. These items were distributed as the following physical self- care aspect (112) items, psychological self-care aspect (8) items, social family and functional self-care aspect (7) items and spiritual self-care aspect (4) items.

Scoring system:

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Each correct answer was graded (1) and incorrect answer was (0). The total score of patients' knowledge assessment were (146) grades: (131) regarding total score of patients self-care, Knowledge regarding leukemia (7) grades and regarding chemotherapy description (8) grades.

Total score was considered as the following:

- >70% (>102 grades) was satisfactory.
- < 70% (< 102 grades) was unsatisfactory.

This scoring system supported by***Elsayed, et al (2021)*.**

Tool III: Self-care Practices Assessment Questionnaire:

This tool was adapted from***Mohamad, et al (2019); Dunphy&Winland-Brown (2012); Decker & Lee (2011); Courneya&Friedenreich, (2011)*** and modified by the researcher**.** This tool was usedto assess patients' ability to perform skills related to self- care which were important to detect and prevent complications. The response of each procedure was divided into (done, not done).The Self-care practices assessment sheet was composed of seven self-care skills including (hand washing, oral care, temperature measurement, pulse measurement, deep breathing exercise, rang of motion and relaxation exercise).

Scoring system:

The total grade of self-care practices assessment sheet was (86) grades. One grade was given to the step which was done and zero to the step which was not done or incorrectly done. it was distributed to seven procedures the grades were distributed as the following : hand washing (8) grades, oral care (9) grades, temperature measurement (11) grades, pulse measurement (5) grades, deep breathing exercise (5) grades, relaxation exercise (9) grades, rang of motion exercise (39) grades.

Total score was considered as the following:

- > 70% (> 60 grades) was considered satisfactory level of self-care practices.
- < 70% (< 60 grades) was considered unsatisfactory level of self-care practices.

This scoring system supported by***Elsayed, et al (2021)*.**

Tool IV- Quality of Life Cancer Survivors Questionnaire: (Quality of Life Patient/Cancer Survivor Version):

This tool was adapted from ***Mohamad, et al (2019) and Ferrell, et al (2012)*** and modified by the researcher**.** This tool was used to assess the QoL dimensions for patients with leukemia and undergoing chemotherapy, translation from English to Arabic was done and back translation for this tool was done to assure accuracy. The scale included (40) items as the following: physical wellbeing (8) items such as Fatigue, Change in appetite, Pain, Sleep disturbance. Psychological wellbeing (18) items such ashow good is your quality of life, how happy do you feel. Social wellbeing (8) items such as how painful was your illness for your family, is the amount of support you receive from others sufficient to meet your needs. Spiritual wellbeing (6) items such as how important is it to you to participate in religious activities such as prayer and going to church.

Scoring system:

The patients response for each statement was made on a 10 point likert response scale, before computing the final score, all negatively worded items were reverse scored so that higher scores indicate better quality of life (Reversed Score = 10 – Original score), then a total

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QoL score was computed by summing all 40 items after reverse scoring. The subgroup and total domains were categorized into poor QoL, average QoL and good QoL as the following:

- Poor QoL= 0- < 50%
- Average QoL = 50-< 75%
- Good QoL = 75% & more

This scoring system supported by***Mohamad, et al (2019).***

Operational design:

The operational design for this study was consisted of 3 phases, namely preparatory phase, content validity and reliability, pilot study and field work.

The preparatory phase:

This phase was included reviewing of the relevant related literature, and theoretical knowledge of various aspects of the study using books, articles, internet periodicals and magazines this served to develop tools for data collection. Development of the tools was under supervisors' guidance and experts' opinions.

Toolsvalidity and reliability:

Testing validity

It was done for used tools to evaluate each item on the tool as to its degree of representation of the variable to be tested, as well as the tool over all appropriateness for use in examining the variable within the proposed study population. The content validity of the used tools was done by a panel of five expertsfrom critical and medical surgical nursing department. The panel of experts was from (five assist professors), who reviewed the content of the tools for comprehensiveness, accuracy, clarity, relevance and applicability. Suggestions were given and modifications were done. Tool validity: Content validity as a qualitative form of validity that evaluates whether the expressions contained in the measuring instrument represent the phenomenon intended to be measured.

Testing reliability:

Reliability of instrument is "the extent to which the instrument yields consistent, reproducible estimates of what is assumed to be an underlying true score ***(Artner, 2021).***The degree to which an instrument measures the same way each time it used under the same condition with the same subjects. Reliability of the tool was tested to determine the extent to which the questionnaire items are related to each other. Reliability was assessed using Cronbach's Alpha coefficient, which normally ranges between 0 and 1, with values greater than 0.7 considered acceptable. Alpha Cronbach Reliability Analysis of the used tool was, Knowledge= (0.798), practice= (0.867), QoL=(0.835).

Ethical considerations:

The Capital University Faculty of Nursing's Scientific Research Ethical Committee granted ethical permission for the proposed study. The current study was conducted with official approval from the administrative authorities of the chosen setting.

Patients were asked to give their agreement after the researcher explained the nature and goal of the study, the potential of withdrawal at any time, and the researcher's assurance of data confidentiality by identifying participants using codes rather than names or other personal identifiers.

Pilot Study:

A pilot study was carried out with 10% (6 patients) of the study sample to test the applicability, clarity and efficiency of the tools, then the tools modified according to the results of the pilot study. Modifications were done, where some items and questions were omitted and others were added based on the result of the pilot study. Patients who shared in pilot study are excluded from the study sample.

Field Work:

The sampling process was carried out in fourphases: assessment, planning anddesign, implementation, and evaluation. It began in April 2025 and ended at the end of November 2025.

I-Assessment phase:

During this phase, the researcher visited the selected setting regularly, 3 days per week, selected patient according to inclusion criteria, and then assigned randomly to either a study or control group. Initial assessment was done by the researcher for all study subjects in study and control groups regarding to participants' age, gender, educational level, occupation, comorbidities, and health history. Determine whether the deficit is due to lack of knowledge, lack of skills, or limited ability. Data collection was held through structured interviews and medical record chart. During this phase each patient was assessed individually, during follow up period, and data collection was filled by the researcher, by using tools (I), tool (II), tool (III) and tool (IV) for study and control groups as follows:

Tool I: Was utilized to assess patients' socio-demographic characteristics and medical history data that filled for the study and control groups, it took around (10 minutes).

Tool II: To assess patients' knowledge regarding leukemia disease, treatment and self-care.

Part 1: In this questionnaire was to assess patients' knowledge regarding leukemia such as definition, causes and risk factor, signs and symptoms, complication and treatment methods for leukemia.

Part 2: In this questionnaire was to assess patients` knowledge regarding chemotherapy and its effect such as definition, aims, routes of administration and side effects of chemotherapy.

Part 3:In this questionnaire was to assess patients' knowledge regarding self- care, including: physical, psychological, social and functional and spiritual aspect; it took around (15-20 minutes).

Tool III: To assess self-care practices assessment questionnaire was composed of seven self-care skills including (hand washing, oral care, temperature measurement, pulse measurement, deep breathing exercise, rang of motion and relaxation exercise); it took around (15 minutes).

Tool IV: To assess QoL dimensions for patients with leukemia and undergoing chemotherapy, the scale included items as the following: physical wellbeing, psychological wellbeing, social wellbeing, spiritual wellbeing; it took around (10-20 minutes).

II- Planning and design phase:

This phase included analysis of the pre-test findings; where goals and outcomes are formulated that directly impact patient care. The researcher plan intervention, design the self-care guidelines sessions content according to the patient's needs. Detected needs, requirements and deficiencies were translated into the aim and objectives of the self-care guidelines sessions in the form of self-care guidelines booklet.

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The researcher develops an instructional colored booklet to be given for each patient in the study group in the implementation phase. It was formulated in simple, easily readable Arabic words and completed with photos and illustrations in order to improve patient's knowledge, self-care practices and QoL.

III- Implementation phase:

Based on the results obtained from the interviewing and literature review, the self-care guidelines were developed by the researcher. It was implemented immediately after the pre-test**.** No intervention was performed for the control group during the study.

This includes implementing the designated nursing self-care guidelines for the study group (30) patient, in term of self-care guidelines sessions, instructions and follow up. The program was divided into 6 sessions (3 theoretical and 3 practical sessions)each session was implemented in one day. The duration of each session varied, according to its contents as well as the clients' response. Divided study patient into 6 groups each group included 5 patients.

Each session usually started by a summary of what had been taught during the previous session and the objectives of the new session. After every session, there has been five minutes for discussion and gave feedback. Each participant within the study group obtains a copy of the self-care guidelines booklet. The researcher used pictures for illustration, and video to educate the patients.

IV- Evaluation phase:

Evaluation phase aimed to reassess patients after implementation of nursing self-care guidelines to identify progress in term of differences in patients' level of response from baseline. Evaluation was done by using the posttest questionnaire which was the same format of pre-test in order to compare the changes in patients' knowledge, and practices, using assessment tools (II, III, IV) post month and follow up 3 months from self-care guidelines program.

Administrative design:

An official letter was issued from the dean of the Faculty of Nursing, Capital University to the manager of in inpatients oncology ward and out patients' oncology clinic in the new medical complex affiliated to Health insurance in Fayoum. At which the study was conducted, explaining the purpose of the study and requesting the permission for data collection from the study and control group.

Statistical Design:

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, unpaired student t-test was used to compare between two groups in quantitative data, chi-square test was used to compare between groups in qualitative, ANOVA test was used for comparison among different times in the same group in quantitative data, linear correlation coefficient was used for detection of correlation between two quantitative variables in one group by (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp).

Results:

Table (1):Comparison between two groups regarding socio-demographic data of patients with leukemia and undergoing chemotherapy.

	Study		Control		Chi-square	
	N	%	N	%	X^2	P-value

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Age						
18- <25	**5**	**16.7**	**7**	**23.3**	**1.736**	**0.629**
25- <35	**8**	**26.7**	**11**	**36.7**		
35- <45	**12**	**40.0**	**9**	**30.0**		
45 or more	**5**	**16.7**	**3**	**10.0**		
Mean±SD	**30.27 ± 9.32**		**29.98 ± 11.57**			
Gender						
Male	**24**	**80.0**	**21**	**70.0**	**0.800**	**0.371**
Female	**6**	**20.0**	**9**	**30.0**		
Job						
Not working	**0**	**0.0**	**0**	**0.0**	**0.300**	**0.584**
Manual work	**9**	**30.0**	**11**	**36.7**		
Office work	**21**	**70.0**	**19**	**63.3**		
Marital status						
Married	**23**	**76.7**	**20**	**66.7**	**1.209**	**0.546**
Single	**3**	**10.0**	**6**	**20.0**		
Widowed	**4**	**13.3**	**4**	**13.3**		
Level of education						
Does not read or write	**0**	**0.0**	**4**	**13.3**	**4.660**	**0.198**
Reads and writes	**6**	**20.0**	**7**	**23.3**		
Diploma/intermediate qualification	**15**	**50.0**	**12**	**40.0**		
High qualification	**9**	**30.0**	**7**	**23.3**		
Monthly income						
Sufficient	**0**	**0.0**	**1**	**3.3**	**1.017**	**0.313**
Not sufficient	**30**	**100.0**	**29**	**96.7**		
Treatment costs						
Free or at state expense or health insurance	**30**	**100.0**	**27**	**90.0**	**3.158**	**0.076**
Private	**0**	**0.0**	**3**	**10.0**		
Do you smoke						
Yes	**11**	**36.7**	**14**	**46.7**	**0.617**	**0.432**
No	**19**	**63.3**	**16**	**53.3**		
residence						
Urban	**18**	**60.0**	**21**	**70.0**	**0.659**	**0.417**
Rural	**12**	**40.0**	**9**	**30.0**		

Table (1): Shows that 30.27 ± 9.32years was the mean age of the study group and 29.98 ± 11.57 years in the control group,40% of patients in the study group and 30% in the control group were aged between 35- <45 years.Males accounted for 80.0% of the study group and 70.0% of the control group. Regarding job, office work was reported by 70.0% of the study group and 63.3% of the control group. For marital status, 76.7% of the study group was married and 66.7% of the control group. In relation to education, 50.0% of the study group had a diploma/intermediate qualification and 40.0% of the control group. Concerning income, 100% of the study group reported insufficient income and 96.7% of the control group. Treatment was free or at state expense or health insurance for 100% of the study group and 90.0% of the control group.In terms of smoking status, 36.7% of the study group was smokers and 46.7% of the control group. As for residence, 60.0% of the study group lived in urban areas and 70.0% of the control group. No statistically significant differences were detected between the two groups across all variables ($p > 0.05$).

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Table (2): Comparison between two groups regarding medical health profile of patients with leukemia and undergoing chemotherapy

Medical Health Profile for patients with leukemia and undergoing chemotherapy	Study		Control		Chi-square	
	N	%	N	%	X^2	P-value
Present medical history						
How long have you been suffering from leukemia						
Less than five years	20	66.7	22	73.3	0.317	0.573
Five years and more	10	33.3	8	26.7		
The factors that cause you to develop leukemia from your point of view						
Psychological pressures	25	83.3	23	76.7	0.417	0.519
Smoking	5	16.7	7	23.3		
What are the symptoms you suffer from as a result of leukemia						
Feeling tired and exhausted	27	90.0	24	80.0	1.176	0.278
Losing a lot of weight for no reason	22	73.3	24	80.0	0.373	0.542
Loss of appetite or feeling full after eating little food	13	43.3	17	56.7	1.067	0.302
Ease of bleeding and bruising	7	23.3	10	33.3	0.739	0.390
The occurrence of recurrent infections	1	3.3	3	10.0	1.071	0.301
Unexplained fever or night sweats	0	0.0	1	3.3	1.017	0.313
Swollen lymph nodes especially in the neck and under the armpit	5	16.7	6	20.0	0.111	0.739
Bloating and discomfort in the abdomen	0	0.0	1	3.3	1.017	0.313
Swelling and bleeding of the gums	0	0.0	2	6.7	2.069	0.150
past medical history						
Do you suffer from other diseases						
Diabetes	0	0.0	0	0.0	0.000	1.000
High blood pressure	0	0.0	2	6.7	2.069	0.150
Kidney failure	0	0.0	0	0.0	0.000	1.000
Heart disease	0	0.0	0	0.0	0.000	1.000
Liver disease	0	0.0	0	0.0	0.000	1.000
Have you been hospitalized before for another disease						
Yes	0	0	0	0	0.000	1.000
No	30	100.0	30	100.0		
Have you ever had a tumor removal operation before						
Yes	0	0.0	0	0.0	0.000	1.000
No	30	100.0	30	100.0		
Family medical history						
Do any of your family members suffer from blood diseases or other cancerous diseases						
Yes	2	6.7	5	16.7	1.456	0.228
No	28	93.3	25	83.3		
What is the degree of kinship						
First	1	50.0	2	40.0	0.058	0.809
Second	1	50.0	3	60.0		

Table (2): Shows that 66.7% of the study group had been suffering from leukemia for less than five years and 73.3% of the control group. Psychological pressures were identified as a causative factor by 83.3% of the study group and 76.7% of the control group. Regarding

symptoms, feeling tired was reported by 90.0% of the study group and 80.0% of the control group, loss of appetite was noted by 43.3% and 56.7% respectively. In relation to past medical history, 93.3% do not have high blood pressure in the control group. All participants in both groups had no prior hospital admissions for other diseases and no history of tumor removal. Regarding family history, blood diseases or cancer were reported by 6.7% in the study group and 16.7% in the control group. Among those affected, second-degree relatives accounted for 50.0% in the study group and 60.0% in the control group.

Table (3): Comparison between two groups regarding total satisfactory knowledge at pre, post, and follow-up assessments

Total knowledge	Study				Control				Chi-square	
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	N	%	N	%	N	%	N	%	X^2	P-value
Pre	**10**	**33.3**	**20**	**66.7**	**9**	**30.0**	**21**	**70.0**	**0.077**	**0.781**
Post	**25**	**83.3**	**5**	**16.7**	**13**	**43.3**	**17**	**56.7**	**10.335**	**<0.001***
Follow up	**24**	**80.0**	**6**	**20.0**	**12**	**40.0**	**18**	**60.0**	**10.000**	**0.002***

Non-significant >0.05, significant <0.05*, highly significant <0.001*

Table (3): Shows that preself-care guidelines implementation,total satisfactory knowledge was low in both study and control groups. At post- self-care guidelines implementation, the study group showed marked improvement, with achieving satisfactory knowledge compared to control group. At follow-up, knowledge retention in the study group remained high, while the control group remained largely unchanged. Chi-square analysis indicated no significant difference at pre- self-care guidelines implementation ($p > 0.05$), but significant improvements were observed in the study group compared to the control group at both post- self-care guidelines implementation and follow-up ($p < 0.05$).

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Figure (1): Comparison between the study and control groups regarding total satisfactory self-care practice at pre, post, and follow-up assessments

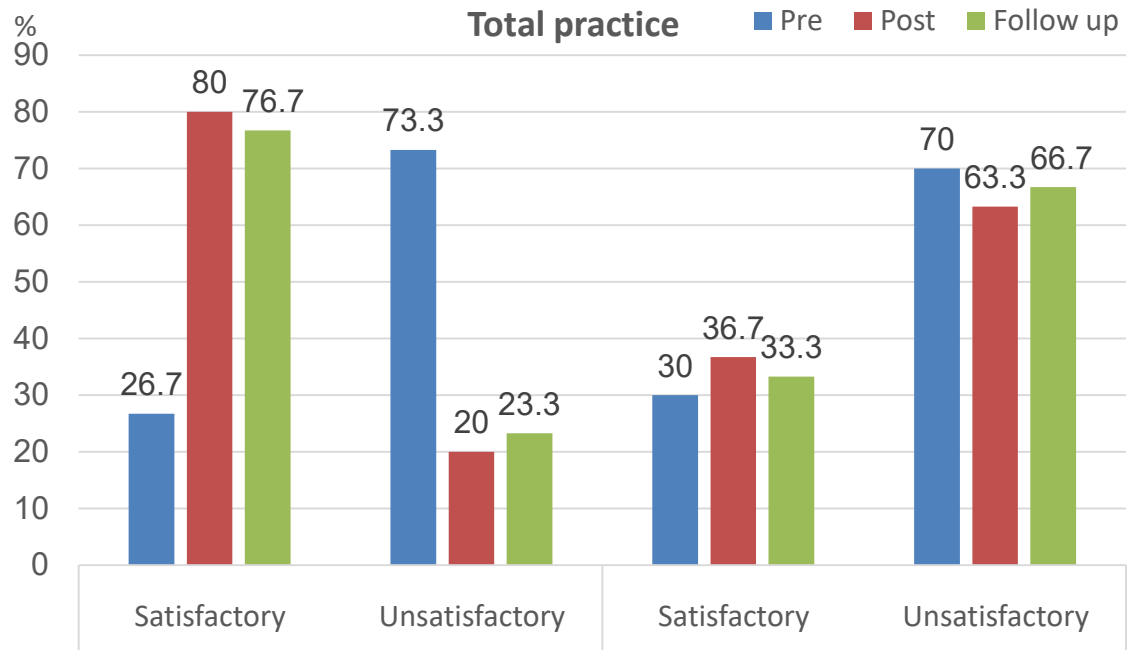

Figure (1): Shows that at pre self-care guidelines implementation, total satisfactory self-care practice was low in both study and control groups. At postself-care guidelines implementation, the study group demonstrated a notable improvement, with achieving satisfactory practice compared to the control group. At follow-up, practice retention in the study group remained high, while the control group showed minimal change. Chi-square analysis indicated no significant difference at preself-care guidelines implementation ($p > 0.05$), but significant improvements were observed in the study group compared to the control group at both postself-care guidelines implementation and follow-up ($p < 0.001$*).

Table (4): Comparison between study and control groups regarding total quality of life at pre, post, and follow-up assessments

Total QoL	Study						Control						Chi-square	
	Good		Average		Poor		Good		Average		Poor			
	N	%	N	%	N	%	N	%	N	%	N	%	X^2	P-value
Pre	3	10.0	9	30.0	18	60.0	5	16.7	8	26.6	17	56.7	0.587	0.746
Post	23	76.7	6	20.0	1	3.3	7	23.3	9	30.0	14	46.7	20.400	<0.001*
Follow up	22	73.3	5	16.7	3	10.0	6	20.0	7	23.3	17	56.7	19.276	<0.001*

Non-significant >0.05, highly significant <0.001*

Table (4): Shows the total QoL of patients in both groups. At preself-care guidelines implementation, most participants reported poor QoL. Postself-care guidelines implementation, the study group demonstrated marked improvement, with reporting good QoL compared to the control group. At follow-up, the study group maintained these gains, whereas the control group showed minimal change. Chi-square analysis indicated no significant difference at preself-care guidelines implementation ($p > 0.05$), but significant differences favoring the study group were observed at both postself-care guidelines implementation and follow-up ($p < 0.001$*).

Table (5):The correlation between patients' knowledge, practice, and total quality of life in both study and control groups.

	Study				Control			
	knowledge		Practice		knowledge		Practice	
	r	P-value	r	P-value	r	P-value	r	P-value
Pre								
Practice	0.421	0.021*			0.255	0.047*		
QoL	0.389	0.032*	0.404	0.017*	0.242	0.049*	0.261	0.045*
Post								
Practice Post	0.560	<0.001*			0.539	<0.001*		
QoL Post	0.643	<0.001*	0.645	<0.001*	0.572	<0.001*	0.490	<0.001*
Follow up								
Practice	0.705	<0.001*			0.488	<0.001*		
QoL	0.724	<0.001*	0.750	<0.001*	0.521	<0.001*	0.391	0.031*

Non-significant >0.05, significant <0.05*, highly significant <0.001*

Table (5): Shows statistically significant positive correlations between patients' knowledge, practice, and total quality of life in both the study and control groups across all phases. In the study group, moderate significant correlations were observed at the pre-test phase ($p<0.05$), which markedly increased at post-test and follow-up, reaching strong and highly significant levels between knowledge, practice, and quality of life ($p<0.001$). Regarding the control group, correlations were generally weaker at the pre-test phase ($p<0.05$), but became stronger and highly significant at post-test and follow-up ($p<0.001$), although they remained lower than those observed in the study group.

Discussion

Leukemia is characterized by progressive and aggressive malignant neoplasms of hematopoietic stem cells with maturation arrest of either the myeloid or lymphoid lineage. Across all types of leukemia, patients suffer from pain, fatigue, lack of energy, and sleep disturbances. Chemotherapy treatments can cause nausea, vomiting, hair loss, and myelosuppression. These consequences significantly impact patients' functional status and quality of life ***Thiab, et al (2025).***

In the current study, the socio-demographic analysis showed that two-fifths of patients in the study group and less than one-third in the control group were aged between 35 and <45 years. The mean age was 30.27 ± 9.32 years for the study group and 29.98 ± 11.57 years for the control group. These findings align with the results of ***Fathallah, et al (2021)***in their study "Needs of Patients with Leukemia Post Stem Cell Transplantation", which reported a mean age of patients was 31.8 ± 7.45, with more than half of the leukemia patients falling within the 30 to <45 age range.

Furthermore, the current findings are in agreement with those of ***Rakhshani, et al (2022)***, who conducted the study "The Effect of Orem-Based Self-Care Education on Improving Self-Care Ability of Patients Undergoing Chemotherapy". Their results showed that the mean age in the control group was 35.06 ± 14.51, while in the experimental group it

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was 31.72 ± 15.01. Similarly, the present results are consistent with ***Mohammed, et al (2024)***, who conducted the study "Foot Reflexology Effect on Chemotherapy-Induced Nausea, Vomiting and Its Relation to Patients' Hydration Status and Fatigue Level" the study revealed that more than one-third of patients were aged 30 to <40 years.

Regarding gender distribution, the majority of patients in the study group were male, while more than two-thirds of the control group was male. From the researcher's point of view, this finding may be explained by the fact that over one-third of the studied patients were smokers, as smoking and tobacco use are recognized risk factors for developing certain types of leukemia. These results are consistent with ***Zeng, et al (2021)***, who conducted the study "Assessment of the Health Utility of Patients with Leukemia in China" who reported that the majority of leukemia patients were male. Similarly, the findings align with ***Leber, et al (2025)*** in their study "Real-World Treatment Patterns and Outcomes with Oral Azacitidine Maintenance Therapy in Patients with Acute Myeloid Leukemia", which revealed that less than two-thirds of the patients were male.

Concerning patients' occupation, more than two-thirds of those in the study group were engaged in office work, compared to less than two-thirds in the control group. From the researcher's point of view, this outcome may be related to increased stress associated with limited income. These findings are consistent with ***Jalal et al (2024)***, who conducted the study "The Effect of Self-Care Education with Smartphone Applications on the Severity of Nausea and Vomiting after Stem Cell Transplantation in Leukemia Patients", which reported that most leukemia patients were employed. Similarly, the results are in line with ***Ebob&Bassah (2022)***, who conducted the study "Psychosocial Distress and the Quality of Life of Cancer Patients in Two Health Facilities in Cameroon", which revealed that approximately three-fifths of the examined patients were employed.

In relation to marital status, the present study found that more than three-quarters of patients in the study group and more than two-thirds in the control group were married. From the researcher's point of view, this outcome may be explained by cultural norms, as individuals within this age range are typically married. These findings are consistent with ***Bıkmaz&Ünsar (2021)***, who conducted the study "Quality of Life and Social Support Levels in Leukemia Patients" which reported that the majority of leukemia patients were married. Furthermore, this result was in agreement with ***Wang, et al (2020***), who conducted a study entitled "Factors associated with quality of life of adult patients with acute leukemia and their family caregivers in China" which revealed that more than two thirds were married.

Regarding to educational level, the present study revealed that half of the patients in the study group held a diploma or intermediate qualification, compared to two-fifths in the control group. From the researcher's point of view, this finding may be attributed to the low socioeconomic status of the study participants.This result was in agreement with ***Song, et al (2023)***, who conducted a study entitled "Assessment of knowledge, attitudes, and practices of CML patients and their families toward TKI therapy in China" who reported that two fifths of patients had Middle school. Also, these results are consistent with ***Zeng et al (2021)***, who reported that more than half of leukemia patients had completed middle or high school education.

In relation to monthly income, the present study revealed that all patients in the study group and the most in the control group reported insufficient income. These finding is consistent with ***Kamal, et al (2024)***, who conducted a study entitled "Assessment of self-efficacy and self-care behavior among patients with leukemia undergoing chemotherapy." who found that the majority of leukemia patients had inadequate monthly income. Similarly, the results align with ***Al-Omari, et al (2022)***, who conducted the study "Supportive Care Needs Assessment for Cancer Survivors at a Comprehensive Cancer Center in the Middle East", which indicated that the majority of patients did not have adequate monthly income.

Concerning treatment costs, the present study revealed that all patients in the study group received treatment free, either through at state expense or health insurance, while the majority in the control group had similar support. From the researcher's point of view, this finding may be explained by the fact that many of the study participants were government employees with insufficient income, making them more dependent on state-funded healthcare. These results are consistent with***, Huan-Tze, et al (2023),*** their study about " Frailty in chronic myeloid leukemia: evidence from 2016–2018 Nationwide Inpatient Sample of the US" who reported that nearly three quarters studied patients based on health insurance.Also, the findings align with ***Khalfi, et al(2022)***, who conducted the study "Assessment of Patients' Feelings and Psychological Impact of the Announcement of Cancer Diagnosis at Hassan II University Hospital in Fez", which indicated that the majority of patients possessed health insurance.

In relation to patients' residence, less than two thirds of the study group lived in urban areas, whereas more than two thirds of the control group resided there. According to the researcher's point of view, this variation may be explained by environmental factors such as smoking, and there is evidence suggesting that exposure to industrial solvents could play a role in the development of leukemia. These findings are consistent with ***El-Nagar, et al (2020),*** who conducted "Quality of life of patients with leukemia undergoing chemotherapy" who reported that more than three quarters of leukemia patients lived in urban areas. Also, the present results align with ***AbdElhamid, et al (2025),***who conducted "Biopsychosocial Needs of Patients with Leukemia Undergoing Chemotherapy" who revealed that less than two thirds of leukemia patients resided in urban areas.

Regarding the smoking status of patients under study, more than one third of the study group and over two fifths of the control group were smokers. From the researcher's point of view, this may be associated with the fact that the majority of the patients were males. These findings are consistent with ***Kristensen, et al (2020),*** who conducted "The prognostic effect of smoking status on intensively treated acute myeloid leukemia" who reported that more than one third of patients were current smokers. Moreover, the present results are in agreement with ***Bi, et al (2022),*** who conducted "The prognostic impact of cigarette smoking on survival in acute myeloid leukemia with TP53 mutations and/or 17p deletions" who found that more than half of the patients were smokers.

As regard to medical history, more than two thirds of patients in both the study and control groups had been living with leukemia for less than five years. This finding is consistent with ***AbdElhamid, et al (2025),*** who reported that fewer than half of the patients examined had a leukemia duration ranging from one to five years. In contrast, the present result is not in agreement with ***Sandling, et al (2024),*** who conducted "Identifying health-

related social needs among cancer patients with comorbidities" who found that less than one quarter of patients had been diagnosed one to five years earlier.

Regarding factors that may contribute to the development of leukemia, the majority of patients in the study group and more than three quarters of those in the control group reported experiencing psychological pressures. This finding is congruent with the results of ***Sun, et al (2021),*** who conducted a study entitled "Effect of continuous nursing on negative emotion and quality of life in patients with leukemia under chemotherapy" who found that the majority of leukemia patients suffered from anxiety and depression.

Regarding the symptoms of leukemia patients, the vast majority in the study group and the majority in the control group reported feeling tired and exhausted. Additionally, less than half of the study group and more than half of the control group experienced loss of appetite. These findings are consistent with ***AlFayyad, et al (2020),*** who conducted a study entitled "Clinically significant fatigue in adult leukemia patients: prevalence, predictors, and impact on quality of life" who revealed that more than three quarters of patients suffered from fatigue, while less than two thirds reported poor appetite.

Regarding the past medical history of the patients under study, the vast majority of patients in the control group had no history of high blood pressure. This finding is consistent with ***Zhou, et al (2021),*** who conducted "Effect of a PDCA-based nursing management model on the quality of life and complications of patients with acute leukemia" who reported that most patients had no history of hypertension. In addition, the result aligns with ***Tadesse, et al (2024),***who conducted "Health-Related Quality of Life and Financial Burden in Ethiopian Patients with Chronic Myeloid Leukemia Receiving Tyrosine Kinase Inhibitors" who found that less than one quarter of patients were diagnosed with hypertension.

Concerning previous hospitalization and tumor removal among the patients under study, had no history of either condition. This result is consistent with the findings of ***El-Nagar, et al (2020),*** who reported that three quarters of the studied patients had no prior hospitalization or surgical interventions.

In relation to family history, the current study revealed that the vast majority of patients in the study group and the majority in the control group had no family history of blood diseases. From the researcher’s point of view, this outcome may be attributed to the fact that individuals with a family history of leukemia are at greater risk due to genetic predisposition, which is recognized as a strong risk factor for leukemia disease. Therefore, the absence of such family history among most patients could reflect the relatively low prevalence of hereditary leukemia in the studied patients. This finding is consistent with ***Sun, et al (2021),*** who reported that the vast majority of patients in both groups had no family history of leukemia.

In relation to the degree of kinship, the current study revealed that second-degree relatives represented half of the patients in the study group and nearly two-thirds in the control group. These findings are consistent with ***Mendes-de-Almeida, et al (2023),*** who conducted "Identifying childhood leukemia with an excess of hematological malignancies in first-degree relatives" who reported that less than two-thirds of leukemia patients had second-degree relatives affected.

The socio-demographic and medical characteristics of participants in both the study and control groups showed no significant differences. This means that the participants were

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selected from identical population of patients with leukemia and undergoing chemotherapy and that proper random allocation was achieved. These findings are consistent with ***Jalal, et al (2024),*** who reported no statistically significant differences between the two groups. Also,these findings are consistent with***Latifzadeh, et al (2022),*** in their study "The impact of a collaborative care model on leukemia patients' quality of life and anxiety" confirmed that there were no significant differences in demographic characteristics between the groups.

Regarding total satisfactory patients' knowledge, the findings of the present study indicated that, pre self-care guidelines implementation; both the study and control groups demonstrated low levels of satisfactory knowledge, with no significant differences between them. After self-care guidelines implementation, the study group showed a marked improvement, achieving satisfactory knowledge levels, while the control group exhibited only minimal change. At follow-up, knowledge in the study group remained consistently high, with significant differences observed in the study group compared to the control group at both after self-care guidelines implementation and follow-up across all items.

This finding is aligns with ***Sivakumar&Susila, (2021),***who conducted "Effectiveness of self-care measures on knowledge, self-efficacy and performance status among cancer patients" who reported that patients demonstrated adequate knowledge of self-care measures after the intervention. Their results revealed a statistically significant difference in post-intervention knowledge scores between the experimental and control groups. Moreover, these findings further support the importance of patient education in enhancing knowledge and promoting effective self-care behaviors for patients.

This finding is also in agreement with ***Zhang, et al (2021),*** who reported that patients in the observation group demonstrated significantly better knowledge of leukemia and higher nursing satisfaction compared to those in the control group. Their study confirmed that the intervention effectively enhanced the knowledge of patients with acute leukemia, underscoring the importance of educational and supportive strategies in improving patient outcomes.

Regarding total satisfactory self-care practice, the findings of the present study indicated that, pre self-care guidelines implementation; both the study and control groups demonstrated low levels of satisfactory practice, with no significant differences between them. After self-care guidelines implementation, the study group showed a notable improvement, achieving satisfactory practice levels compared to the control group. At follow-up, the study group maintained high adherence, while the control group's progress remained limited. Statistically significant improvements favoring the study group were observed both immediately after self-care guidelines implementation and at follow-up.

The current study's findings are in line with those of ***Mohamad, et al (2019),*** who conducted "Effect of Self–Care Guidelines on Quality of Life for Leukemic Patients Undergoing Chemotherapy" who revealed a highly statistically significant difference between the study and control groups in the level of satisfactory self-care practices post the implementation of self-care guidelines ($p < 0.01$). Similarly, the present findings correspond with those of ***Ahmed, et al (2023),*** who conducted"Quality of Life among Adolescents with Leukemia" who reported that the majority of adolescent patients demonstrated satisfactory to total levels of self-care practice related to leukemia disease.

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Regarding the total quality of life of patients in both groups, the findings of the present study revealed that, pre self-care guidelines implementation, most participants in both the study and control groups reported poor QoL across all domains, with no significant differences between them. After self-care guidelines implementation, however, the study group demonstrated marked improvement, with a considerable proportion reporting good QoL compared to the control group. At follow-up, the study group maintained these improvements, and significant differences favoring the study group were observed both immediately after self-care guidelines implementation and at the follow-up assessment.

The findings of the present study are consistent with those of ***Peng, et al (2023),*** who conducted "Effects of different psychological interventions on quality of life and remission rate in patients with acute leukemia receiving chemotherapy" their results demonstrated that the total quality-of-life score, along with most of its dimensions, was significantly improved among participants in the intervention groups compared to those in the control group.

Regarding to the current study, correlations found statistically significant positive correlations between patients' knowledge, practice, and total quality of life in both the study and control groups across all phases. This finding is in harmony with the study by ***Mohamad, et al (2019),*** who reported a highly statistical significant positive correlation between self-care (knowledge and practices) and QoL post the implementation of self-care guidelines. Also, it corresponds with the study conducted by ***Salah, et al (2019),*** who conducted "Effect of self-management guidelines on chemotherapy associated symptoms among non-hodgkin lymphoma patients", which demonstrated that the implementation of self-management guidelines had a statistically significant positive effect on patients' knowledge and self-care practices. Furthermore, this finding is consistent with the study by ***Ahmed, et al (2023),***who revealed that a statistically significant positive correlation between total knowledge, total practices, and total QoL scores among the adolescent patients with leukemia.

Conclusion

Based on the findings of the study, it can be concluded that, the self-care guidelines, had a positive effect on the patients outcomes among study group as regarding knowledge, self-care practices and quality of life.

Recommendation

-Develop and implement standardized protocols for leukemia and undergoing chemotherapy patients care based on self-care guidelines to enhance knowledge, self-care practices and quality of care.

- Conduct longitudinal studies to assess the long-term effects of self-care guidelines on the quality of life for patients with leukemia and undergoing chemotherapy.

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