Biopsychosocial Needs of Patients with Leukemia Undergoing Chemotherapy

Mohamed Mamdouh Abd Elhamid[1, 2], Manal Saad Shaker[3], Reham El Ashery Ashery Asker[4]

[1]Nursing specialist at Tamia general hospital, Fayoum
[2]Master Degree in Nursing Sciences, Medical Surgical Nursing, Faculty of Nursing, Fayoum University
[3,4]Assistant Professor of Medical Surgical Nursing, Faculty of Nursing, Fayoum University
Corresponding Author: Mohamed Mamdouh
Email: Mohamedmamdouh30397@gmail.com

Abstract

Background: Leukemia patients who receive chemotherapy experience a range of biopsychosocial needs that require comprehensive care. These needs include managing physical side effects like fatigue and pain, addressing emotional distress like anxiety. In addition to, depression, and navigating social challenges related to work, finances, and social support. **Aim**: This study was conducted to assess biopsychosocial needs of patients with leukemia undergoing chemotherapy. **Design:** A descriptive exploratory design was utilized in this study. **Setting:** The study was conducted at outpatient and inpatient units in Fayoum cancer center at Fayoum governorate, Egypt. **Subjects:** A Purposive sample of (60) patients who have leukemia undergoing chemotherapy. **Tools for data collection:** It included 1) a structured interviewing questionnaire, and 2) functional disability and handicap the patient evaluation. **Results:** Majority (81.7%) of the studied patients had low biopsychosocial needs levels and the minority (18.3%) of the studied patients had moderate biopsychosocial needs levels. **Conclusion:** There was strong positive correlation between total biopsychosocial needs, physical needs, psychological needs, social needs and spiritual needs. While, there was negative correlation between physical needs, psychological needs, social needs and spiritual needs. **Recommendations:** Patients should get continual individualized educational sessions accompanied by written materials before and after treatment, as well as during follow-up appointments.

Keywords: Biopsychosocial Needs, Chemotherapy, Leukemia.

Introduction:

Chemotherapy remains a physically and psychologically highly demanding treatment. Research has consistently found that 30 to 40% of people newly diagnosed with cancer experience a marked degree of psychological distress, including clinically significant depressive or anxiety disorders. Irrespective of cancer type, distress often peaks shortly after cancer diagnosis and during the first 12 months after diagnosis, when a range of medical treatments take place **(Card, 2022).**

Leukemia patients receiving treatment have diverse biopsychosocial requirements that necessitate holistic care. These needs encompass managing physical side effects such as fatigue and discomfort, treating mental distress including anxiety and despair, and negotiating social problems pertaining to job, finances, and social support. According to the established biopsychosocial paradigm, a reciprocal relationship exists between psychosocial influences and biological results **(Sylvestro et al., 2021).**

Psychosocial variables influence both physical and mental health, as well as practical issues like medical costs. The advancement or recuperation from an illness induces psychological anguish and influences feelings, perceptions, and beliefs, in addition to impacting the daily lives of sufferers. Moreover, confronting cancer is not solely a personal struggle. Thus, the requests from family and oncology specialists to comprehend the psychological and social difficulties encountered by cancer patients are inherently substantial **(Albert et al., 2022).**

The impact of cancer on patients and survivors are always complex and can be explained from two perspectives: time and function. Regarding the functional domains, cancer results in challenges at the individual level, such as somatic problems, psychological problems, and existential inquiries, as well as interpersonal and social difficulties, such as the decline of social roles and relationships **(Vandendorpe et al., 2021).**

Consequently, nurses must conduct periodic examinations of the biopsychosocial needs of those suffering from leukemia undergoing chemotherapy and apply the evaluation findings in treatments to evaluate and enhance these needs, enhancing the patient's quality of life, ensure high-quality care, reduce hospitalization duration, and facilitate a prompt return to normalcy ***(*Khatab, Mohamed & Elshatby, 2021).**

Significance of the study

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).**

Leukemia constitutes 10% of all cancer diagnoses in Egypt. Leukemia ranks as the fifth most prevalent cancer. In 2020, Egypt had the greatest mortality figures for the following cancers: liver (26,523), lung (5,817), breast (9,148), Non-Hodgkin Lymphoma (4,078), leukemia (3,858), bladder (6,170), and brain and central nervous system (3,686), culminating in a total of 89,042 cancer-related deaths **(Ibrahim & Shash, 2022).**

Aim of the study

This study aimed to assess biopsychosocial needs of patients with leukemia undergoing chemotherapy.

Research question:

What are biopsychosocial needs of patients with leukemia undergoing chemotherapy?

Research design:

A descriptive exploratory design was utilized in this study.

Setting:

The current study was conducted at outpatient and inpatient units in Fayoum Cancer Center at Fayoum Governorate, Egypt. The outpatient clinics located in first floor consts of one room and inpatient units located in fourth floor consists of one larg room and contains 6 beds.

Subjects:

Sample type: A purposive sample was used in this study.

Sample size:

The number of patients with leukemia undergoing chemotherapy that was admitted to Fayoum cancer center in 2022 (100 cases) so the target population of this study was 60 patients who have leukemia undergoing chemotherapy, the sample size calculation done based on power analysis Herbert Equation **(Pavlov et al., 1973)**.

$$n = \frac{p(1-p)}{(SE \div t) + [p(1-p) \div N]}$$

N = 100 - t = 1.96

SE = 0.05- P = 0.50

$$n = \frac{0.50(1-0.50)}{(0.05 \div 1.96) + [0.50(1-0.50) \div 100]}$$

n = 60

The criteria for selection sample were as following:

Inclusion criteria:

- Agree to engage in this study
- Both genders
- Age ranged between 18-60 years old

- Patient diagnosed by leukemia undergoing chemotherapy
- Fully conscious and free from others chronic diseases.

Exclusion criteria:

-Patients with diseases that affect factors affecting of biopsychosocial needs of patients with leukemia undergoing chemotherapy negatively as un-controlled diabetes mellitus, hypoxemia, morbid obesity, severe anemia, sepsis, heart failure, irreversible shock, immunosuppressive& and chronic renal failure was excluded from the study.

Tools of data collection:

The study utilized three tools for data collection as follows:

Tool I: A Structured Interviewing: (Appendix II)

This tool was developed by the researcher following an examination of relevant literature to create data gathering instruments (**Ramadan, 2012& Guirguis, 2021**).

It includes two parts as follows:

Part I: **Socio-Demographic Characteristics of Patients:** It was included age, gender, marital status, educational level, job, monthly income and residence, treatment costs and smoking.

Part II: Patients' Medical History: It was included family history, past and present patients' history including duration, medical management and complications of the disease

Tool II: Functional Disability and Handicap The Patient Evaluation: **(Appendix III)**

It was adapted from **(Stineman, Ross & Maislin, 2005 & Ramadan, 2012)** and it was used to assess biopsychosocial needs for patients with leukemia. It was consisted of four parts included:

Part 1: Physical Needs: It was included seven sections were respiratory system, musculoskeletal system, neurological system, gastrointestinal system, the skin, sleep and rest and sexual intercourse (28 questions).

Part 2: Psychological Needs: It was included (17 questions).

Part 3: Social Needs: It was included (16 questions).

Part 4: Spiritual Needs: It was included (4 questions).

Scoring system:

Two likert scales were used in this tool as (no=0 and yes=1) except question (1) in sleep and rest needs, questions (10, 11, 12 and 14) in psychological needs, questions (8, 9, 10, 11, 12, 13, 14 and 15) in social needs and questions (2, 3 and 4) in spiritual needs which was (no=1 and yes=0), the total global score of 65 items with 65 scores was summed and classified into:

-< 65% that means low biopsychosocial needs (< 42.25 scores).
- 65% -< 75% that means moderate biopsychosocial needs (42.25-<48.75 scores).
- ≥ 75% that means high biopsychosocial needs (≥48.75 scores).

Ethical considerations:

Approval for the research was secured from the Fayoum University Supreme Committee for Scientific Research Ethics with commencement of the study. Official authorization was granted by the hospital director, and approval was gained from all participants. The researcher elucidated the study's objectives and explained its nature before data collection commenced. Data confidentiality and privacy were upheld, and each patient retained the ability to resign from the study at any time.

Validity and reliability of the tool:

Tool validity: (Appendix III)

A group of five experts, including three faculty members from Helwan University's nursing school and one lecturer and an assistant professor from Damietta University's medical-surgical nursing school, assessed the test's face and content validity. After making small revisions based on the experts' feedback, the tools were finalized after being assessed for clarity, relevance, comprehensiveness, simplicity, and application.

Reliability:

In the present study, reliability was evaluated by using Chronbach's Alpha coefficients for functional disability and handicap the patient evaluation which was 0.781.

Operational design:

The operational design encompasses the preparatory phase, pilot study, and fieldwork.

Preparatory phase:

The process involved examining existing and historical literature, as well as theoretical frameworks related to various facets of the study, utilizing booklets, papers, online resources, publications, and journals to formulate the data gathering instruments.

Pilot Study:

The pilot study was conducted on 10% (6 patients) of the participants to assess the applicability, questions comprehension, time required to fill the study instruments, and to evaluate the tools' effectiveness. Subsequently, relevant modifications were made based on the pilot study results. The subject included in the pilot study was incorporated into the study following minor adjustments.

Field work:

Exploratory phase: In this phase, the research instruments were created based on the needs assessment of the study issues. Upon acquiring a permit from the research team at the Fayoum Cancer Center in Fayoum Governorate, Egypt. Upon obtaining consent, the researcher introduced himself to the patients in accordance with the criteria and elucidated the study's objective, assuring them that the obtained data would remain confidential and utilized solely for the study's purpose. Duration for data collection was six months.

Implementation phase:

1. Individual interview was conducted with the patients who agree to participate in the study and explained the purpose of the study.
2. An interview questionnaire sheet was collected from each patient using the developed tools (Appendix I), then functional disability and handicap the patient evaluation (Appendix II) was used to assess biopsychosocial needs for each patients with leukemia each patient took about 10-20 minutes for response all tools.
3. Data was collected by the investigator in morning and afternoon shifts “two days in week, from Oncology Center at Fayoum Government outpatient clinic and unit about six months” from beginning of August (2024) to the end of January (2025).

Administrative design:

The researcher defined the study's goal to the patients, received informed consent, and promised anonymity.

Statistical design:

Applying SPSS software (Statistical Package for the Social Sciences, version 16, SPSS Inc., Chicago, IL, USA), the collected data were methodically sorted, tabulated, and analyzed statistically. When it came to the numerical data, we calculated the standard deviation, mean, and range. Qualitative data uses percentages, frequencies, or proportions to define each category in a categorical dataset. For this reason, we compared percentages across qualitative criteria using the Chi-square (X2) test of significance. A significance level of less than 0.05 is considered significant (*), while a value less than 0.001 is considered very significant (**). The Pearson correlation coefficient is also provided.

Results

Table (1): Percentage Distribution of The Studied Patients with Leukemia Undergoing Chemotherapy, shows that, fewer than half (40%) of the studied patients their age group was 51 ≥ 60 years with mean age 44.33±12.77

years, over than two thirds (68.3%) of them were females, over than half (55%) of them were married, three fifths (60%) of them were from rural areas, over than half (53.3%) of them were employed and over than one third (36.7%) of them weren't read and write. Additionally, fewer than two thirds (65%) of the studied patients had not enough monthly income, over than three quarters (76.7%) of them had health insurance, over than two thirds (68.3%) of them weren't smoking. fewer than half of the studied patients (45%) had (1-5 years) of duration of leukemia.

Table (2): Percentage Distribution of The Studied Patients Regarding Their Present Medical History, fewer than half of the studied patients (45%) had cancer from 1-5 years, the mean duration of current hospitalization was 2.25±0.704 days, over than one third of the studied patients (35%) their cause of current hospitalization was feeling very tired, the majority of the studied patients (81.7%) were performed complete blood count and over than half of them (55%) were performed CT scan with dye. Moreover, most of the studied patients (95%) weren't performed MRI, all of the studied patients (100%) underwent treatment with chemotherapy with mean duration 2.43±0.945 months and most of the studied patients (90%) weren't received radiation therapy with mean duration 1.10 ± 0.302 months.

Table (3): Percentage Distribution of the Studied Patients' Regarding to Their Biopsychosocial Needs. Sub-Items shows that, the most of the studied patients (93.3%) had low biopsychosocial needs regarding respiratory system. While, fewer than half of them (48.3%) had moderate biopsychosocial needs regarding sleep and rest and over than one third of them (35%) had high biopsychosocial needs regarding sleep and rest.

Figure (1): Percentage Distribution of The Studied Patients' Regarding to Their Total Biopsychosocial Needs, revealed that, the majority of the studied patients (81.7%) had low biopsychosocial needs levels and the minority of the studied patients (18.3%) had moderate biopsychosocial needs levels.

Table (4): Relation between Sociodemographic Characteristics of The Studied Patients and Their Total Biopsychosocial Needs, illustrates that, there was high statistically significant relation in educational level, duration of disease and patient's age between the studied patients' sociodemographic characteristics and their total biopsychosocial needs.

Table (5): Correlation between Subitems of Biopsychosocial Needs and Total Biopsychosocial Needs. The table showed that, a strong positive correlation was observed among total biopsychosocial needs, encompassing physical, psychological, social, and spiritual dimensions. While, there was negative correlation between physical psychological social and spiritual needs.

Table (1): Percentage Distribution of The Studied Patients with Leukemia Undergoing Chemotherapy (n=60).

Items	No.	%
Patients' age		
- 18 ≤ 30 years	8	13.3
- 31 ≤ 40 years	15	25.0
- 41 ≤ 50 years	13	21.7
- 51 ≥ 60 years	24	**40.0**
Mean ± SD	**44.33±12.77**	
Gender		
- Male	19	31.7
- Female	41	**68.3**
Marital status		
- Single	12	20.0
- Married	33	**55.0**
- Divorced	15	25.0
- Widowed	0	0.0
Residence		
- Rural area	24	40.0
- Urban area	36	**60.0**
Job		
- Don't working	28	46.7
- Employed	32	**53.3**
Educational level		
- Don't read and write	22	**36.7**
- Read & write	10	16.7
- Secondary/ intermediate education	15	25.0
- High education	13	21.6
Monthly income (According to patient opinion)		
- Enough	21	35.0
- Not enough	39	**65.0**
Treatment costs		
- Health insurance	46	**76.7**
- On his/her expense	14	23.3
Smoking		
- No	41	**68.3**
- Yes	19	31.7
If yes Mean ± SD of Cigarettes per day	**2.75±4.34**	
Duration of current disease		
- Less than a year	9	15
- 1-5 years	27	45
- More than 5 years	24	40

Table (2): Percentage Distribution of The Studied Patients Regarding Their Present Medical History (n=60).

Items	No.	%
Duration of current disease		
- Less than a year	9	15.0
- 1-5 years	27	**45.0**
- More than 5 years	24	40.0
Duration of current hospitalization/days		
Mean ± SD	**2.25±0.704**	
Causes of current hospitalization*		
- Increased heart rate	8	13.3
- Shortness of breath	7	11.7
- Dizziness	10	16.7
- Chest pain	9	15.0
- Feeling very tired	21	**35.0**
- Joint and bone pain	15	25.0
- Headache	20	33.3
Laboratory investigation*		
- Complete blood count	49	**81.7**
- Kidney function	25	41.7
- Liver function	12	20.0
- Bone marrow	22	36.7
Radiological investigation		
CT scan with dye		
- Yes	33	**55.0**
- No	27	45.0
If yes mention location		
- Arm	1	3.1
- Brain	3	9.0
- Colon	4	12.1
- Kidney	6	18.2
- Leg	1	3.1
- Liver	7	21.2
- Lung	7	21.2
- Stomach	4	12.4
MRI		
- No	57	**95.0**
- Yes	3	5.0
If yes mention location		
- Full body	3	5.0
Chemotherapy		
- Yes	60	**100.0**
Mean ± SD of chemotherapy duration/months	2.43±0.945	
Radiation therapy		
- No	54	**90.0**
- Yes	6	10.0
Mean ± SD of duration/months	1.10±0.302	

Table (3): Percentage Distribution of The Studied Patients' Regarding to Their Biopsychosocial Needs Sub-Items (n=60).

Items	Low		Moderate		High		Mini m	Max	Range	Mean±SD
	No.	%	No.	%	No.	%				
Physical needs	53	88.3	4	6.7	3	5.0	12	22	10	16.23±2.13
Respiratory system	56	**93.3**	0	0.0	4	6.7	0	4	4	2.20±0.92
Gastrointestinal system	25	41.7	22	36.7	13	21.6	3	8	5	5.73±1.10
Neurological system	45	75.0	15	25.0	0	0.0	1	3	2	1.85±0.82
Musculoskeletal system	44	73.3	15	25.0	1	1.7	0	4	4	1.98±0.85
The skin	40	66.7	0	0.0	20	33.3	0	2	2	1.10±0.75
Sleep and rest	10	16.7	29	**48.3**	21	**35.0**	0	3	3	2.17±0.74
Sexual intercourse	41	68.3	0	0.0	19	31.7	0	2	2	1.20±0.63
Psychological needs	33	55.0	10	16.7	17	28.3	7	14	7	11.15±1.81
Social needs	35	58.3	15	25.0	10	16.7	5	14	9	9.98±1.69
Spiritual needs	42	70.0	16	26.7	2	3.3	0	4	4	2.07±0.84

Figure (1): Percentage Distribution of The Studied Patients' Regarding to Their Total Biopsychosocial Needs (n=60).

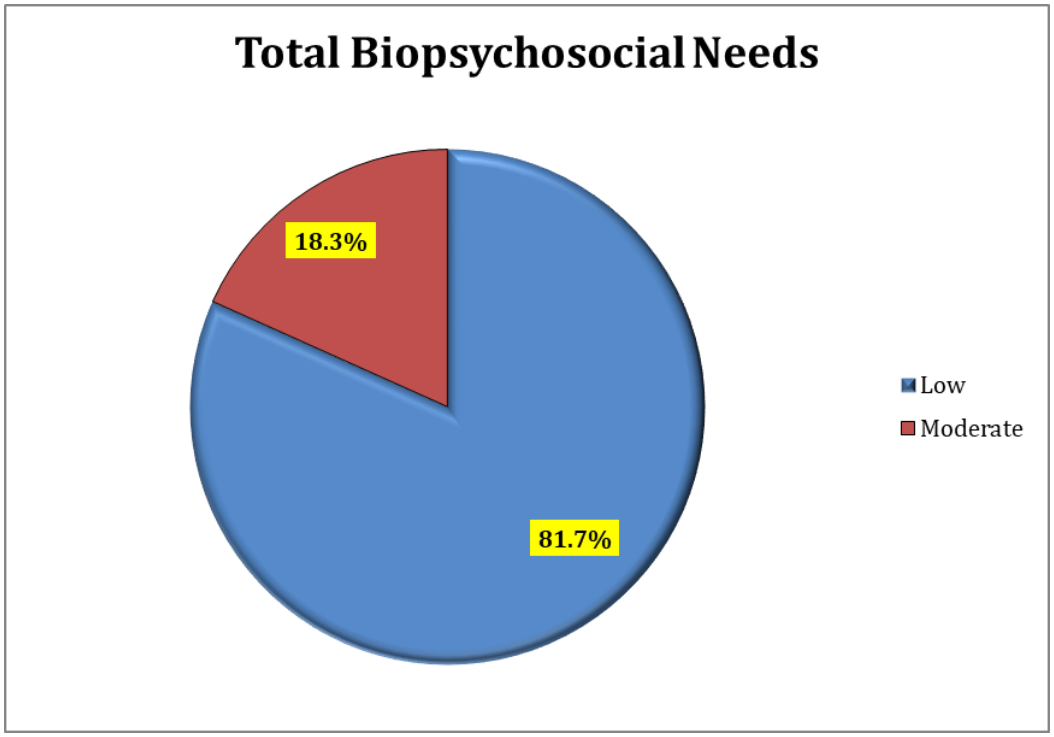

Table (4): Relation between Sociodemographic Characteristics of the Studied Patients and Their Total Biopsychosocial Needs (n=60).

Items	No.	Total biopsychosocial needs				X^2	p value
		Low (n=49)		Moderate(n=11)			
		No.	%	No.	%		
Patients' age							
- 18 ≤ 30 years	8	6	10.0	2	3.3		
- 31 ≤ 40 years	15	13	21.7	2	3.3	12.582	**0.041***
- 41 ≤ 50 years	13	12	20.0	1	1.7		
- 51 ≥ 60 years	24	18	30.0	6	10.0		
Gender							
- Male	19	17	28.3	2	3.3	1.132	0.287
- Female	41	32	53.4	9	15.0		
Marital status							
- Single	12	9	15.0	3	5.0		0.738
- Married	33	28	46.7	5	8.3	.607	
- Divorced	15	12	20.0	3	5.0		
Residence							
- Rural area	24	22	36.7	2	3.3	2.672	0.102
- Urban area	36	27	45.0	9	15.0		
Job							
- Don't working	28	22	36.7	6	10.0	.336	0.562
- Employed	32	27	45.0	5	8.3		
Educational level							
- Don't read and write	22	18	30.0	4	6.7		**0.000****
- Read & write	10	7	11.7	3	5.0	18.371	
- Secondary education	15	13	21.7	2	3.3		
- High education	13	11	18.3	2	3.3		
Monthly income							
- Enough	21	17	28.3	4	6.7	.011	0.916
- Not enough	39	32	53.4	7	11.6		
Treatment costs							
- Health insurance	46	39	65.0	7	11.6	1.278	0.258
- On his/her expense	14	10	16.7	4	6.7		
Smoking							
- No	41	35	58.4	6	10.0	1.183	0.277
- Yes	19	14	23.3	5	8.3		
Duration of current disease							
- Less than a year	9	6	10.0	3	5.0		**0.009****
- 1-5 years	27	22	36.7	5	8.3	16.947	
- More than 5 years	24	21	35.0	3	5.0		

* Statistically significant at p≤0.05 ** Highly statistical significant at p≤0.01

Table (5): Correlation between Subitems of Biopsychosocial Needs and Total Biopsychosocial Needs (n=60).

		Physical needs	Psychological needs	Social needs	Spiritual needs
Physical needs	r				
	p				
Psychological needs	r	.087			
	p	.441			
Social needs	r	.017	.142		
	p	0.882	0.209		
Spiritual needs	r	.015	.056		.130
	p	0.892	0.624		0.252
Total biopsychosocial needs	r	.687	.594	.520	.534
	p	0.000**	0.000**	0.000**	0.000**

* Positive correlation at p≤0.05 ** Strong positive correlation at p≤0.01

Discussion

The biopsychosocial assessment has initiated a paradigm shift in medicine, transitioning from a disease-centered approach to one that emphasizes patient-centered care. This biopsychosocial assessment considers the patient as an individual within a social context, addressing both the subjective experience of illness and clinical data concurrently. Upon diagnosis, cancer patients encounter a novel life circumstance and an uncertain future, which can lead to apprehension and existential distress. In later stages, physical and psychological symptoms progressively disrupt daily functioning, constraining social roles within familial and community contexts. The biopsychosocial assessment aids in identifying the comprehensive needs of cancer patients **(Lauriola & Tomai, 2019).** So, the current study aimed to assess biopsychosocial needs of patients with leukemia undergoing chemotherapy.

The current study examined patients with leukemia undergoing chemotherapy and found that less than half of the participants were aged between fifty one and sixty years. This result aligns with the findings of **Almigbal et al., (2019),** who indicated that less than one third of the patients studied were in the age group of 51-60 years. In contrast, this study did not align with the findings of **Elimimian et al., (2020),** who indicated that over half of the patients studied were in the age group of 50-59 years.

The present study reported that, more than two thirds of the studied

patients were females. This finding was similar to **Lauriola & Tomai, (2019)** who found that more than half of the studied patients were females. In contrast, this study was dissimilar to **Liu et al., (2023)** who mentioned that less than one quarter of the studied patients were females.

The current study indicated that more than half of the patients examined were married. This finding is consistent with the report by **Chen et al., (2021),** which indicated that most of the studied patients were married. In contrast, this finding was not corroborated by **Ratnasekera et al., (2024),** who indicated that fewer than half of the patients examined were married.

The current research indicated that three-fifths of the patients examined were from rural regions. This study aligns with the findings of **Prakash et al,. (2024),** which indicated that more than half of the patients examined were from rural areas. This result aligns with the findings of **Negussie et al., (2023),** who indicated that over one third of the patients studied resided in rural areas.

The current study indicated that more than half of the patients examined were employed. This finding was corroborated by **Guirguis et al., (2021),** who reported that more than half of the patients studied were employed. This study aligns with the findings of **Ebob-Anya & Bassah (2022),** who indicated that about three fifths of the patients examined were employed.

The current study indicated that over one third of the patients examined were unable to read or write. This finding aligns with the report by **Gour et al., (2021),** which indicated that over one quarter of the patients examined were illiterate and lacked formal education. This finding aligns with the work of **Negussie et al., (2023),** who indicated that less than one quarter of the patients studied are unable to read and write.

The current study revealed that fewer than two-thirds of the patients examined reported insufficient monthly income. This study aligns with the findings of **Al-Omari et al., (2022),** which indicated that a majority of the patients examined did not possess sufficient monthly income. Furthermore, this finding was corroborated by **Gour et al., (2021),** who indicated that over two-thirds of the patients examined did not have sufficient monthly income.

The current study indicated that over seventy-five percent of the patients examined possessed health insurance. This finding aligns with the research conducted by **Khalfi et al., (2022),** which indicated that the

majority of the patients studied possessed health insurance. This study aligns with the findings of **Zeng et al., (2021),** who reported that the majority of the patients examined had medical insurance.

The current study indicated that over two-thirds of the patients examined were non-smokers. From the researcher's perspective, this may be associated with the fact that over two-thirds of the patients studied were female. This finding aligns with the work of **Sasaki et al., (2019),** who noted that over fifty percent of the patients examined were nonsmokers. In contrast, this finding was not supported by **Kristensen et al., (2020),** who reported that approximately three quarters of the studied patients were smokers.

The current study revealed that fewer than half of the patients examined had duration of leukemia ranging from 1 to 5 years. This study aligns with the findings of **Sandling et al., (2024),** who indicated that less than one quarter was diagnosed 1–5 years earlier. This result aligns with the findings of **Al-Omari et al., (2022),** who indicated that fewer than one quarter of the patients studied were diagnosed with cancer within the last five years.

The current study indicates that fewer than half of the patients examined had a cancer diagnosis ranging from 1 to 5 years. This finding was corroborated by **De Souza Vieira et al., (2022),** who reported that over one third of the patients examined were diagnosed with cancer more than five years ago. This study presents a differing perspective from **Vromans et al., (2022)**, who indicated that over half of the patients examined were diagnosed with cancer within the 0–5 year timeframe.

The current study indicated that the average duration of hospitalization was 2.25±0.704 days. This finding aligns with the work of **Dixit et al., (2024),** who reported that the average length of hospital stay was 3.00±0.549 days. In contrast, this finding does not align with the results of **Ali et al., (2020),** who reported a mean length of hospital stay of 68.17 ± 29.76 days.

The current study found that more than one third of the patients examined reported that their reason for hospitalization was extreme fatigue. This study aligns with the findings of **Singh et al., (2024),** who reported that a significant number of cancer patients are often hospitalized in their final 30 days of life due to various symptoms. In contrast, this result was not aligned with the findings of **Marks et al., (2019),** who indicated that the primary

reasons for hospitalization were related to the treatment of acute leukemia.

The current study indicated that the majority of the patients underwent a complete blood count, and more than half of them had a CT scan with contrast dye administered. Furthermore, the majority of the patients included in the study did not undergo MRI. This study aligns with the findings of **Palmieri et al., (2022),** who noted that the majority of the patients examined underwent CT scans with contrast dye. This result aligns with the findings of **Liu et al., (2024),** who reported that the majority of the studied patients underwent a complete blood count. In contrast, this finding does not align with the results of **Guo et al., (2022),** who reported that more than half of the patients studied underwent MRI.

The current study indicated that all of the patients examined underwent chemotherapy treatment, with a mean duration of 2.43±0.945 months. This finding aligns with the research conducted by **Malik et al., (2021),** which indicated that over fifty percent of the patients studied received chemotherapy. This study differs from the findings of **Islam et al., (2023),** who reported that fewer than one quarter of the patients studied received chemotherapy treatment.

The current study indicated that the majority of the patients examined did not receive radiation therapy, with a mean duration of 1.10±0.302 months. This result aligns with the findings of **Ebob-Anya & Bassah (2022),** who indicated that the majority of the studied patients did not receive radiotherapy. In contrast, this finding aligns with the work of **Cheng et al., (2019),** who reported that over half of the patients studied received radiotherapy.

The current study indicated that the majority of the patients examined exhibited low biopsychosocial needs concerning the respiratory system. Less than half of the individuals exhibited moderate biopsychosocial needs related to sleep and rest, while over one third demonstrated high biopsychosocial needs in the same areas.

This finding aligns with the report by **Malik et al., (2021),** which indicated that fewer than three quarters of the patients examined exhibited low respiratory needs, such as dyspnea and shortness of breath. This finding contrasts with that of **Guo et al., (2022),** who reported that fewer than two-thirds of the studied patients exhibited high physical needs related to sleep and rest.

The present study examined the total biopsychosocial needs of patients, revealing that the majority exhibited low levels of these needs, while a minority demonstrated moderate levels. From the researcher's perspective, this may be attributed to the physical, psychological, and emotional distress caused by leukemia, which can result in significant social challenges. This study aligns with the findings of **Guirguis et al. (2021),** which indicated that over fifty percent of the examined patients exhibited low biopsychosocial needs. In contrast, this finding aligns with the work of **Prakash et al. (2024),** who indicated that over two-thirds of the patients examined had moderate needs, while less than one-third experienced unmet needs. The current study indicated a high statistically significant relationship between the educational level, duration of disease, and patient age among the sociodemographic characteristics of the studied patients and their total biopsychosocial needs.

This finding aligns with the research conducted by **Al-Omari et al., (2022),** which identified a statistically significant relationship between the total needs of the studied patients and factors such as age, education level, and time since cancer diagnosis. This result contrasts with the findings of **Lauriola & Tomai (2019),** who indicated that there was no statistically significant relationship between the total biopsychosocial needs of the studied patients and their age.

The current study indicated a strong positive correlation among the total biopsychosocial needs and its subcomponents, including physical, psychological, social, and spiritual needs. There was a negative correlation observed among physical needs, psychological needs, social needs, and spiritual needs. The findings of this study align with those of **García-García et al. (2019),** who demonstrated a positive correlation among total biopsychosocial needs, including physical, psychological, social, and spiritual dimensions. In contrast, this study did not align with the findings of **Fathallah et al. (2021),** who indicated a positive correlation among total physical, psychological, and social needs.

Conclusions:

The current study indicated that, the most of the studied patients (93.3%) had low biopsychosocial needs regarding respiratory system. While, less than half of them (48.3%) had moderate biopsychosocial needs regarding sleep and rest and more

than one third of them (35%) had high biopsychosocial needs regarding sleep and rest. The majority (81.7%) of the patients examined exhibited low levels of biopsychosocial needs, while a minority (18.3%) demonstrated moderate levels of these needs. Ultimately, a positive correlation was observed among total biopsychosocial needs, encompassing physical, psychological, social, and spiritual dimensions.

Recommendations:

-Patients should get ongoing individualized educational sessions accompanied by written materials before and after treatment, as well as during follow-up appointments.

-A psychological health program must be developed by experts for those suffering from leukemia, chemotherapy those receiving them, and their cregivers/families to assist in managing depression, anxiety and stress, as well as to aid patients in adapting to changes following a leukemia diagnosis.

-Family and social support should be seen as a significant factor influencing patients' psychological as well as physical health following the administration of chemotherapy.

-Encourage patient participation in rehabilitative activities while undergoing chemotherapy treatment .

- Conduct the study on a bigger probability sample across diverse settings to enhance the generalizability of the findings.

-Further studies are recommended to consider describing the differing cultural, demographic, and contextual aspects of leukemia patients regarding to their biopsychosocial needs.

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