



## **The Effect of a Psycho-Educational Program on Stress and Coping Strategies among Nurses Caring For Leukemic Children at 57357 Hospital**

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### **Abstract**

**Background:** Stress is uncomfortable feeling toward anything that increase physical and mental tension to the body. Coping is the process of spending conscious effort and energy to solve personal and interpersonal problems. Aim of the Study: to design and evaluate the effects of psycho educational program on stress and coping strategies among nurses caring leukemic children at 57357 hospital. Setting: The study was conducted in inpatient of both pediatric hematology and oncology units of leukemic children at 57357 Hospital in Cairo. Subjects: Purposive sampling which included all available nurses caring leukemic children at the time of study. Tools: 1) Social-demographic data assessment, 2) Stress index tool 3) Coping inventory scale. Results: There is an improvement in the high level of stress toward all types of stress post program compared with preprogram physiological and organic pressures (pre 60%-post 18%), psychological pressures (pre 54%-post 16%), work pressures (pre 52%-post 17%), economic pressures (pre 54%-post 29%) and social and familial pressures (pre 59%-21%). There is an increasing in the level of coping post program (low 29%-moderate 16%-high 55%) compared with the level preprogram (low 71%-moderate 13%-high 16%). Conclusion: There is highly statistically significant improvement according to the nurses levels of stress post-program compared to preprogram. There is an increasing in the level of coping post program compared with the level preprogram-There is negative correlation between stress level and coping level pre and post program. Recommendations: The current study recommended that: In order to minimize oncology nurses' stress: Encouraging them to express their problems and present gaps in the section and trying to fix the problems Holding workshops on stress management. Compatibility of oncology nurses with workplace stress through self-esteem and efforts to increase knowledge and experience and rely on their own abilities. Holding training courses by educational supervisors and head nurses to increase knowledge to level of the nurses.

**Keywords:** coping, stress, psycho educational program, leukemia, children.

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### **Introduction**

Oncology nurses are challenged with the increased responsibility for coordinating quality child care with limited resources and supports. The real challenge for nurses is to meet the mental, social, cultural, spiritual and developmental needs arising from patient's emotional responses to their diagnosis (*Brito & Carvalho, 2020*).

Leukemia is cancer of the bone marrow characterized by overproduction of abnormal white blood cells (WBCs) that range from very primitive and immature of nearly normal. The abnormal cells cannot defend the body against micro-organisms and tissue injuries. They also decrease the production of normal red blood cells, white blood cells, and platelets and infiltrate other organs. Leukemia is a type of cancer that is fatal if untreated (*La Russo, 2019*).

Stress is uncomfortable feeling toward anything that increase physical and mental tension to the body. May be positive due to help to accomplish the tasks and may be negative when cause physical and mental harm and the causes of stress called stressors (*Craven & Hirnle, 2018*).

Stress can be caused by daily responsibility and routine event, when people fell that they are unable to manage or control changes caused by illness, they are in distress (*Lutgenerol, Antoni, 2017*).

Leukemia affects the entire family, not just the patient. Treating a cancer is often an exercise of treating a part if not the whole family of the patient, in addition to cause distress to the patient, it puts financial, personal, social and health stress on family members. If nurses are among the family, as they usually are, stress reduces the quality of care that the patient receives (*Kasiulis and Barvydiene, 2018*).

Stressors describe what nurses feel when they are under mental, physical, or emotional pressure. Although is normal to experience psychological stress from time to time, nurses who experience high levels of psychological stress or who experience it repeatedly over a long period of time may develop health problems (mental and/or physical) (*Moreno smith M, 2018*).

Physical stressors as aches, back pain, diarrhea or constipation, nausea, dizziness, Chest pain, rapid heartbeat, loss of sex drive, and frequent colds (*Fashioinetal, 2020*).

Social stressors such as low socialization, depersonalization, emotional exhaustion, and low personal accomplishment (*Lulgnderysk et al., 2019*).

Coping is the process of spending conscious effort and energy to solve personal and interpersonal problems. In the case of stress, coping mechanisms seek to minimize, or tolerate stress and stressors that occur in everyday life (*Wickens et al., 2015*).

There are many types of coping strategies to adapt with stress and the nurse should apply in her life as problem focused and emotion focused categories, many studies explained the effects of these categories to manage stress and alleviate its impact toward life (*Walsh, 2016*).

The nurse caring leukemic children often the first individual who interacts with patient /family during hospitalization or primary care settings, at clinical appointments, at day treatment programs, and during a home visits. This type of work make much stress to her (*Boyd, 2018*).

The nurse who caring leukemic children suffers from many types of stressors as physical, psychological, emotional and social, these types of stressors alter her work, family and life at all negatively (*McPherson et al., 2017*).

The psychiatric nurse has an important role in designing programs to reduce stress and enhance stress coping strategies to nurses who caring leukemic children, apply it in the clinical field and finally evaluate these programs to make recommendations for enhancing the nursing research and applying it in nursing field (*Wickens et al., 2015*).

#### **Significance of the study:**

The incidence of leukemia at children in Egypt is 150 child/1000 of total children with cancer and more risk to die or relapse after complete their treatment so that the nurses caring them are high risk for stress that alter their life at work and within their families (*WHO, 2018*).

More than 80 percent of nurses within the world who caring leukemic children suffer from many types of stressors as physical, psychological, emotional and social, these types of stressors alter their work, family and life at all negatively (*WHO, 2018*).

So, this study aimed to create psycho educational program to improve the coping strategies of nurses caring with leukemic children and evaluate the effects of this program.

### **Aim of the Study**

This study aims to design and evaluate the effects of psycho educational program on stress and coping strategies among nurses caring leukemic children at 57357 hospital and this program will be achieved through the following:

- 1- Assessing the stress levels among nurses caring leukemic children at 57357 hospital (pre intervention).
- 2- Assessing coping strategies among nurses caring leukemic children at 57357 hospital (pre intervention).
- 3- Accordingly developing and implementing psycho-educational program for nurses caring leukemic children at 57357 hospital.
- 4- Evaluating the effects of the psycho-educational program on stress and coping strategies among nurses (post intervention).

### **Hypothesis:**

Psycho educational program for nurses caring leukemic children at 57357 Hospital will decrease their stress and enhance their coping strategies positively.

### **Subjects and Methods**

#### **Research setting:**

The study was conducted in inpatient of both pediatric hematology and oncology units of leukemic children at 57357 Hospital in Cairo.

#### **• Research Subjects:**

Purposive sampling to include all available nurses caring leukemic children at the time of study (100 nurses).

#### **-Inclusion criteria for nurses:**

- Different age groups.
- Sex: both Sexes.
- Different educational levels.
- Years of experiences in 57357 hospital: at least one year.

#### **-Exclusion criteria for nurses:**

- New staff nurses less than one year of work at 57357 hospital (under training)

#### **-Research design:**

A quasi-experimental design was utilized in this study.

#### **- Tools of data collection:**

**Data for this study were collected by using the following tools:-**

#### **1) Social-demographic data assessment:**

This sheet was constructed by the researcher to collect data related to social demographic characteristics of study subjects which include age, sex, level of education and etc.

#### **2) Stress index tool:**

It was designed by *Wickens et al. (2015)* to assess stress levels for health team who work on hospitals and exposed to different types of stressors include physical (15 items), psychological (15 items), work (20 items), economical (6 items) and family (15 items). (the total items of tool are 71 items).

**Scoring system:**

The questionnaire items were scored

Score	Interpretation
3	Strong agree
2	Agree uncertain
1	Disagree

The scores of the items of each part were summed up and the total divided by the number of items, giving a mean score for the part. These scores were converted into a percent score and the mean and standard deviations were computed.

**Stress levels:-**

Stress levels	Percentage
No	< 35 %
Mild	35%: 60%
Moderate	61%: 75%
High	> 75%

3) Coping inventory scale:

The cope inventory scale was designed by Fenny-Collins (2016) to assess coping strategies of employees especially who work with patients at health care organizations. These strategies include reinterpretation and positive growth, mental disengagement, focus on emotions and venting, use effective social support, effective interaction, denial, religious adaptation, humor, behavioral disconnection, self control, using emotional social support, use of materials, acceptance, suppression of competing activities and planning (each strategy consists of 4 items and total items of scale are 60 items)

-Scoring system of coping inventory scale:

The response indicated the studied samples coping patterns. Their answers were scored in 4 point scale. The numerical value allotted to each response:

**Coping scores:-**

Score	Interpretation
1	I usually don not do this at all used
2	I usually do this a little amount used
3	I usually do this a medium amount used
4	I usually do this a lot amount used

**Coping levels:-**

Coping levels	Percentage
low	< 35 %
Moderate	35%: 70%
High	> 70 %

**The present study was conducted in four phases:**

**First: preparatory phase:**

This phase was based on the following steps:

**Administrative design:**

An official letter requesting permission to conduct the study was submitted from the Dean of the Faculty of Nursing, Helwan University to all persons in charge. This letter included the aim of the study and a photocopy from the data collection tools in order to get the permission and help for

collection of data.

1) Pilot study:

The pilot study was conducted on 10 % from the total sample in order to test validity and reliability of the constructed tools, ensure the clarity of questions, applicability of the tools and the time needed to complete them and perform the required modification according to the available resources.

**3) Ethical consideration:**

The researcher assured voluntary participation for every selected nurse who was involved on the study sample. The researcher maintained confidentiality of data.

- The researcher will clarify to the nurses that all information will be used for scientific research only.

**Second: Designing phase:**

This phase aimed at planning for psycho-educational program through setting educational objectives, preparing the nurses for educational activities, and designing the methodology and media. ;

**Third: Implementing phase:**

This phase began by data collection then implementation of nursing interventions program how the nurses manage stress and improve their stress coping strategies.

This phase aimed at estimation the effect of nursing interventions program on how the nurses decrease stress and enhance stress coping strategies positively.

**Field work and procedure:**

- A review of related literature covering various aspects of the problem was done, using available recent books and journals, to get acquainted with the research problem and to develop the study tools
- An official permission from the dean of the 57357 hospital was obtained to conduct the current study.
- The purpose of the study was explained to the subjects and an oral consent was taken for participation in the study. The investigator assured the voluntary participation and confidentiality to each subject who agreed to participate.
- The investigator collected data in January/2022 through interviewing participants using a structured questionnaire conducted.

The purpose of the study was simply explained to the participants in groups who agree to participate in the study prior to any data collection. The researcher explained the data of questionnaire in about (35-45 min). The researcher made two visits /week to the setting of the study. The program will include 9 sessions divided in to 3 theoretical and 6 practical. The program implementation was completed within 6 months including pre and post intervention.

**Statistical analysis:**

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Chi-square (x<sup>2</sup>) test of significance was used in order to compare proportions between qualitative parameters.
- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-

value was considered significant as the following:

- Probability (P-value)
- P-value <0.05 was considered significant.
- P-value <0.001 was considered as highly significant.

## Results

### Part I: Socio-Demographic data of the study nursing (table 1)

Table (1): Number and percentage distribution of nursing according to their socio-demographic data (N=100).

Socio-demographic data	No.	%
<b>Sex</b>		
Male	40	40.0
Female	60	60.0
<b>Age (years)</b>		
<20 years	0	0
20-30 years	50	50.0
30-40 years	30	30.0
40-50 years	20	20.0
50-60 years	0	0.0
Mean±SD	32.64±6.20	
<b>Social status</b>		
Single	40	40.0
Married	40	40.0
Divorced	10	10.0
Widowed	10	10.0
<b>Qualification</b>		
Bachelor of Nursing	50	50.0
Diploma of the Technical Institute	30	30.0
Diploma of Secondary Technical nursing schools	20	20.0
Other qualifications	0	0.0
<b>Current job</b>		
Director of Nursing	0	0.0
Supervisor of Nursing	10	10.0
Head nurse	10	10.0
Nurse	80	80.0
<b>Years of experience</b>		
1-<5 years	40	40.0
5-<10 years	30	30.0
10-<15 years	30	30.0
15-<20 years	0	0.0
≥20 20 years	0	0.0
Mean±SD	7.65±1.45	
<b>Do you suffer from any health problems?</b>		
Yes	40	40.0
No	60	60.0
<b>If, yes:</b>		
Hypertension	30	75.0
Diabetes mellitus	10	25.0
<b>Do you take any medications for any disease?</b>		
Yes	40	40.0
No	60	60.0
<b>If, yes:</b>		
Anti hypertension	30	75.0
Anti diabetes mellitus	10	25.0

**Table (1)** shows that **the mean age** of the studied nursing is 32.64±6.20, regarding **gender** 60% of them are from female, In additional to **social status** 40% & 40% of them are single and married respectively, Mean while **qualification** 50% of them are from bachelor of nursing, regarding **current job** 80% of nursing are nurses, regarding **years of experience** 40% of nursing are 1-<5 years, regarding **health problems** 40% of nursing are yes, as well as **Medications for any disease** 40% of nursing are yes.

**Table (2):** Number and percentage distribution of nursing between Pre Program and Post Program according to their stress index about (level of domain by stress index tool) (N=100).

Level of Domain by Stress index		Pre Program		Post Program		Chi-square test	
		No.	%	No.	%	x2	p-value
1) The organic dimension "Physiological pressures"	Strong agree	60	60.0	18	18.0	43.219	<0.001**
	Agree uncertain	21	21.0	23	23.0		
	Dis agree	19	19.0	59	59.0		
2) The psychological dimension "Psychological stress"	Strong agree	54	54.0	16	16.0	39.763	<0.001**
	Agree uncertain	24	24.0	22	22.0		
	Dis agree	22	22.0	62	62.0		
3) Work pressures	Strong agree	52	52.0	17	17.0	33.795	<0.001**
	Agree uncertain	25	25.0	24	24.0		
	Dis agree	23	23.0	59	59.0		
4) Economic pressure	Strong agree	54	54.0	29	29.0	21.201	<0.001**
	Agree uncertain	24	24.0	18	18.0		
	Dis agree	22	22.0	53	53.0		
5) Social and familial pressures	Strong agree	59	59.0	21	21.0	35.194	<0.001**
	Agree uncertain	21	21.0	23	23.0		
	Dis agree	20	20.0	56	56.0		
Level of total Stress index tool	No Stress <35%	14	14.0	53	53.0	55.037	<0.001**
	Mild Stress 35-60%	18	18.0	27	27.0		
	Moderate Stress >60-75%	51	51.0	20	20.0		
	High Stress >75%	17	17.0	0	0.0		

*p-value >0.05 NS; \*p-value <0.05 S; \*\*p-value <0.001 HS*

This table shows that, there is highly statistically significant improvement post-program compared to pre-program according to their according to their stress index about total level of domain by stress index, with (p-value <0.001).

**Table (3):** Number and percentage distribution of nursing between Pre Program and Post Program according to their coping patterns about (level of domain by coping patterns) (N=100).

Level of Domain by Coping Patterns		Pre Program		Post Program		Chi-square test	
		No.	%	No.	%	$\chi^2$	<i>p</i> -value
Re-interpretation and positive growth	Low ability to cope <35%	70	70.0	22	22.0	55.359	<0.001**
	Moderate ability to cope 35-70%	16	16.0	16	16.0		
	High ability to cope >70%	14	14.0	62	62.0		
Mental disengagement	Low ability to cope <35%	66	66.0	25	25.0	37.859	<0.001**
	Moderate ability to cope 35-70%	14	14.0	16	16.0		
	High ability to cope >70%	20	20.0	59	59.0		
Focus on emotions and venting	Low ability to cope <35%	73	73.0	27	27.0	47.476	<0.001**
	Moderate ability to cope 35-70%	12	12.0	14	14.0		
	High ability to cope >70%	15	15.0	59	59.0		
Use effective social support	Low ability to cope <35%	72	72.0	41	41.0	21.827	<0.001**
	Moderate ability to cope 35-70%	13	13.0	17	17.0		
	High ability to cope >70%	15	15.0	42	42.0		
Effective interaction	Low ability to cope <35%	68	68.0	28	28.0	38.889	<0.001**
	Moderate ability to cope 35-70%	16	16.0	16	16.0		
	High ability to cope >70%	16	16.0	56	56.0		
Denial	Low ability to cope <35%	74	74.0	29	29.0	68.626	<0.001**
	Moderate ability to cope 35-70%	9	9.0	17	17.0		
	High ability to cope >70%	17	17.0	54	54.0		
Religious adaptation	Low ability to cope <35%	72	72.0	23	23.0	48.600	<0.001**
	Moderate ability to cope 35-70%	10	10.0	21	21.0		
	High ability to cope >70%	18	18.0	56	56.0		
Humor	Low ability to cope <35%	72	72.0	28	28.0	40.701	<0.001**
	Moderate ability to cope 35-70%	11	11.0	17	17.0		
	High ability to cope >70%	17	17.0	55	55.0		
Behavioral disconnection	Low ability to cope <35%	72	72.0	34	34.0	31.709	<0.001**
	Moderate ability to cope 35-70%	12	12.0	16	16.0		
	High ability to cope >70%	16	16.0	50	50.0		
Self-control	Low ability to cope <35%	69	69.0	35	35.0	24.588	<0.001**
	Moderate ability to cope 35-70%	11	11.0	15	15.0		
	High ability to cope >70%	20	20.0	50	50.0		
Using emotional social support	Low ability to cope <35%	72	72.0	29	29.0	38.946	<0.001**
	Moderate ability to cope 35-70%	12	12.0	19	19.0		
	High ability to cope >70%	16	16.0	52	52.0		
Use of materials	Low ability to cope <35%	69	69.0	27	27.0	43.992	<0.001**
	Moderate ability to cope 35-70%	15	15.0	13	13.0		
	High ability to cope >70%	16	16.0	60	60.0		
Acceptance	Low ability to cope <35%	72	72.0	28	28.0	46.249	<0.001**
	Moderate ability to cope 35-70%	14	14.0	14	14.0		
	High ability to cope >70%	14	14.0	58	58.0		
Suppression of competing activities	Low ability to cope <35%	71	71.0	27	27.0	41.423	<0.001**
	Moderate ability to cope 35-70%	11	11.0	15	15.0		
	High ability to cope >70%	18	18.0	58	58.0		
Planning	Low ability to cope <35%	70	70.0	27	27.0	44.573	<0.001**
	Moderate ability to cope 35-70%	14	14.0	13	13.0		
	High ability to cope >70%	16	16.0	60	60.0		
Level of total Coping Patterns	Low ability to cope <35%	71	71.0	29	29.0	38.002	<0.001**
	Moderate ability to cope 35-70%	13	13.0	16	16.0		
	High ability to cope >70%	16	16.0	55	55.0		

*p*-value >0.05 NS; \**p*-value <0.05 S; \*\**p*-value <0.001 HS

This table shows that, there is highly statistically significant improvement post-program compared to pre-program according to their according to their total level domain by coping pattern, with (*p*-value <0.001).

**Table (4):** Relation between level of stress index of the studied nursing and their socio-demographic data pre and post program (n=100).

Socio-Demographic data	Level of total Stress index tool													
	Pre Program								Post Program					
	No Stress (n=14)		Mild Stress (n=18)		Moderate Stress (n=51)		High Stress (n=17)		No Stress (n=53)		Mild Stress (n=27)		Moderate Stress (n=20)	
<b>Qualification</b>														
Bachelor of Nursing	7	50.0	9	50.0	27	52.9	7	41.2	29	54.7	16	59.3	5	25.0
Diploma of the Technical Institute	4	28.6	3	16.7	18	35.3	5	29.4	16	30.2	9	33.3	5	25.0
Diploma of Sec. Technical schools	3	21.4	6	33.3	6	11.8	5	29.4	8	15.1	2	7.4	10	50.0
<b>Chi-square test</b>	6.004								15.245					
<b>p-value</b>	0.423								0.004*					
<b>Sex</b>														
Male	6	42.9	8	44.4	21	41.2	5	29.4	21	39.6	11	40.7	8	40.0
Female	8	57.1	10	55.6	30	58.8	12	70.6	32	60.4	16	59.3	12	60.0
<b>Chi-square test</b>	1.019								0.009					
<b>p-value</b>	0.797								0.995					
<b>Age (years)</b>														
20-30 years	6	42.9	9	50.0	26	51.0	9	52.9	27	50.9	14	51.9	9	45.0
30-40 years	5	35.7	6	33.3	17	33.3	2	11.8	16	30.2	11	40.7	3	15.0
40-50 years	3	21.4	3	16.7	8	15.7	6	35.3	10	18.9	2	7.4	8	40.0
<b>Chi-square test</b>	5.051								8.842					
<b>p-value</b>	0.537								0.065					
<b>Social status</b>														
Single	7	50.0	7	38.9	21	41.2	5	29.4	26	49.1	10	37.0	4	20.0
Married	4	28.6	6	33.3	23	45.1	7	41.2	19	35.8	9	33.3	12	60.0
Divorced	2	14.3	3	16.7	3	5.9	2	11.8	3	5.7	5	18.5	2	10.0
Widowed	1	7.1	2	11.1	4	7.8	3	17.6	5	9.4	3	11.1	2	10.0
<b>Chi-square test</b>	5.187								8.682					
<b>p-value</b>	0.818								0.192					
<b>Current job</b>														
Supervisor of Nursing	2	14.3	3	16.7	3	5.9	2	11.8	4	7.5	2	7.4	4	20.0
Head nurse	3	21.4	2	11.1	4	7.8	1	5.9	3	5.7	4	14.8	3	15.0
Nurse	9	64.3	13	72.2	44	86.3	14	82.4	46	86.8	21	77.8	13	65.0
<b>Chi-square test</b>	5.182								5.509					
<b>p-value</b>	0.521								0.289					
<b>Years of experience</b>														
1-<5 years	5	35.7	9	50.0	21	41.2	5	29.4	11	20.8	13	48.1	16	80.0
5-<10 years	5	35.7	4	22.2	14	27.5	7	41.2	19	35.8	8	29.6	3	15.0
10-<15 years	4	28.6	5	27.8	16	31.4	5	29.4	23	43.4	6	22.2	1	5.0
<b>Chi-square test</b>	2.415								23.342					
<b>p-value</b>	0.878								<0.001**					
<b>Health problems</b>														
Yes	4	28.6	6	33.3	23	45.1	7	41.2	14	26.4	13	48.1	13	65.0
No	10	71.4	12	66.7	28	54.9	10	58.8	39	73.6	14	51.9	7	35.0
<b>Chi-square test</b>	1.657								10.031					
<b>p-value</b>	0.647								0.007*					
<b>Medications for any disease</b>														
Yes	5	35.7	8	44.4	21	41.2	6	35.3	16	30.2	9	33.3	15	75.0
No	9	64.3	10	55.6	30	58.8	11	64.7	37	69.8	18	66.7	5	25.0
<b>Chi-square test</b>	0.442								12.834					
<b>p-value</b>	0.932								0.002*					

Chi-square test; p-value >0.05 NS; \*p-value <0.05 S; \*\*p-value <0.001 HS

Table (26) presented that, there are highly statistically significant relation between level of stress index post-program of the studied nursing and their years of experience at (p-value <0.001). In additional to, there are statistically significant relation with qualification, health problems and medication for any disease at (P<0.05). While, there are no significant relation sex, age, social status, current job at (P>0.05).

**Table (5):** Relation between level of coping patterns of the studied nursing and their socio-demographic data pre and post program (n=100).

Socio-Demographic data	Level of total Coping Patterns											
	Pre Program						Post Program					
	Low ability to cope (n=71)		Moderate ability to cope (n=13)		High ability to cope (n=16)		Low ability to cope (n=29)		Moderate ability to cope (n=16)		High ability to cope (n=55)	
<b>Qualification</b>												
Bachelor of Nursing	34	47.9	7	53.8	9	56.3	11	37.9	4	25.0	35	63.6
Diploma of the Technical Institute	24	33.8	3	23.1	3	18.8	11	37.9	6	37.5	13	23.6
Diploma of Sec. Technical schools	13	18.3	3	23.1	4	25.0	7	24.1	6	37.5	7	12.7
<b>Chi-square test</b>	1.815						10.694					
<b>p-value</b>	0.779						0.030*					
<b>Sex</b>												
Male	26	36.6	9	69.2	5	31.3	14	48.3	9	56.3	17	30.9
Female	45	63.4	4	30.8	11	68.8	15	51.7	7	43.8	38	69.1
<b>Chi-square test</b>	5.477						4.482					
<b>p-value</b>	0.065						0.106					
<b>Age (years)</b>												
20-30 years	36	50.7	8	61.5	6	37.5	19	65.5	7	43.8	24	43.6
30-40 years	22	31.0	3	23.1	5	31.3	8	27.6	5	31.3	17	30.9
40-50 years	13	18.3	2	15.4	5	31.3	2	6.9	4	25.0	14	25.5
<b>Chi-square test</b>	2.345						5.555					
<b>p-value</b>	0.673						0.235					
<b>Social status</b>												
Single	34	47.9	3	23.1	3	18.8	10	34.5	6	37.5	24	43.6
Married	27	38.0	6	46.2	7	43.8	12	41.4	3	18.8	25	45.5
Divorced	4	5.6	2	15.4	4	25.0	3	10.3	4	25.0	3	5.5
Widowed	6	8.5	2	15.4	2	12.5	4	13.8	3	18.8	3	5.5
<b>Chi-square test</b>	10.067						10.175					
<b>p-value</b>	0.122						0.118					
<b>Current job</b>												
Supervisor of Nursing	5	7.0	1	7.7	1	6.3	3	10.3	3	18.8	4	7.3
Head nurse	4	5.6	4	30.8	2	12.5	4	13.8	2	12.5	4	7.3
Nurse	62	87.3	8	61.5	10	62.5	22	75.9	11	68.8	47	85.5
<b>Chi-square test</b>	8.062						3.084					
<b>p-value</b>	0.089						0.544					
<b>Years of experience</b>												
1-<5 years	31	43.7	4	30.8	5	31.3	16	55.2	9	56.3	15	27.3
5-<10 years	19	26.8	5	38.5	6	37.5	9	31.0	5	31.3	16	29.1
10-<15 years	21	29.6	4	30.8	5	31.3	4	13.8	2	12.5	24	43.6
<b>Chi-square test</b>	1.695						12.568					
<b>p-value</b>	0.792						0.014*					
<b>Health problems</b>												
Yes	29	40.8	6	46.2	5	31.3	24	82.8	5	31.3	11	20.0
No	42	59.2	7	53.8	11	68.8	5	17.2	11	68.8	44	80.0
<b>Chi-square test</b>	0.737						31.769					
<b>p-value</b>	0.692						<0.001**					
<b>Medications for any disease</b>												
Yes	26	36.6	8	61.5	6	37.5	22	75.9	6	37.5	12	21.8
No	45	63.4	5	38.5	10	62.5	7	24.1	10	62.5	43	78.2
<b>Chi-square test</b>	4.095						23.158					
<b>p-value</b>	0.393						<0.001**					

Chi-square test; p-value >0.05 NS; \*p-value <0.05 S; \*\*p-value <0.001 HS

Table (27) presented that, there is highly statistically significant relation between level of coping patterns post-program of the studied nursing and their medications for any disease at (p-value <0.001). Also, there is statistically significant relation with qualification, years of experience at (P<0.05). While, there are no significant relation sex, age, social status, current job at (P>0.05).

**Table (6):** Relation between level of total stress index pre-program of the studied nursing and their level of total coping patterns pre-program (n=100).

Level of total Coping Patterns	Level of total Stress index tool								Chi-square test	
	No Stress (n=14)		Mild Stress (n=18)		Moderate Stress (n=51)		High Stress (n=17)		x2	p-value
	No.	%	No.	%	No.	%	No.	%		
Low ability to cope (n=71)	8	57.1	12	66.7	41	80.4	10	58.8	6.016	0.421
Moderate ability to cope (n=13)	3	21.4	2	11.1	4	7.8	4	23.5		
High ability to cope (n=16)	3	21.4	4	22.2	6	11.8	3	17.6		

Chi-square test; p-value >0.05 NS

Table (28) presented that, there are no statistically significant association between level of total stress index pre-program of the studied nursing and their level of total coping patterns pre-program.

**Table (7):** Relation between level of total stress index post-program of the studied nursing and their level of total coping patterns post-program (n=100).

Level of total Coping Patterns	Level of total Stress index tool						Chi-square test	
	No Stress (n=53)		Mild Stress (n=27)		Moderate Stress (n=20)		x2	p-value
	No.	%	No.	%	No.	%		
Low ability to cope (n=29)	0	0.0	16	59.3	13	65.0	46.459	<0.001**
Moderate ability to cope (n=16)	12	22.6	3	11.1	1	5.0		
High ability to cope (n=55)	41	77.4	8	29.6	6	30.0		

Chi-square test; \*\*p-value <0.001 HS

Table (29) presented that, there are highly statistically significant association between level of stress index and level of coping patterns of the studied nursing. In No stress, high ability to cope increased representing 41/53 (77.4%) compared to moderate stress, low ability to cope 13/20 (65%), with (p-value <0.001).

**Table (8):** Correlation between total score of stress index and total score coping patterns (n=100).

				Total Stress index tool	
				Pre Program	Post Program
Total Coping Patterns	Pre Program	r-value	-0.186		
		P-value	0.621		
	Post Program	r-value		-0.719	
		P-value		<0.001**	

r-Pearson Correlation Coefficient; \*\*p-value <0.001 HS

Table (8) shows that there are **negative correlation and highly significant** between the total score of stress index and total score coping patterns.

## Discussion

The current study aimed to assess the effect of psycho educational program for nurses caring leukemic children on children cancer hospital 57357. The results of the current study comparing with recent literatures and other related studies to explain to what extent these results were supported or contradicted by other studies, the discussion is classified in to the following parts:-

### Part 1: stress of the studied nurses:-

As regards to physical stress of the studied nurses, the present study showed that the majority at the studied nurses usually have that oozes sweat from the hand of the large work load, high blood pressure, high blood sugar, increase of heart rate during the work and pain in the neck respectively, So the researcher suggests that increase number of nursing staff, decrease ratio of patient for each nurse, it will evenly spread the workload and decrease stress levels these findings were in accordance with study done by **Williams (2020) and Jackson (2018)** an Australian study of pediatric oncology healthcare providers who found the majority of the studied nurses suffered from high blood pressure, high blood sugar and heart palpitation during the work.

As regards to psychological stress of the studied nurses the present study showed that the majority at the studied nurses usually irritable quickly for simpler reasons because of work pressure, suffer from oblivion most of the

time, feel tightness in the chest for no apparent reason crying children is unbearable and doing with care nursing feel tightness in the chest for no apparent reason, have sense of sadness without justification, This result may be explained that related clinical environment (children cancer unit) considered stressful factor among nurses, this come from children crying, crowding and invasion of personal space, noise, dirty or untidy conditions and badly organized environment. This finding was agreement with **The American Institute of Stress (2017)** findings which showed that work environment (children cancer unit) can be a source of unpleasant or distracting stimuli. Also this finding were agreement with **Bhattacharya (2019)** who found the majority of nurses in a pediatric hospital setting suffered from psychological stress as irritable, oblivion, feel tightness in the chest during working time.

According to work stress related to studied nurses, the present study showed that the majority of the studied nurses are never that visitors entering bother me to ask for their cases in the time of the visit, professional relationship characterized by tension with some colleagues, having trouble transport to get to work or get into a home after work respectively. These finding are on agreement with **Samar M. Kamal (2018)** in Taif governmental hospital in kingdom of Saudi Arabia who found that the majority of nurses had tension with their colleagues, during the work had trouble transport to get to work or get into a home after work. So the researcher suggests better relationships with other professions (e.g. physician/nurse) may also relieve stress. This could be achieved through closer integration during parts of training to enhance understanding of each other's roles and clearly define nurses role and responsibilities to avoid conflict related to expectation of nurses

Regarding to financial Stress of the Studied Nurse, the present study showed that the majority of sample is usually bothers me not to apply the law of reward and punishment in the section gingerly by directly responsible. bothers me not to increase the monthly salary for the amount of effort of an annual basis and lack of cash bonus with the size and effort expended work respectively these findings were in an agreement with the findings of **Janet Evans Emery (2020)** who studied sources of stress among pediatric oncology nurses and mentioned that most of the studied nurses have stress refuted to lack salary income for the amount of effort. So the researcher suggests that Increase the monthly salary and provide cash bonus on a regular basis commensurate with the size and quality of work

On the other hand family stress in the studied nurse the present study showed that the majority of sample usually long working times will not help nurses to carry out visits to family and friends not available in the hospital place to care for children while working these findings were disagree with **Czaja (2021)** in European Journal of Pediatric Nursing Stated that the majority of studied sample had time man agent for caring with their family. He also found that the hospital provided a place for caring of nurses children while working. So the researcher suggests that the organization must provide transportation to get to work or get into a home after work shift and provide in the hospital a place to care for nurse's children while working {nursery school}.

Regarding to their total score of stress for the studied nurse, the present study showed that the majority of the studied nurses have severe stress more than these on minor or moderate stress preprogram in adverse to post program. These findings are agreement with the findings of **Anne E Kazak (2017)** in children hospital of Philadelphia and **Mary Rocker In University of Pennsylvania (2018)** who stated that the majority of nurses working with children cancer had severe stress had higher levels of direct exposure to potentially stressful illness preprogram in adverse to post program. So the researcher suggests that the organization must develop strategies to reduce nursing stress through physical health, mental health, emotional health, intuitional health, and agency support.

#### **Part 11:- Effects of using coping strategies for managing stress:-**

In relation to using coping strategies of denial, effective interaction, social support, focus on emotions eventing and mental disengagement, showed that majority of them were used post program more than preprogram these findings were agreement with the findings of **Kathryn (2019)** who developed aprogram to apply these coping strategies for nurses caring leukemic children cancer patients on philadilphia and found application of these strategies is very useful for managing of stress to nurses. So the researcher suggests that using of this strategies are helpful for decrease stress level among nurses.

Regarding to results of using the coping strategies of religious adaptation, humor, behavioral disconnection, self control and using emotional support in this study for managing stress of nurses caring leukemic children are very useful for relieve and decrease of their stress, respectively these findings of this study are in agreement with results of **Myrelet al., (2020)** who Studied effect of using of these strategies for oncology nurses in France and described that the most of the studied sample usually succeed in managing their stress positively. So the researcher suggests that using of these coping strategies are helpful for managing stress for nurses, While These Findings are Disagreed With **Teresa et al., (2018)** who measures effect of using these coping strategies for Pediatric Oncology Nurse in Musory Hospital in USA stated that the

most of studied nurses who work with cancer Department had low responses with using of self-control and behavioral disconnection than other coping strategies.

Regarding to using of planning, acceptance, using of relaxation materials and suppression of competing activities as coping strategies by leukemic children cancer nurses, they could use these strategies well for decrease their stress levels. These findings are in an accordance with the findings of **Purcell Kutash (2021)** Who Studied The Relationship between nurses' stress and these coping strategies for nurses caring leukemic children cancer patients in California hospital for children cancer diagnosis and treatment. So the researcher suggests that using of this strategy are helpful for decrease stress level among nurses.

### **Part III:- The relationship between socio demographic data with stress and coping strategies:-**

the present study showed that, about two thirds of them their age less than 30 years old, this may be explained by the fact that a lot of nurses working with children cancer unit their age less than 30 years. These finding were agreement with the findings of **Vivian Alien (2018)** who were talk about stressors among nurses who are working in oncology unit finding which showed that nurses which their age less than 30 year have stress while performing their nursing roles in the hospital environment. While these finding were disagreement with findings of **Luiz Jaroge (2017)** who were talk about stressors for nurses in children cancer unit, Findings which showed that nurse while performing their nursing roles represent that the majority (90.5%) healthcare providers in the hospital environment as regard their age ranged between (30-50) years.

Regarding to the characteristics of studied nurse, the present study showed that the highest percentage of the study subjects was females, This result may be explained by the fact that nursing is a universal feminine profession as well as the enrollment of the male students in this profession was started in the late dedicates. This finding were agreement with **Nicola Payne (2019)** who were talk about occupational stressors in hospice nurses at psychological department university of Hertfordshire finding which showed that female nurses had a higher mean stress score than stress score participant male nurse.

In relation to the characteristics of studied nurses, the present study showed that the highest percentage of the study subjects had baccalaureate degree nurse, this may be higher grade have more responsibility and more pressure from work this finding were agreement with **MjHocken Berry and Dwilson (2020)** who discussed stressor for nurses and the nurse's reaction for hospitalization nursing intervention available to prevent dominate these stressor, which showed that studied nurse was female had baccalaureate degree

On the other hand marital status, in this finding showed that the majority of the nurses included in the study were married. This result may be explained by the fact that high stress levels result from multiple and complex roles that these women have to perform: wife, mother, employee and housekeeper in their home. This finding was agreement with **Anne Klassen (2018)** on Canadian institutes of health research who conducted a study which the total sample consisted of 90 percent of nurses as the majority of them are married.

While these finding are disagreement with finding of **Sonia Gulati (2019)** at the University of Ottawa who found that the majority of nurses who work in children cancer are divorced while only 12% are married.

According to the number and percentage distribution of the studied nurses according to their position and experience years the present study showed that the majority of the studied nurses are staff nurse having experience ranged between 5 < 10 Years. This result may be explained by the fact that work load perceived as a level of stress among nurses. Work load can represented in deficiency in the number of nursing staff in the shift, dealing with patients who suffer from psychological pressures and the burden of non-nursing duties such as office work and secretarial work. these finding were agreement with the findings of **David Dix (2017)** in the department of pediatrics at the university of British Columbia who found the majority of nurses had stressors related to work with children cancer were staff nurses and they have experience for more than 5 years in these field.

Furthermore, socio-demographic data determinants of the participants in our study (age, marital status and education level) proved to significantly influence stress perception at work. Nurses who are married have higher stress level than other nurses. It has been suggested that such higher stress levels result from multiple and complex roles that these women have to perform: wife, mother, employee and housekeeper in their home.

## **Conclusions**

There is highly statistically significant improvement according to the nurses levels of stress post-program (no stress 53%-mild 27%-moderate 20%-high 0%) compared to pre-program (no stress 14%-mild 18%-moderate 51%-high 17%).

There is an improvement in the high level of stress toward all types of stress post program compared with preprogram physiological and organic pressures (pre 60%-post 18%), psychological pressures (pre 54%-post 16%), work pressures (pre 52%-post 17%), economic pressures (pre 54%-post 29%) and social and familial pressures (pre 59%-post 21%).

There is an increasing in the level of coping post program (low 29%-moderate 16%-high 55%) compared with the level preprogram (low 71%-moderate 13%-high 16%).

There is an increase in the coping level toward all types of coping strategies post program compared with preprogram as re interpretation and positive growth (pre 14%-post 62%), mental disengagement (pre 20%-post 59%), focus on emotions and venting (pre 15%-post 59%), use effective social support (pre 15%-post 42%) and effective interaction (pre 16%-post 56%).

There is an increase in the coping level toward all types of coping strategies post program compared with preprogram as denial (pre 17%-post 54%), religious adaptation (pre 18%-post 56%), humor (pre 17%-post 55%), behavioral disconnection (pre 16%-post 50%), self control (pre 20%-post 50%), using emotional social support (pre 16%-post 52%), use of materials (pre 15%-post 60%), acceptance (pre 14%-post 58%), suppression of competing activities (pre 18%-post 58%) and planning (pre 16%-post 60%).

There are negative correlation and highly significance between the total score of stress index and total score coping patterns pre and post program.

There is highly statistically significant relation between level of coping patterns post-program of the studied nursing and their medications for any disease at ( $p$ -value  $<0.001$ ). Also, there were statistically significant relation with qualification, years of experience at ( $P < 0.05$ ). While, there were no significant relation sex, age, social status and current job.

## **Recommendations**

The current study recommended that:

### **In order to minimize oncology nurses' stress:**

- Establishment of regular meetings for nurses
- Encouraging them to express their problems and present gaps in the section and trying to fix the problems
- Holding workshops on stress management
- Setting up counseling centers by experienced psychologists
- Providing amenities toward nurses working with children cancer patients.
- Continuous education, social support and creating self-confidence among nurses
- Compatibility of oncology nurses with workplace stress through self-esteem and efforts to increase knowledge and experience and rely on their own abilities
- Holding training courses by educational supervisors and head nurses to increase knowledge to level of the nurses coping.

### **To maximize the management of stress among oncology nurses:**

- Training stress management skills using the role of positive attitude towards the profession.
- Fostering spirituality of the nurses.
- Existing of psychological support systems.

### **To increase the coping strategies through:**

- Breathing exercise technique
- Time management and organized:
- Maintain a healthy Nutrition.
- Good physical Exercise:

- Establish a solid sleep schedule
- Use humor when appropriate to lighten the mood.
- Think positive and set high expectations
- Talking about a problem can help put it in perspective and reduce feelings of stress.
- Take a break for a few minutes during the work it is a good strategy for dealing with a stressful environment.

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