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The Effect of Psychoeducational Program on Coping Patterns of Mothers Having Children Newly Diagnosed with Cancer

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Abstract

Cancer is a chronic disease that necessitates ongoing attention through treatment, hospitalization, and the management of side effects of therapies. It has an effect on the mothers physically and psychosocially, and makes them more vulnerable to associated emotional and physical disorders. **Aim of the study:** evaluate the effect of psychoeducational program on coping patterns of mothers having children newly diagnosed with cancer. **Design**: A quasi-experimental research design was used. **Setting:** National Cancer Institute, faculty of medicine, Cairo university, Egypt, including inpatient and outpatient units. **Subjects:** 52 mothers having children newly diagnosed with cancer. **Tools:** data was collected by: **Tool (1)** socio-demographic questionnaire of the mothers and their children, **Tool (2)** mothers' knowledge scale regarding childhood cancer, **Tool (3)** coping scale of mothers having children newly diagnosed with cancer. **Results**: There is a highly statistically significant correlation regarding total coping patterns and total knowledge score pre and post implementation of the program. **Conclusion:** The psychoeducational program has positive effect on enhancing coping patterns of mothers having children newly diagnosed with cancer. **Recommendation:** Conducting a continuous practical training and health programs for all mothers having children with cancer focusing on the modification of the coping techniques.

Key words; Cancer, Children, Mothers, Psychoeducation, Coping, Patterns.

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Introduction:

Cancers that affect people 0 to 19 years old is known as childhood cancer and it represent a diverse range of illnesses with particular biologic, genetic, and demographic characteristics. Scientists were unable to provide a logical response to what happens to cause a cell to become cancerous thirty years ago. They understood that the development of cancer resulted from cells that started to multiply uncontrollably within the body and that chemicals, radiation, and viruses may cause this shift. But the specifics of how it occurred were a mystery **Martins, Fernandes, Santos, et al., (2020).**

Over the past several decades, the combined use of these therapies has allowed for significant advancements in the long-term survival rates for childhood solid tumors and hematologic malignancies. At the same time myelosuppression, mucositis, nausea, vomiting, diarrhea, alopecia, tiredness, sterility, infertility, and infusion reactions are common toxicities linked to these therapies **Erdmann, Frederiksen, Bonaventure, (2021).**

Having a child newly diagnosed with cancer is a stressful emotional experience and severely poses a significant challenge to the coping skills of the family. As the majority of care for children is provided by the mothers, mothers' psychological well-being has been found to be impacted by their child's diagnosis, treatment, side effects, and overall health. Evidences indicate that mothers who have a child with cancer are more likely to have depression, anxiety, and post-traumatic stress symptoms as well as having a poorer quality of life **Mojen, Rassouli, Ashrafizadeh, et al., (2022).**

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Psychoeducation programs are not completely alleviating the condition to the point where it no longer exists, but rather to provide the person suffering from the psychological condition with a better road map towards functioning optimally without being too limited by their condition. So, the individual who suffers from a psychological condition can be given more positive coping skills, resources, cognitive patterns, and a sense of self-efficacy to get the most out of their lives **Brown, (2018).**

Psychiatric mental health nursing has been identified as an important influencing element in mothers' ability to cope positively with their child's illness. Psychiatric mental health nurse can play an important role in assisting both mothers and children. They play a part to facilitate the transition from illness to optimum health by assisting the mother in acquiring coping behaviors, facilitating adaptation to new functions of caring for the ill child, and addressing any negative emotions, common social and psychological conflicts that arise as a sequence of their critical situations **Liu, Sundquist, Sundquist, et al., (2023).**

Significance of the Study

Cancer is a leading cause of death for children and adolescents. In USA, an estimated 13,060 child aged 0-19 years old is newly diagnosed with childhood cancer per year **National Academies Press, (2020).** In Europe there were almost 16,000 children diagnosed with cancer in 2020. **European Cancer Information System, (2020).** Mothers with a child with cancer may go through various painful experiences related to being informed about the diagnosis, watching the child suffer, dealing with the reactions of others, the quality of care. Coping skills help mothers tolerate, minimize, and deal with

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the huge deal of stress resulting from the increasing demands of their children illness conditions for better psychological wellbeing for them and to be able to provide ultimate care for their children. So, this study was conducted to provide a psychological program for the mothers having children newly diagnosed with cancer to help them overcome with stress and negative thoughts and feelings regards their children's conditions.

Aim of the Study

Evaluate the effect of psychoeducational program on coping patterns of mothers having children newly diagnosed with cancer.

- It was achieved through the following objectives:

1- Assessing mothers' knowledge about the cancer.

2- Assessing coping patterns of mothers having children newly diagnosed with cancer.

3- Planning psychoeducational program on coping patterns of mothers having children newly diagnosed with cancer.

4-Implementing psychoeducational program on coping patterns of mothers having children newly diagnosed with cancer.

5- Evaluating psychoeducational program on coping patterns of mothers having children newly diagnosed with cancer.

Hypothesis:

The psychoeducational program will have a positive effect on the coping patterns of mothers having children newly diagnosed with cancer.

The subjects and methods of this study were portrayed under the four main designs as follows:

I. Technical design.
II. Operational design.

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III. Administrative design.

IV. Statistical design.

I. Technical design:

1. Research design:

A quasi-experimental research design has been utilized to conduct the current study.

2. Setting of the study:

This study was conducted at National Cancer Institute affiliating to Cairo university, Egypt, including inpatient and outpatient units. Which serves the area of Greater Cairo with capacity of 550 beds and considering the largest cancer hospital in the Middle East. Patients from other parts of the country may come for medical service; therefore, this hospital serves both rural and urban areas.

3. Subjects:

Selection of sample:

A "purposive sample" of 52 selected from mothers caring children newly diagnosed with cancer who attended to the National Cancer Institute including inpatient and outpatient units.

Sample size: During 2022 about 11000 cases (Adults and children) were diagnosed with cancer admitted to National Cancer Institute. So, the sample size was calculated by adjusting the power of the test to 80% and the confidence interval to 95% with margin of error accepted adjusted to 5% using the following equation:

Type I error (α) = 0.05%

Type II error (B) = 0.20%

With power of test 0.80%

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Nxp(1-p) = (11000*(0.5*(1-0.5))/
N-1 = (11000-1) *
d2/z2 =0.0025 / 3.8416+
p(1-p) =0.5*(1-0.5)
n =372

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 0.05

p= Ratio provides a neutral property = 0.50

The sample size was 372. Only 52 patients of them have met the inclusion criteria.

Inclusion criteria for children newly diagnosed with cancer:

1. Children between the ages of 0 and 19 years.
2. Children newly diagnosed with cancer within the past 4–16 weeks.

3. Free from others neurological disorder or chronic physical disease or handicapped (through checking the child chart).

4. Attended previously mentioned setting regularly.

4. Tools for data collection:

Tools that used for data collection includes the following:

I. Sociodemographic sheet:

It was designed by researcher after reviewing national and international related literature which consisted of three parts, as the following:

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Part 1: Socio-demographic characteristics of the studied mothers of children newly diagnosed with cancer. It includes descriptive data regarding the mother's age, number of children, level of education, occupation, and place of residence and family income.

Part 2: Characteristics of the studied children newly diagnosed with cancer. It includes the child's age, sex, order with in the family.

Part 3: concerned with mothers' knowledge about cancer such as definition, causes, risk factors, signs and symptoms, treatment, complications, caring for the child, and prevention, etc.

Scoring system:

Mother's Knowledge about cancer

- For mothers' knowledge, each correct/ complete response took two scores; the incomplete one took one score, and zero score was given for the wrong answer or the not known.
- The total score is 30 which is (100%) meaning completely satisfied knowledge.
- Then categorized as following: score 15 degrees which is (≥ 50%) was considered satisfactory level; meanwhile, mothers' overall score (less than 50%) was regarded as an unsatisfactory level of knowledge.

<50%	**Unsatisfactory knowledge**
≥50%	Satisfactory knowledge

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II. Jalowiec Coping Scale (Jalowiec, 1984):

It was designed by (Jalowiec, 1984), and adopted by the researcher to measure coping patterns of the parents of children with cancer.

Consists of 40 items classified into 15 problem-oriented copings and 25 affective-oriented copings. The scale uses the Likert scale with the response option of always (4), often (3), about half of time (2), occasionally (1), and never (0).

Scoring system:

Coping scale

- The items were scored on a 5-point Likert scale ranging from Never (1) to Always (5), The maximum total score is 200.
- Affective (Emotion)-oriented coping behaviors: Higher scores indicate better coping include statements (1,3,14,15,22,24), while negative statements including (2,4,5,6,7,8,9,10,11,12,13,16,17,18,19,20,21,23,25).
- Problem-oriented coping behaviors: positive statements including (26,27,28,29,30,31,32,33,34,35,36,37,38), while negative statements including (39,40).
- Each positive statement given 1-5 points as the following:

Always (5)	Often (4)	About half the time (3)	Occasionally (2)	Never (1)

- Each negative statement given 1-5 points as the following:

Always (1)	Often (2)	About half the time (3)	Occasionally (4)	Never (5)

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II. Operational Design:

First: preparatory and designing phase: -

This phase started with a review of current and past, national and international related literature and theoretical knowledge of various aspects of the study by using books, articles, internet periodicals and magazines to develop tools for data collection and the psychoeducational program of the mothers having children newly diagnosed with cancer.

Pilot Study: -

The pilot study was conducted on 10% (5) subjects of the total subjects before conducting the actual study to determine the size and the method of selection of the sample, to test the feasibility, clarity and applicability of the study tools also to test relevancy and clarity of the content, to calculate the time needed for conducting the study and to estimate the needed time to be filled in the tools. in order to ensure the clarity of questions, applicability of the tools, the time needed to complete them and perform the required modifications according to the available resources. Subjects who shared in the pilot study were excluded from the main study sample.

The field work conducted through three phases:

Phase I:

In this phase the researcher met 52 mothers having children newly diagnosed with cancer, who met the inclusion criteria. Subjects involved on the study were interviewed, assessed and informed that the time for collect the data was through two times; one time before the program to obtain baseline data, another time after implementing the program to evaluate the effectiveness. Acquaintance sessions, the researcher introduced himself to all mothers having children newly diagnosed with cancer who agreed to be included in this study. In order to gain their trust, cooperation and confidence. Voluntary participation and confidentiality were assured by the researcher for each mother through clarifying that all information will be used for scientific research only.

Phase II:

There was a working phase, the researcher visited the selected setting two times per week on Mondays (9:00 am to 10:00 am) and Wednesdays from (11 am to 12:30 pm), from middle of January 2022 to middle of June 2022. Time

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allocated to implement the program was (20 hours) divided into (15) sessions covered in (4) theoretical sessions, (1) introductory and acquaintance session, (1) pre data collection session, (8) practical sessions and (1) post data collection session. The researcher explained the purpose of the study before implementing the program and distributing the tool to the mothers to be filled in, while the researcher was present to assure that all questions were completed.

Phase III:

There was a terminating phase for the researcher through which, the same used tools in pre and post program were used to evaluate effectiveness of program.

Ethical Considerations

- Ethical approval obtained from the Scientific Ethical Committee and the research and post graduate affairs of the National Cancer Institute. The researcher assured for every selected mother involved in the study sample, that participation is voluntary and that they have the right to withdraw from the study at any time without giving any reason. The researcher assured confidentiality of data for every mother involved in the study sample. The researcher clarified that all information would be used for scientific research.

First: preparatory and designing phase: -

A psychoeducational program was designed in Arabic language after reviewing the related review of the past, current Arabic and English related literature covering various aspects of the problem was done, using available books, articles, periodicals, journals to get acquainted with the research problem and develop the content.

Second: implementation phase: -

This phase began by implementing the psychoeducational program for the mothers having children newly diagnosed with cancer who met the inclusion criteria 2 days/ week, Monday (9 AM to 10:00 AM) and Wednesday (11 AM to 12:30 AM).

Third: Evaluation phase:

Upon the completion of the psychoeducational Program for the mothers, the post-test was done for the mothers to estimate the effect of the

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psychoeducational program on the coping patterns of the mothers having children newly diagnosed with cancer using the same pre-program tools.

III- Administrative Design:

An official letter of approval was taken from the Dean of Nursing faculty, Helwan University to the vice dean of the National Cancer Institute for research and post graduate affairs in which the study was conducted. Then, an approval from the vice dean of the National Cancer Institute for research and post graduate affairs was issued to the training department in the hospital.

IV- Statistical Design:

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, **chi-square test** was used to compare between groups in qualitative and **linear correlation coefficient** was used for detection of correlation between two quantitative variables in one group. Statistical significance was considered at p-value <0.05; while highly significant was considered at p-value p > 0.00

Results

Figure (1,2) Illustrates that mean age of the studied subjects is 27.24±4.6 years. 61.5% of them are living in rural areas. Regarding the occupation, 53.8% of them are working. In relation to their education level, 34.6% of the studied subjects are graduated from a university and 84.6% of the studied subjects see that the family income is not sufficient for the needs of the family with the presence of < 4 persons in (63.5%) of the studied subjects.

Table (1): Illustrates that 38.5 % of children under this study are in age from 10 years and more with the mean age of 6.58±2.91years. 57.7% of them are female. Regarding order of birth, 73.1% of them are the middle child.

Figure (3) shows that total percentage of satisfaction of mothers' knowledge was 32.7% preprogram implementation, increased to become 86.5% post program implementation. There is a highly statistically significant difference between pre and post the psychoeducational program regarding total knowledge of mothers about childhood cancer at p value < 0.001**.

Figure (4) shows percentage of high emotion-oriented coping preprogram implementation is 15.4% increases to 76.9% post implementation of the program. There is a highly statistically significant difference between pre and

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post psychoeducational program regarding total emotion-oriented coping patterns among studied sample at p-value < 0.001**.

Figure (5) shows total percentage of high problem-oriented coping was 11.5% preprogram implementation, increased to 80% post program implementation. There is a highly statistically significant difference between pre and post psychoeducational program regarding total problem-oriented coping patterns among studied sample at p-value < 0.001**.

Figure (6) shows that high coping patterns is 13.5% preprogram implementation, changed to 67.8% post program implementation. There is a highly statistically significant difference between pre and post psychoeducational program regarding total coping patterns among studied sample at p-value < 0.001**.

Table (2) reveals that there is statistically significant difference between total knowledge score pre and post the psychoeducational program with age of mothers (at p value 0.009*), Education level (at p value <0.001**), number of family members (at p value 0.039*) and the arrangement of the child within the family (at p value <0.001**).

Table (3) reveals that there is statistically significant difference between total coping patterns pre and post the psychoeducational program with age of mothers (at p value 0.035*), education level (at p value <0.001**), number of family members (at p value 0.01*) and the order of birth within the family (at p value 0.005*).

Table (4) shows that there is a highly statistically significant correlation regarding total coping patterns and total knowledge score pre and post implementation of the program.

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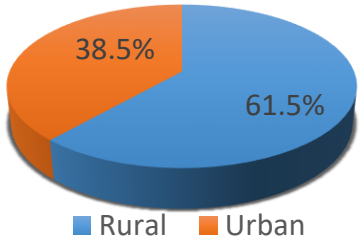

Figure (1): Total percentage of mother's residence

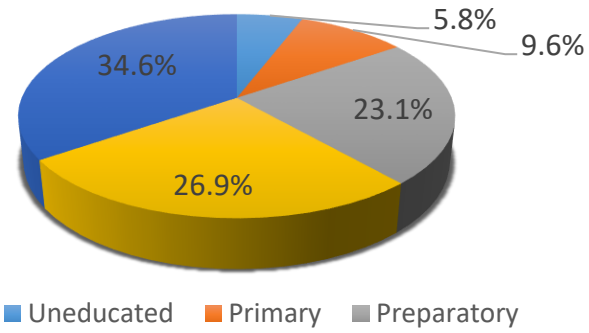

Figure (2): Total percentage of mother's level of education

Table (1): Frequency distribution of the children newly diagnosed with cancer regarding sociodemographic data (n = 52).

Child's data	N	%
Age		
1- <5 years	14	26.9
5- <10 years	18	34.6
10 or more	20	38.5
Mean±SD	6.58±2.91	
Gender		
male	22	42.3
female	30	57.7
Order of birth		
first	12	23.1
middle	38	73.1

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last	2	3.8

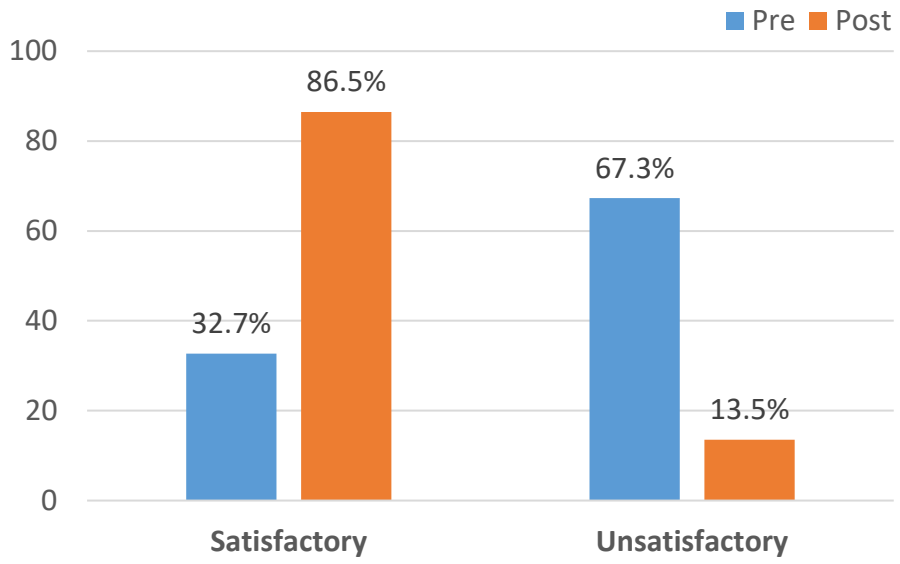

Figure (3): Mother's total knowledge about cancer pre and post the psychoeducational program

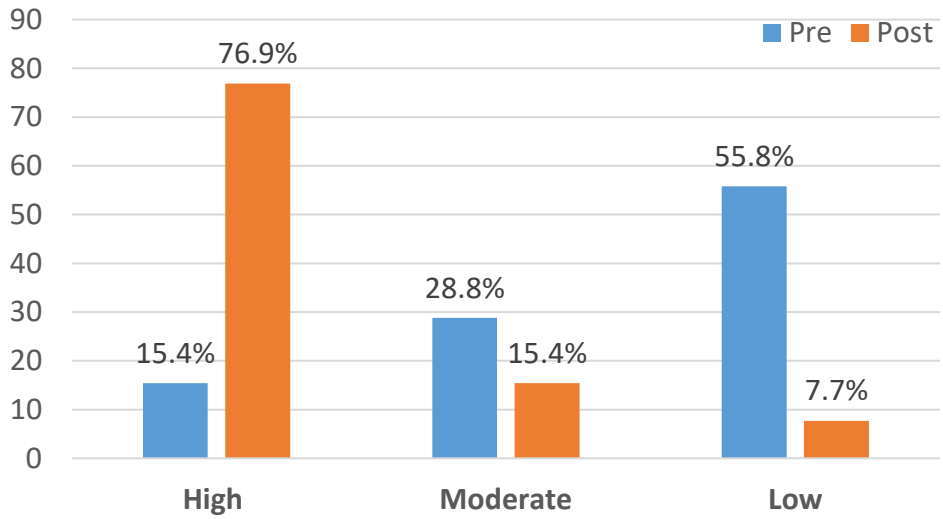

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Figure (4): Total percentage of emotion-oriented coping patterns pre and post psychoeducational program of the studied sample

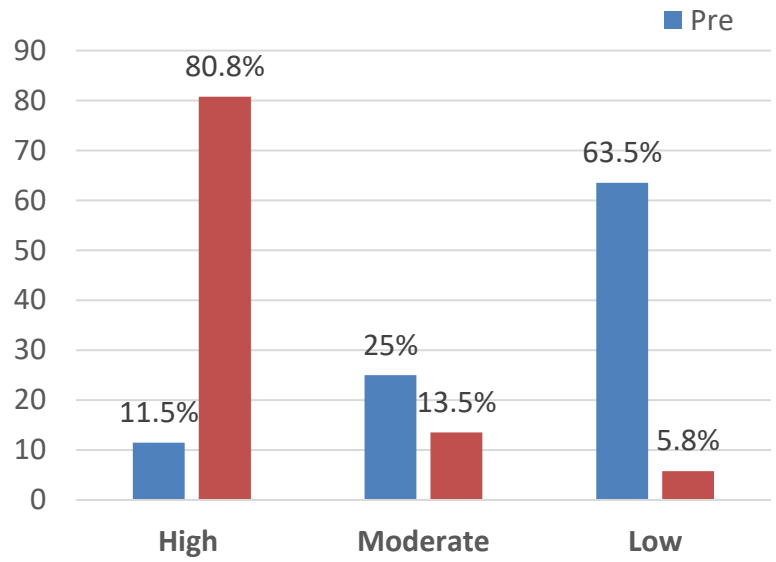

Figure (5): Total percentage of problem-oriented coping patterns pre and post psychoeducational program of the studied sample

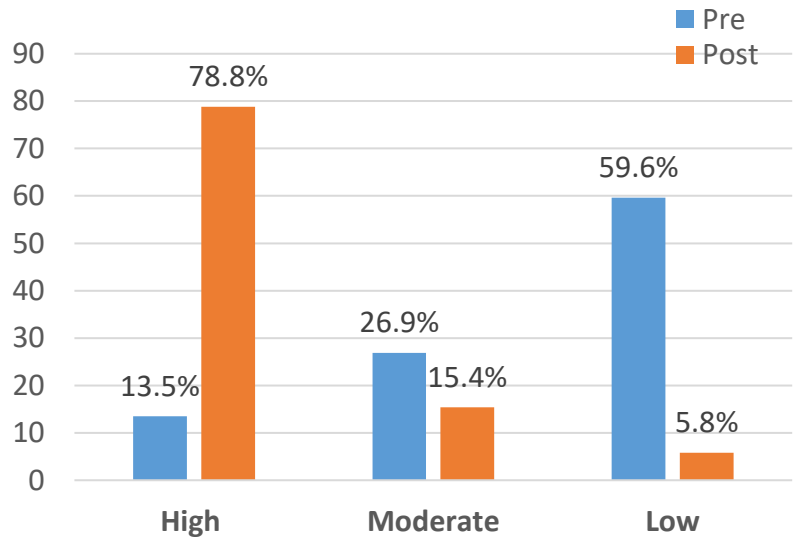

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Figure (6): Percentage of coping patterns pre and post psychoeducational program of the studied sample

Table (2): Correlation between socio demographic data and total knowledge score pre and post psychoeducational program of the studied sample (n = 52).

Socio-demographic data	Total knowledge									
	Pre				Post					
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		Chi-square	
	N	%	N	%	N	%	N	%	X^2	P-value
Age (years)										
20- <25	0	0.0	18	100.0	12	66.7	6	33.3	9.488	0.009*
25- <30	7	33.3	14	66.7	20	95.2	1	4.8		
30 or more	10	76.9	3	23.1	13	100.0	0	0.0		
Residence										
Rural	8	25	24	75	27	84.4	5	15.6	0.334	0.563
Urban	9	45	11	55	18	90.0	2	10.0		
Occupation										
Working	11	39.3	17	60.7	26	92.9	2	7.1	2.079	0.149
Not working	6	25.0	18	75.0	19	79.2	5	20.8		
Education level										
Uneducated	0	0.0	3	100.0	0	0.0	3	100.0	25.859	<0.001**
Primary school	0	0.0	5	100.0	3	60.0	2	40.0		
Preparatory school	2	16.7	10	83.3	11	91.7	1	8.3		
Secondary school	3	21.4	11	78.6	13	92.9	1	7.1		
University	12	66.7	6	33.3	18	100.0	0	0.0		
Family income										
Sufficient	5	62.5	3	37.5	7	87.5	1	12.5	0.008	0.931
Not sufficient	12	27.3	32	72.7	38	86.4	6	13.6		
Number of family members										
< 4	15	45.5	18	54.5	31	93.9	2	6.1	4.247	0.039*
4 or more	2	10.5	17	89.5	14	73.7	5	26.3		
Order of birth										

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First	0	0.0	12	100	6	50	6	50	17.889	<0.001**
Middle	15	39.5	23	60.5	37	97.4	1	2.6		
Last	2	100	0	0.0	2	100	0	0.0		

(**) High Significant HS at p<0.001 (*) Statistically significant S at p< 0.05

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Table (3): Correlation between socio demographic data and total coping patterns pre and post psychoeducational program of the studied sample (n = 52).

Socio-demographic data	Total Coping patterns													
	pre						Post							
	High		Moderate		Low		High		Moderate		Low		Chi-square	
	N	%	N	%	N	%	N	%	N	%	N	%	X^2	P-value
Age (years)														
20- <25	0	0.0	2	11.1	16	88.9	10	55.5	5	27.8	3	16.7	10.330	0.035*
25- <30	3	14.3	6	28.6	12	57.1	19	90.5	2	9.5	0	0.0		
30 or more	4	30.8	6	46.2	3	23.1	12	92.3	1	7.7	0	0.0		
Residence														
Rural	3	9.4	6	18.8	23	71.9	24	75.0	6	18.8	2	6.3	0.802	0.670
Urban	4	20.0	8	40.0	8	40.0	17	85.0	2	10.0	1	5.0		
Occupation														
Working	5	17.9	7	25.0	16	57.1	25	89.3	3	10.7	0	0.0	5.199	0.074
Not working	2	8.3	7	29.2	15	62.5	16	66.7	5	20.8	3	12.5		
Education level														
Uneducated	0	0.0	0	0.0	3	100.0	0	0.0	1	33.3	2	66.7	28.280	<0.001**
Primary school	0	0.0	1	20.0	4	80.0	3	60.0	1	20.0	1	20.0		
Preparatory school	0	0.0	3	25.0	9	75.0	11	91.7	1	8.3	0	0.0		
Secondary school	0	0.0	4	28.6	10	71.4	11	78.6	3	21.4	0	0.0		
University	7	38.9	6	33.3	5	27.8	16	88.9	2	11.1	0	0.0		

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Family income														
Sufficient	2	25	4	50	2	25	7	87.5	1	12.5	0	0.0	0.686	0.709
Not sufficient	5	11.4	10	22.7	29	65.9	34	77.3	7	15.9	3	6.8		
Number of family members														
< 4	7	21.2	6	18.2	20	60.6	30	90.9	3	9.1	0	0.0	9.203	0.010*
4 or more	0	0.0	8	42.1	11	57.9	11	57.9	5	26.3	3	15.8		
Order of birth														
First	0	0.0	1	8.3	11	91.7	6	50	6	50	0	0.0		
Middle	5	13.2	13	34.2	20	52.6	33	86.8	2	5.3	3	7.9	14.978	0.005*
Last	2	100	0	0.0	0	0.0	2	100	0	0.0	0	0.0		

(**) High Significant HS at p<0.001 (*) Statistically significant S at p< 0.05

Table (4): Correlation between total coping patterns and total knowledge score pre and post psychoeducational program of the studied sample (n = 52).

Total coping patterns	Total Knowledge score			
	Pre-program		Post program	
	r	P-value	r	P-value
Total Emotion-oriented score	0.425	<0.001**	0.484	<0.001**
Total Problem-oriented score	0.569	<0.001**	0.550	<0.001**

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Total Coping behaviors score	0.430	<0.001**	0.492	<0.001**

(**) High Significant HS at p<0.001 (*) Statistically significant S at p< 0.05

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Discussion

Current study stated that near to half of the studied subjects aged 25-<30 years with a mean age 27.24±4.6 years. This can be explained that according to our society especially in rural areas, girls get married early and early adulthood characterized by work and being productive woman for both the family and society so having a child newly diagnosed with cancer during this age leading to stress and fear results in feeling of not being able to perform maternal roles in the family or the society which could affect coping and quality of life. This finding comes in disagreement with **Nasr, (2023)** who revealed in a published study entitled "Mother's Coping while Caring for a Child with Cancer and its Relationship with Mother-Child Relationship" that the majority of studied subjects were 50 years old. Mothers' age might be affecting their experience and coping patterns with childhood cancer.

The current study stated more than half of the studied subjects are living in rural areas where there is insufficient awareness, knowledge about childhood cancer, which caused stress, fear, mal adaptation and coping. This finding agreed with **Deribe, et al., (2023),** who reported in a published study entitled "Stress and coping strategies among parents of children with cancer at Tikur Anbessa Specialized Hospital pediatric oncology unit, Ethiopia: a phenomenological study" that children in rural areas are experiencing worse survival due to low socioeconomic status and barriers to health care access related to living on a reservation and as a result, their parents experience high levels of fear, stress and poor adherence to guideline-concordant childhood cancer care. In the same line, **Egypt Demographics Profile, (2020)** reported that rural community was 57 % of the total residents, and the rate of urbanization was 1.68 % annual rate of change.

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Regarding to occupation, the current study showed that more than half of the studied subjects were working. This can be explained that because of the increasing financial demands of the family. So, they help in maintain adequate income for their families. This finding is agreed with **Kaatsiz, and Öz, (2020),** who reported in their study entitled "The effectiveness of psychoeducation given to mothers of children with cancer" that majority of the studied subjects were working. Working mothers have to cope with stressors and other issues such as difficulty taking time off from work and experiencing economic difficulties while caring a child diagnosed with cancer.

Results of the current study showed that majority of the studied subjects are graduated from a university. This can be explained that in our community there is increased awareness about girls' education so this will help them find suitable opportunities in occupation, think easily about how to cope with their children's illness and provide adequate care for them. This finding is agreed with **Padeniya, et al., (2020),** who reported in their published study entitled "Maternal coping strategies in response to child's oncological diseases in Sri-Lanka" that mothers with higher education background have applied more coping patterns.

The present study illustrated that more than three quarters of the studied subjects see that the family income is not sufficient for the needs of the family. This may because the increasing socioeconomic demands for the family especially after diagnosing their child with cancer. This finding is conformed to **Öhman, Woodford, Esse, (2020),** who reported in their published study entitled "Socioeconomic consequences of parenting a child with cancer for fathers and mothers in Sweden: A population-based difference-in-difference

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study" that childhood cancer has negative short and long-term effects on the family income.

As regards order of birth of the child within the family, finding of this study showed that more than half of the children diagnosed with cancer were the middle with in their siblings. This reflects that mothers with more children pay more attention to balance care of their other children in addition to the sick child which affecting the mothers coping. This findings in an accordance with the finding of the study conducted by **El-Marzky, et al., (2019)** who studied "Stressors and Coping Patterns of Mothers Having Children with Epilepsy" reported that mothers had several children other than ill child, showed more coping patterns and had double stress compared to other parents.

Concerning mothers' knowledge about childhood cancer, current study results revealed that highest percentages of mothers didn't know or had incomplete knowledge about childhood cancer, its different types, causes, risk factors, symptoms and side effects of the treatment before implementation of the program. The overall level of mothers' knowledge before the implementation of the program was unsatisfactory. This because no scientific educational programs provided to their areas about deferent aspects of childhood cancer. Instead, they gain information from social media. These results supported an Egyptian study done by **Hasan, et al., (2020)** titled "Knowledge and Performance of Mothers having Children with Cancer Undergoing Chemotherapy". The study results proved that the overall level of mothers' knowledge about childhood cancer was unsatisfactory pretest.

There is a highly statistically significant difference between pre and post the implementation of the program regarding all items of mother's

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knowledge about cancer. This may be due the strong desire of the mothers to overcome the child illness in order to keep healthy life style for their children in the future as well as providing knowledge create some sense of security that things will be handled according to the mothers wishes. This result is supported by **Akl, et al., (2016)** who reported in their published study entitled "Effect of Educational Training Program for Mothers about their Cancer Children Care and its Effect on Children Health Status" that 14% of the studied mothers before implementation of the program had satisfactory knowledge about childhood cancer, while post the intervention majority of the studied mothers had satisfactory knowledge (96 %). There highly statistically significant difference between pre and post the implementation of the program.

Results of the present study illustrated that majority of the studied subjects have a negative emotional coping with their children illness before the implementation of the program. More than two thirds of the studied subjects respond to stress caused by their children illness either by eat, smoke, and chew gum or want to be alone and withdraw from the situation. Half of the studied subjects always cry, get depressed as they see its overwhelming event. This can be explained as when the mothers are under stress and cannot control their behaviors and emotions, they prefer to withdraw from the situation and using avoidance techniques as they can't find a way to how to deal with this stressful situation. Conversely, a published study held by **Kaatsiz, Öz, (2020)** entitled "The Effectiveness of Psychoeducation Given to Mothers of Children with Cancer" found that most of mothers withdraw social relationships in response to the child's illness due to required constant and more attention and care to their diseased child not for avoidance.

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Present study showed that there is a highly statistically significant difference between pre and post psychoeducational program regarding all items of affective (Emotion)-oriented coping patterns except "Drink alcoholic beverages" there is no statistically significant difference between pre and post the program. This may because the sociocultural aspects of our eastern society which deprive drinking alcohols. Also, mothers usually use emotional coping with stress more than problem-oriented coping. This finding is supported by **Hassan, Shehata, (2018),** who found in their published study titled "The Effect of Supportive Nursing Intervention on Burden and Coping Strategies of Caregivers of Children with Cancer" that most Egyptians women use emotional-oriented coping patterns in dealing with their stress more than any other types of coping.

Results of the current study showed that there is a highly statistically significant difference between pre and post the implementation of the program regarding all items of problem-oriented coping patterns. This finding proved the importance of psychoeducational program so mothers in parallel to medical developments in cancer cure, they became believing that cancer can be overcome, and there are active ways from our country to reach this important goal. This finding is supported by **Bhattacharya, et al. (2016)** who illustrated in their published study entitled "Depression and Anxiety in Mothers of Children with Cancer and How They Cope with it: A Cross Sectional Hospital Based Study in Eastern India" that majority of the studied subjects use ways of problem-oriented coping as problem solving techniques to overcome stressors.

Present study revealed that there is statistically significant difference between total knowledge score pre and post implementation of the program

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with age of the studied subjects, level of education, number of family members and the arrangement of the child within the family. The result reflected that higher literacy rates among Egyptian mothers as mentioned before that majority of them are graduated from universities. This finding is supporting an Egyptian study conducted by **Taha, et al., (2019)** titled "Effect of Nursing Instructions on Knowledge and Practice of Mothers Having Children with Leukemia Undergoing Chemotherapy" they found that there were highly statistically significant positive correlations between mothers' total score of knowledge and their level of education. Another study conducted by **Hassan, and Ibrahim, (2018)** entitled "The effect of supportive nursing intervention on the burden and coping strategies of caregivers of children with cancer" showed that there is statistically significant difference between total knowledge score of the studied subjects and their age, education and occupation. A study was published by **Priya, et al. (2019) titled** "Effectiveness of structured teaching program on knowledge and practice regarding care of children with leukemia among mothers", they found a significant association between knowledge of the studied subjects with the number of the family members and the arrangement of the child within the family.

1- **Relation between socio demographic data and total coping patterns of the studied subjects pre and post the psychoeducational program**

Present study revealed that there is statistically significant difference between total coping patterns pre and post the implementation of the program with age of mothers, education level, number of family members and the arrangement of the child within the family. This can be explained as age, education, number of family members, arrangement of the child all are factors

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greatly affecting the mothers' coping patterns. This result is in agreement with the finding of a study published by **Kohlsdorf, ÁL, (2008)** titled "Strategies for parents coping with children undergoing cancer treatment" reported that there is a statistically significant difference between coping patterns of the studied subjects and their age, level of education.

2- Relation between total coping patterns and total knowledge score pre and post psychoeducational program of the studied sample

Current study illustrated that there is a highly statistically significant difference regarding total coping patterns and total knowledge score pre and post the implementation of the program. This can be explained as when mothers have more accurate knowledge about cancer, then they use more positive coping patterns. This finding is conformed with **Yaşar, et al., (2023)** in their published study entitled "Assessment of the Knowledge, Attitudes, Anxiety, and Coping Strategies of Pediatric Patients and Parents after Leukemia Diagnosis in Türkiye" found that using of coping patterns is greatly linked to increased knowledge about cancer.

Conclusion

The main results showed that, the psychoeducational program has positive effect on enhancing coping patterns of mothers having children newly diagnosed with cancer.

Recommendation

- Psychoeducational programs should be implemented into continuous professional developmental programs at all oncology hospitals and in rural areas in Egypt to decrease the maternal stress, fear and improve awareness and knowledge of mothers about childhood cancer.
- Establishment of counseling clinics in every national oncology center in Egypt especially for mothers of children newly diagnosed with cancer, to promote care, reduce anxiety, and enhance coping of those mothers

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