

THE EFFECT OF PSYCHOEDUCATIONAL PROGRAM ON COPING PATTERNS OF MOTHERS HAVING CHILDREN NEWLY DIAGNOSED WITH CANCER

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Abstract

Childhood cancer is a chronic disease that necessitates ongoing attention through treatment, hospitalization, and the management of the side effects related to therapies. It has an effect on the mother's quality of life on a physical, psychosocial, and professional levels and makes them more vulnerable to associated emotional and physical disorders. **Aim of the study was to:** 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:** the study was carried out at National Cancer Institute affiliating to faculty of medicine, Cairo university, Egypt, including inpatient and outpatient units. **Subjects:** the study sample was 52 mothers having children newly diagnosed with cancer. **Tools:** data was collected by using three tools, **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:** the study results showed that. 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 educational programs for all mothers having children with cancer focusing on the modification of the coping pattern techniques.

Keywords: Cancer, Children, Mothers, Psychoeducation, Coping, Patterns

INTRODUCTION

The word "cancer" encompasses a collection of over 100 illnesses that manifest progressively and include the proliferation of cells without regulation. Childhood cancer refers to the many types of cancers that specifically impact individuals aged 0 to 19 years. This category encompasses a wide spectrum of disorders characterized by distinct biological, genetic, and demographic features. Three decades ago, scientists had difficulties in providing a coherent explanation for the mechanisms behind the transformation of a normal cell into a malignant one. It was comprehended that the onset of cancer was attributed to the uncontrolled proliferation of cells inside the human body, which may be induced by several factors such as chemicals, radiation, and viruses. However, the precise details of the occurrence remained undisclosed (Martins, Fernandes, Santos, et al., 2020).

For many years, juvenile cancer therapies such as chemotherapy, radiation therapy, surgery, and sometimes hematopoietic stem cell transplantation have served as the fundamental pillars of effective interventions for childhood cancer. In recent decades, the concurrent use of various therapeutic approaches has facilitated notable progress in enhancing the rates of long-term survival among pediatric patients afflicted with solid tumors and hematologic malignancies. Simultaneously, myelosuppression, mucositis, nausea, vomiting, diarrhea, alopecia, fatigue, sterility, infertility, and infusion responses are often seen toxicities associated with the administration of these medications (Erdmann, Frederiksen, & Bonaventure, 2021).

The prevailing body of research in the field of children oncology indicates that the experience of having a kid just diagnosed with cancer is a highly stressful emotional event that presents a considerable challenge to the coping abilities of the affected family. The psychological well-being of mothers is influenced by several factors related to their kid's diagnosis, treatment, side effects, and general health, given that they are primarily responsible for the bulk of child care. There is much evidence suggesting that moms who have a child diagnosed with cancer have a higher propensity for experiencing symptoms of depression, anxiety, and post-traumatic stress disorder, while also reporting a worse quality of life. Mojen, Rassouli, Ashrafizadeh, and colleagues (2022).

Psychoeducation programs do not achieve total eradication of the psychological disorder, but instead aim to provide those afflicted with the disease with improved strategies for effectively managing their symptoms and enhancing their overall functioning, while minimizing the impact of the condition on their daily lives. According to Brown (2018), individuals with psychological conditions may benefit from the acquisition of positive coping skills, access to resources, development of cognitive patterns, and cultivation of a feeling of self-efficacy in order to optimize their overall well-being and life outcomes.

Psychiatric mental health nursing has been recognized as a significant factor that impacts mothers' capacity to effectively manage their child's sickness in a good manner. Psychiatric mental health nurses has a significant capacity to contribute to the support and care of both mothers and children. Nurses play a crucial role in facilitating the transition from illness to optimal health by supporting the mother in developing effective coping mechanisms, aiding in the adaptation to new caregiving responsibilities for the sick child, and addressing any negative emotions, as well as common social and psychological conflicts that may arise as a result of the challenging circumstances they face. Liu, Sundquist, Sundquist, and colleagues (2023).

The study has great importance in the field. Cancer is a prominent factor contributing to mortality in the pediatric and adolescent population. In the United States, it is estimated that around 13,060 children between the ages of 0 and 19 are diagnosed with pediatric cancer annually. The source cited is the National Academies Press (2020). In the European region, the number of children diagnosed with cancer in the year 2020 amounted to over 16,000 cases. The European Cancer Information System (ECIS) is a resource that was established in 2020. Mothers who have a child diagnosed with cancer may encounter a range of distressing situations pertaining to receiving information about the diagnosis, seeing their child's suffering, managing the responses of others, and assessing the quality of treatment provided. Coping strategies assist mothers in managing, reducing, and addressing the significant levels

of stress that arise from the escalating demands associated with their children's disease conditions. This is crucial for enhancing their psychological well-being and enabling them to provide optimal care for their children. This research aimed to develop a psychological program for moms who have just received a diagnosis of cancer in their children. The program was designed to assist these mothers in managing stress and addressing negative thoughts and emotions related to their children's medical condition.

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. 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:

1. Technical design.
2. Operational design.
3. Administrative design.
4. 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 (β) = 0.20%

With power of test 0.80%

$Nxp(1-p) = (11000*(0.5*(1-0.5)))/$

$N-1 = (11000-1) *$

$d^2/z^2 = 0.0025 / 3.8416+$

$p(1-p) = 0.5*(1-0.5)$

$n = 372$

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 are:

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 the 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:

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 ($\geq 50\%$) was considered satisfactory level; meanwhile, mothers' overall score (less than 50%) was regarded as an unsatisfactory level of knowledge.

<50%	Unsatisfactory knowledge
$\geq 50\%$	Satisfactory knowledge

II. Coping Scale (Abdelmeged, 1999)

It was designed by (Abdelmeged, 1999), 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)
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- 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:

A preliminary investigation, known as a pilot study, was undertaken on a subset of the total subjects, comprising 10% (5) individuals. The purpose of this pilot study was to ascertain the appropriate size and method of selecting the sample, evaluate the feasibility, clarity, and applicability of the study tools, assess the relevance and clarity of the content, determine the time required to conduct the study, and estimate the duration needed to complete the tools. To ensure the clarity of questions, the applicability of tools, the necessary time for completion, and the implementation of appropriate revisions based on available resources. Participants who were involved in the pilot research were eliminated from the final sample of the main study.

The field work conducted through three phases:

Phase I:

During this portion of the study, the researcher saw a total of 52 moms who had children recently diagnosed with cancer and who satisfied the predetermined inclusion criteria. The participants of the study were interviewed, examined, and told that data collection would occur on two occasions. The first occasion was before the program implementation to gather baseline data, while the second occasion was after the program was implemented to evaluate its efficacy. During the acquaintance meetings, the researcher formally presented themselves to all moms whose children had just been diagnosed with cancer and who had consented to participate in this study. To establish trust, collaboration, and confidence from individuals. The researcher ensured voluntary involvement and anonymity for each woman by explicitly stating that all information provided will be utilized only for scientific study purposes.

Phase II:

During the study phase, the investigator conducted regular visits to the designated location twice a week, namely on Mondays between 9:00 am and 10:00 am, as well as on Wednesdays from 11:00 am to 12:30 pm. This period spanned from the middle of January 2022 to the middle of June 2022. The time provided for program implementation consisted of a total of 20 hours, which were split into 15 sessions. These sessions included 4 theoretical sessions, 1 introduction and acquaintance session, 1 pre-data collecting session, 8 practical sessions, and 1 post-data collection session. Prior to administering the program and providing the tool to the moms, the researcher provided an explanation about the study's objectives. Additionally, the researcher was present throughout the completion of the questionnaire to ensure that all inquiries were addressed..

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 permission was received by the Scientific Ethical Committee and the research and postgraduate affairs department of the National Cancer Institute. The researcher provided assurance to each chosen mother included in the study sample that their participation is voluntary and they possess the right to withdraw from the study at any point without the need to provide a justification. The researcher provided a guarantee of data confidentiality for each mother included in the study sample. The researcher explicitly stated that all data collected will be used for the purpose of scientific investigation.

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 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 ± 2.91 years. 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 that 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 post psychoeducational program regarding total emotion-oriented coping patterns among studied sample at p-value < 0.001**.

Figure (5) shows that 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 arrangement of the child 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.

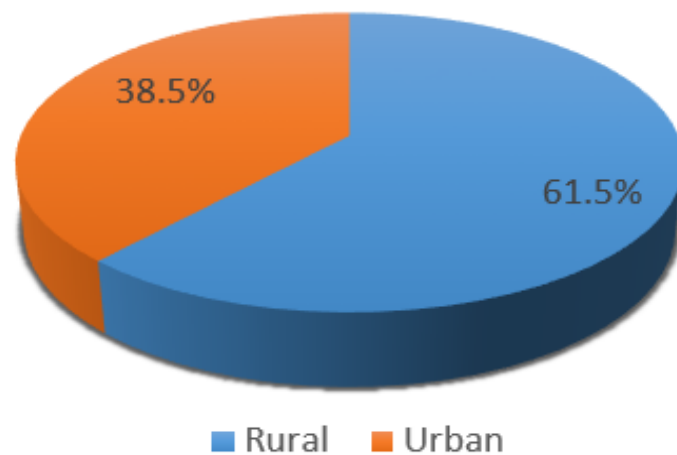


Figure 1: Total percentage of mother's residence (n = 52).

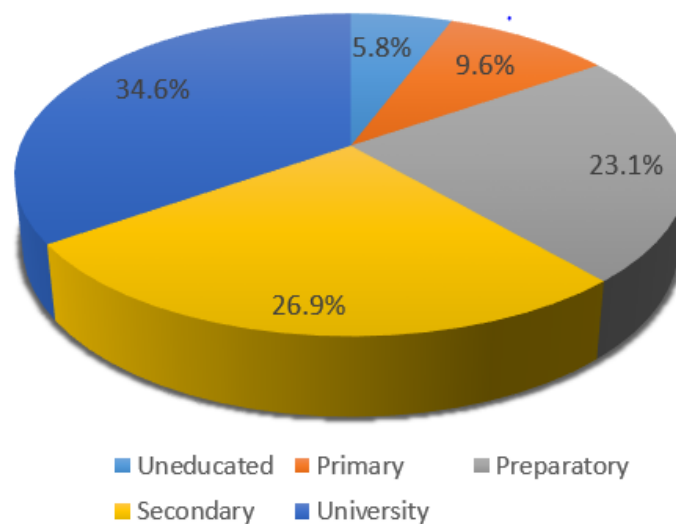


Figure 2: Total percentage of mother's level of education (n = 52).

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
last	2	3.8

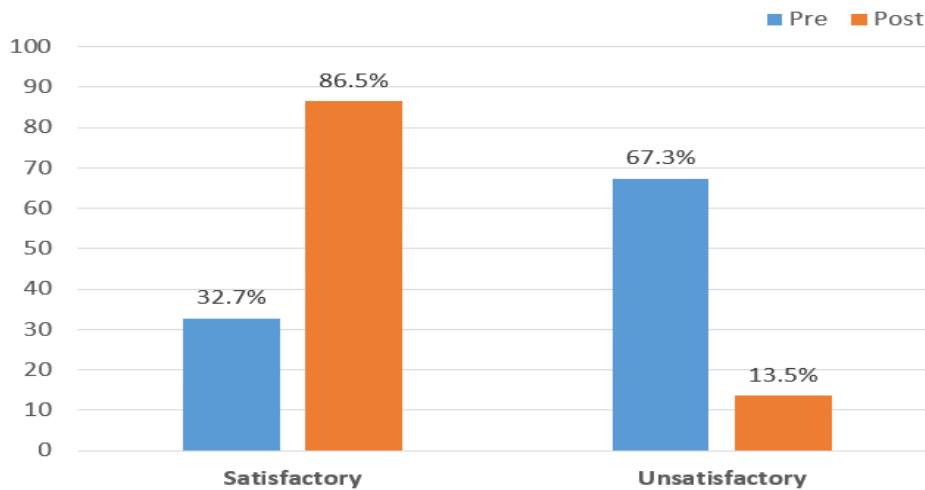


Figure 3: Mother's total knowledge about cancer pre and post the psychoeducational program

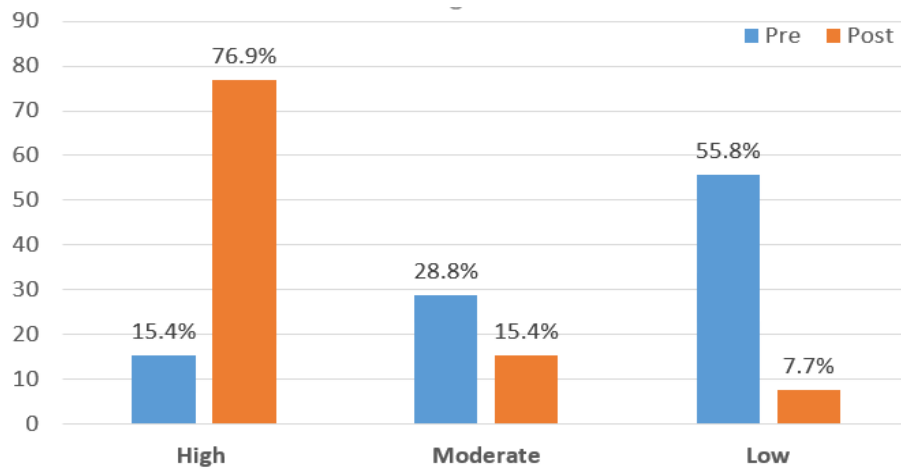


Figure 4: Total percentage of emotion-oriented coping patterns pre and post psychoeducational program of the studied sample (n = 52)

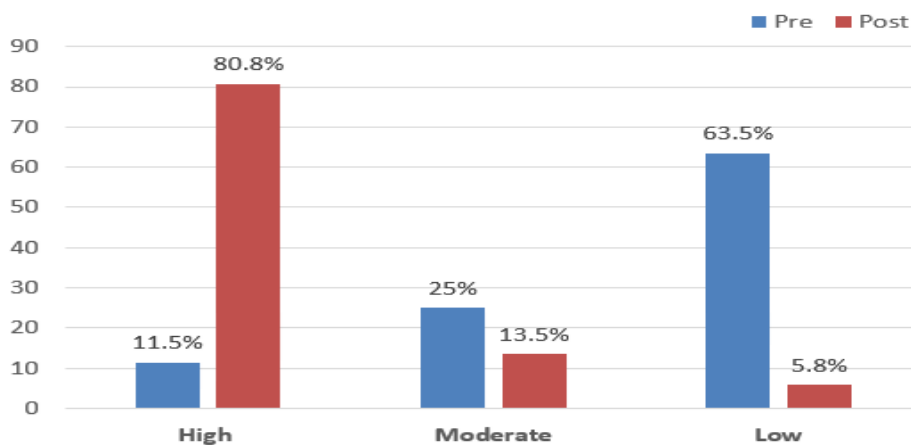


Figure 5: Total percentage of problem-oriented coping patterns pre and post psychoeducational program of the studied sample

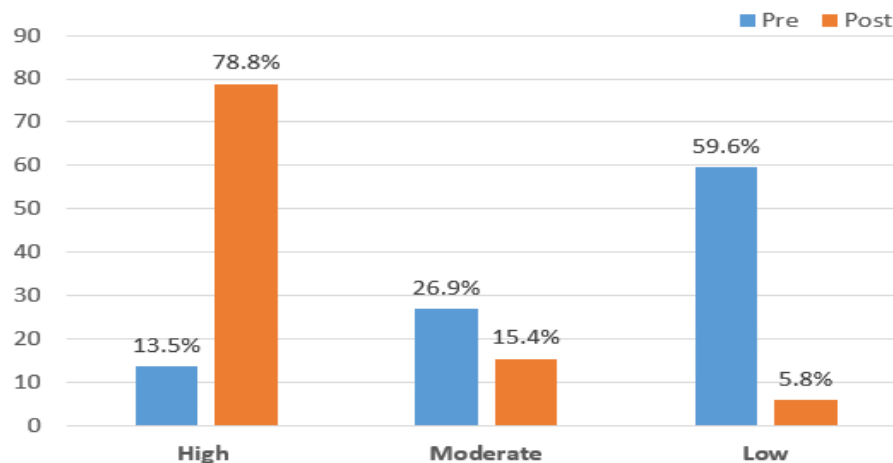


Figure 6: Percentage of coping patterns pre and post psychoeducational program of the studied sample

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				Chi-square	
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		X ²	P-value
	N	%	N	%	N	%	N	%		
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										
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

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												Chi-square	
	pre						Post							
	High		Moderate		Low		High		Moderate		Low		X ²	P-value
	N	%	N	%	N	%	N	%	N	%	N	%		
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		
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	14.978	0.005*
Middle	5	13.2	13	34.2	20	52.6	33	86.8	2	5.3	3	7.9		
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**
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

DISCUSSION

The 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 in Kuwait 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 or more. 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 in Ethiopia 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.

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 be because the increasing socioeconomic demands for the family especially after diagnosing their child with cancer. This finding is conformed to **Öhman, Woodford, Esse, (2021)**, 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 study” that childhood cancer has negative short and long-term effects on the family income.

As regards the arrangement 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 **EI-Marzky, et al., (2019)** who studied “Stressors and Coping Patterns of Mothers Having Children with Epilepsy” reported that mothers had several children other than the ill child, showed more coping patterns and had double stress compared to other parents.

Concerning mothers' knowledge about childhood cancer, the current study results revealed that the highest percentages of mothers didn't know or had incomplete knowledge about childhood cancer, its different types, its 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 there are 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 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 only 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.

The present study showed that there is a highly statistically significant difference between pre and post the 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 tend to use emotional-oriented coping patterns in dealing with their stress and fears 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 in India 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 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

2- The current research has shown a statistically significant disparity in coping strategies before and after program implementation, with regards to the age of mothers, degree of education, number of family members, and the child's placement within the family structure. The coping mechanisms of mothers may be significantly influenced by several aspects such as age, level of education, number of family members, and the arrangement of the kid. This finding aligns with the results of a study conducted by Kohlsdorf, AL (2008) entitled "Strategies for parental coping during pediatric cancer treatment." The study reported a statistically significant association between the coping patterns of the participants and their age and level of education.

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

The present research demonstrated a substantial and statistically significant disparity in both overall coping strategies and total knowledge scores before and after the program was implemented. This phenomenon may be elucidated by the correlation between mothers' level of cancer-related information and their adoption of positive coping strategies. The present study aligns with the research conducted by Yaşar et al. (2023) titled "Assessment of the Knowledge, Attitudes, Anxiety, and Coping Strategies of Pediatric Patients and Parents after Leukemia Diagnosis in Türkiye." It reveals a significant association between the utilization of coping patterns and enhanced cancer-related knowledge.

CONCLUSION

The primary findings indicate a substantial improvement in coping patterns among mothers whose children have recently been diagnosed with cancer following the implementation of a psychoeducational program. There were highly significant statistical differences observed between the pre- and post-implementation stages of the program in terms of the total knowledge and coping patterns of the mothers.

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.

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