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Mothers' Awareness about Caring of Their Children with Brain Tumor

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Abstract

Background: Mothers play an important role in improving quality of life for their children with brain tumors through their awareness of all aspect of child caring. **Aim:** The current study aimed to assess mothers' awareness about caring for their children with a brain tumor. **Design:** Descriptive research design was used in this study. **Setting:** This study was conducted in the inpatient and outpatient neurological department in Children Cancer Hospital Foundation- Egypt 57357. **Sampling:** A purposive sample composed of 150 mothers having children with brain tumors. **Tools:** Two tools were used for data collection. 1st tool: A structured interview questionnaire included; characteristics data of the studied mothers, characteristics data of their children and knowledge of mothers about brain tumor and care given for their children. 2nd Tool: Mothers' reported practices. **Results:** The minority of mothers had good level of total knowledge and less than two fifths of them had adequate level of reported practices regarding caring for children with brain tumor. Furthermore, there was statistically significant positive correlation between mothers' total knowledge scores, and their reported practices. **Conclusion:** The majority of the studied mothers had a poor level of knowledge. Also, more than three fifths of them had an inadequate level of reported practices regarding caring for their children with brain tumor. Also, appositive correlation was observed between total knowledge level and reported practices of the mothers. **Recommendation:** Develop an educational program focusing on brain tumor and caregiving techniques should be prioritized. Provide mothers with an instruction booklet regarding care of their children with brain tumor, which should be available for all mothers as references.

Key words: *Awareness, brain tumor, caring, children, Mothers.*

Introduction

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and multiply (through a process called cell division) to form new cells as the body needs them. When cells grow old or become damaged, die and new cells take their place. Sometimes orderly process breaks down, and abnormal or damaged cells grow ***(Gajjar et al., 2022).***

Brain tumor (BT) is one of the major causes of death among other types of the cancer because brain is a very sensitive, complex and central part of the body. Brain tumors include all intracranial tumors within the

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central spinal canal and solid intracranial neoplasm or tumor (abnormal cell growth) inside the brain or central spinal canal ***(Malbari & Lindsay, 2020).***

Brain tumor is a collection or mass of abnormal cells in brain or skull there are roughly 130 different types of brain and central nervous system tumors, all ranging from benign to malignant and from extremely rare to relatively common. The former represents about 70% of all brain tumors, while secondary tumors are the residuals 30%. Classification is setermined according to tumors origin just as tumors first originate in the brain are called primary tumors. On the other side, tumors first arise in any other part of the body and then transferred to the brain are called secondary tumors, and most of them are malignant ***(Pertz et al., 2022).***

Treatment options also depend on the type, size, grade and location of the brain tumor. Options might include surgery, radiation therapy, radiosurgery, chemotherapy and targeted therapy. When considering treatment options, health care team also considers overall health and preferences. Surgery is the most common treatment for brain tumors, and in a lot of cases the only treatment needed. There are numerous surgical approaches to remove brain tumors depending on their size and location ***(Cohen, (2022).***

Chemotherapy for brain tumors uses strong medicines to kill tumor cells and can be used to treat brain cancers and benign brain tumors. Chemotherapy medicines can be taken in pill form or injected into a vein. Sometimes chemotherapy medicine is placed in the brain tissue during surgery. Sometimes done at the same time as radiation therapy. Chemotherapy side effects depend on the type and dose of drugs received. Chemotherapy can cause nausea, vomiting and hair loss ***(Siegel et al., 2020).***

Radiotherapy is a mainstay and successful treatment in most cancer child. Has an important role in the treatment of brain tumors either with curative intent or for palliation. Cranial irradiation is commonly used to treat known tumor occurrence in the brain, either with highly precise stereotactic radiation or therapeutic cranial irradiation. The prognosis for child with BT is poor and whole brain radiotherapy (WBRT) is the standard therapy in clinical practice guidelines for the management of BM, neurological symptoms and control the local disease ***(Noll et al., 2022).***

Mothers' of children with brain tumor are in challenging. Mothers' have lack of knowledge about the disease and treatment, association of brain tumor with incurability, pain and death, and the accompanying uncertainty. Also that influence other aspects such as psychological problems and social communications and may even lead to lack of trust in health care team and lack of children's cooperation with treatment ***(Huang et al., 2022).***

Mothers' play important role in helping their children with brain tumors feel more comfortable by providing regular activity, infection prevention, skin care and emotional support. A mother may have to balance the physical, emotional, cognitive, and practical needs of child, as well as own wellbeing and that of family. Some of the tasks and responsibilities that a mother may have are: providing comfort, support and reassurance to child, especially during painful or scary procedures, treatments, or symptoms communicating with the health care team and advocating for child's best interests and preferences ***(baylee et al., 2023).***

Pediatric oncology nurse act as a key element in the health care team, guiding and evaluating the quality of the assistance provided to CNST child, so that, assistance can be conducted in a holistic manner to meet all the basic human needs of child. In addition to delivering quality care, exercising leadership and an educator. Through education, the nurse can address health issues with the team, the child and the family, solve doubts and also develop prevention, health promotion and rehabilitation initiatives ***(Blackburn & Wang, 2020).***

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Significance of the study

Brain tumors are the most common cancer among children and commonest serious chronic neurological disease that requires long-term treatment, Brain tumor account for about 1 out of 4 childhood cancer in worldwide. More than 4,000 brain and spinal cord tumors are diagnosed each year in children and teens ***(American Cancer Society, 2023)***. In Egypt, the prevalence was estimated 11470 to be 11.21 per 100,000 population ***(World Health Organization, 2021).*** In Children Cancer Hospital Foundation- Egypt 57357, the prevalence was estimated to be about 500 brain tumors each year ***(Children Cancer Hospital Foundation- Egypt 57357).***

Mothers are usually the primary caregivers in terms of home management of brain tumor. So increase knowledge raise awareness about brain tumors and management and improve attitudes toward brain tumor ***(Datta, 2018)***. The researchers view that it is important to help mothers' feel competent in their ability to meet responsibilities towards caring of their children. Therefore, the study was conducted to assess level of mothers' awareness about caring of their children with brain tumors.

Aim of the study

The study aimed to assess the mothers' awareness about caring of their children with brain tumors.

Research Questions

1- What are the mothers' knowledge and reported practices about caring of their children with brain tumors?

2- Is there a relation between mothers' knowledge and their reported practices regarding caring of their children with brain tumors?

Subject and Methods

I. Technical design:

The technical design includes research design, setting, subject and tools for data collection.

Research Design:

A descriptive research design was used to achieve the aim of this study.

Setting:

This study was conducted in the inpatient and outpatient neurological department in Children Cancer Hospital Foundation- Egypt 57357. It is located in the railway, Sayida Zeinab- Egypt.

Subject:

A purposive sample composed of 150 mothers having children with brain tumors. The following inclusion criteria namely: Mothers having children of both genders, less than 18 years with confirmed diagnosis of brain tumor and free from any other chronic disease such as cardiac diseases or D.M.

Sample size:

To determine the sample size, Stephen Thompson equation (n) was used ***Steven & Thompson, (2012)***. It is as follows:

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Sample equation= $\frac{N\times p(1-p)}{[N-1\times(d^2\div Z^2)]+P(1-P)}$ =150

Where (N) The sample size of the community is equal to (245), (p) the standard score for the level of significance is equal to (0.05), (Z) the level of confidence is equal to (1.96), (d) the error rate is equal to (0.05) and the probability value is (0.5). By applying the previous equation to the study population, so the total sample size is 150

Tools for data collection

Two tools were used to collect the data during the study.

1st Tool: A structured interview questionnaire:

The questionnaire was designed by the researchers after reviewing related literature. It consisted of the following three parts:

Part 1: Characteristics data of studied mothers: it included mothers' age, level of education, occupation, residence, family income, family size and attendance of educational programs about brain tumors**.**

Part 2: Characteristics data of children: it included children's age, gender, birth order, educational grade, and family history of brain tumor.

Part 3: Studied mothers' knowledge about brain tumor. .

The questionnaire was developed by the researchers based on ***Nair et al., (2017); Gajjar et al., (2018) and Khalf, (2021).*** This questionnaire was intended to assess mothers' knowledge about brain tumor including definition, causes, clinical manifestations, diagnosis, complications, treatment (chemotherapy, radiotherapy and surgery) and care given for their children.

Scoring system for mothers' knowledge:

Total knowledge questions were 22 open end questions, the mothers' correct complete answer was scored (2), correct incomplete answer was scored (1) and incorrect or don't know answer was scored (0). Total scores of mothers' knowledge were 44 categorized as the following:

Good level of knowledge ≥75 % equal (33-44) grade.

Average level of knowledge 50 - <75 % equal (22-32) grade.

Poor level of knowledge < 50 % equal (0-21) grade.

2nd Tool: Mothers' reported practices:

This tool was adapted ***Achi, (2020); McKinney et al., (2021) and Yoost& Crawfor, (2021)*** and modified by the researchers, it was designed in Arabic language to suit understanding of the studied mothers. It was used to assess mothers practices regarding caring for their children with brain tumor, including hand hygiene (10) steps, child transferring (8) steps, axillary body temperature (8) steps and wound care (8) steps.

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Scoring system

The total number of practice steps (34), each done steps was scored (1) and not done was scored (0). Total scores for mothers' reported practices were 34 grade categorized as the following:

Adequate level of reported practices ≥ 60 % equal (21-34) grade.

Inadequate level of reported practices < 60 % equal (0-20) grade.

Tool Validity

The tools were reviewed for content validity and clarity by three experts in pediatric nursing and oncology. The tools were then adjusted based on their recommendations.

Tool Reliability

It was done by Cornbrash's Alpha coefficient test to assure homogeneity of tool, for Knowledge was 0.887. Reported practices was 0.760

II) Operational design

The operational design includes the preparatory phase, pilot study, and field work.

Preparatory Phase:

It included reviewing past, current, national and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals, and magazines to develop tools for data collection**.**

Pilot study:

A pilot study was carried out after review of data collection tools by three experts in pediatric nursing. It was applied on 10% of study sample (fifteen mothers and their children). The purpose of the pilot study was to test the applicability, clarify, feasibility of the data collection tools, and it included in the study sample.

Field work:

This study was carried out in the inpatient and outpatient neurological department. The process of data collection was carried out over the period of three months started from the end of December 2023 to the end of March 2024. The researcher presented in the study setting 2 days/ week (Monday& Tuesday) at morning shift (8 am. - 2 pm.) to collect data using the previously mentioned tools. The researcher firstly met the studied mothers, explained the purpose of the study after introducing herself then their informed consent was gained. The researcher interviewed mother to fill in the questionnaire sheet which took approximately 20 to 30 minutes to gather information about the mothers' characteristics, knowledge and reported practices. There was slight variation in the time for questionnaire filling depending on the individual mothers.

III) Administrative Design:

An official permission was obtained from the dean of Faculty of Nursing and director of Children Cancer Hospital Foundation- Egypt 57357 to conduct the present study.

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Ethical considerations

An approval to conduct the study was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Helwan University, in 7/2023 with serial no 35 in and from Children Cancer Hospital Foundation-Egypt 57357, in 28/2/2023 with serial no 110/2023. The studied mothers was given complete full information about the purpose and nature of the study before signing the informed consent, and participation in the study was voluntary stating the possibility to withdraw at any time, confidentiality of the information that not be accessed by any other party without taking permission of the participants, Ethics, values, culture and beliefs respected.

Statistical design

The collected data were analyzed using the statistical package for social sciences, version (28). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage. The Chi-square test was used to compare between qualitative data. Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables: Reliability statistics was assessed using Cornbrash's Alpha test. The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the P-value ≤ 0.05 was considered significant and P-value > 0.05 was considered insignificant.

Results

Table (1): Shows that more than half (56.7%) of the studied mothers' ages ranged from 30-< 40 years old with mean ± SD (35.01±7.78). As regard to educational level, two fifths (40.0%) of the studied mothers had secondary education. Moreover, the majority (82.0%) of them were housewives. Also, more than half (56.0% & 50.7%) of them were from rural area and had enough income respectively. As well, more than two thirds (68.7%) of the studied mothers had 4- < 7 family members and the majority (84.7%) of them didn't attend any health educational program about brain tumor and care given for their children affected with it.

Table (2): Reveals that more than two fifths (42.7%) of the children were aged 9-< 13 years old with mean ± SD (10.04±4.6.) As regard to gender, more than half (54.7 %) of the children were males and two fifths (40.0%) of them were first child in the family. Moreover, more than one third (36.0%) of them were at primary school and more than three quarters (76.0%) had no family history for brain tumor.

Table (3): Demonstrates that nearly three quarters (74.7%) of the studied mothers had incomplete answer regarding clinical manifestation and diagnosis. Less than two thirds (64.0 %) have incomplete answer regarding causes of brain tumor. While more than half (52.7 %) have incorrect answer or don't know definition of brain tumor. Also, less than half (46.0% & 42.7%) of them have incomplete answers about complication and treatment respectively.

Table (4): Reveals that, nearly three quarters (74.7%) of the studied mothers had incomplete answer regarding methods of overcoming loss of appetite, more than two thirds (69.3% & 67.3%) have incomplete answer regarding caring for the child during hair loss and ways to care for a child during vomiting. As well, less than two thirds (64.0%, 62.0% & 61.4 %) had incomplete answer regarding methods of overcoming the fatigue and exhaustion, prevention of diarrhea, oral care motheds respectively. While, less than one fifth (4%, 2.7%& 6.7%) had correct answer regarding care for a child's pain, skin ulcer, constipation respectively.

Figure (1): Illustrates that the majority (80.7%) of the studied mothers had poor level of knowledge, while the minority (2.6%) of them had good level of knowledge regarding brain tumor and caring of their children affected with it.

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Figure (2): Illustrates that less than two thirds (60.7%) of the studied mothers had inadequate level of reported practices. While, more than one third (39.3%) of them had adequate level of reported practices regarding caring for their children with brain tumor.

Table (5): Clarifies that there is positive statistically significant correlation between mothers' total level of knowledge, and reported practices regarding caring for their children with brain tumor as evidence by ($r = 0.519$, p-value ≤ 0.000).

Table (1): Distribution of the studied mothers' according to their characteristics (n=150).

Mothers characteristics	**No**	**%**
Age/ years		
<30	35	23.3
30-<40	85	**56.7**
40-<50	24	16.0
≥ 50	6	4.0
Mean ±SD	**35.01±7.78**	
Educational level		
Not read or write	4	2.7
Read and write	48	32.0
Secondary education	60	**40.0**
University or above	38	25.3
Occupation		
Working	27	18.0
House wife	123	**82.0**
Residence		
Rural	84	**56.0**
Urban	66	44.0
Family income		
Enough and saved	6	4.0
Enough only	76	**50.7**
Not enough	68	45.3
Family size		
<4	37	24.7
4- <7	103	**68.7**
≥ 7	10	6.6
Previous attendance educational program about brain tumor and care given for their children affected with it.		
Yes	23	15.3
No	127	**84.7**

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Table (2): Distribution of the children of studied mothers according to their characteristics (n=150).

Children's characteristics	No	%
Age/ years		
< 5	12	8.0
5-< 9	34	22.7
9- < 13	64	**42.7**
13- ≤ 18	40	26.6
Mean ±SD	**10.04±4.6**	
Gender		
Male	82	**54.7**
Female	68	45.3
Birth order		
The first	60	**40.0**
The second	50	33.3
The third	22	14.7
The fourth or more	18	12.0
Educational grade		
Nursery school	46	30.7
Primary school	54	**36.0**
Preparatory school	28	18.6
Secondary school	22	14.7
Family history for brain tumor		
Yes	36	24,0
No	114	**76.0**

Table (3): Distribution of the studied mothers' regarding their knowledge about brain tumor (n=150).

Items	Correct answer		Incomplete answer		Incorrect answer / don't know	
	No	%	No	%	No	%
Definition	5	3.3	66	44.0	79	**52.7**
Causes	3	2.0	96	**64.0**	51	34.0
Clinical Manifestation	12	8.0	112	74.7	26	17.3
Diagnosis	12	8.0	112	74.7	26	17.3
Complication	15	10.0	69	**46.0**	66	44.0
Treatment	34	22.7	64	**42.7**	52	34.6

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Table (4): Distribution of the studied mothers' regarding their knowledge about caring of their children with brain tumor (n=150).

Items	Correct answer		Incomplete answer		Incorrect answer / don't know	
	No	%	No	%	No	%
Methods of overcoming loss of appetite	16	10.7	112	**74.7**	22	14.6
Methods of overcoming the fatigue and exhaustion	10	6.7	96	**64.0**	44	29.3
caring for a child during hair loss	6	4.0	104	**69.3**	40	26.7
Oral care methods	8	5.3	92	**61.4**	50	33.3
Prevention of constipation	10	**6.7**	82	54.7	58	38.6
Prevention of diarrhea	9	6.0	93	**62.0**	48	32.0
Care for a child during vomiting	4	2.7	101	**67.3**	45	30.0
Caring methods for skin ulcers	4	**2.7**	80	53.3	66	44.0
Care for a child's pain	6	**4.0**	90	60.0	54	36.0
Psychological support of child during hospitalization	10	6.7	88	58.7	52	34.6
Social care for a child outside the hospital	12	8.0	87	58.0	51	34.0
Caring for a child's mental health	15	10.0	79	52.7	56	37.3
Rehabilitation after treatment	20	13.3	67	44.7	63	42.0

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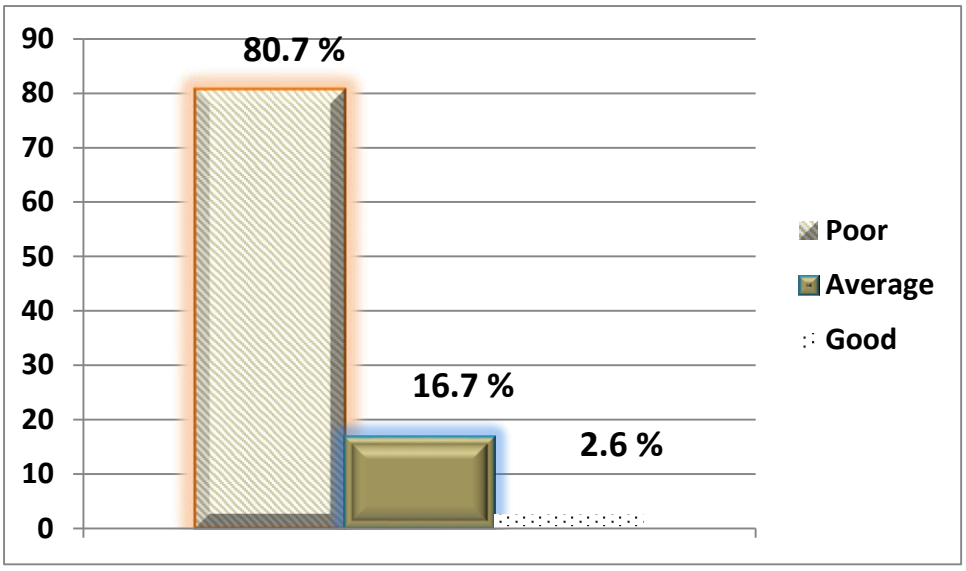

Figure (1): Percentage distribution of the studied mothers' total knowledge scores regarding brain tumors and caring of their children.

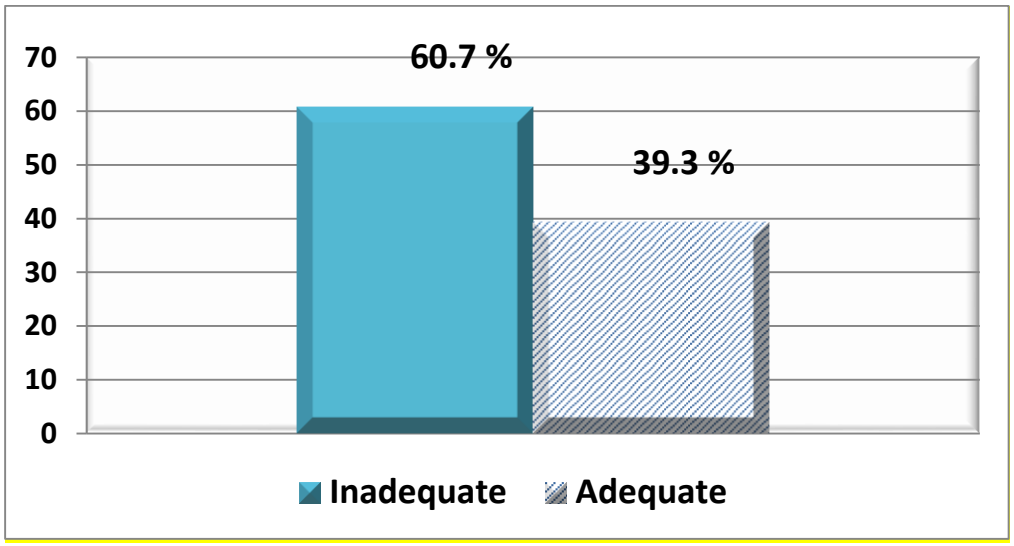

Figure (2): Percentage distribution of the studied mothers' total reported practices scores regarding caring for their children with brain tumor.

Table (5): Correlation between total score of knowledge and reported practices of the studied mothers**.**

Variable	Total reported practices	
	R	p- value
Total knowledge	0.519	0.000*

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Discussion

Brain tumors are the most common solid tumors in the children and account for the greatest number of childhood cancer death. Cancer characterized by uncontrolled division of cells and metastasis, is one of the major causes of mortality among children. The oncology nurses have important roles in supporting mothers with necessary information to improve the health satisfaction and quality of life children ***(Fahmideh& Scheurer., 2021).*** Mothers of children with brain tumor are in challenging result from lack of knowledge about the disease and treatment. ***(Huang et al., 2022).*** So the present study was carried out to assess knowledge and reported practices of mothers' having children with brain tumor**.**

Regarding to the characteristics of the studied mothers, the finding of the current study (table 1) showed that more than half of the studied mothers' age ranged from 30 -< 40 years old. In relation to the educational level, two fifths of the studied mothers had secondary education. Furthermore, the majority of them being housewives. Regarding the residence area, the study indicated that more than half of mothers were from rural areas and reported enough income. Regarding family size, more than two thirds of the mothers having 4 to less than 7 members in the family. As well, the present study result showed that vast majority of mothers did not attend any health educational programs specifically about brain tumors and caregiving for their children.

From the researchers' point of view, the characteristics highlighted in the study underscore the multifaceted influences on mothers' caregiving for children with brain tumors. Adequate income can potentially alleviate some barriers to healthcare access, such as transportation costs, out of pocket medical expenses and the ability to afford specialized care, educational background potentially influence their understanding of health information, their ability to comprehend medical advice, and their decision-making regarding their children healthcare needs. Rural residents often face challenges such as limited healthcare facilities, fewer specialist services, and longer travel times to access medical care. These factors can impact the timely diagnosis and management of brain tumors in children.

Concerning characteristics of the children, **(**table, 2) reported that less than two thirds of the children were aged between 9 to less than 13 years old with a mean age of (35.01±7.78). As regard to gender, more than half of the children were males and two fifths of them were first child in the family. Also, more than one third of the children in primary school at the time of the study and more than three quarters of them had no family history for brain tumor.

The current study (table, 3) provides a comprehensive overview of the knowledge levels among mothers regarding various aspects related to brain tumors in children. The findings revealed substantial gaps in different items, including definition, causes, clinical manifestations, diagnosis, complications, and treatment. The present study revealed that nearly three-quarters of the mothers had incomplete answer regarding the clinical manifestations and diagnosis. As well less than two thirds had incomplete answers regarding causes of brain tumors. This result agrees with a similar study performed by **Philip & Jenkins (2021)** title on "Supporting caregivers of children with cancer and brain tumors: A framework for intervention" In primary health centre, Indian and found more than two thirds (70%) of parents reported incomplete knowledge regarding the clinical features and causes of pediatric neurodevelopmental disorders.

As regarding to mothers knowledge about caring of their children with brain tumors. The present study findings (table, 4) showed that less than three-quarters of the mothers had incomplete answers regarding methods to overcome loss of appetite for their children undergoing treatment. This findings underscore the ongoing challenges faced in ensuring that mothers are fully informed and equipped to support their children's care, particularly in managing common side effects of cancer treatments. In a similar vein a systematic review

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conducted by **Beeler et al., (2023)** on " Supportive Care in Pediatric Oncology: Opportunities and Future Directions. Cancers (Basel)." found consistent evidence of inadequate knowledge among parents, with three fifths (60%) unaware of the strategies needed to manage treatment-related symptoms, such as appetite loss, nausea, and weight loss.

More than two thirds of mothers were provided incomplete answers regarding methods for managing hair loss. These results supported with the study done by **Alonzo & Moffat (2021).** Study title "Challenges and strategies in managing pediatric chemotherapy-induced alopecia: Insights from parents and caregivers" in Canada the findings indicates that a significant number (60%) of parents reported knowledge about overcome hair loss by wearing suitable wig and a hat when going out .

From of the researchers' point of view lack of information not only affects their ability to support their children emotionally but also complicates their efforts to find practical solutions to minimize the impact of this side effect, more detailed information and resources to help them navigate the challenges associated with alopecia, which could lead to improved emotional support for their children during treatment

Across several domains including ways to care for a child during vomiting, fatigue and exhaustion, diarrhea, care for the mouth, and manage pain, two thirds of mothers had incomplete answers. These results agree with the study achieved by **Thompson et al., (2019)** entitled "Parental experiences and information needs regarding pediatric cancer treatment side effects" in the United States which found similar more than half (59%) had deficiencies in understanding symptom and management strategies. These findings highlight widespread gaps in knowledge regarding symptom management and care given.

Regarding total knowledge of the studied mothers, the present study result (finger 1) revealed that the majority of the mothers had a poor level of knowledge. These results are consistent with the study conducted by **Shattnawi et al. (2021)** under tittle " Caring for a child with cancer: experiences of Jordanian mothers" in Jordan found that three fifths (60%) of mothers have inadequate knowledge about specific cancer types including brain tumors.

The researchers' point of view insufficient awareness among mothers can contribute to increased anxiety, misconceptions about the disease, and a lack of proper home care, ultimately impacting the child's prognosis and quality of life. Implementing structured educational programs, workshops, and accessible informational resources could significantly enhance parental comprehension and lead to better child care outcomes. This opinion supported by **Kilic et al., (2019)** with study title "Parental knowledge and preparedness in pediatric brain tumor care: Challenges and educational needs" in Turkey which mentioned that parental knowledge is crucial in ensuring adherence to treatment protocols, recognizing early symptoms of complications, and providing adequate emotional and physical support to children undergoing treatment, this gap underscores the urgent need for targeted educational interventions.

The present study finding figure (2) revealed that less than two thirds of the mothers had inadequate reported practices regarding caring for their children with brain tumors. This finding aligns with study carried by **Zahid et al., (2024)** with study title " Factors associated with changes in the quality of life and family functioning scores of primary caregivers of children and young people with primary brain tumors " in Karachi showed that more than one third (39%) had inadequate caregiving practices.

From researchers' point of view while exhibited adequate caregiving practices are often linked to limited access to healthcare resources, lack of specialized support and poor communication with healthcare providers and skills necessary to care for children with serious health conditions effectively. This emphasizes the

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importance of ongoing caregiver education and support, tailored to the specific needs of families managing children with brain tumors.

Regarding the correlation between studied mothers' total knowledge level and their total reported practices. The present study (table 5) revealed that there was a statistically significant positive correlation between mothers' knowledge and reported practices related to brain tumor child care. This result agrees with the study conducted by **Schmieding et al., (2021)** titled "Parental knowledge and caregiving practices in pediatric chronic illness: A systematic review" which reported a similar positive correlation between knowledge and reported practices among mothers in a different clinical context.

Emphasizing that better informed caregivers tend to adopt more effective care strategies, adhere to medical recommendations, and provide safer and more supportive environments for their children. Strengthening mothers' knowledge, healthcare professionals can indirectly improve caregiving practices, leading to better health outcomes and enhanced quality of life for children with brain tumors.

Conclusion

On the light of the current study findings, it can be concluded that:

The majority of the studied mothers had poor level of knowledge regarding caring for children with brain tumor. As well, more than three fifths of them had inadequate level of reported practices. Moreover, there was a positive statistically significant correlation between their total level of knowledge and reported practices regarding brain tumor child care.

Recommendations

Based on the findings of the study results, the following recommendations were suggested:

* Continuous assessment and training for mothers about care given for children with brain tumors.

* Develop an educational program for mothers focusing on brain tumor awareness and caregiving techniques should be prioritized.

* Provide mothers with an instruction booklet regarding the care of their children with brain tumor which should be available for all mothers as references.

* Further study is needed to assess obstacles that affect mothers' performance regarding caring for their children with brain tumors.

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