Health Related Learning Needs among Patients Undergoing Brain Tumor Surgeries

Mona Samy Mohamed Zohdy⁽¹⁾, Sanaa Alaa El-Din⁽²⁾, Amna Yehia Saad⁽³⁾, Ahmed Saeed El-Kady⁽⁴⁾

(1) Medical and surgical Nursing department, Faculty of Nursing, Alexandria University, Egypt.

(2) Medical and surgical Nursing department, Faculty of Nursing, Alexandria University, Egypt.

(3) Medical and surgical Nursing department, Faculty of Nursing, Alexandria University, Egypt.

(4) Spine and Neurosurgery Department, Faculty of Medicine, Alexandria University, Egypt.

Corresponding Author: Mona Samy Mohamed, Faculty of Nursing, Medical and surgical Nursing Department Email: Mona_samy@alexu.edu.eg

Abstract

Background: A brain tumor is a serious and potentially life-threatening condition that impacts many people annually. The primary treatment modalities for benign brain tumor include surgery. Assessment of learning needs influences patients' lifestyles and can assist in meeting such demands. In order to ensure patient satisfaction and successful outcomes, nurses play a crucial role in education. Aim: This study aimed to identify health related learning needs among patients undergoing brain tumor surgeries. Design: A descriptive research design was utilized for this study. Setting: This study conducted at the Neurosurgical ward of The Main University Hospital in Alexandria, Egypt .Subjects: convenience sample of (80) adult patients undergoing brain tumor surgeries. Tools: One tool was used for the aim of data gathering which is learning needs assessment of patients undergoing brain tumor surgeries structured interview schedule. It included two main parts; part I: Patients' socio demographic and clinical data. Part II: Assessment of patients learning needs. Results: The findings showed that all patients with a brain tumor had high learning needs across all assessed domains. There was statistically significance difference between patients level of knowledge and educational level, monthly income (p<0.001),(p=0.0210)respectively, while no statistically significance difference between patients level of knowledge and gender(p=0.392), age (p=0.865), occupation (p=0.277), type of work (p=0.945), marital status (p=0.342) and residence (p=0.664).Conclusion: It can be concluded that the studied subjects had poor knowledge level regarding nature of disease, pre-operative and post-operative care, post-operative complications, life style modifications and follow up. Recommendations: Health education pamphlets for patients undergoing brain tumor surgery can be prepared and In-service education on brain tumor surgery must be administered to nurses by efficient and skilled doctors as well as experienced nurses

Keywords: Health, Learning needs, Patients, brain tumor surgeries

Introduction

A brain tumor is a potentially fatal condition that affects numerous individuals each year. A tumor is an uncontrolled cell growth inside a person's skull that might harm the brain's functions and neurological system. According to research conducted by the National Brain Tumor (NBT) Foundation, there have been over 29,000 cases of brain tumors identified in the United States, and over 13,000 people die from them each year. Similarly, more than 42,000 people in the UK are diagnosed with brain tumors each year. Furthermore, according to the data, the tumor can develop anywhere in the skull, and these people differ in age, sex, and fitness (Akil et al., 2020).

Brain surgeries are considered as one of the most critical surgeries performed on the human body .Brain tumor surgeries remain a mainstay treatment for brain tumors. Surgery for brain tumors aims to either remove as much of the tumor as feasible without worsening the neurological impairment (blindness, paralysis), or to partially remove the tumor to alleviate symptoms (decompression). Surgery also can be done to remove a tissue sample of tumor to confirm the diagnosis (biopsy). A variety of surgical approaches have been developed to treat patients with brain tumor (Hinkle et al., 2022).

The nurses have a crucial role during the preoperative and post operative period in determining the learning needs for the patients undergoing brain surgery. The primary purpose of a learning needs assessment is to identify and address the specific educational gaps and informational needs that can significantly impact their surgical experience and recovery. This assessment aims to understand the patient's current knowledge about their condition, the surgical procedure, potential risks, and postoperative care. By evaluating their emotional, psychological, and social needs, healthcare providers can develop a personalized education plan that enhances the patient's understanding and coping mechanisms (Blöndal et al., 2022).

Nurses should improve patient education regarding brain tumors and provide simple information to patients in order to encourage active engagement by patients with the hospital. Nurses should create patient-specific health education based on their personality traits and educational background. Through education, nurses can have a significant positive impact on patients' lives and potentially result in longlasting changes. (Fereidouni et al., 2019)

Patients undergoing brain tumor surgery have specific learning needs to ensure they are well-prepared for the procedure and recovery process. They need comprehensive education about the nature of their brain tumor, the surgical procedure, potential risks. and expected outcomes. Understanding the preoperative preparations, including fasting requirements and medication adjustments, is crucial. Postoperative care instructions are vital, covering topics such as wound care, signs of infection, medication management, and activity restrictions correct position, measures for ICP management. Patients should also be informed about possible changes in neurological function and the importance of follow-up appointments for monitoring recovery and addressing complications (Shlobin et al., 2021).

Significance of the study:

Although health related learning needs are documented in the literature, nevertheless when dealing with human beings this needs are always influenced by cultures, life style and religion. Through the understanding of each patient specific health related learning needs, nurses can provide a better health care. This ultimately will improve patient condition and coping patterns. An informed and educated patient can actively participate in his or her own treatment, participate in self care program, understand and implement the therapeutic and rehabilitation plan and reduce complications, which in turn will improve outcomes and reduce his or her length of stay in the hospital (Kirimlioğlu, 2018).

Aim of the Study:

The study was aimed to Identify health related learning needs among patients undergoing brain tumor Surgeries

Research question: What are the health related learning needs among patients undergoing brain tumor surgeries?

Subjects and Methods:

- **Design:** A descriptive research design was utilized to accomplish this study.
- **Settings:** This study conducted at the Neurosurgical ward of The Main University Hospital in Alexandria, Egypt which is located at the 6th floor. It includes emergency room, intensive care unit, operating room, recovery room and 2 rooms for males and 5 rooms for females.
- Subjects: A convenience sample of (80) adult patients undergoing brain tumor surgeries from the above-mentioned setting. The Epi info-7 tool was used to estimate the sample size using the following parameters: Population size: 100 / year (based on hospital statistical records), expected frequency: 50%, acceptable error: 5%, confidence coefficient: 95% and minimum sample size: 80 patients with the following criteria: aged from 20 to 60 years, diagnosed as benign brain tumor. TNM staging (1, 2 stage) and scheduled for brain tumor surgeries.

Tools of data collection:

One tool was used for the aim of data collection: Learning needs assessment of patients undergoing brain tumor surgeries structured interview schedule This tool was developed by Glal et al., (2020). It adapted by the researcher after reviewing the relevant literatures. (Durmo et al., 2018; Shree & Kumar., 2018). To identify learning needs of patients undergoing brain tumor surgeries.

It included two main parts:

- Part I: Patients' socio demographic and clinical data: This part divided into two categories:
- **1. Socio-demographic data:** This part was used to collect patients' personal data such as age, sex, level of education, occupation, residence, marital status and monthly income.
- **2. Clinical data:** It had been used to gather clinical history data for patients and their relatives such as sign and symptoms of the disease, associated diseases , duration of the disease, data related to previous hospitalization due to other tumor and family history.
- **Part II: Assessment of patients learning needs:** This part included fifty-seven multiple-choice questions arranged into five Categories as follows:
- 1- Learning needs of patients regarding nature of the disease (brain tumor): This category included five questions related to nature of the disease as meaning of brain tumor, signs and symptoms, of risk factors and different methods of treatment.
- 2- Learning needs of patients before brain tumor surgery/eradication : This category included sixteen questions regarding to indication for the surgery, advantages, complications and preparation for brain tumor surgery such as laboratory investigations, radiological studies. preoperative medications, stopping anticoagulant drugs, fasting period before the surgery, explanation of the surgery, duration of surgery, skin preparation before surgery and Head site of surgery.
- **3- Learning needs of patients after brain tumor surgery (brain tumor eradication):** This category will include eighteen questions in order to assess patients' knowledge and actual learning needs post

brain tumor surgeries and it will be divided into:

- 3.1-Post-operative food and fluids: When he/she started food and fluid intake, suitable type of food should be taken after surgery.
- 3.2- Post-operative medications and wound care: Types of postoperative medications, when to resume use of anticoagulants, dates of wound care, signs of wound infection, time of wound healing and removal of surgical sutures, how to keep incision clean and dry, catheters and drains, benefits of drains inside the wound day of drain removal.
- 3.3- Post-operative physical activities: Time of starting movement, Correct position after the surgery, time of resuming normal activities.
- 3.4- Post operative ICP management: It included questions related to measures to avoid raising of Intracranial pressure as patient position, permissible types of activities that should be performed by the patient and strenuous activity to be avoided such as chronic coughing, sneezing, constipation, straining, nervousness, shouting and carrying heavy objects.
- 4- Learning needs of patients about post operative complication: This category included four questions related to post discharge such as what possible complications after the surgery and how to prevent occurrence of these complications.
- 5- Patient learning needs regarding life style modification and follow up: This category included fourteen questions related to avoidance of strenuous activities, time of avoidance of strenuous activity, weight allowed for lifting, time to resume driving, healthy diet, smoking, bode weight control, follow up to physician and danger signs.

Ethical Considerations:

An ethical approval received from the Research Ethics Committee (REC) IRB00013620 (9/19/2025), Faculty of Nursing Alexandria University for carrying out this study. An official letter obtained from the responsible authorities of the inpatient Neurosurgical Department at the Main University Hospital in Alexandria to obtain their approval to collect the data after explaining the aim of the study.

Study tool was adapted by the researcher after reviewing the relevant literatures. The study tool translated into Arabic by the researcher

Written informed consent from every patient was obtained before data collection and after providing an appropriate explanation of the study aim. The patient informed that his or her participation in the study is voluntary. The subject has the right to withdraw at any time. Confidentiality of the collected data was assured. Anonymity and Privacy of the study subjects were assured.

Validity of the tool:

Study tool tested for content validity by five experts specialized in the field of Medical-Surgical Nursing Department, Faculty of Nursing. Alexandria University for evaluating comprehensiveness, its completeness, item clarity, and content validity. The tool was adjusted in response the jury's comments and to recommendations.

Reliability of the tool

• The reliability of the tool was tested using Cronbach's alpha test. The tool for the study was given to eight patients. The reliability coefficient value was 0.85 for the tool which is acceptable.

Pilot study

 A pilot study was conducted on 10% of patients (8 patients) of total studied subjects in order to test clarity ,feasibility of the adapted tool and necessary modifications were done. Patients that participated in the pilot study were not included in the study.

Fieldwork:

 Collection of data began after administrative approval was obtained. To accomplish the goal of this study, data was gathered using the final form of the structured tool. The researcher conducted personalized interviews with each patient to gather data. The duration of the one-on-one interview was between 30 and 45 minutes.

- Study subjects interviewed individually in the morning shift once before the operation to assess actual needs regarding the nature of disease and preoperative preparation. Then they interviewed after the operation to assess actual needs regarding the post operative instruction, complication and follow up.
- Patients are interviewed during hospitalization before operation in the neurosurgical department to assess patients who are undergoing brain tumor surgery knowledge and their actual needs regarding the nature of the disease, pre-operative preparation and provided explanation of the surgical procedure. Then the brain tumor patients interviewed after the operation to assess their knowledge and actual needs "post-operative regarding instructions. complications and follow up" and patients received explanation and information needed for post operative instructions and follow up.
- Data collection was started on June 2024 to half November 2024

Statistical Analysis of the data: The Statistical Package of Social Sciences (SPSS, version (26) was used to analyze the data. Before analysis, the data was coded, entered, and verified. Data for qualitative variables were displayed as percentages and numbers. However, the quantitative variable (age) was presented using the mean and standard deviation.

Results

Table (1) shows the frequency distribution of socio-demographic characteristics among the studied patients. Regarding gender, it was found that about two third (60%) of studied subjects were Females.(40%) of studied subjects were males. In relation to age, it was noticed that more than one quarter of studied subjects were in the age group (20<30) years with equal percentage in the age group (40<50) (26.3%), while (22.5%) were in the age group (50<60) years. Concerning the educational level, it was evident that illiterate patients formed (32.5%) of studied subjects, while (11.3%) had university education. In relation to occupation, it was found that two third (67.5%) of studied subjects were not working. Also, this table revealed that (77.5%) of studied subjects were married, and more than two third (62.5%) lived in rural area. Moreover; it was found that more than half (55%) of studied subjects had insufficient monthly income to fulfill the daily requirements.

Table (2) show the distribution of studied patients according to their Clinical data. It was noticed that more than half (51.3%)of studied subjects suffered from brain tumor about six months before admission while (12.5%)suffered brain tumor more than from lvear.Episodes of headache that worsen with physical activity or early in the morning reported by the majority of studied subjects (83.8%). Whereas sleep disturbance, seizures reported by (41.3%) respectively. In relation to previous hospitalization as a result of other tumor it was found that the majority of patients (73.8%) had no previous hospitalization.

According to previous surgeries; above half (58,8%) of the studied subjects didn't had surgery before, while (41,3%) had previous surgery. more than one third (33.3%) had neurosurgery, only (2.9%) had open heart surgery. Regarding family history; it was found that the majority (71.3%) of studied subjects had no family history of brain tumor while (28.8%) of studied subjects had positive family history and the majority from first degree members (78.3%) .In relation to associated diseases; more than two third (63.8%) of studied subjects were free from any associated diseases. However (36.3%) had associated disease, the majority of studied subjects (72.4%) had hypertension and (55.2%) had diabetes.

Table (3): illustrates the percentage distribution of the studied patients -according to their level of knowledge. This table revealed that learning needs of patients regarding nature of the disease; more than half (51.2%) of the studied subjects had poor knowledge ,(38.2%) studied subjects good of the had knowledge ,while only (10 %) of the studied subjects had fair knowledge. As regards learning needs of patients before brain tumor surgery /eradication the majority (98.8%) of the studied subjects had poor knowledge (1.3%) of the studied subjects had fair knowledge. Concerning to learning needs of patients after brain tumor surgery; (100%) of the studied subjects had poor knowledge, Also learning needs of patients about post operative complication; (100%) of the studied subjects had poor knowledge. Moreover, learning needs regarding life style modification and follow up;(100%) of the studied subjects had poor knowledge.

Finally, the overall assessment of patients learning needs showed that the majority (92.5%) of the studied subjects had poor knowledge level,(5%)of the studied subjects had fair knowledge level while only (2.5%) had good knowledge level.

Table (4): illustrates the distribution of the studied patients -according to total score of assessment of patient learning needs. This table revealed that the average of total score of learning needs of patient about post operative complication, regarding nature of the disease, regarding life style modification and follow up, after brain tumor surgery were (1.39 ± 2.31) , (3.23 ± 2.45) , (5.18 ± 3.95) , (6.56 ± 5.45) , (9.38 ± 6.0) respectively. More over the total average score for overall assessment of patients learning needs was(31.20 ± 26.9).

Table (5) shows the relation between Socio-demographic data for the patient and total score of assessment of patients learning needs. This table revealed that there was statistically significance difference between total score of assessment of patient learning needs regarding nature of the disease, learning needs before brain tumor surgery and educational level (p=0.002), (p=0.005)respectively. Moreover, there was statistically significance difference between total score of assessment of patient learning after brain tumor surgery and marital status (p=0.011). Furthermore. there statistically was significance difference between total score of assessment of patient learning needs regarding life style modification and residence (p=0.033)

Table (6) shows the relation between Socio-demographic data for the patient and total score of knowledge level. The finding of this table showed that there was statistically

Original Article

significance difference between patients level of knowledge and educational level, monthly income (p<0.001), (p=0.0210) respectively, while its was noticed that there was no statistically significance difference between patients level of knowledge and gender (p=0.392), age (p=0.865), occupation (p=0.277), type of work (p=0.945), marital status (p=0.342) and residence (p=0.664).

Table (1): Distribution	of studied patients	according to t	heir socio-demo	graphic characteristic	s
(n = 80)					

Sociodemographic data	No.	%
Gender		
Male	32	40.0
Female	48	60.0
Age (years)		
From 20- less than 30 yrs	21	26.3
From 30-less than 40 yrs	20	25.0
From 40 -less than 50 yrs	21	26.3
From 50-60 yrs	18	22.5
Educational level		
Illiterate	26	32.5
Read and Write	22	27.5
Intermediate	23	28.8
University	9	11.3
Occupation		
Working	26	32.5
Not working	54	67.5
If working what is the type of job $(N = 26)$		
Worker	13	50.0
Employee	9	34.6
Free work	4	15.4
Marital status		
Single	13	16.3
Married	62	77.5
Divorced	1	1.3
Widowed	4	5.0
Residence		
Rural	50	62.5
Urban	30	37.5
Monthly income		
Enough	36	45.0
Not enough	44	55.0

multiple responses

Clinical data	No.	%
Time of having a brain tumor		
Since less than 6 months	41	51.3
from 6 months – one year	29	36.3
More than one year	10	12.5
Symptoms experienced as a result of your brain tumor#		
Episodes of headache that worsen with physical activity or early in the	(7	020
morning	67	83.8
Sleep distrubance like hypersomnia	33	41.3
Irrational nausea and vomiting	21	26.3
Memory problems	28	35.0
Difficulties in speech	26	32.5
Loss of sensation or movement in the arm or leg gradually	23	28.8
General fatigue	13	16.3
Muscles inflammation	3	3.8
Hearing problems	18	22.5
Dizziness	30	37.5
Vision problems such as double vision or vision on one side	26	32.5
Seizures and sudden involuntary muscles movements	33	41.3
Difficulties in balance (change in ability to walk)	26	32.5
Unbreathing for short periods	3	3.8
Cvanotic skin	1	1.3
Disturbed level of consciousness	15	18.8
Other (incontinence / numbress)	8	10.0
Previous Admission to the hospital.as a result of other tumor		
Yes	21	26.3
No	59	73.8
Previous surgeries	-	
Yes	33	41.3
No	47	58.8
Surgical procedures done before (n = 33)#	1	
Appendectomy	15	45.5
Tonsillectomy	4	12.1
Neurosurgery	11	33.3
Orthopedic surgery	5	15.2
Hysterectomy	3	8.8
Tumor remove	3	8.8
C.S	2	5.9
Open heart surgery	1	2.9
Family history		
Yes	23	28.8
No	57	71.3
Family member relation (n = 23)	1	
Relationship from first degree	18	78.3
Relationship from second degree	5	21.7
Associating chronic diseases		
Yes	29	36.3
No	51	63.8
Associated chronic disease patients had	1	
Hypertension	21	72.4
Diabetes mellitus	16	55.2
Cardiac diseases	4	13.8
Respiratory diseases	1	3.4
Liver diseases	0	0.0
Kidney diseases	0	0.0
Others (anemia/ thyroid disfunction)	2	6.9

Table (2): Frequency distribution of Clinical data among the studied patients (n = 80)

Part 2: Assessment of patients learning needs		Poor		Fair		od
		%	No.	%	No.	%
Learning needs of patients regarding nature of the disease (brain tumor).	41	51.2	8	10.0	31	38.2
Learning needs of patients before brain tumor surgery /eradication.	79	98.8	1	1.3	0	0.0
Learning needs of patients after brain tumor surgery (brain tumor eradication)		100.0	0	0.0	0	0.0
Learning needs of patients about post operative complication:	80	100.0	0	0.0	0	0.0
Learning needs regarding life style modification and follow up	80	100.0	0	0.0	0	0.0
Overall Part 2: Assessment of patients learning needs	74	92.5	4	5.0	2	2.5

Table (3): Distribution of the studied patients according to their level of knowledge. (n = 80)



Figure (1): Level of Assessment of patients learning needs (n = 80)

Table (4): Distribution of the studied patients according to total Score of assessment of patients learning needs (n = 80)

	Total	score	Percent score		
Part 2: Assessment of patients learning needs	Min. – Max	Mean ± SD	Min. – Max	Mean ± SD	
Learning needs of patients regarding nature of the disease (brain tumor).	0.0-6.0	3.23±2.45	0.0-100.0	54.0±40.8	
Learning needs of patients before brain tumor surgery /eradication.	0.0-28.0	9.38±6.0	0.0-66.7	22.32±14.36	
Learning needs of patients after brain tumor surgery (brain tumor eradication)	0.0-25.0	6.56±5.45	0.0-56.8	14.91±12.38	
Learning needs of patients about post operative complication:	0.0-8.0	1.39±2.31	0.0-47.1	8.16±13.61	
Learning needs regarding life style modification and follow up	0.0-16.0	5.18±3.95	0.0-41.0	13.27±10.12	
Overall Part 2: Assessment of patients learning needs	4.0-131.0	31.20±26.9	2.70 -88.51	21.08±18.18	

55





Table (5): Relation between Socio-demographic data for the patient and total score of assessment of patients learning needs (n = 80)

Sociodemographic data	of the disease (brain tumor).	brain tumor surgery /eradication.	patients after brain tumor surgery (brain tumor eradication)	patients about post operative complication:	regarding life style modification and follow up
	mean ± SD	where \pm SD	wiean ± SD	wiean ± SD	wiean ± SD
Gender	22.20.126.42	21.0()17.0(15 77 10 (0	11.05+16.07	12 20 10 00
Male	32.29 ± 26.42	$21.06\pm1/.06$	15.//±12.62	$11.95\pm16.8/$	13.38±9.98
	31.00±27.34	19.84±11.98	14.35 ± 12.33	5.04 ± 10.30	13.19 ± 10.32
	/55.0 (0.880)	/51.5 (0.8/1)	/24.5 (0.007)	638.0 (0.120)	/60.0 (0.937)
Age (years)	27 78 1 28 54	17.00+14.00	12 24 12 05	0.04+14.49	12.04+0.79
From 20- less than 50 yrs	21.78±28.54	$1/.80\pm14.90$	12.34±13.93	9.24 ± 14.48 0.41±12.28	12.94 ± 9.78
From 50-less than 40 yrs	$31.0/\pm 23.00$	23.12 ± 17.55 10.05+11.42	10.39 ± 12.82	9.41 ± 13.20	12.51 ± 11.75 12.59±10.25
From 40 -less than 50 yrs	38.89±29.03	19.05 ± 11.42 10.44 ± 11.00	10.02 ± 12.27 14.77±10.40	7.00+13.23	12.38 ± 10.23
	26.70 ± 25.44	19.44±11.90	$14.//\pm 10.49$	0.80 ± 14.30 1.040 (0.702)	15.55 ± 0.00
n (r) Educational lovel	1.805 (0.001)	2.220 (0.328)	2.390 (0.439)	1.040 (0.792)	2.201 (0.320)
Educational level	22 72+22 65	14 84+10 55	14.51 ± 12.70	2 71+7 67	11 14+0 27
Read and Write	23.72 ± 25.03 28.70 ± 25.81	14.04 ± 10.00 10 50±15 80	14.31 ± 12.79 11.05±0.03	2.71 ± 7.07 11.76±14.86	11.14 ± 9.57 11.66 ± 10.00
Intermediate	20.79 ± 23.01 30.43 ± 22.28	19.39 ± 13.09 22.88 \pm 15.31	11.03 ± 9.93 18 58 ± 14.07	8.70 ± 15.14	16.61 ± 10.30
University	66 67+25 0	31 48+7 88	16.36 ± 14.07 16.16+10.87	13.73 ± 16.38	14 81+8 77
H (P)	14564*(0.002*)	12 739* (0 005*)	4 084 (0 252)	6 673 (0 083)	5 210 (0 157)
(I) Occupation	14.304 (0.002)	12.739 (0.003)	4.004 (0.252)	0.075 (0.085)	5.210 (0.157)
Working	40 38+29 50	24 27+14 25	1556+1046	7 47+13 37	12 62+9 14
Not working	27.78 ± 24.66	18 43+13 82	14.60 ± 13.20	8 50+13 84	12.02 ± 9.14 13.58+10.63
I (P)	533 5 (0.075)	521.0 (0.062)	632.0 (0.469)	663 5 (0.630)	675 5 (0 784)
If working what is the type of job	555.5 (0.075)	521.0 (0.002)	052.0 (0.407)	005.5 (0.050)	075.5 (0.704)
(N = 26)					
Worker	26 92+23 11	22 16+16 90	15 73+12 01	4 98+12 21	8 88+7 30
Employee	55 56+35 36	25 13+12 66	15 66+9 80	7 19+12 40	17 38+10 55
Free work	50.00 ± 13.61	29.17±8.33	14.77 ± 8.80	16.18 ± 18.83	14.10 ± 7.40
H (P)	5.015 (0.081)	1.888 (0.389)	0.074 (0.964)	2.043 (0.360)	4.610 (0.100)
Marital status					
Single	34.62±34.33	18.68 ± 11.49	8.92 ± 9.84	4.98±12.21	9.27±5.69
Married	32.26±25.58	21.31±15.01	16.42±12.29	9.11±14.28	14.64±10.64
Divorced	33.33	9.52	40.91	0.00	0.00
Widowed	16.67±23.57	13.10±4.12	4.55±3.21	5.88±6.79	8.33±8.21
H (P)	1.262 (0.738)	2.542 (0.468)	11.156* (0.011*)	1.981 (0.576)	5.890 (0.117)
Residence					
Rural	28.00±24.15	19.19±15.22	14.18±12.56	8.00±13.95	11.49±9.87
Urban	38.33±30.05	22.22±12.15	16.14±12.19	8.43±13.26	16.24±10.00
U (P)	597.5 (0.119)	596.0 (0.125)	652.5 (0.330)	726.0 (0.771)	536.5* (0.033*)
Monthly income					
Enough	26.39±24.36	18.92±14.58	12.88±12.74	5.39±11.28	11.82±10.19
Not enough	36.36±28.14	21.48±13.84	16.58±11.97	10.43±15.00	14.45±10.03
U (P)	630.5 (0.109)	675.0 (0.257)	618.5 (0.091)	654.0 (0.104)	663.0 (0.210)

U: Mann Whitney test

H: H for Kruskal Wallis test

*: Statistically significant at $p \leq 0.05$

Table (6): Relation	between	Socio-demograp	hic data	for the	e patient	and sco	ore of K	Inowledge	level
(n = 80)									

	Knowledge level			
Sociodemographic data	Mean ± SD	Test of sig.		
Gender				
Male	34.38±29.25	t= 0.860		
Female	29.08±25.33	p=0.392		
Age (years)				
From 20- less than 30 yrs	30.52±31.61			
From 30-less than 40 yrs	35.60±28.17	F=0.245		
From 40 -less than 50 yrs	28.81±25.99	p=0.865		
From 50-60 yrs	29.89±21.83			
Educational level				
Illiterate	17.77 ± 8.74			
Read and Write	27.09±13.17	F=26.677*		
Intermediate	30.0±19.62	P<0.001*		
University	83.11±41.61			
Occupation				
Working	27.58±11.89	t= 1.095		
Not working	32.94±31.68	p=0.277		
If working what is the type of job (N = 26)				
Worker	27.23±12.54	F=0.057		
Employee	27.22±13.82	p=0.945		
Free work	29.50±5.80			
Marital status				
Single	22.23±12.49			
Married	34.05±29.40	F=1.130		
Divorced	31.0	p=0.342		
Widowed	16.25±7.27			
Residence				
Rural	30.18±27.63	t= 0.435		
Urban	32.90±26.05	p=0.664		
Monthly income				
Enough	23.87±10.65	t= 2.375*		
Not enough	35.84±32.63	p=0.0210*		

t: Student t-test

F: F for ANOVA test *: Statistically significant at $p \le 0.05$

Discussion

Brain tumors are the most terrifying of all cancer types because, in comparison to other cancers, they are challenging to cure and can have systemic effects extensive because of neurological damage. Patients with brain tumors may have physical, psychological, social, and cognitive changes both during and after treatment, in addition to the effects of the tumor itself. These changes are difficult for patients to handle on their own, and their medical professionals are also under stress and strain. The patient's health and chances of survival are ultimately impacted by the care provider's stress and burden (Jung et al., 2023)

As regards to the current study's findings, the vast majority of the patients had inadequate

knowledge about the nature of brain tumors as well as its management ; as a result, they have learning needs about risk factors for the disease. available treatment modalities, preoperative and postoperative complications, lifestyle care, modification, follow-up, and ICP and complications management. . Moreover, there were highly statistically significant relation were found between patients' level of knowledge and educational level, monthly income.

Regarding gender, this study revealed that two third of studied subjects were females. This result can be justified by females have a higher risk for certain types of brain tumors, such as meningiomas, possibly due to hormonal influences like estrogen and progesterone that can stimulate tumor growth. This finding is supported by (Heng et al., 2023; Ostrom, Cioffi, et al., 2019), (Patil & Giridhar, 2021) who stated that The incidence of brain and other central nervous system tumors is higher in females compared to males. However, these findings contradict the study of (Dong et al., 2019) who reported that Males have higher incidence but lower survival compared to females for most brain tumor histologies.

In relation to patient's age, the result revealed that, the largest proportion of patients were in age group from(20<30) and from (40<50).This findings supported by (Hardell & Carlberg, 2017) who found that brain tumor incidence increased over time, with the highest increase in the 20-39 age group. Otherwise (A. Ghaffari-Rafi et al., 2021) reported that among age groups, peak incidence was largest for those 65-84 years old in the benign group, but 45-64 years old for the malignant group.

This study showed that, more than one third of the subjects were illiterate. Low educational level may be associated with weak awareness of the seriousness of the disease. Moreover, there was association between illiteracy, many false practices that may predispose to complications. Especially those who had poor knowledge about methods of preventing increase intracranial pressure. This finding matched with (Valiyaveettil et al., 2021) who report that most of subjects (80%) were illiterate. However, this contradicted finding with (Ali Ibrahim Almanzlawi et al., 2021) who reported that above high of patients were educated (secondary education) and above third highly educated.

Regarding monthly income, more than half of the patients had inadequate income to cover daily requirements .This could be associated with increase Unemployment and poverty in Egypt especially in rural area. These findings agreed with the study of (Urooj et al., 2022) who reported that brain tumors in Pakistan are more common in lower socioeconomic patients who seek treatment at public hospitals. However, other studies contradicted this finding and showed no relation between brain tumor incidence and socioeconomic status (Roberts et al., 2021). Moreover (Bell et al., 2019) (Wanner et al., 2020) reported that lower incidence of brain tumor found in low and middle-income countries. Concerning residence area , the findings indicated that more than two third of patients were from rural areas .this may be associated with increased exposure to environmental risk factors such as agricultural chemicals or limited access to healthcare, delaying early detection. This findings matched with (Bell et al., 2019) (Arash Ghaffari-Rafi et al., 2021) who found that rural areas had the greatest incidence of benign cerebral meningiomas in the United States.

According to family history, the present study detected that more than half of studied subjects had a negative family history for brain tumor that may be because the majority of brain tumors occur due to random genetic mutations or environmental exposures rather than inherited genetic predispositions. Which agrees with (Glal et al., 2020) who reported that more than half of patients had negative family history.

In relation to knowledge of the studied subjects regarding to nature of the disease, the current study showed that more than half of the studied subjects were lacking knowledge about brain tumor nature regarding definition and risk factors. This result may be justified by the lack of guidance and instructions from the health care givers to those patients, unavailability of health education program. This findings is come in line with **(El Ashery Ashery Asker et al., 2024)** who found that the majority of patient had a poor knowledge about the disease, surgery and method of diagnosis.

Regarding the association between patients' sociodemographic characteristics and the level of knowledge, the current research study found a statistically significant difference between the patients' knowledge and their monthly income and level of education. This result is corroborated by (Glal et al., 2020) who mentioned that there was a significant correlation between patients' knowledge and educational level, monthly income.

The study findings showed that there were statistically significance relation between total score of assessment of patient learning needs regarding nature of the disease, learning needs before brain tumor surgery and educational level, in my opinion this is because individuals with higher education may have better health literacy, allowing them to understand complex medical information more easily. Conversely, those with

lower educational levels may require simplified explanations and additional support to comprehend their condition and care requirements effectively. This results agrees with (ABD ALLAH et al., 2020) who's result showed that patients with low educational level had a high learning needs. otherwise this results contradicted by (Hussein & Mohammed, 2022) who found that no significant relationship was found between patients' level of education and learning needs, and their age.

Moreover, the findings of the present study showed that there was statistically significance difference between total score of assessment of patient learning needs regarding life style modification and residence. This findings matched with (Golboni et al., 2018) who found that Rural residents have significantly higher rates of inadequate health literacy compared to urban residents and that place of residence can influence health behaviors, perceptions, and literacy. Urban residents tend to exhibit higher health behavior indicators compared to rural residents.

The study showed that there was statistically significance difference between total score of assessment of patient learning after brain tumor surgery and marital status this may be exist because married individuals often require additional health education to support both personal recovery and the well-being of their partner or family. This finding supported by (Kim et al., 2018; Song et al., 2023) they stated that there were significant relationship between marital status and health behaviors, learning well-being. needs. and overall Married exhibit better health individuals generally behaviors and outcomes compared to those who are separated, divorced, or widowed

Finally, nurses must deliver better information to adult surgery patients. It reminds out that surgical patients have a unique health demands during the peri-operative period and these needs Nevertheless. remain steady. there was inconsistency in the results regarding the information given to surgical patients in crucial areas. As a result, greater focus should be placed on analyzing and determining the specific needs of surgical patients. The conversation affirms that information tailored to specific patient features plays a vitally essential role for individuals undergoing brain tumor surgery. Information seems to empower people, allowing them to take charge of their health care and adhere to treatment plans.

Conclusion:

It can be concluded that, the majority of the studied patients (92.5%) had poor knowledge level, while 5% of them had fair knowledge level. and only 2.5% of them had good knowledge level. there was statistically significance difference between total score of assessment of patient learning needs regarding nature of the disease, learning needs before brain tumor surgery and educational level. Moreover. there was statistically significance difference between total score of assessment of patient learning after brain tumor surgery and marital status. Furthermore, there was statistically significance difference between total score of assessment of patient learning needs regarding life style modification and residence. Therefore, there was increasing demand on the nurse in provision the correct amount of information specific to the three phases of surgery (pre, intra and post-operative) for patient who undergoing brain tumor surgery.

Recommendations:

Health education pamphlets for patients undergoing brain tumor surgery can be prepared. Development and application of educational programs for patients to improve their knowledge regarding brain tumor disease in order to comply with treatment method and to prevent complications. Increase patient's awareness about the disease through mass media. Disseminate health knowledge through posters, photos, video, and booklets as educational directed to patients that help to meet health needs for patients with brain tumor disease. Discussions can be arranged in surgical wards where nurses are requested to find journal articles on brain tumor surgery and then discuss and share the information with colleagues.

Limitations of the study:

One of the greatest problem is that some patients who met the criteria for selection they were unaware about their disease. The dropped out was a problem of this study about three patients after the initial interview before surgery they are unable to complete the interview post operative because of the incomplete recovery for them and neurological defict.

References

- Abd Allah, E. S., Ali, S. A. A., & Abdel-Aziz, H. R. (2020). Anxiety and its associated factors among older patients undergoing coronary angiography and percutaneous coronary intervention. Journal of the Egyptian Society of Parasitology, 50(2), 333-343. https://doi.org/10.21608/jesp.2020.113055.
- Akil, M., Saouli, R., & Kachouri, R. (2020). Fully automatic brain tumor segmentation with deep learning-based selective attention using overlapping patches and multi-class weighted cross-entropy. Medical Image Analysis, 63, 101692. https://doi.org/10.1016/j.media.2020.10169 2.
- Ali Ibrahim Almanzlawi, H., Farahat Ibrahim Ahmed, H., Mohamed Mohamed Lofty, I., & Ibrahem Abd El Fatah Yassen, M. (2021).
 Effect of Instructional Guidelines on Knowledge, Practice, and Fatigue Level among Patients with Brain Tumors. Egyptian Journal of Health Care, 12(1), 1268-1280.
- Askarinejad, A., Alizadehasl, A., Jolfayi, A. G., & Adimi, S. (2023). Hypertension in Cardio-Oncology Clinic: an update on etiology, assessment, and management. *Cardio-Oncology*, 9(1), 46.
- Bell, J. S., Koffie, R. M., Rattani, A., Dewan, M. C., Baticulon, R. E., Qureshi, M. M.,...Nahed, B. V. (2019). Global incidence of brain and spinal tumors by geographic region and income level based on cancer registry data. *Journal of Clinical Neuroscience*, 66, 121-127.
- Blöndal, K., Sveinsdóttir, H., & Ingadottir, B. (2022). Patients' expectations and experiences of provided surgery-related patient education: A descriptive longitudinal study. *Nurs Open*, 9(5), 2495-2505. <u>https://doi.org/10.1002/nop2.1270</u>
- Dong, M., Cioffi, G., Kruchko, C., Ostrom, Q., Lathia, J., Rubin, J.,...Barnholtz-Sloan, J. (2019). EPID-03. histology-specific brain tumor incidence and survival varies by sex. *Neuro-oncology*, 21(Supplement_6), vi74-

vi75.

- Durmo, F., Lätt, J., Rydelius, A., Engelholm, S., Kinhult, S., Askaner, K., Englund, E., Bengzon, J., Nilsson, M., Burtscher, I., Chenevert, T., Knutsson, L. &Sundgren, P. (2018). Brain Tumor Characterization Using Multibiometric Evaluation of MRI. *International Journal of Tomography*, 4(1), 20.
- El Ashery Ashery Asker, R., Dardier Hussein Awad, R., Mohamed Ahmed Ayed, M., Gamal Abd Elnaser Ahmed Elnabawey, M., Yousef Abdelwahed, A., Elsayed Awad Negm, H., & Tag Mohamed Mohamed, A. (2024). Effect of Implementing a Designed Rehabilitation Nursing Intervention for Brain Surgery's Patients on their Physical and Psychological Status. *Egyptian Journal of Health Care*, *15*(2), 434-449.
- Fereidouni, Z., Sabet Sarvestani, R., Hariri, G., Kuhpaye, S. A., Amirkhani, M., & Kalyani, M. N. (2019). Moving Into Action: The Master Key to Patient Education. J Nurs Res, 27(1), 1-8. <u>https://doi.org/10.1097/jnr.00000000000280</u>
- Ghaffari-Rafi, A., Mehdizadeh, R., Ko, A. W. K., Ghaffari-Rafi, S., & Leon-Rojas, J. (2021). Demographic and socioeconomic disparities of benign cerebral meningiomas in the United States. *Journal of Clinical Neuroscience*, 86, 122-128. <u>https://doi.org/ https://doi.org/10.1016/j.jocn.2021.01.023</u>
- Glal, A., Shreif, W. I., Hassan, M., & Mohamed, N. (2020). Assessment of Learning Needs for Patients Undergoing Brain Tumors Surgeries at Al Mansoura General Hospital.
- Golboni, F., Nadrian, H., Najafi, S., Shirzadi, S., & Mahmoodi, H. (2018). Urban–rural differences in health literacy and its determinants in Iran: A community-based study. *Australian Journal of Rural Health*, 26(2), 98-105.
- Hardell, L., & Carlberg, M. (2017). Mobile phones, cordless phones and rates of brain tumors in different age groups in the Swedish National Inpatient Register and the Swedish Cancer Register during 1998-2015. *Plos one, 12*(10), e0185461.

Heng, Y. W., Tan, K. H., & Yap, N. K. B. (2023).

Brain Tumor: A Review of Its Demographic in a Rural Hospital of Sibu in Sarawak, Malaysia. *Asian J Neurosurg*, *18*(1), 1-4. <u>https://doi.org/10.1055/s-0043-1760855</u>

- Hinkle, J. L., Cheever, K. H., & Overbaugh, K. J. (2022). Brunner & Suddarth's *textbook of medical-surgical nursing*. 15th edition. Philadelphia, Wolters Kluwer Health.
- Kim, A., Lee, J. A., & Park, H. S. (2018). Health behaviors and illness according to marital status in middle-aged Koreans. *Journal of Public Health*, 40(2), e99-e106.
- Kırımlıoğlu, N. (2018). Patient Education And Its Importance in Terms of Patient Safety. International Journal of Research -GRANTHAALAYAH, 6, 109-120. <u>https:// doi.</u> org/ 10. 29121/ granthaalayah. v6. i12.2018.1090
- McKinnon, C., Nandhabalan, M., Murray, S. A., & Plaha, P. (2021). Glioblastoma: clinical presentation, diagnosis, and management. *Bmj*, 374, n1560. <u>https:// doi. org/ 10. 1136/ bmj.n1560</u>
- Ostrom, Q. T., Cioffi, G., Gittleman, H., Patil, N., Waite, K., Kruchko, C., & Barnholtz-Sloan, J. S. (2019). CBTRUS statistical report: primary brain and other central nervous system tumors diagnosed in the United States in 2012–2016. *Neuro-oncology*, 21(Supplement_5), v1-v100.
- Patil, P. A., & Giridhar, P. (2021). Epidemiology and Demography of Brain Tumors. In S. Mallick, P. Giridhar, & G. K. Rath (Eds.), *Evidence based practice in Neuro-oncology* (pp. 3-7). Springer Singapore. <u>https:// doi.org/10.1007/978-981-16-2659-3 1</u>
- Roberts, A., Hu, M., & Hajizadeh, M. (2021). Income and Education Inequalities in Brain and Central Nervous System Cancer Incidence in Canada: Trends over Two Decades. *Journal of Cancer Prevention*, 26(2), 110.
- Shlobin, N. A., Clark, J. R., Hoffman, S. C., Hopkins, B. S., Kesavabhotla, K., & Dahdaleh, N. S. (2021). Patient Education in Neurosurgery: Part 1 of a Systematic Review. *World Neurosurg*, 147,202-214.e201. <u>https:// doi.org/10.1016/j.wneu.2020.11.168</u>

- Shree, N. & Kumar, T. (2018).Identification and Classification of Brain Tumor MRI Images with Feature Extraction Using DWT and Probabilistic Neural Network. *International Journal of Brain Informatics*, 5(1), 25.
- Song, L., Guan, T., Guo, P., Tan, X., Bryant, A. L., Wood, W. A.,...Keyserling, T. C. (2023). Health behaviors, obesity, and marital status among cancer survivors: a MEPS study. *Journal of Cancer Survivorship*, 17(2), 499-508.
- Urooj, F., Bajwa, M. H., Khalid, M. U., Shah, M. M., Khan, A. A., Hani, U.,...Raghib, M. F. (2022). A national overview of paediatric and adolescent and young adult surgical neurooncology in Pakistan. JPMA. The Journal of the Pakistan Medical Association, 72(11), S85-S92.
- Valiyaveettil, D., G, A., Malik, M., Eaga, P., Ahmed, S. F., & Joseph, D. (2021). "A prospective study of assessment of neurocognitive function in illiterate patients with gliomas treated with chemoradiation": Assessment of neurocognitive function in gliomas. *Cancer Treatment and Research Communications*, 26, 100288. <u>https://doi. org/ https:// doi. org/ 10. 1016/ j. ctarc. 2020. 100288</u>
- Wanner, M., Rohrmann, S., Korol, D., Shenglia, N., Gigineishvili, T., & Gigineishvili, D. (2020). Geographical variation in malignant and benign/borderline brain and CNS tumor incidence: a comparison between a highincome and a middle-income country. *Journal of neuro-oncology*, 149, 273-282.