Effect of Implementing Nursing Educational Program on Reducing Postoperative Complications for Patients after Intracranial Surgery

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Abstract

Background: Because brain structures are complex, neurosurgery is associated with high rates of morbidity and death. From minor surgical nausea and vomiting to catastrophic neurological degeneration, the consequences might vary widely. **Aim**: Determine the effect of implementing nursing educational program on reducing postoperative complications for patients after intracranial surgery**. Design:** a quasi-experimental study design. **Setting**: The study was conducted at the neurosurgical care unit and outpatient clinic at Eldemerdash hospital affiliated to Ain Shams university hospital Cairo, Egypt. **Subjects:** Purposive sample of sixty adult patients of both genders after intracranial surgery (burr hole, craniotomy and craniectomy).The patients divided into two groups: the control group (30 patients who received routine care) and the study group (30 patients) who received nursing educational program. **Tools:** three tools were used to collect data include: I: intracranial surgery patients' health status assessment questionnaire, II: postoperative complications assessment questionnaire, the nursing educational program for patients undergoing intracranial Surgeries. **Results:** among the study group 30.3 % of their age ranged from 30 to less than 40 while the control group 36.4 % aged from 30 to less than 40 and 40 to less than 50. Regarding to gender 57.6 % and 60.6% were females among the study and control group respectively. Concerning educational level 48.5%, and 39.4% had secondary school of the study and control group respectively. Regarding to total patients knowledge there is a highly statistically significant correlation post the educational program than pre the program among the study group. **Conclusion:** There is a positive significant correlation between total patients knowledge and post-operative systemic complications and neurological complications among the study group pre and post the educational program. **Recommendations:** Every patient having brain surgery should get the educational programme. It is advised that nurses get in-service training about the care required for patients undergoing brain surgery. Further research on larger sample is recommended to achieve generalization.

Key words: Educational program, Intracranial surgery, Post operative complications

Introduction:

Brain surgery is a difficult and vital procedure. The ailment being treated has a major impact on the sort of brain surgery performed. To treat patients with brain problems, a variety of neurosurgical methods have been devised, including craniectomy, craniotomy, and burr holes. A craniotomy is a surgical procedure in which the skull is opened to access the brain or its blood arteries. **(Xiaoyan ,et al, 2022**).

The removal of a lump or tumour, such as a meningioma; the drainage of an abscess; the removal of a blood clot; the repair of fractures to the skull resulting from trauma; the removal of pressure from the trigeminal nerve (also known as microvascular decompression); and the removal of pressure from the back of

the brain (foramen magnum decompression) are among the reasons why craniotomies are performed. It is occasionally utilised to perform operations on the blood arteries supplying the brain. **(Xing-yu, 2021).**

In contrast to a craniotomy, a craniectomy stores the bone for possible future insertion or, depending on the disease (such as an infection), may result in its disposal. There is a cranial defect as a result. Should the bone flap need to be removed, a specially designed implant is used in its stead. **(Amit ,2019).**

The weakest and most vulnerable time in a patient's life is right after surgery. A variety of neurosurgical treatments have been developed to treat patients with brain problems, and neurosurgical brain operations are rather common in daily practice. **(Canty, et al 2018).**

After intracranial operations, educational programmes are seen to be a crucial first step in ensuring high-quality nursing care. Its main goal is to offer a framework for carrying out the various nursing care tasks and identifying patients' requirements. The framework for arranging educational programmes that is most frequently utilised is the structure, process, and result aspects in assessing the quality of care. It offers recommendations for what a nurse should and shouldn't do. (**Haddad**, **et a**l**2019**)

Intracerebral haemorrhage, cerebral edoema, further neurological damage, behavioural abnormalities, electrolyte imbalance, infection, seizures, venous thrombosis, or hydrocephalus are among the potential complications following brain surgery. Within hours of surgery, haemorrhage can develop at the surgical site. There are a few places where bleeding might happen: the bed of the lesion, the ventricles, the subdural or subarachnoid region. (**Bartek**, **et al 2019)**.

Other issues that are uncommon and often connect to particular parts of the brain mean that they might not be real hazards for some people: Memory issues, speech difficulties, paralysis, unusual coordination or balance, and coma. Depending on the particular medical condition, there can be additional dangers. (**Guilabert, 2014).**

In certain circumstances, postoperative treatment following brain surgery may not conclude for months or even years. Patients undergoing brain surgery should expect the following benefits: no or fewer post-operative complications; good neurological status; carers' capacity to manage post-operative seizures; stability of vital signs; stability of laboratory investigations; decreased anxiety; increased patient satisfaction; and the absence of patient problems.. **(Ramesh et al, 2021).**

Significance of the study

Because brain structures are complex, neurosurgery is associated with high rates of morbidity and death. From minor surgical nausea and vomiting to catastrophic neurological degeneration, the consequences can be anything. Thorough planning is necessary for brain surgery. The medical professional will do blood tests in addition to a physical examination. Ensuring the patient is well enough for surgery and anaesthesia is their goal. A variety of imaging procedures, such magnetic resonance imaging (MRIs), could also be performed on them. computed tomography, or CT, scans.Angiography and PET (positron emission tomography) scans. These imaging procedures produce incredibly comprehensive images of your brain's blood channels, structures, and nerves. The images assist the surgeon in pinpointing the precise locations that require care. **(Al-Dorzi,et al,2017).**

Restoring brain circulation, allowing for outward herniation of brain tissue, minimising compression of brainstem structures, and reducing intracranial pressure (ICP) by 15–85%, depending on the amount of the removed bone, are all made possible by craniectomy **(Brain & Spine,2016).**

Intracerebral infections are a common post-craniotomy consequence that not only lengthen hospital stays but also raise medical costs and potentially endanger patient lives. As a result, it is crucial to identify the postoperative intracranial infection risk factors early on after craniotomy and to take the appropriate precautions to lower the risk and enhance the prognosis. **(Weiying and Danli,2022).**

Aim of the study:

This study aimed to:

Analyse the impact of introducing a nurse education programme on patients' reduced postoperative problems following intracranial surgery.

Hypothesis: at the end of the program

H1: Compared to patients receiving standard hospital nursing treatments, patients having brain surgery who will participate in the nursing educational programme show less problems.

Subjects and methods:

Design: The study utilized a quasi-experimental research design.

Setting: The study was carried out in the Neurosurgical care unit and outpatient clinic at Eldemerdash hospital affiliated to Ein Shams university hospital Cairo, Egypt.

Subjects: This study includes a sample of (60) adult patients of all genders who had undergone intracranial surgery (burr hole, craniotomy, and craniectomy). The patients were separated into two groups: the control (30 patients who got normal care) and the study (30 patients who received nurse educational services program). Data were collected during the period from (June 2023 to October 2023); this period included both the time of assessment and follow up. Patients were assessed immediately after intracranial surgery (burr hole, craniotomy and craniectomy) and daily during hospitalization. Those patients were followed up before discharge in the neurosurgery department and 1month and 2 months after discharge in the neurosurgery outpatient clinic.

The inclusion criteria of patients were:

1-age ranged from 20 to more than 60 years old,

2- Fully conscious

3- Ability to converse vocally, alertness and ability to follow directions, absence of associated diseases, hospitalised at least one day previous to surgery.

4- Agree to participate in the study

Exclusion criteria:

- Disoriented patient.

- Uncooperative patient.

-Patients on mechanical ventilation

Data collection tools:

Three tools were used to collect data include :

Tool I: intracranial Surgery Patients' Health Status Assessment questionnaire

This test was created after a thorough study of related literature to assess the health condition of brain surgery patients. It is divided into two parts: **Part 1**: patients demographic characteristics. **Part II**: Patients' medical data.

Tool II: Postoperative complications Assessment questionnaire

This tool adopted from **Teasdale and Jennett, (1974**) and contained two parts, **Part I**: includes an assessment of the postoperative systemic complications like hypertension, tachycardia, myocardial infarction, nausea, vomiting, gastric irritation, constipation ,hyperglycemia, wound infection and impaired wound healing.

Part II: includes an assessment of the neurological post operative complications like behavioral changes, cerebrospinal fluid leak, post operative heamatoma, seizures residual neurological problem, visual disturbances , brain abscess and insomnia. This tool will collected four times immediate post operative, before discharge and follow up after 1 month and 2 months follow up .

Tool III: The Nursing Educational Program for Patients Undergoing intracranial Surgeries

The program's contents covered the following topics: what brain surgery is and is not, different diagnostic techniques, patient preparation, the advantages of surgical management and types of brain surgeries, neurological assessment, types of brain surgeries, systemic and neurosurgical postoperative complications, medical therapy following brain surgery and the role of nurses, breathing exercises, infection control measures, routine follow-up, and when to consult a doctor.

Validity:

Five medical surgical nursing academic experts from the Faculty of Nursing were asked to assess the validity of the instruments. Expert replies for the content validity were categorised as either agreeing or disagreeing to assess the tools' relevance, clarity, completeness, and comprehensiveness. Then their opinions are reviewed and final questionnaire were prepared and used.

Reliability:

The instruments' dependability was assessed by administering the pre-established questionnaire to 10% of the patients. The same patients were retested after four weeks, and the outcomes were consistent each time.

Pilot Study:

In order to assess the effectiveness, dependability, clarity, and application of the tools, a pilot study including six patients, or 10% of the total sample size, was conducted. Based on the findings of the pilot research, the tools were modified. Because the research instruments were not altered, participants in the pilot study were not removed from the overall sample.

Field work:

After obtaining an official permission to carry out the study. The patients were given an introduction to the researchers along with an explanation of the study's objectives. The participants provided their written consent. The researchers were accessible in the study settings three times a week from 9:00 a.m. to 1:00 p.m. for the duration of the five-month data collecting period, which ran from the beginning of June 2023 to the end of October 2023. The structured interview questionnaire took about 25 minutes to be filled.

The Nursing Educational Program was done in four phases:

Assessment phase:

Following one-on-one interviews with each respondent, the researchers explained the purpose of the study and solicited participation. They met the subjects and had them complete the questionnaire in order to examine the patients' condition, gather personal information, and evaluate the subjects' state. The data that was obtained during this phase was considered the basis for the program.

Planning phase:

The researchers identified the patient's condition and then described the programme based on the findings of the evaluation phase. Its purpose was to lessen the patients' post-operative problems.

Implementation phase: The programme was explained in basic Arabic to ensure that the subject understood it. Patients were evaluated immediately following surgery, before discharge, one month and two months later. The theoretical and application portion of the seminar lasted around 30 minutes.

Evaluation phase:

The evaluation was assessed after one month and two months after discharge to identify any complications occurred.

Administrative Design:

The current study was conducted following the presentation of an official letter from the Faculty of Nursing, Helwan University, to the administrators of the Neurosurgical Care Unit and Outpatient Clinic at Eldemerdash Hospital, who granted official

permission after the study's purpose was satisfactorily stated. Helwan University Faculty of Nursing's ethics committee by date On 10/7/2023 (N0.35) authorised the project.

Ethical considerations:

Upon consenting to participate, the subjects are informed of the purpose and goals of the study by the researchers. It was explained to the subjects that they might opt out of the study at any moment and that they could choose to participate or not. After data processing, the data was burnt because it was just being collected for study.

Statistical analysis:

SPSS was used for all statistical analyses. Before doing any computations, the data were checked for normality of distribution. The mean ± standard deviation (SD) was used to express continuously distributed, normally distributed data. Both percentages and numbers were used to convey categorical data. Variables with categorical data were compared using the chi-square test. $p<0.05$ was used as the threshold for statistical significance.

Results

Table(1) shows that, among the study group 30.3 % of their age from 30 to less than 40 while the control group 36.4 % aged from 30 to less than 40 and 40 to less than 50 years old. Regarding to gender 57.6 % and 60.6% were females among the study and control group respectively. Concerning the educational level 48.5% of the study group and 39.4% had secondary school among control group. 66.7% of the study group and 75.8% of the control group were married. Regarding to occupation 45.5 % of the study group and 42.4% of the control group had manual work. Additionally 57.6% of the study group and 66.7% of the control group were not smoke.

Table (2) illustrates that, regarding to diagnosis 57.6% of the study group and 48.5% of the control group diagnosed with subdural hematoma. Concerning surgical management craniotomy was performed to study and control group 69.7% and 36.4%respectively. 69.7% of the study group and 57.6% of the control group had no previous neurological problem. 42.4% had diabetes mellitus of the study group and 39.4% had hypertension of the control group. 54.5% and 60.6% had mild score of Glasgow coma scale among the study and control group respectively. While there are a statistically significant relation of previous neurological problems and chronic illness among the study and control group at $P \leq 0.05$.

Table (3) explains that, 45.5% of the study group and 54.5% of control group had change in consciousness. 60.6% and 72.7% had no visual disturbance among the study and control group respectively. 69.7% and 57.6% of the study and control group had persistent headache respectively. 66.7% of the study group had dizziness while control group were 75.8%. 63.6% of the study group and 54.5% of the control group had motor deficit. 78.8% and 81.8% had no seizures among the study and control group respectively. There are a highly statistically significant relation among the study and control group at $P \leq 0.05$in change in consciousness, persistent headache and motor deficit.

Table (4) shows that, regarding to systemic post operative complications there are a highly statistically significant correlation of hypertension ,tachycardia, gastric irritation ,constipation and hyperglycemia among the study and control group at P =0.000.

Table(5) explains that, regarding to neurological post operative complications there is a highly statistically significant correlation of behavioral change, seizures and residual neurological problems among the study and control group at P =0.000..

Table(6) shows that, regarding to subtotal patients knowledge pre and post the educational program there are a highly statistically significant correlations of all items among the study and control group at P = 0.000.

Table(7) reveals that, regarding to total patients knowledge there is a highly statistically significant correlation post the educational program than pre the program among study and control group at P =0.000.

Table(8) demonstrates that, there is a significant correlation between patients age and total patients knowledge post the program of the study group.

Table(9) shows that; there is a significant correlation between total patient knowledge and post operative systemic complications and neurological complications of the study group pre and post the educational program while the control group pre the educational program at P=0.000.

Table (1):Frequency and percentage distribution of the demographic characteristics among the study and control group (n = 60).

Patients' demographic characteristics		Study group n=30		Control group n= 30		X^2- value	P- value
		N	%	N	%		
Age	20 to less than 30 years	3	9.1	3	9.1		
	30 to less than 40 years	10	**30.3**	12	**36.4**		
	40 to less than 50 years	12	36.4	12	**36.4**	**3.250**	**.095**
	50 to 60 years	5	15.2	3	9.1		
	Mean ± Std. Deviation	**2.633 ± .889**		**2.500 ± .820**			
Gender	Male	11	33.3	10	30.3	**.231**	**.635**
	Female	19	**57.6**	20	**60.6**		
Educational level	Not read and write	8	24.2	11	33.3		
	Read and write	5	15.2	6	18.2	**1.003**	**.333**
	Secondary school	16	**48.5**	13	**39.4**		
	University degree	1	3.0	0	0		
Marital status	Single	2	6.1	3	9.1		
	Married	22	**66.7**	25	**75.8**	**17.563**	**.000****
	Widow	6	18.2	2	6.1		
	Divorced	0	0	0	0		
Occupation	Manual work	15	**45.5**	14	**42.4**		
	Professional work	12	36.4	10	30.3	**8.800**	**.007**
	House wife	2	6.1	4	12.1		
	Retired	1	3.0	2	6.1		
History of smoking	yes	11	33.3	8	24.2	**6.650**	**.015**
	No	19	**57.6**	22	**66.7**		

: Significant at P ≤ 0.05.**: *Highly significant at P <0.001

Table (2): Frequency and percentage distribution of the medical data of the study and control group (n = 60).

Medical characteristics Data		Study group n = 30		Control group n = 30		X^2- value	P- value
		N	%	N	%		
Diagnosis	Brain tumor	6	18.2	8	24.2		
	Brain abscess	1	3.0	2	6.1		
	Subdural hematoma (SDH)	19	**57.6**	16	**48.5**	**.724**	**.475**
	Cystic lesion	4	12.1	4	12.1		
Surgical management	Craniotomy	23	**69.7**	18	**36.4**		
	Burr hole	0	0	0	0	**NC†**	
	Craniectomy	7	21.2	12	54.5		
Previous neurological problems	Yes	7	21.2	11	33.3		
	No	23	**69.7**	19	**57.6**	**16.210**	**.000****
Chronic illness	Diabetes mellitus	14	**42.4**	12	36.4		
	Hypertension	13	39.4	13	**39.4**	**11.994**	**.002***
	others	3	9.1	5	15.2		
GCS	Mild	18	**54.5**	20	**60.6**		
	Moderate	9	27.3	8	24.2	**3.503**	**.073**
	Sever	3	9.1	2	6.1		

*** Significant at P ≤ 0.05.*****Highly significant at P < 0.001 NC†: Not computed because the variable is constant***

Table (3): Frequency and percentage distribution of patients neurological assessment of the study and control group (n = 60).

Patient neurological assessment		Study group n= 30		Control group n= 30		X^2- value	P- value
		N	%	N	%		
Change in consciousness	Yes	15	**45.5**	18	**54.5**	**14.000**	**.001****
	No	15	45.5	12	36.4		
Visual disturbances	Yes	10	30.3	6	18.2	**.056**	**.814**
	No	20	**60.6**	24	**72.7**		
Persistent headache	Yes	23	**69.7**	19	**57.6**	**220.681**	**.000****
	No	7	21.2	11	33.3		
Dizziness	Yes	22	**66.7**	25	**75.8**	**3.413**	**.075**
	No	8	24.2	5	15.2		
Motor deficit	Yes	21	**63.6**	18	**54.5**	**50.400**	**.000****
	No	9	27.3	12	36.4		
Seizures	Yes	4	12.1	3	9.1	**.466**	**.500**
	No	26	**78.8**	27	**81.8**		

*** Significant at P ≤ 0.05.** *Highly significant at P < 0.001***

Table (4): Systemic post operative complications percentage distribution among the study and control group (n= 60).

Systemic post operative complications	Study group n= 30				Control group n= 30				X^2- value	P- value
	Immediate Post Operative %	Before discharge %	After 1 month %	After 2 months %	Immediate Post Operative %	Before discharge %	After 1 month %	After 2 months %		
Hypertension	54.5	51.5	39.4	39.4	48.5	36.4	39.4	39.4	**99.437**	**.000****
Tachycardia	63.6	54.5	51.5	51.5	57.6	57.6	51.5	45.5	**71.542**	**.000****
Myocardial infarction	0	12.1	0	6.1	3.0	0	0	0	**NC†**	
Nausea	33.3	24.2	15.2	18.2	51.5	45.5	42.4	36.4	**4.935**	**.008**
Vomiting	39.4	24.2	18.2	24.2	45.5	36.4	30.3	24.2	**3.461**	**.022**
Gastric irritation	66.7	51.5	30.3	3.0	60.6	42.4	42.4	27.3	**8.298**	**.000****
Constipation	12.1	6.1	3.0	33.3	18.2	6.1	6.1	0	**75.900**	**.000****
Hyperglycaemia	24.2	18.2	18.2	33.3	12.1	24.2	15.2	9.1	**117.268**	**.000****
Wound infection	0	6.1	3.0	0	0	3.0	3.0	0	**.224**	**.640**
Impaired wound healing	0	12.1	6.1	3.0	0	9.1	3.0	0	**.989**	**.329**

*** Significant at P ≤ 0.05.*****Highly significant at P < 0.001 NC†: Not computed because the variable is constant***

Table (5): Neurological post operative complications percentage distribution among the study and control group (n = 60)

Neurological post operative complications	Study group n= 30				Control group n= 30				X^2- value	P- value
	Immediate Post Operative %	Before discharge %	After 1 month %	After 2 months %	Immediate Post Operative %	Before discharge %	After 1 month %	After 2 months %		
Behavioural changes	54.5	36.4	24.2	18.2	48.5	24.2	18.2	33.3	16.856	**.000****
Cerebrospinal fluid leak	6.1	0	0	0	0	0	0	0	NC†	
Postoperative hematoma	39.4	27.3	0	18.2	48.5	45.5	12.1	9.1	2.687	.054
Seizures	15.2	15.2	3.0	0	18.2	6.1	0	0	67.371	**.000****
Residual neurological problem	12.1	9.1	3.0	0	15.2	15.2	3.0	6.1	8.629	**.000****
Visual disturbances	15.2	18.2	3.0	0	21.2	9.1	12.1	21.2	4.623	.010
Brain abscess	0	0	0	0	0	0	0	0		
Insomnia	48.5	27.3	24.2	18.2	39.4	30.3	18.2	21.2	.387	.763

*** Significant at P ≤ 0.05.*****Highly significant at P < 0.001 NC†: Not computed because the variable is constant***

Table (6): Mean of the subtotal Patients knowledge among the studied patients pre and post the program (n = 60)

Subtotal patients' knowledge	Study group n= 30		Control group n= 30		X^2- value	P- value
	Pre test	Post test	Pre test	Post test		
	Mean ± Std. Deviation	Mean ± Std. Deviation	Mean ± Std.Deviation	Mean ± Std. Deviation		
Wound care patient information	15.766 ± 1.869	13.000 ± 1.414	15.766± 1.501	14.2000 ± 1.584	**-3.598**	**.001***
Patient knowledge related to complications	10.466 ± 1.479	8.400 ± 1.003	10.600± 1.037	9.833± 1.641	**-4.241**	**.000****
Warning signs information	7.200±.805	5.600± .723	7.266±.784	6.800±1.447	**-3.756**	**.001***
What you should do if you have serious seizure	26.566± 2.812	19.700± 4.069	26.700±3.108	23.700± 3.041	**-4.891**	**.000****
What you should do if you have serious seizure	13.900± 1.7488	10.100± 2.617	14.500± .973	81.400 ± 6.284	**-62.061**	**.000****

*** Significant at P ≤ 0.05.*****:Highly significant at P <0.001***

Table (7): Mean of total Patients' knowledge among the studied patients pre and post the educational program (n = 60)

Total patients' knowledge	Study group n= 30	Control group n= 30	X^2- value	P-value
	Mean ± Std. Deviation	Mean ± Std. Deviation		
Pre program	73.9000 ±5.81526	74.8333± 4.86425	**-2.100**	**.045**
Post program	56.8000±6.56742	66.9000 ± 6.18312	**-6.787**	**.000****

*** Significant at P ≤ 0.05.*****Highly significant at P <0.001***

Table (8): Correlations between patient demographics characteristics and patients knowledge among the study and control group pre and post the program (n = 60)

Total patients Knowledge	Control group N = 30				Study group N = 30			
	Total patients knowledge pre program		Total patients knowledge post educational program		Total patients knowledge pre program		Total patients knowledge post educational program	
Patient's demographic characteristics	r	p	r	p	r	p	r	p
Age	**-.374***	**.042**	-.296	.112	**-.461***	**.010**	**.689****	**.000****
Gender	-.001	.995	-.131	.491	.031	.869	**-.411***	**.024**
Educational level	.219	.246	.154	.417	**.374***	**.042**	-.085	.656

. Correlation is significant at the 0.05 level (2-tailed).* ***. Correlation is significant at the 0.01 level (2-tailed).. r= person correlation coefficient

Table (9): Correlations between patients post operative complications and patients knowledge among the study and control group pre and post the program (n = 60)

Total patients Knowledge	Study group n = 30				Control group n = 30			
	Total patients' knowledge preprogram		Total patients' knowledge post program		Total patients' knowledge preprogram		Total patients' knowledge post program	
Patient's complications	r	p	r	p	r	p	r	p
Total post operative systemic complications	**.802****	.000	**.805****	.000	**.844****	.000	-.119	.532
Total post operative neurological complications	**.697****	.000	**.924****	.000	**.670****	.000	-.035	.853

. Correlation is significant at the 0.05 level (2-tailed).* ***. Correlation is significant at the 0.01 level (2-tailed). r= person correlation coefficient

Discussion

The purpose of this study was to ascertain how nurse education programmes can help patients who have had intracranial surgery experience fewer postoperative problems. Brain abnormalities and illnesses can be managed or treated by brain intracranial surgery. Central nervous system contain two parts, the brain consider the critical part. Brain surgery performed to treats brain disorders. There are several reasons why a person could require brain surgery, since it can release pressure on the brain. Following brain surgery or a craniotomy to remove a brain tumour, patients often require admission to an ICU for close observation. Thus, it is crucial to assess the frequency and timing of both neurologic and non-neurologic postoperative problems following brain tumour surgery, identify risk factors for neurologic occurrences, and assess the reasons behind ICU readmissions. **(Skardelly et al ,2017).**

In terms of the patients' demographics, the current study stated that less than one-third of the study group's participants were between the ages of thirty and forty, and more than one-third of the control group were between the ages of forty and fifty. Among the research and control groups, women made up more than half of the participants.

Concerning educational level, more than one third have secondary school among the study and control group, most of the study and control group were married, as well as occupation more than one third have manual work among the study and control group, this result disagreed with **Abd elmowla et al, 2015)** who reported that, males made up more than half of the subjects in both the control and

experimental groups, with ages ranging from 35 < 50 yrs old.

Also, the current study found that more than half of the study and control groups did not smoke, which may be attributed to the fact that the majority of the study participants were females.

In terms of medical features, the current study refers to patient diagnosis, with around half of both the study and control groups having subdural hematoma. About two-thirds of the study group had craniotomy, while only one-third of the control group did. Furthermore, more than half of the study and control groups had no prior neurological issues. In terms of chronic disease, more than one-third of the study and control groups had diabetes mellitus.

The study of **Mohamed et al ,2019)** validated the findings of the present investigation and showed that over half of the research and control participants had had craniotomies. **Van de Beek et al (2010)** said that in order to reach brain tissue that has to be removed, craniotomies are frequently employed in neuroscience. Contrary to the findings of the current study, a large number of the study's control subjects and study participants had a history of smoking.

Finding of the current study referred to, patient neurological assessment, about half of study and control groups had no change in consciousness, more than two thirds had no visual disturbances of both study subjects while more than half of them complained from persistent headache, in addition to the study and control groups' dizziness and motor impairment, more than two thirds of the study and control groups experienced seizures.

Regarding to neurological and systemic complications the current study found that, the complication occur post operative and declined gradually after one and two months, so their was a statistically significant improvement between phases of assessment, this conclusion was in line with the findings of **Lepski et al. (2021),** who found that around 31% of patients experience at least one complication—25% experience postoperative nausea and vomiting, and 16% are often linked to neurologic problems. The lack of motor deficiency was substantially correlated with the development of neurological problems.

This also congruent with **Venkatapura, et al, 2021**). Who found that, Neurological problems following surgery account for 19%. Postoperative NDs, SDs, and seizures had corresponding rates of 10, 8.6, and 6.1%.

Using patient knowledge as its primary focus, the current study discovered that patient subtotal and total knowledge of the study group after the programme improved statistically significantly compared to pre-program levels, and that study group knowledge improved significantly after the programme compared to the control group. this outcome not in line with According to Xu et al. (2020), the patients in the study and control groups before to and during intracranial surgery possessed an inadequate degree of awareness about the procedure. This can be the result of patients not receiving adequate information from medical staff in a medical environment.

The current study found that the nursing educational programme had a favourable effect on lowering systemic and neurosurgery postoperative problems in the study group patients.

Conclusion:

There is a strong link between total patient knowledge and post-operative systemic problems and neurological complications in the study group before and after the educational programme, but not in the control group before and after it. Systemic and neurosurgical postoperative complications were significantly lower in the study group than in the control group, indicating that increasing patients' knowledge in the study group had a positive effect in preventing or reducing these complications. Therefore, postoperative educational programmes are crucial for patients recovering from intracranial surgery since they can assist them improve their health and thereby prevent numerous postoperative issues.

Recommendations:

The following suggestions are made based on the findings of the current investigation:

1- Every patient having brain surgery should get the educational programme.

2- Nurses should participate in in-service training programmes regarding the care required for patients undergoing brain surgery.

3- 3-Further research on larger sample is recommended to achieve generalization.

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