Effect of Nurse-Led Intervention on Headache Pain, Anxiety, and Fatigue Levels among Patients with Brain Tumors

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Abstract

Headache pain, anxiety, and Fatigue are recognized as one of the most common and distressing adverse effects among patients with brain tumors. **Aim was to** evaluate the effect of the nurse-led intervention on headache pain, anxiety, and fatigue level among patients with brain tumors.

**Subjects and method:** **Design:** A quasi-experimental research design was used to fulfill the aim of this study. **Setting:** the research was conducted in the neurosurgery department at Mansoura University Hospital. **Subjects:** A purposive sample of 50 adult patients was included. Four tools were used: Tool (I) a structured interview questionnaire (II) a numerical pain rating scale, (III) a State-Trait Anxiety Inventory, and Tool (IV) a Fatigue assessment scale. **Results:** The current study revealed that there was a highly statistically significant difference and reductions in headache pain mean scores post-nurse-led intervention at (P= <0.05). Also, the study demonstrated that there was a highly statistically significant difference in anxiety scores post-nurse-led intervention with (P= <0.001). Highly statistically significant differences and reductions were detected between fatigue mean scores pre and post-nurse-led intervention with (P= <0.001). **Conclusion:** The nurse-led intervention had a positive effect on headache pain, anxiety, and fatigue level among patients with brain tumors. **Recommendations:** The nurse-led intervention regarding brain tumors should be conducted, discussed, and integrated into the rehabilitation programs.

**Keywords:** Anxiety, Fatigue level, Nurse-led intervention, Pain level, Patients with brain tumors.

Introduction:

Malignant brain tumors (BT) are terrible diseases that can have a significant impact on a person's ability to function and quality of life in addition to having a grim prognosis. In the USA, it is anticipated that 23,180 new cases of primary malignant BT will be identified. All brain, CNS, pituitary, and nasal olfactory tumors fall under the category of primary malignant BT. A partial or complete surgical resection, chemotherapy, and/or radiation therapy are frequently used to treat BT. Overall, the USA has a 34.2% 5-year survival rate after BT diagnosis (Valko. et al., 2018).

Glioblastomas can result in neurological abnormalities such as ataxia, altered behavior, dizziness, motor deficits, visual impairment (blurred vision, diplopia), epilepsy, recurrent syncope, and, in more severe cases, extreme drowsiness and coma. Patients with glioblastoma multiforme have a 10- to 24-month survival rate, according to the literature. Surgery is the traditional first line of treatment, followed by radiotherapy and chemotherapy (Lakhan & Harle, 2019).

Intervention for any brain tumour can be invasive, despite the fact that benign tumours are more common and are thought to be more curable than malignant tumours. Treatment options for brain tumours include observation, surgery, chemotherapy, and radiotherapy. The characteristics and location of the tumour as well as the state and preferences of the patients should all be taken into account when choosing the treatment strategy (McCarty et al., 2017).

But there are hazards associated with treatments. The side effects of radiotherapy and chemotherapy treatments can include exhaustion and encephalopathy. It is generally known that patients with brain tumours can develop a variety of medical issues, such as venous thromboembolic disease, the syndrome of inappropriate antidiuretic hormone (SIADH), dysphagia, and seizures. Headaches,
altered sleep patterns, and cognitive difficulties have been observed together with psychiatric symptoms such sadness, exhaustion, mood swings, and personality abnormalities (Berger et al., 2018).

Patients with brain tumors who experience headaches; nonetheless, it's crucial to recognize the headaches that are typically present with tumors. Headaches are more likely to occur in certain places (eg, a posterior fossa tumor causes headaches more often than a supratentorial tumor). Headaches are more frequently linked to rapidly expanding tumors. Cluster headaches and paroxysmal cough are two uncommon headache manifestations that can accompany malignancies (McCarty et al., 2017). The classic brain tumor headache is not as common as a tension-type presentation or migraine. In addition to their primary headache issue, patients who have experienced primary headaches in the past may experience greater headache symptoms if they have a tumor. Along with a headache, mass lesions progress and inevitably generate new symptoms and indicators; it is important to look for and identify these new symptoms and signs. Headache and neck- and back-related spinal discomfort are possible symptoms of metastatic leptomeningeal involvement (Piil et al., 2020).

In general, imaging headache patients for tumors is not cost-effective if they have primary headache diseases like migraine and typical cluster headaches, but it is required if there are any abnormal symptoms. Patients with metastatic brain tumors should receive aggressive pain and symptom management for their headaches. The type of neoplasm and location determine how primary CNS malignancies are treated, although headache management should not be ignored (Allan & Sarah, 2017).

Even though patients with headaches are less likely to have brain tumors, 33% to 71% of patients with brain tumors also experience headaches. In a 2-year prospective research, 58.78% of patients with brain neoplasms also had headaches, with headaches being their first complaint for half of them (McCarty et al., 2017). As headaches are the most common complaint and are frequently reported as the initial symptom among patients with malignant brain tumors, it was speculated that headaches or migraines should be treated as risk factors for the development of brain tumors or merely be considered as the “first sign” of brain neoplasms (Kurth et al., 2019).

Anxiety levels were higher in those with brain tumors. The data may, however, indicate an acute stress reaction rather than the anxiety itself because the anxiety evaluations were only done one week before and after the operation. Patients with right posterior lesions on their brain tumors reported considerably higher degrees of anxiety compared to those with right anterior and left posterior lesions. Since mood assessments were done as soon as 2–10 days after the tumor was removed, the authors hypothesized that the patients’ mood alterations may have more to do with their current state than with specific changes in the focused brain lesions (Louis et al., 2020).

Anxiety among brain tumor patients have been reported by distinct diagnostic clinical interviews with distinct criteria and thresholds (Pranckeviciene & Bunevicius A. (2019), which have been linked to the adverse course of the disease, a worsened life quality and even higher rates of mortality (Lucchiari et al., 2018). However, estimates of the prevalence of depression or depressive symptoms varied greatly, ranging from 2.8% to 95% (Palese et al., 2019). Different screening and diagnostic scales were employed to evaluate depression prevalence in brain tumor patients of different ages or sex, education levels, countries, brain tumor types, and grades, thus leading to various findings about the estimated depression prevalence (Rooney et al., 2020).

It is widely acknowledged that fatigue is one of the most prevalent and upsetting side effects of cancer and its treatment. The worldwide quality of life of cancer patients is significantly impacted by the clinical symptom of fatigue, which can also include generalized weakness, poor mental focus, insomnia or hypersomnia, and emotional change both during and after treatment. Although the etiology of the link between cancer and fatigue is not fully understood, it appears that physiological, biochemical, and psychological abnormalities are at play. Numerous management strategies for cancer-related
fatigue have been researched due to the complex nature of the condition (Armstrong & Gilbert, 2018).

A few physiopathological causes of weariness are abnormalities in the serotonergic system in the central nervous system (CNS), dysregulation of inflammatory cytokines, and hypothalamic regulator circuit modifications (Horneber et al., 2017). Furthermore, irregularities in circadian and sleep-wake rhythms, gene polymorphisms of regulatory proteins involved in oxidative phosphorylation, B-cell signal transmission, proinflammatory cytokine production, and catecholamine metabolism (Raaf et al., 2018).

Due to fatigue's heterogeneous etiology and the lack of understanding of underlying mechanisms, there is no proven gold standard for treating it. Nevertheless, it has been discovered that various pharmacological and non-pharmacological methods can help to lessen weariness brought on by cancer. Physical activity (exercise), psychological interventions, including educational interventions, management of work and rest hours, and relaxation and focus techniques are the non-pharmacological methods that are most frequently utilized (Bower, 2014).

According to the definition of cancer-related fatigue (CRF), it is "a unpleasant, persistent, subjective sensation of physical, emotional, and/or cognitive tiredness or exhaustion connected to cancer or cancer treatment that is not proportional to recent activity and interferes with ordinary functioning." The so-called "healthy" or "normal" fatigue differs significantly from the CRF because it is typically more severe, more upsetting, and less likely to be alleviated by rest. According to studies, more than 80% of BT patients report feeling exhausted throughout treatment (Armstrong & Gilbert, 2018).

In individuals with recurrent malignant gliomas, the incidence of CRF may be as high as 89–94% when determined with validated and trustworthy tests designed for this population. 39% of patients with low-grade gliomas complained of fatigue up to 8 years after the end of their treatment. It has also been said that other symptoms, such pain or nausea and vomiting, which are typically treated with medication, are less bothersome than fatigue. The CRF may have significant psychological, societal, and economic effects (NCCN Clinical Practice Guidelines in Oncology, 2019).

According to an expert neurological assessment, nurses play a crucial role in the care of adult patients with brain tumors at different stages of intervention and are essential to the patient's overall result. They also play a key role in the health education of these patients. For the best nursing intervention and education to benefit the patient's health, the nurse must have a complete awareness of their needs (White et al., 2017).

**Significance of the study:**

Anxiety, weariness, and headaches were reported by 55% of patients with brain tumors in a prospective cohort study (McCarty et al., 2017). Any educational endeavours intended to enhance patients' hygienic practises and health status are referred to as patient education. The primary goal of this treatment is to preserve or enhance the health of the patient, or in some situations, to prevent further decline. Patients who are well-informed and educated can take an active role in their care, enhance results, spot mistakes early, and shorten their hospital stays. Medical information and preventative strategies pertaining to health and wellbeing are included in the medical component of health education. According to research, identifying patients' many critical requirements is the first step in effective health education (Pachman et al., 2018).

Cognitive-behavioral therapy and educational therapy are two of the psychosocial interventions that have demonstrated to have a major positive impact on patients, along with counseling and support groups. In addition to introducing new ideas about energy saving, self-care, and confrontation skills, educational guidelines also include general information about weariness. Energy conservation is described as tailored planning intended to improve a patient's capacity to manage fatigue throughout the entire day and prevent a decline in the patient's energy level needed to perform a task (Pachman et al., 2018). So, this study was conducted to evaluate the effect of the nurse-led intervention on headache pain, anxiety, and fatigue level among patients with brain tumors.

**Aim of the study**

Evaluate the effect of the nurse-led intervention on headache pain, anxiety, and
fatigue level among patients with brain tumors through:
- Assessing patients' headache pain level regarding brain tumors.
- Assessing patients' anxiety level regarding brain tumors.
- Assessing patients' fatigue level regarding brain tumors.
- Designing and implementing nurse-led interventions based on the patient's needs.
- Determining patients' headache pain, anxiety, and fatigue level among patients with brain tumors after nurse-led intervention implementation.

Research hypothesis:

H₁: The patients with brain tumors who received nurse-led intervention expected to experience an improvement in headache pain levels less than those who did not.

H₂: The patients with brain tumors who received nurse-led intervention expected to experience an improvement in anxiety levels less than those who did not.

H₃: The patients with brain tumors who received nurse-led intervention expected to experience an improvement in fatigue levels less than those who did not.

Subjects and Method:

Research design:

A quasi-experimental research design was used to fulfill the aim of this study.

Setting:

The study was conducted at research was conducted in the neurosurgery department at Mansoura University Hospital, Egypt, this setting was selected due to the high prevalence of patients in the selected setting, and also because it serves the biggest region of the population.

Subjects:

Sample size calculation:

The sample size was calculated based on considering the level of significance of power analysis of 0.95(β=1-0.95=0.5) at alpha .05 (one-sided) with a large effect size (0.5) was used as the significance, and 0.001 was used as the high significance.

A purposive sample of 50 patients was included from a population who met the inclusion criteria within six months and received care from the previously mentioned setting. The inclusion criteria were adult patients whose ages ranged from 18-60 years old and who visited the previously mentioned setting, were fully oriented, aged from 20–60 years old, and agreed to participate in this study. Those patients were followed up before discharge in the neurosurgery department and one month. Exclusion criteria included: Disoriented patients, uncooperative patients, and patients on mechanical ventilation.

Data collection tools:

Four tools were used to collect the data for the study as the following:

Tool I: A structured interview questionnaire was developed by the researchers after reviewing the related literature and research studies (Pachman et al., 2018; Zeng et al., 2018, and Yennurajalingam & Bruera, 2019); it included two parts:

Part (1): It included personal data of patients such as age, educational level, occupation, and residence.

Part (2): It included past and medical data-related items such as previous neurological problems (More than one), presence of chronic illness, previous neurosurgery treatment received, type of tumor, and family history

Tool (II):- Numeric Pain Rating Scale (NRS) adopted from John et al, (2008), used for assessment of the pain intensity, the child is asked to indicate the numeric value on the segmented scale that best describes their pain intensity, consists of (11 points) numeric rating scale, with 0 representing "no pain" and 10 "unbearable pain. It was used twice in an individual interview with researchers pre and post-manipulation.
Tool (III): State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory developed by Spielberger (1972) to detect the State-Trait Anxiety level, it is a self-assessment questionnaire consisting of short statements. 20 items requiring individuals to describe how they felt themselves in a particular situation and on certain conditions, taking into account their feelings about the situation in which they were present.

In this section, expressions are separated directly and reversely. The scoring was done with the SPSS program in the computer environment. Initially, two separate scales were prepared for each of the direct and reversed expressions. After being positive for direct expressions and negative for negative questions, the total weighted score for negative expressions was subtracted from the total weighted score for direct expressions.

Scoring system:

The scale items measure the level of State-Trait Anxiety and are scored as follows: ‘‘none’’ (1), ‘‘some’’ (2), ‘‘many’’ (3), and ‘‘entirely’’ (4). The highest score obtained is 80 and the lowest score is 20.

Tool (IV): Fatigue assessment scale:

This measure, a 10-item rating scale that was independently constructed, was adapted from Kleijn et al., (2011) which assess the fatigue level of individuals during various activities in a week in terms of physical, social, psychological, and spiritual domains and its relationship with time of the day). With a total score range of 0 to 100, scores might be anywhere from 0 (no weariness) to 10 (worst possible). No weariness, hardly any, light, moderate, severe, and worst are denoted by 0, 1, 9, 10, 31, 60, 61, 80, and 81, respectively. With a Cronbach's alpha of 0.81 for the overall score, the scale's reliability is regarded as good.

Validity of the tools:

The content validity of the tools, their clarity, comprehensiveness, appropriateness, and relevance were reviewed by five experts; three professors in Medical- the surgical nursing field and two professors; in the Psychiatric nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

Reliability of the tools:

State-Trait Anxiety Inventory reliability is considered good with Cronbach's alpha of 0.87 for the total score. The Numeric Pain Rating Scale reliability was (r = 0.94). A structured interview questionnaire reliability was (r = 0.93).

Methods of data collection:

Ethical considerations:

Before the research started, the Approval of the Ethical Research Committee of the Mansoura Faculty of Nursing was obtained to conduct the study. The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and take their approval. Written consent was obtained from patients to gain their cooperation. The aim of the study was explained and the expected outcomes from the implementation of the study were included in this letter to obtain permission for data collection. The objective of the study was explained to adult patients. The researchers informed the patients that, the study was voluntary; they were allowed to refuse to participate in the study. Patients had the right to withdraw from the study at any time, without giving any reason. Patients were assured that their information would be confidential and used for research purposes only.

A pilot study

A pilot study was conducted on 10% (5 patients) of the total sample to test the clarity and feasibility of the research process. No modifications were carried out to develop the final form of the tools. Patients who were in the pilot were included in the research study.

Fieldwork:

The actual study was divided into three phases:

A- Assessment phase:

The study included 50 patients. The researchers collected data from the patients who attended previously selected settings three
days / a week from 9 am to 1 pm on the morning shift (Sunday and Monday). Data were collected within 6 months from June 2021 until the end of November 2021. Approximately, 40-50 minutes were taken to complete each interview questionnaire.

**B- Implementing Phase:**

The researchers met patients individually at the waiting area present at previously selected settings and explain the aim of the study after introducing themself to patients. The researchers used to face- to-face interviews and they read the questions and possible answers to the patients to help them fill their responses in the tools. After selecting the patients, who met the inclusion criteria, the aim and importance of the research study were explained.

The simplified booklet was used as supportive material and given to adult patients in the Arabic language to cover all items regarding brain tumors after reviewing the related literature based on the assessment of the actual needs of the studied patients. Different teaching methods such as lectures, discussions, pictures, and posters were used.

The researchers designed and implemented the nurse-led intervention regarding brain tumors. It was implemented through lectures, posters, educational films, scenarios, and role-plays. An educational booklet written in simple Arabic language and illustrative pictures prepared by the researchers was given to the patients regarding brain tumors.

The subject contents have been sequenced through 4 sessions, and each session took about 20-30 minutes. The total time was 2 hours for each one. At the beginning of the first session, an introduction about the nurse-led intervention regarding brain tumors was given and each session started with summary feedback about the previous session.

**The nurse-led intervention included brain tumors as follows:**

- Brief anatomy of the brain
- Various diagnostic procedures and how to be prepared for it
- Benefits of surgical management, systemic and neurosurgical postoperative complications after brain tumors surgery
- Information about how to reduce or prevent postoperative complications through medical therapy after surgery
- How to deal with seizures
- Nutrition
- Weight control
- Rest
- Physical activity and exercises
- Smoking cessation
- Care of wound site
- Stress reduction
- Effective communication
- Chemotherapy and radiotherapy
- Routine follow up

**C-Evaluation Phase:** occurred after one month, each patient was re-interviewed to assess their pain, anxiety, and fatigue level. Re-assessment of the adult patient was done using the same tool (II, III, and IV).

**Administrative design:**

Administrative permission was obtained through an issued letter from the Dean of the Faculty of Nursing, Mansoura University to the Directors of the Neurosurgery Department to achieve this study.

**Statistical analysis:**

Data entry and statistical analysis were performed using SPSS for Windows, version 20. Frequencies and percentages for qualitative variables and mean and SDs for quantitative variables were represented as descriptive statistics. Differences between the two means tests (t-test) were used. Chi-square (x2) test was used to compare qualitative parameters. Pearson's correlation coefficient (r) test was used. Statistical significance was considered at P-value <0.05.

**Results:**

Table (1): Shows that 60% of the studied patients were between 40 < and 60 years.
Males constituted 70% of the total sample, 44% of them had secondary education, 68% were working and (62%) of them were living in urban residences.

**Table (2):** Showed that (90%) of the studied patients had previous neurological problems, (52%) of the studied patients were having a chronic disease, types treatment of cancer (54%) of them have received chemotherapy as a treatment, all patients (100%) received anticonvulsants medication, analgesics, and antibiotics. Most of them (90%) received steroids. Finally, 70% of the studied patients had benign brain tumors.

**Figure (1):** Shows that less than two-thirds (64%) of the studied patients were not having a family history of cancer.

**Figure (2):** Portrayed that 70% of the studied patients reported that their main source of information about brain tumors was doctors.

**Table (3)** illustrates a highly statistically significant decrease in pain score with a statistically significant difference observed among the studied patients post-one-month of nurse-led intervention at (P<0.001).

**Table (4)** shows that anxiety mean scores were lower pre-nurse-led intervention in comparison to their anxiety mean scores post-nurse-led intervention, with a statistically significant difference pre and post-nurse-led intervention (p<0.001).

**Table (5):** Illustrated frequency and percentage distribution of fatigue level of the studied patients' pre and post-nurse-led intervention, it was observed that there was a significant difference and improvement in fatigue level among patients with decreased fatigue level scores.

From **Table 6,** a highly statistically significant (P<0.000) decrease in fatigue score with a statistically significant difference was observed among the studied patients post-one-month of nurse-led intervention.

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**Table (1):** Frequency and percentage distribution of the studied patients regarding their data (n=50)

<table>
<thead>
<tr>
<th>Items</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult patients’ age in years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21&lt; 30 years</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>30&lt; 40 years</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>40 - 60 years</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Read and write</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Secondary education</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td>Higher education</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>40</td>
<td>68</td>
</tr>
<tr>
<td>Not working</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rural</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>- Urban</td>
<td>31</td>
<td>62</td>
</tr>
</tbody>
</table>
Table (2): Frequency and percentage distribution of the studied patients regarding their past and medical data (n=50)

<table>
<thead>
<tr>
<th>Item</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous neurological problems:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td>- No</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Presence of chronic illness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>27</td>
<td>52</td>
</tr>
<tr>
<td>- No</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td><strong>Previous neurosurgery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- No</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td><strong>Treatment received</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiotherapy</td>
<td>23</td>
<td>46</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>27</td>
<td>54</td>
</tr>
<tr>
<td>Anticonvulsants medication</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Analgesics medication</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Steroids</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td><strong>Type of tumor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Benign</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>- Malignant</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

Figure (1): Percentage distribution of the studied patients regarding their family history (n=50)
Figure (2): Percentage distribution of the studied adult patients about their source of knowledge regarding brain tumor

Table (3): Differences between patients' pain mean scores pre and post-one month of nurse-led intervention regarding brain tumors (n=50)

<table>
<thead>
<tr>
<th>Items</th>
<th>Pre nurse-led intervention</th>
<th>Post-nurse-led intervention</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain score</td>
<td>6.69 ± 2.47</td>
<td>2.73 ± 2.17</td>
<td>0.138 ( &lt;0.000*)</td>
</tr>
</tbody>
</table>

*highly Significance at 0.0001 levels

Table (4): Differences between patients' anxiety mean scores pre and post-one month of nurse-led intervention regarding brain tumors (n=50)

<table>
<thead>
<tr>
<th>Items</th>
<th>Pre nurse-led intervention</th>
<th>Post-nurse-led intervention</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety score</td>
<td>39.49 ± 4.43</td>
<td>24.13 ± 2.36</td>
<td>0.142 ( &lt;0.000*)</td>
</tr>
</tbody>
</table>

*highly Significance at 0.0001 levels

Table (5): Frequency and percentage distribution of fatigue level of the studied patients' pre and post-nurse-led intervention (n=50)

<table>
<thead>
<tr>
<th>Fatigue level</th>
<th>Pre nurse-led intervention</th>
<th>Post-nurse-led intervention</th>
<th>T</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fatigue (0)</td>
<td>0</td>
<td>4</td>
<td>17.025</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Very little (1-9)</td>
<td>0</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild (10-30)</td>
<td>0</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate (3-60)</td>
<td>22</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe (61-80)</td>
<td>15</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worst (81-100)</td>
<td>13</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (6): Differences between patients' fatigue mean scores pre and post-one month of nurse-led intervention regarding brain tumors (n=50)

<table>
<thead>
<tr>
<th>Items</th>
<th>Pre nurse-led intervention</th>
<th>Post-nurse-led intervention</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue score</td>
<td>27.76+ 4.03</td>
<td>14.03+ 1.43</td>
<td>0.123 (0.0001*)</td>
</tr>
</tbody>
</table>

*highly Significance at 0.0001 levels

Discussion:

From the time of diagnosis until death, patients with brain tumors are thought to experience pain, anxiety, and fatigue as their most frequent symptoms. These symptoms are described as a distressing, enduring, and irrational feeling linked to physical, emotional, and/or cognitive fatigue that impairs daily functioning (Bower, 2014).

According to the results of the current study, less than three-quarters of the overall sample were men, and three-fifths of the patients were between the ages of 40 and 60. These results are comparable to those of a study by Bin-Madhi, published in 2017, titled "Brain tumors excision guided by neuronavigation: Practical application and outcomes," which found that men were more likely than women to develop brain tumors, with a mean age of 47 years old.

The majority of the patients in the current study had prior neurological problems, according to the study's findings. The more frequent clinical signs of brain tumors, according to Urden et al. (2016) and Krucik (2018), are headache, drowsiness, visual abnormalities, change in consciousness level, seizures, and motor impairment.
The findings of this study showed that adults who were evaluated had chronic diseases in greater than 50% of cases. This conclusion is comparable to that of Edlinger et al., (2016), who studied "Blood Pressure and Other Metabolic Syndrome Factors and Risk of Brain Tumor," which found that 30% of the study sample's participants had hypertension. Therefore, individuals with high blood pressure may be at increased risk for brain tumors. Additionally, Tong et al. (2018) revealed similar findings in their study on "Diabetes mellitus and risk of brain tumors," which found that women with diabetes had a 24% increased chance of developing brain tumors.

According to the study's findings, all of the patients evaluated received anticonvulsant medicine, analgesics, and antibiotics, and more than half of them had chemotherapy. Steroids were given to the majority of them. Patients with brain tumors need a range of medical therapies, according to White et al. (2017). Anticonvulsant drugs are routinely administered to prevent the potential of seizures. Usually, antibiotics are taken to treat infections. After intracranial surgery, analgesics are frequently administered to lessen pain and steroids are typically given to lessen cerebral edema.

Less than two-thirds of the patients in the study had no family history of cancer, according to the family history of the patients. From the researchers' perspective, it demonstrated the possibility that the patients under study also had cancer.

Less than 75 percent of the survey subjects indicated that their primary source of information on brain tumors came from doctors, according to the study's findings. This shows, in the opinion of the researchers, that patients are guided appropriately when seeking treatments and assistance for such chronic disorders.

Regarding the study subjects' pain scores, it was noted that after receiving nurse-led intervention for one month, there was a very statistically significant decline in pain scores with a statistically significant difference (P 0.001). According to the researchers, this outcome demonstrates the beneficial impact of nurse-led interventions that match patients' needs and give them the information they need to preserve their health and lessen their discomfort.

The results of the present study demonstrated that anxiety mean scores were lower pre-nurse-led intervention than their anxiety mean scores post-nurse-led intervention, with a statistically significant difference between pre and post-nurse-led intervention.

The nurse-led intervention had a positive effect on lowering anxiety levels, according to the researchers, and this study supported that conclusion. These demonstrated the considerable changes in the patients' anxiety that represented the primary objectives of the implementation of the nurse-led intervention. This development highlights the fact that the majority of patients have a great desire to learn more about their problems and to demonstrate the impact of the nurse-led intervention. This finding is consistent with that of Youssef and Hassan (2019), who discovered that following the application, the anxiety level in the study group was decreased.

According to the study's findings, after receiving nurse-led brain tumor management for one month, the average fatigue score among the patients was statistically significantly lower. The purpose and hypothesis of the current investigation supported these findings. These findings are consistent with Parth et al., (2020)'s research on "Rehabilitation of Patients with Primary Brain Tumors," which found a reduction in fatigue following the rehabilitation program. According to the researchers, the implementation of the teaching recommendations for brain tumors was successful.

Piper and Stewart (2009) found that a successful health education program will produce changes that show greater knowledge of particular medical and health-related concerns for a protracted length of time, which results in changes that support these findings. Effective health education will result in both temporary and permanent behavioral changes that lessen risky behavior and lessen or prevent numerous postoperative problems. Evaluator observations and learner comments can be used to document these behavioral changes.
Conclusions:

Based on the results and hypotheses of the present study, the study findings concluded that the results support the research hypothesis in implementing the nurse-led intervention had a positive effect on reducing headache pain, anxiety, and fatigue level among patients with brain tumors.

Recommendations:

Based on the current study results, the following recommendations are proposed:

- Nurse-led intervention regarding brain tumors should be conducted, discussed, and integrated into the rehabilitation programs.

- To improve patients’ knowledge and lower their levels of pain, anxiety, and fatigue, nurses should teach them about brain tumors using the booklet and illustrated pamphlets for each patient.

- The current study needs to be replicated with a larger sample of patients with brain tumors in different settings in order to generalize the findings.

References:


