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Pre-Operative Anxiety Assessment among Patients Undergoing Craniotomy Procedure

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ABSTRACT

Patients undergoing craniotomy surgery often develop preoperative anxiety, a severe psychological issue that affects both the surgical experience and after healing. This worry is made worse by the intrusive nature of the procedure, which involves opening the skull and adjusting the brain. **Objectives:** To determine the prevalence and severity of preoperative anxiety in patients having craniotomies and to look into how it relates to certain clinical and demographic characteristics. **Methods:** Descriptive cross-sectional research was conducted in the neurosurgery wards of Khyber Teaching Hospital and Hayat Abad Medical Complex in Peshawar. 160 individuals undergoing craniotomies were selected based on predefined criteria. Preoperative anxiety was measured using the 15-item Likert-scale-based Surgical Anxiety Questionnaire. **Results:** Patients reported a considerable prevalence of moderate to severe preoperative anxiety across all questionnaire domains. Anticipated postoperative pain (83.8%), loss of control over the procedure or Anesthesia (88.1%), danger of hospital-acquired infection (91.9%), failure to awaken from Anesthesia (91.9%), and financial load (86.9%) were the most common concerns. Fear of not fully recovering at release (83.1%), finding new health issues (80%), and receiving injections or vascular access (78.1%) were other significant concerns. Concerns regarding wound-related problems (73.7%), intraoperative awareness (71.9%), inadequate postoperative social support (78.1%), and medical errors (71.9%) were also mentioned. 66.2% of patients reported feeling uncertain about going back to their regular lives. **Conclusions:** Patients undergoing craniotomies frequently experience preoperative anxiety. To enhance patient care and results, early detection and psychological interventions are crucial.

INTRODUCTION

Patients who are waiting for surgery have frequently reported experiencing preoperative anxiety. Tension, anxiety, and concern over the surgical process and its outcome are characteristics of the condition [1, 2]. Preoperative hemodynamic stability, anesthetic requirements, and recovery may be negatively impacted by such anxiety's significant physiological reactions to stress, which include elevated blood pressure, heart rate, and stress hormone release [3-5]. High levels of preoperative anxiety have been consistently shown to be associated with increased anaesthetic use, heightened postoperative pain experience, longer hospital stay, delayed recovery, and lower patient satisfaction with the surgical experience [6, 7]. Neurosurgical procedures, especially craniotomy, have a lot of challenges that can increase anxiety among the affected patients. Craniotomy is a neurosurgical procedure performed on the brain, usually because of conditions such as tumours, haemorrhage, or injuries [8-10]. Patients undergoing brain surgery may be anxious about intraoperative awareness, complications from

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anaesthesia, postoperative neurological deficits, and uncertain functional outcomes, which are contributing factors to their high levels of anxiety compared to patients undergoing other types of surgery [8, 10]. According to existing literature, the prevalence of preoperative anxiety has been found to range from moderate to high in various surgical settings, with considerable variations depending on the demographic characteristics of the patients being assessed [11]. Systematic review of 27 studies in low- and middle-income countries showed a pooled prevalence of preoperative anxiety of 55.7%, with a higher prevalence among female patients (59.4%) and in the Asian population (62.6%) [11]. According to a systematic review and meta-analysis, preoperative anxiety is prevalent in 60-80% of patients undergoing surgery [12]. In a large cross-sectional study, the prevalence of preoperative anxiety was found to be 15.8%, and it was found to be higher in females, younger patients, non-retired patients, patients undergoing surgery for the first time, higher-risk procedures, and patients with poor preoperative sleep [13]. In a study carried out in a developing country with 280 patients, 27.1% showed high levels of preoperative anxiety (APAIS), 57.1% showed a high need for information, 50.0% showed high levels of state anxiety (STAIS-5), and 20.0% showed high levels of trait anxiety [14]. In Pakistan, a study conducted in Karachi shows that the prevalence of preoperative anxiety was 52.4%. Another study conducted in Pakistan reported a preoperative anxiety prevalence of 62%, with higher rates observed among females (73%) compared to males (42%) [15]. A systematic review on preoperative anxiety in neurosurgical patients emphasized that current literature is limited and very heterogeneous, which reflects the lack of research in this surgical population [10]. Anxiety is common among patients undergoing brain surgery and can negatively affect a variety of aspects of the preoperative period. It is, therefore, important to understand the nature and degree of anxiety among patients undergoing craniotomy to develop interventions that will address the issue and improve the surgical outcomes [10].

The anti-anemic capability of the mature fruit peel of Carica papaya has not been well studied, especially utilizing in vivo experimental models. The necessity for safer, plant-based alternatives is further highlighted by the adverse effects of the present anemic therapies. However, the effectiveness of papaya peel extract in enhancing hematological parameters has not been well studied, which is the root of this research issue. Therefore, this study aimed to assess the prevalence and severity of preoperative anxiety among patients undergoing craniotomy and to explore its association with selected socio-demographic factors.

METHODS

Over the course of four months, from August to November 2024, this descriptive cross-sectional study was conducted in the neurosurgical wards of Hayatabad Medical Complex and Khyber Teaching Hospital, Peshawar. The purpose of this study was to ascertain the level of preoperative anxiety in patients undergoing craniotomy operations. Data were collected in accordance with the ethical criteria of the Declaration of Helsinki after each participant completed an informed consent form. Because only a small number of patients were admitted to both institutions' neurosurgery units throughout the study, universal sampling was utilized. By ensuring that all eligible patients who met the predefined inclusion criteria were included, this method improved the sample's representativeness and reduced selection bias. Because of the limited patient flow at specialized neurosurgical facilities, random sample approaches were both unnecessary and impractical in this situation, making universal sampling the best choice. After fulfilling the qualifying criteria, 160 patients in all were included in the final analysis. This study was open to patients who were in the preoperative stage, had adequate communication abilities, and were ready to give informed consent after being admitted to the neurosurgical facilities for craniotomies. Participants in this study could not be unconscious, younger than eighteen, or unable to provide informed consent. Preoperative anxiety was measured using the modified Surgical Anxiety Questionnaire (SAQ), which was initially developed and approved by Sürme and Maraş (2024). The 15-item SAQ employs a five-point Likert scale, with 0 representing "Not at all" and 4 representing "Extremely." With a Cronbach's alpha of 0.93, the SAQ has been demonstrated to have outstanding internal consistency.

The data werestored and analyzed using SPSS version 27.0. Descriptive statistics such as frequencies and percentages were used to summarize the demographic and clinical variables.

RESULTS

The sociodemographic information of the 160 patients who had craniotomies is displayed in the findings. 53.1% of the patients were female. 40.0% of the patients were in the 30- to 40-year-old age range, and 78.1% of them were married. The majority of the patients (83.1%) were jobless, and over half (51.9%) had no formal education (Table 1).

Table 1: Sociodemographic Characteristics of Patients Undergoing Craniotomy (n=160)

Variables	Category	n (%)
Gender	Male	75 (46.9%)
	Female	85 (53.1%)

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Age (years)	20–30	24 (15.0%)
	30–40	64 (40.0%)
	40–50	48 (30.0%)
	50–60	19 (11.9%)
	60–70	5 (3.1%)
Marital Status	Single	35 (21.9%)
	Married	125 (78.1%)
Level of Education	No Formal Education	83 (51.9%)
	Primary Education	35 (21.9%)
	Secondary Education	34 (21.3%)
	College/University	8 (5.0%)
Employment Status	Employed Full-Time	11 (6.9%)
	Unemployed	133 (83.1%)
	Retired	8 (5.0%)
	Student	8 (5.0%)

It lists 15 questions from the Surgical Anxiety Questionnaire (SAQ). The results show that many people were anxious about things. A lot of people were worried about getting sick in the hospital (91.9%), not waking up from anesthesia (91.9%), and not being in control of their surgery or anesthesia (88.1%). People were also anxious about paying for surgery (86.9%) and having pain after surgery (83.8%). Some patients were worried about not recovering when they left the hospital (83.1%), finding out about other health problems during surgery (80%), and having injections or a needle put in (78.1%). Money and social problems were also a concern, as 86.9% of people worry about paying for surgery, and 78.1% worry about not having help from family and friends after surgery. Other things that made people anxious were having a cut or wound (73.7%), being awake during surgery (71.9%), and the possibility of the healthcare team making a mistake (71.9%). Not knowing when they can go back to life made 66.2% of people a little anxious (Table 2).

Table 2: Preoperative Anxiety Levels among Craniotomy Patients (n=160)

Sr. No.	Anxiety Item	Not At All, n (%)	A Little, n (%)	Moderately, n (%)	Very Much, n (%)	Extremely, n (%)	Total, n
1	Not knowing what will happen	8 (5.0%)	35 (21.9%)	48 (30.0%)	48 (30.0%)	21 (13.1%)	160
2	Current health makes surgery/recovery difficult	0 (0.0%)	37 (23.1%)	59 (36.9%)	43 (26.9%)	21 (13.1%)	160
3	Injection or vascular access	11 (6.9%)	24 (15.0%)	67 (41.9%)	53 (33.1%)	5 (3.1%)	160
4	Lack of control over surgery/anaesthesia	8 (5.0%)	11 (6.9%)	50 (31.2%)	72 (45.0%)	19 (11.9%)	160
5	Wound/incision on tissues	5 (3.1%)	37 (23.1%)	61 (38.1%)	37 (23.1%)	20 (12.5%)	160
6	Being awake during surgery	8 (5.0%)	37 (23.1%)	40 (25.0%)	48 (30.0%)	27 (16.9%)	160
7	The healthcare team is making a mistake	5 (3.1%)	40 (25.0%)	40 (25.0%)	59 (36.9%)	16 (10.0%)	160
8	Not waking up from Anesthesia	0 (0.0%)	13 (8.1%)	56 (35.0%)	64 (40.0%)	27 (16.9%)	160
9	Discovering other health problems during surgery	3 (1.9%)	29 (18.1%)	35 (21.9%)	77 (48.1%)	16 (10.0%)	160
10	Post-surgery pain or discomfort	5 (3.1%)	21 (13.1%)	40 (25.0%)	64 (40.0%)	30 (18.8%)	160
11	Being discharged without full recovery	0 (0.0%)	27 (16.9%)	53 (33.1%)	67 (41.9%)	13 (8.1%)	160
12	Getting an infection from the hospital	5 (3.1%)	8 (5.0%)	45 (28.1%)	67 (41.9%)	35 (21.9%)	160
13	Uncertainty about the return to normal life	3 (1.9%)	51 (31.9%)	53 (33.1%)	29 (18.1%)	24 (15.0%)	160
14	Insufficient social support after surgery	8 (5.0%)	27 (16.9%)	53 (33.1%)	56 (35.0%)	16 (10.0%)	160
15	Surgery-related costs	0 (0.0%)	21 (13.1%)	40 (25.0%)	51 (31.9%)	48 (30.0%)	160

DISCUSSION

The current research explored the incidence and origins of preoperative anxiety in patients having craniotomy, highlighting that moderate to severe anxiety was extensively present in all assessed areas of the Surgical Anxiety Questionnaire (SAQ). The results reveal that anxiety-provoking worries were primarily centred on fear of hospital-acquired infections, fear of not awakening from anaesthesia, and lack of control over surgery or anaesthesia, followed by financial concerns, expected postoperative pain, and worries related to recovery and social support. These results are aligned with and broaden the current literature regarding preoperative anxiety in neurosurgical groups. The fear of possible bad outcomes of surgery and uncertainty regarding them were prominent sources of anxiety in this study. Nearly 80% of the participants said they were extremely nervous about the potential for additional health issues to be discovered following surgery. This is consistent with research in neurosurgical populations, where preoperative psychological morbidity is greatly influenced by thoughts of neurological decline and an unclear prognosis. According to their comprehensive study, anxiety in patients undergoing brain surgery is closely associated with uncertainty regarding probable neurological abnormalities and postoperative outcomes [10]. Anesthesia-related anxiety was very significant. In the current study, 16.9% of patients experienced "extreme" anxiety, and 40.0% reported feeling "very much" frightened about not waking up. These findings are consistent with a cross-sectional study conducted by Markos *et al.* who

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found that fears related to anaesthesia, particularly the fear of not waking up and being conscious during surgery, were significantly associated with increased preoperative anxiety in adult surgical patients [16]. Similarly, Jovanovic et al. also reported that a significant proportion of surgical patients experience anaesthesia-related fear [17]. Another concern that was evident in the study was the issue of postoperative pain, with 58.8% of the patients experiencing very much to extreme anxiety concerning postoperative pain. This is supported by previous research that suggested that anticipated postoperative pain was a major anxiety-evoking factor in surgical patients [18]. Interestingly, financial issues were also highlighted, with financial concerns being noted as moderate to extreme among 86.9% of the participants. This is related to the overall socioeconomic issues that prevail in the context of developing countries, where the overall cost of seeking healthcare is still relatively high. Farooqui *et al.* and Farid *et al.* also highlighted financial issues as one of the causes of pre-surgical anxiety, related to the overall socioeconomic issues [19, 20].

The study was conducted in two tertiary care facilities, and this could be considered a limitation of the study in terms of the generalizability of the findings to other settings. It is to be noted that the population attending tertiary care facilities may vary in terms of complexity of disease, socioeconomic profile, and healthcare service utilization when compared to those attending healthcare facilities in the private sector and the general population in the community. Therefore, the pattern of preoperative anxiety may vary in different healthcare settings, and this needs to be investigated in future studies. In addition, the cross-sectional study, where the data were obtained at one point in time, did not allow the evaluation of the time-related changes in the anxiety levels. Anxiety is dynamic in the preoperative period, meaning that the anxiety levels may vary over time, making it impossible for the study to evaluate the anxiety trajectories, as well as the long-term psychological and clinical consequences of high anxiety levels. More longitudinal study designs would give an in-depth insight into the long-term anxiety levels, their possible impact, and the long-term consequences.

CONCLUSIONS

Surgical patients have shown high levels of anxiety, which is multi-dimensional in nature, resulting from procedural ambiguities, intraoperative complications, postoperative problems, and financial issues. Fear of lack of control, medical mistakes, and health-related issues have also been found to contribute to the anxiety of surgical patients, particularly in the preoperative period. On the other hand, anxiety in the postoperative period is caused by fear of pain, infection, recovery, and support systems, thereby affecting the overall well-being of the surgical patient. The anxiety of surgical patients must be reduced through effective measures such as preoperative counselling, individualized patient education, and measures that promote control, thereby providing an optimal solution for the overall quality of healthcare services.

Authors' Contribution

Conceptualization: AA[1]
Methodology: AA[1], AA[2]
Formal analysis: AA[1]
Writing and Drafting: AA[1], AA[2], AA[3], AF, AR, NU
Review and Editing: AA[1], AA[2], AA, AF, AR, NU

All authors approved the final manuscript and take responsibility for the integrity of the work.

Conflicts of Interest

All the authors declare no conflict of interest.

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