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Surgery

# Assessment of Preoperative Depression, Anxiety and Stress for Patients Awaiting Surgery in a Tertiary Care Hospital

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**Abstract:** The burden of emotional states such as anxiety, depression and stress in people undergoing surgery is undeniable. The excessive and continuous effects of those emotional states have negative impact on people's physical, mental and psychological well-being, quality of life and productivity. They are influenced by each person's individual difference of socio-demographic variables and type of surgery. Identifying the levels of anxiety, depression and stress in preoperative surgical patients may evaluate the magnitude of its effect on the outcome. Among patients waiting for surgery and admitted in surgery & orthopedic department 1) To identify the levels of preoperative depression, anxiety and stress 2) To analyze their correlation with demographic variables 3) To analyze their correlation for patients awaiting major versus minor surgery. Study was carried out in CUSMCH, Surendranagar. The participants were the patients who were admitted in surgery and orthopedic department for elective surgery. Patients were explained about the procedure, written consent was taken and then they were subjected to self-administered survey forms which included socio-demographic data and DASS-21 questionnaire. The data was analyzed by statistical methods using SPSS version 16. The study was conducted after obtaining prior approval from Ethics Committee of the institution. Study included 160 patients, of which males (102) and females (58). Mean age of participants was 41.1 year. Participants showed moderate levels of preoperative anxiety, depression and stress. There were significant differences in the three emotional states according to type of surgery. Patient's education, occupation, department and type of surgery significantly associated with depression level and generalized stress level was significantly associated with department, marital status. Results showed that Doctor & nursing staff need to be more proactive in assessing and intervening in the emotional states. Counseling required for the pre-operative patients by psychiatrist, psychologist or nursing staff to decrease their emotional disturbances.

**Keywords:** Depression; anxiety; stress; surgery.

## INTRODUCTION

The burden of emotional states such as anxiety, depression and stress in people undergoing surgery is undeniable, for this is a critical event that is perceived as an unknown and frightening reality. The excessive and continuous effects of those emotional states have negative impact on people's physical, mental and psychological well-being, quality of life and productivity. They are influenced by each person's individual difference of socio-demographic variables like age, sex, education, marital status, socioeconomic status & family status; and type of surgery. Identifying the levels of anxiety, depression and stress in preoperative surgical patients may evaluate the magnitude of its effect on the outcome.

There are some factors which can affect preoperative patient anxiety, depression and stress such as the necessity of surgery, post-operative pain, and patient's physical condition. Anxiety is a kind of response to an unknown and unpredictable situation which triggers the physiologic response such as increased postoperative pain, delay in wound healing, immune system response, higher risk of infection, increased dose of anesthesia and pain relieving medications. These drugs have some side effects such as respiratory depression and other complications. On the other hand, less activity of patients increases the risk of thrombosis and bowel disease [1,2].

A person hospitalized for surgery has to deal with many feeling and reactions. So, most people find that was extremely stressful event. Anxiety represents

uneasiness and it is an integral aspect of human nature because anxiety plays a crucial role in adaptation and homeostasis. Surgery is a stressor that produces both physiological stress reactions and psychological stress reactions such as anxiety and fear. The effects of anxiety can be positive and serve as a motivator for an individual to take a needed action, or they can bring fear in an individual, and paralyze the individual's action [3].

Pre-operative anxiety, depression and stress are a challenging concept in the preoperative care of patients. Most patients awaiting elective surgery experience anxiety and it is widely accepted as an expected response. It begins a soon as the surgical procedure is planned and increases to maximal intensity at the moment of entering the hospital [4].

Undergoing a surgery is a major event in any person's life. During the preoperative phase, the patient fears for post-operative pain, the discovery anything unusual, loss of an organ or limb, anesthesia, vulnerability while unconscious, the threat of loss of job or financial severity, loss of social and familial roles, disruption of lifestyle, separation from significant others and death[5].

They are increased by a number of factors, such as uncertainty of the prognosis, fears about the surgical procedure, complications and disabilities, thus requiring adaptation to the new condition. To minimize those emotional states and facilitate the transition process, nurses should commit themselves to promote, construct and develop about what they know- how based on a specific body of knowledge and individualized technical, scientific, human and relational skills, which are integrated in practice. Nurses should also develop a sense of strong ethical awareness, establish relationships of support and empathy identify potential problems and anguishes, plan adequate interventions to meet existing needs, and promote a capacity for reflection, decision and action in the care process, aimed at meeting the needs concerned.

The preoperative teaching focuses on information that will increase patient's familiarity with procedural events, thus decreasing anxiety, depression and stress; information regarding activities to enhance physiologic healing; and information on prevention of postoperative complications. In this content should include information about 1) procedural: events that will occur during surgical experience, 2) sensory: what the patient may experience during the peri-operative period, and 3) behavioral: what actions may help to decrease stress [6].

Developing a this type of program like preoperative educational that improves patient understanding and provides patient information about the surgical process could decrease much of the patient's anxiety and fear that may occur during the surgical experiences. Someone good says, ''Being well informed about what to expect from surgery can relieve anxiety, increase patient satisfaction, and reduce recovery time [7]''.

Patient education support patients to live the best possible quality of life. It introduces patient's self-confidence to help them to carry out behavior necessary to reach a desired goal. Based on the personal experience of the investigator during his clinical posting found that preoperative anxiety is common among patients awaiting surgical procedures. Hence, the investigator is interested to conduct a study on effectiveness of pre-operative teaching in reduction of anxiety among preoperative patients.

## AIMS & OBJECTIVE

- To identify the levels of preoperative depression, anxiety and stress in patients who awaiting for surgery.
- To analyze their correlation with demographic variables.
- To analyze their correlation for patients awaiting major versus minor surgery.

## RESEARCH QUESTIONS

Three research questions were formulated:

- What are the levels of anxiety, depression and stress in patients who awaiting for surgery?
- What are correlation between the socio-demographic variables to the levels of anxiety, depression and stress in patients who awaiting for surgery?
- What is the correlation between major versus minor surgery in patients who awaiting for surgery?

## HYPOTHESIS

- There is a significant reduction in the level of preoperative depression, anxiety and stress in patients who awaiting surgery.
- There is a significant correlation with demographic variables.
- There is a significant correlation for patients awaiting major versus minor surgery.

## MATERIALS & METHODOLOGY

This is a Cross-sectional study. This study was carried out in C. U. Shah medical college & hospital, Surendranagar. Patients were selected through consultation of the surgery & orthopedic department map, according to the following criteria: Inclusion criteria - Admitted adult patients undergoing various elective surgeries during hospitalisation in Surgery & Orthopedic department at C. U. Shah Medical College & Hospital, Surendranagar; and Exclusion criteria - Patients with known mental health problems, mental retardation and who was taking any type of anxiolytics and antidepressants, who undergoes the emergency

surgery. The data collection was performed between March and August, 2018. Study was carried out at a time when patient was awaiting surgery. Patients were explained about the procedure, written consent was taken and then they were subjected to self-administered survey forms which included socio-demographic data and DASS-21(Depression, Anxiety and Stress) questionnaire [8]. The scale used allows for the simultaneous assessment of three emotional states through their organization in subscales: anxiety, depression and stress, respectively. Each subscale consists of seven items and each item corresponds to an affirmative sentence that refers to negative emotional symptoms with four response possibilities on a self-response 4-point Likert-type scale of severity or frequency. The DASS-21 has three scores, each corresponding to a different subscale, in which the minimum is 0 and the maximum is 21. The final score is equal to the sum of the scores obtained in the seven items. In the end, the higher the score, the more negative the emotional states experienced during the days of hospital stay prior to surgical intervention. The data was analyzed by statistical methods using SPSS version 16. The study was conducted after obtaining prior approval from Ethics Committee of the Health Sciences Research Unit of institution. All ethical issues inherent in research involving human subjects were followed.

## RESULTS

The sample was composed of 160 patients who met the inclusion criteria.Study included 160 patients, of which 102 were males (63.8%) and 58 were females (36.3%). Mean age of participants was 41.1 year, with a minimum age of 15 year, maximum age of 95 year, median of 39year, mode of 45year &standard deviation of 20.64 years. The prevalent age group was middle age group (41-60 years), accounting for 25%. The prevalent of other age group were teenager (15-<18years) had 12.55%; adolescent (18-25 years) had 20.6%; youth (>25-40years) had 21.90% & senior citizen (61-100years) had 20%. Most participants (64.40%) were living in rural area. As for their academic qualifications, 18.10% of patients were illiterate & 23.10% of patients were only studied up-to primary. Most participants (48.10%) were in the group of inconsistent earning & 30.60% of patients were in the group of non-earning. Most of participants (58.10%) were married. Most of participants (46.90%) were belonging to lower socio-economic status. 50% participants were undergoing major surgery & 50% participants under minor surgery.

The data collected using the DASS-21 showed that the mean responses tended to draw in between minimum and maximum values & slightly closer to the minimum value, which indicated moderate levels of anxiety, depression and stress in the preoperative surgical patients. There were slightly higher scores in the anxiety dimension, both in the mean values and the third quartiles (Table-1).

**Table-1: Descriptive statistics of the dimensions of anxiety, depression and stress**

| | | Depression | | Anxiety | | Stress | |
|---|---|---|---|---|---|---|---|
| | | Frequency (n) | Percent (%) | Frequency (n) | Percent (%) | Frequency (n) | Percent (%) |
| Normal | | 23 | 14.38 | 1 | 0.63 | 22 | 13.75 |
| Mild | | 22 | 13.75 | 2 | 1.25 | 25 | 15.63 |
| Moderate | | 62 | 38.75 | 17 | 10.63 | 73 | 45.63 |
| Severe | | 19 | 11.88 | 31 | 19.38 | 38 | 23.75 |
| Extreme Severe | | 34 | 21.25 | 109 | 68.13 | 2 | 1.25 |
| N | | 160 | | 160 | | 160 | |
| Mean | | 18.76 | | 22.5 | | 21.54 | |
| Std. Error of Mean | | 0.703 | | 0.538 | | 0.449 | |
| Median | | 18 | | 22 | | 22 | |
| Mode | | 18 | | 24 | | 24 | |
| Std. Deviation | | 8.896 | | 6.811 | | 5.684 | |
| Minimum | | 2 | | 6 | | 6 | |
| Maximum | | 38 | | 38 | | 34 | |
| Percentiles | 25 | 12 | | 18 | | 18 | |
| | 50 | 18 | | 22 | | 22 | |
| | 75 | 25.5 | | 27.5 | | 25.5 | |

Non-parametric test (chi square test) was used to test the various hypotheses. Through the analysis completed, no statistically significant differences or correlations were found in the levels of anxiety, depression and stress in preoperative surgical patients according to age, gender, domicile, family status & socio-economic status. The differences in the levels of depression in preoperative surgical patients according to education status, occupation status, surgical department and type of surgery & difference in the level of stress in preoperative surgical patients according to marital status and surgical department were statistically significant (Table 2).

**Table-2: Results of significant differences between the levels of depression, anxiety, stress to various socio-demographic variables and to surgical department & type of surgery**

| | | Depression | Anxiety | Stress |
|---|---|---|---|---|
| Age | Chi square | 22.346 | 12.818 | 14.961 |
| | P value | 0.132 | 0.686 | 0.527 |
| Gender | Chi square | 4.325 | 7.217 | 1.426 |
| | P value | 0.364 | 0.125 | 0.84 |
| Domicile | Chi square | 8.29 | 0.942 | 1.297 |
| | P value | 0.082 | 0.918 | 0.862 |
| Education | Chi square | 45.179 | 27.514 | 20.544 |
| | P value | *0.001 | 0.121 | 0.424 |
| Occupation | Chi square | 17.2 | 7.709 | 5.686 |
| | P value | *0.028 | 0.462 | 0.682 |
| Marital status | Chi square | 6.559 | 7.159 | 16.173 |
| | P value | 0.585 | 0.52 | *0.04 |
| Family status | Chi square | 4.485 | 7.38 | 5.836 |
| | P value | 0.344 | 0.117 | 0.212 |
| Socio economic Status | Chi square | 8.737 | 7.781 | 7.233 |
| | P value | 0.365 | 0.455 | 0.512 |

*Statistically significant difference

The differences in the levels of depression in preoperative surgical patients according to education status were statistically significant (Table-3).

The differences in the levels of depression in preoperative surgical patients according to occupation status were statistically significant (Table-4).

**Table-3: Result of significant difference between levels of depression to education status**

| | | Depression | Anxiety | Stress |
|---|---|---|---|---|
| Education | Illiterate | 29 | 29 | 29 |
| | Primary | 37 | 37 | 37 |
| | Secondary | 51 | 51 | 51 |
| | Higher secondary | 19 | 19 | 19 |
| | Graduate | 16 | 16 | 16 |
| | Post graduate | 8 | 8 | 8 |
| Chi square | | 45.179 | 27.514 | 20.544 |
| P-value | | *0.001 | 0.121 | 0.424 |

*Statistically significant difference

**Table-4: Result of significant difference between levels of depression to occupation status**

| | | Depression | Anxiety | Stress |
|---|---|---|---|---|
| Occupation | Regular earning | 33 | 33 | 33 |
| | Inconsistant earning | 77 | 77 | 77 |
| | Non-earning | 49 | 49 | 49 |
| Chi square | | 17.2 | 7.709 | 5.686 |
| P-value | | *0.028 | 0.462 | 0.682 |

*Statistically significant difference

**Table-5: Result of significant difference between levels of stress to marital status**

| | | Depression | Anxiety | Stress |
|---|---|---|---|---|
| Marital status | Single | 38 | 33 | 33 |
| | Married | 93 | 77 | 77 |
| | Other | 29 | 49 | 49 |
| Chi square | | 6.559 | 7.159 | 16.173 |
| P-value | | 0.585 | 0.52 | *0.04 |

*Statistically significant difference

The differences in the levels of stress in preoperative surgical patients according to marital status were statistically significant (Table-5).

The differences in the levels of depression in preoperative surgical patients according to surgical department and type of surgery & difference in the level of stress in preoperative surgical patients according to surgical department were statistically significant (Table-6).

**Table-6: Result of significant difference between levels of depression &stress to surgical department and type of surgery**

| | | Depression | Anxiety | Stress |
|---|---|---|---|---|
| Surgical department | Chi square | 17.949 | 7.283 | 18.014 |
| | P value | *0.001 | 0.122 | *0.001 |
| Type of surgery | Chi square | 12.89 | 3.286 | 2.798 |
| | P value | *0.012 | 0.511 | 0.592 |

*Statistically significant difference

## DISCUSSION

The results of this study show that the slightly greater proportion of severe levels in anxiety compared to moderate levels in depression and stress reported in preoperative surgical patients. In study was expected since anxiety is often the dominant feeling prior to surgery. Some of the following factors, which we consider to be possible causes for these results, may be sample size; the fact that patients were unable to verbalize what they felt; previous surgeries that facilitated the adaptation to surgery; contacts with other people positively experiencing similar clinical situations; preoperative preparations that meet patients' needs; the ability to accept one's health status and a potential bond established with Doctor & Nursing professionals.

This study shows that the surgical department also affects the emotional disturbance in preoperative surgical patients. In generally study shown that extreme levels of anxiety and moderate levels of depression and stress in both orthopedic and surgery department. In study orthopedic department suggested extreme levels of severity in anxiety then surgery department in preoperative surgical patients.

This study suggests that type of surgery also affect the levels of emotional disturbance in preoperative surgical patients. In generally study shows that minor surgery (like in surgery department: appendectomy; breast biopsy; cholecystectomy; debridement of wound, burn, or infection; dilation and curettage; free skin graft; hemorrhoidectomy; inguinal hernia repair and mastectomy; & in orthopedic department: arthroscopic surgery including ACL repair; tendon surgery, closed fracture; displacement of joints by force without muscle and vascular injury; bunionectomy and discectomy) had moderate levels of depression then major surgey (like in surgery department: mastectomy with immediate tissue reconstruction with or without lymphnode biopsy or axillary dissection; laproscopic or open repair or resection of stomach, small bowel, colon, liver, pancreas, spleen, adrenals or liver; open cholecystectomy and large incisional, epigastric or ventral hernia repairs; & in orthopedic department: knee, hip, shoulder or elbow joint replacement; amputation; spinal laminectomy and/or fusion; musculo-skeletal oncology and crushes injury). Anxiety levels remains nearly extreme & stress levels remains nearly moderate in both major and minor surgery in preoperative surgical patients. In this study suggests that patient waiting for surgery in surgery department has higher level of stress then orthopedic department.

The reversal may be true for moderate to severe symptoms since this level of severity may more closely approximate clinical levels of psychiatric illness. Severe to moderate depression may be higher in our sample since clinical depression is more predominant in this age group (clinical anxiety peaks at age 45, whereas depression declines in middle age, but peaks in younger and older populations)[9,10].

Significant predictors of depression and anxiety found in this study were consistent with the other studies. Because symptoms of these psychiatric illnesses like anxiety, depression and stress are associated post-surgical morbidity and mortality, a better understanding of these variables may help identify high risk groups that require for panning of care to them[11,12].

The protective effect of having two co-morbidities in this study may relate to the lifestyle improvements one makes after being diagnosed with multiple health problems. It is possible that the presence of two co-morbidities increases the likelihood of making an adapting lifestyle change that may protect one from experiencing depression, while the presence of more co-morbidities inhibits the ability to do so[13].

Psychological symptoms are most common than physiological symptoms in the preoperative period. So it is essential to identify the areas of patient's vulnerability, helping to implement interventions targeting the psychological dimension and decreasing the intensity of symptoms [14].

One of study suggested that after application of the DASS- 21, 44.3% of patients showed anxiety and 26.6% showed depression in the preoperative period in a study designed to study the presence of anxiety and depression in this period. The authers suggests that emotional states should always be assessed regardless the severity of clinical and/or surgical disease or not. Due to in this situation, prevalence of patients with anxiety is relevant and they provides differentiated care, which may include the use of anxiolytic medication before the intervention [15].

One of study shows the levels of anxiety, depression and stress in 192 patients of the Depression Anxiety and Stress Scale (DASS-21), indicated that 50 to 62% of patients showed normal or mild levels of stress, anxiety and depression, 16 to 21% showed moderate levels, and 20 to 29% showed severe or extremely severe levels. Based on this, in terms of socio-demographic variables, their sample represented the population admitted to the General Surgery Unit where data were collected. This study also suggests that there were no statistically significant differences in the levels of anxiety, depression and stress in preoperative surgical patients according to gender, age, marital status, and occupation [16].

Similar one of the study whose aim was to understand the impact of the socio-demographic variables of gender, age, marital status and education on anxiety and depression, & its result found that there are no significant differences in the levels of depression and anxiety[15].

Similarly, other study showed that the presence of stress in the preoperative surgical period is not correlated with age, marital status or the existence of previous surgeries. Only significant differences found in the levels of depression in the preoperative surgical period according to educational qualifications. It may be suggests that education promotes greater demand for information and greater understanding of the whole surgical process and consequences which increases the levels of depression. It also suggested that most patients in the preoperative surgical period, despite having benign pathologies and undergoing less invasive surgeries, still have levels of anxiety and stress, which raises a range of emotional consequences [14].

The health care professionals' growing concern to carry out the preoperative anaesthetic and surgical visit, as well as implement a psycho-educational programme by psychiatrist or psychologist, may also be essential and necessary to promote appropriate training and guidelines, thus reducing the emotional disturbance experienced.

Information given to patients before surgery enables the construction of positive attitudes toward the disease, appropriate responses to situations, an effective participation in the decision- making process, and a perspective on the future.

Now days, laparoscopy is the surgical method of choice, representing an alternative to conventional technique. This approach has more benefits than the laparotomy, such as the decrease in the length of hospital stay. The results of this study showed the 69% underwent a laparotomy and 31% underwent a laparoscopy. In this study statistically significant differences were found in the levels of stress in preoperative surgical patients according to type of surgery to be undergone [17].

The surgical process generates both physical and psychological disorders, associated with a range of factors such as the unknown of the type of invasive procedure used, which could mean the experience of a critical situation, in addition to the lack of definition of possible future events [18]. Even the less invasive surgeries may have strong emotional outputs and adverse results [19].

Depression is defined as a mood disorder that involves a heterogeneous group of symptoms, such as sadness, unhappiness, discouragement, irritability, loss of interest in body image, decreased cognitive ability, decreased self-esteem and self- confidence, among others (DSM-5, 2014) [20], we can predict that the length of hospital stay waiting for a surgical procedure, even if short, may lead to the emergence or development of these symptoms due to all of the transformations that this process necessitate.

## CONCLUSION

The preoperative period implies a great emotional burden on patients and negative impact on people's physical, mental and psychological well-being, quality of life and productivity. This suggests that, it is essential for the psychological preparation to begin with the nurse before surgery & if possible then by psychiatrist or psychologist. This study aimed at identifying the levels of anxiety, depression and stress in preoperative surgical patients and knowing the possible correlations and differences with various socio-demographic and type of surgery in both orthopaedic & surgery department. Results indicated that, in the preoperative period, surgical patients showed severe levels of anxiety and moderate levels of depression and stress. In this study orthopedic department suggested extreme levels of severity in anxiety then surgery department & higher levels of stress in surgery department then orthopedic department. In this study suggested that minor surgery had moderate levels of depression then major surgery & higher levels anxiety and moderate levels of stress in both type of surgery in preoperative surgical patients.

The results of this study provided an opportunity to reflect on our practices and behaviours as health care professionals. They should be considered as a contribution to understanding the complex phenomenon that concerns the identification of emotional symptoms associated with the preoperative surgical period and their valorisation by health care professionals, thus preventing their progression to pathological situations. Some suggestions arose from these results, such as: promoting on-the-job training programmes for the development of skills in this area; establishing a preoperative consultation together with the remaining multi-professional team which included an interview with a structured script, where emotional states of anxiety, depression and stress could be conceptualised through attitudes, behaviours and words aiming at an autonomous and interdependent intervention to target the problem; and intervening interdependently.

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