ORIGINAL ARTICLE

Association of Depression, Anxiety, and Stress with Socio-demographic Characteristics among Preoperative Patients at Tertiary Care Hospitals in Karachi

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Abstract

Background: The preoperative period is known as one of the disturbing events. It habitually prompts cognitive, physiological, and emotional reactions. Depression, anxiety, and stress are considered emotional states usually found in preoperative surgical patients.

Objective: To find out the frequency and association of depression, anxiety, and stress with socio-demographic variables among preoperative patients.

Methods: This cross-sectional analytical study of 258 preoperative patients was conducted at Dow University Hospital and Dr. Ruth Pfau Civil Hospital, Karachi from August 01, 2019, to July 31, 2020. Ethical approval was obtained before conducting the study. Depression, Anxiety, and Stress Scale-42 tool was used for the data collection. The data was analyzed by using SPSS version 21. Mean and frequency analyses were performed for demographic characteristics. Moreover, a chi-square test was performed to check the association of socio-demographic characteristics of study participants with depression, anxiety, and stress.

Results: The majority of the participants (72.5%) in this study were male and 59.7% were between the ages of 20-35 years. The finding of this study revealed that most of the patients had moderate depression (43.02%), extreme anxiety (54.26%), and moderate stress 36.04%. Significant associations were found for depression with gender and monthly income, with a p-value of 0.035 and 0.003 respectively. Gender (p=0.021) and level of education (p=0.013) were significantly associated with stress levels.

Conclusion: This study concluded that patients before surgeries had different levels of depression, anxiety, and stress. Age is the only variable that showed a significant association with stress and depression. Furthermore, anxiety is the only domain that is not significantly associated with any demographic characteristics.

Keywords: *Depression, anxiety, stress, association, preoperative, patients, tertiary care.*

INTRODUCTION

Surgery is considered a serious event frequently an abruptly imposed reality that may cause insightful changes in a person's life, health, and well-being, as well as in basic life patterns at the individual and family level, consequently, changing roles, identities, behavioral standards, and relationships [1]. This event is perceived as an unidentified alarming reality because of the burden of emotional states like anxiety, stress, and depression in patients who are undergoing surgery [2]. An individual's quality of life, productivity, and physical and psychological well-being can be affected due to the continuous and excessive effects of such emotional states [3]. Moreover, a person may evolve to pathological states as well [4]. Depression, anxiety, and stress are considered emotional states usually found in preoperative surgical patients. For most surgical patients, the preoperative period is known as one of the disturbing events. It habitually prompts cognitive, physiological, and emotional reactions [5]. One of the challenging problems among patients of preoperative care is preoperative anxiety. A mild level of anxiety is a predictable response toward impulsive and possibly life-menacing conditions, particularly for a patient's initial surgical familiarity. However, greater, and prolonged levels of preoperative anxiety may affect negatively on anesthesia and recovery [6].

Mainly patients with depression and anxiety disorders report increased rates of readmission in the hospital and are associated with increased mortality as well as morbidity in the postoperative period also sometimes patients face post-discharge psychiatric problems [7]. A study showed that preoperative anxiety considerably boosts the postoperative pain and the usage of analgesics; neither anxiety nor depression deteriorated the mortality in the critical care unit and due to anxiety and depression there were extensions in hospitalization time [8]. Another study found preoperative depression in patients to be often associated with increased postoperative pain [9]. On the other hand, stress is a form of response with physical and psychological components, mainly produced due to the disturbance of the stability between organisms and the environment [10].

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Some factors may cause preoperative fears including gender, age, education, single or divorced, patient's ability to understand the events that occur during surgical anesthesia, uncertainty of the exact day of surgery, financial loss, and separation from family, postoperative pain, and fear of death [11]. Hospitalization and waiting for surgery, the denotation of the surgery for the patient, and lack of knowledge about surgery also cause distress [12]. In routine practices, usually no psychological support and care is provided to patients before any surgery. Mild psychological imbalance is natural before any surgery, but high levels of distress increase the risks of surgery including morbidity and mortality. Although the literature suggested that psychological problems in the pre-operative period may cause severe negative effects on patient's health, no study was found that was conducted on patients admitted to tertiary care hospitals in Karachi. Therefore, this study aimed to identify the frequency and the association of depression anxiety, and stress levels with socio-demographic characteristics among preoperative patients admitted at tertiary care hospitals in Karachi.

MATERIALS AND METHODS

This cross-sectional analytical study was conducted by using a purposive sampling technique. A total of 258 preoperative patients aged ≥18 years and were on-list for major surgeries at Dow University Hospital and Dr. Ruth Pfau Civil Hospital, Karachi, Pakistan were included. On the other hand, patients who were listed for minor day-care procedures were unwilling and had an age of ≤18 years were excluded. Sample size calculation was performed through open-epi online software, by using 61% as the percentage of preoperative anxiety levels among patients, 95% confidence interval, and 6% margin of error [11]. Approval was taken from the Institutional Review Committee (IRB of the Institute of Nursing, Dow University of Health Sciences, Karachi, Pakistan (Ref. ION/MSN/2019-07/-18-410). Written informed consent was taken from each participant of the study. Data were collected between 1st August 2019, to 31st July 2020 by using the study instrument Depression, Anxiety and Stress Scale-42 (DASS-42). This scale was developed by Lovibond and Lovibond in 1995 to assess depression, anxiety, and stress levels [13]. This 4-point Likert scale comprised 42 items and it consisted of three main domains Depression, Anxiety, and Stress. Each domain is comprised of 14 items, with a maximum score of 42. In addition, each item has scored from 0,1,2 and 3 with the option of did not pertain to me at all, applied to me up to some extent, some of the time, applied to me to a significant amount, or a good part of the time and applied to me very much, or most of the time respectively. The overall score for depression from 0-9 for usual, 10-13 for mild, 14-20 for reasonable, 21-27 for severe, and ≥27 was considered as extremely rigorous. For the assessment of anxiety level, score distribution will be 0-7, 8-9, 10-14, 15-19, and more than 19 for normal, mild, moderate, severe, and extremely severe respectively. Moreover, for stress levels, score categories of 0-14, 15-18, 19-25, 26-33, and more than 33 will be used for normal, mild, moderate severe and extremely severe respectively. The internal consistency of the scale was assessed as Cronbach's alpha = 0.94 whereas Cronbach's alpha of subscales depression, anxiety, and stress were 0.88, 0.91, and 0.82 respectively [14]. Analysis of data was carried out by SPSS V-21. For continuous variables, mean and standard deviation (SD) were calculated. In addition, frequency and percentage were checked for categorical variables. A chi-square test was applied to identify the associations of preoperative anxiety, depression, and stress with demographic variables. P-value ≤ 0.05 was considered as significant.

RESULTS

Total 258 patients were studied. Table **1** describes the demographic characteristics and their association with depression. Most of the participants 59.7% were between the age of 20-35 and the majority of the participants 72.48% were male. This study highlighted that 41.47% of the participants had to have a metric level of education and having income of more than 10,000 Rs/ month.

The finding of this study is evident that depression scores found among study participants were in categories of mild, moderate, severe, and extremely severe with the frequency of 8.52%, 43.02%, 30.62%, and 8.13% respectively. There is a significant association of depression found with gender and monthly income with p=values 0.035 and 0.003 respectively.

Table 1: Association of depression with demographic characteristics of the study participants (n=258).

Variables	Groups	Total count(%)	Normal count(%)	Mild count(%)	Moderate count(%)	Severe count(%)	Extremely severe count(%)	P-value
Age	20-35 Years	154 (59.7)	17 (11.03)	16 (10.38)	62 (40.25)	47 (30.51)	12 (7.79)	0.557
	36 and More	104 (40.3)	8 (7.69)	6 (5.76)	49 (47.11)	32 (30.76)	9 (8.65)	
Gender	Male	187 (72.5)	18 (9.62)	20 (10.69)	82 (43.85)	57 (30.48)	10 (5.34)	0.035*
	Female	71 (27.5)	7 (9.85)	2 (2.81)	29 (40.84)	22 (30.98)	11 (15.49)	
Educational Level	Primary/ Uneducated	77 (29.9)	8 (10.38)	4 (5.19)	38 (49.35)	23 (29.87)	4 (5.19)	0.158
	Matric	107 (41.5)	8 (7.47)	9 (8.41)	39 (36.44)	37 (34.57)	14 (13.08)	
	Others	74 (28.7)	9 (12.16)	9 (12.16)	34 (45.94)	19 (25.67)	3 (4.0)	
Monthly Income	PKR 10000 or Less	89 (34.5)	2 (2.24)	9 (10.11)	32 (35.95)	35 (39.32)	11 (12.35)	0.003*
	More Than PKR 10000	169 (65.5)	23 (13.60)	13 (7.69)	79 (46.74)	44 (26.03)	10 (5.91)	

*p-value ≤ 0.05 is considered significant.

Table 2: Association of anxiety with demographic characteristics of the study participants (n=258).

Variables	Groups	Total count(%)	Normal count(%)	Mild count(%)	Moderate count(%)	Severe count(%)	Extremely severe count(%)	P-value
Age	20-35 years	154 (59.7)	7 (4.54)	5 (3.24)	23 (14.93)	38 (24.67)	81 (52.59)	0.256
	36 and more	104 (40.3)	5 (4.80)	4 (3.84)	6 (5.76)	30 (28.84)	59 (56.73)	
Gender	Male	187 (72.5)	8 (4.27)	8 (4.27)	27 (14.43)	49 (26.20)	95 (50.80)	0.058
	Female	71 (27.5)	4 (5.63)	1 (1.40)	2 (2.81)	19 (26.76)	45 (63.38)	
Educational level	Primary/ uneducated	77 (29.9)	2 (2.59)	2 (2.59)	8 (10.38)	23 (29.87)	42 (54.54)	0.225
	Matric	107 (41.5)	4 (3.73)	4 (3.73)	9 (8.41)	23 (21.49)	67 (62.61)	
	Others	74 (28.7)	6 (8.10)	3 (4.05)	12 (16.21)	22 (29.72)	31 (41.89)	
Monthly income	10000 or less	89 (34.5)	1 (1.12)	3 (3.37)	8 (8.98)	23 (25.84)	54 (60.67)	0.258
	More than 10000 PKR	169 (65.5)	11 (6.50)	6 (3.55)	21 (12.42)	45 (26.62)	86 (50.88)	

*p-value ≤ 0.05 is considered significant.

Table 3: Association of stress with demographic characteristics of the study participants (n=258).

Variables	Groups	Total count(%)	Normal count(%)	Mild count(%)	Moderate count(%)	Severe count(%)	Extremely severe count(%)	P-value
Age	20-35 years	154 (59.7)	40 (25.97)	33 (21.42)	57 (37.01)	23 (14.93)	1 (0.64)	0.242
	36 and more	104 (40.3)	22 (21.15)	24 (23.07)	36 (34.61)	17 (16.34)	5 (4.80)	
Gender	Male	187 (72.5)	51 (27.27)	42 (22.45)	66 (35.29)	22 (11.76)	6 (3.20)	0.021*
	Female	71 (27.5)	11 (15.49)	15 (21.12)	27 (38.02)	18 (25.35)	0 (0)	
Educational level	Primary/ uneducated	77 (29.9)	17 (22.07)	14 (18.18)	36 (46.75)	8 (10.38)	2 (2.59)	0.013*
	Matric	107 (41.5)	21(19.62)	20 (18.69)	38 (35.51)	25 (23.36)	3 (2.80)	
	Others	74 (28.7)	24 (32.43)	23 (31.08)	19 (25.67)	7 (9.45)	1 (1.35)	
Monthly income	10000 or less	89 (34.5)	18 (20.22)	17 (19.10)	32 (35.95)	21 (23.59)	1 (1.12)	0.093
	More than 10000 PKR	169 (65.5)	44 (26.03)	40 (23.66)	61 (36.09)	19 (11.24)	5 (2.95)	

*p-value ≤ 0.05 is considered significant.

The highest percentages of depression were found in the age group of 20-35. Furthermore, male participants' had highest percentage in moderate 43.85%, and female participants were also noticed in 40.84% in the moderate category.

Table **2** shows that mild, moderate, severe, and extremely severe categories of anxiety scores were 3.48%, 11.24%, 26.35%, and 54.26% respectively. Anxiety was not significantly associated with any demographic variable.

The highest percentages of anxiety were found between the ages of 20-35 years and were in extremely severe category was the highest category in both age groups. In addition, the highest percentage of anxiety was observed in males and females with a frequency of 50.80% and 63.38% respectively.

Table **3** illustrates that stress levels for mild, moderate, severe, and extremely severe categories were 22.09%, 36.04%, 15.50%, and 2.32% respectively. There is a significant association of stress with gender and educational level with p-values was 0.021 and 0.013 respectively.

The highest percentages of stress observed in the moderate category for the ages of 20-35 years more than 36 years 37.01% and 34.61% respectively. Male and female participants have the highest percentage in the moderate category with percentages of 25.98% and 10.63% respectively.

DISCUSSION

The current study aimed to find out the frequency and association of anxiety, depression, and stress with socio-demographic variables among preoperative patients at two tertiary care hospitals in Karachi Pakistan. This study results show a moderate level of depression among 43% of the total study participants, while 30% severe level of depression among study participants. Similar results were found in a previous study which revealed 74% severe depression among hospitalized patients. [15]. In contrast, the study showed that cardiac patients were classified as having elevated preoperative depressive symptoms [16]. Another native study suggested moderate to severe depression was noticed in participants suffering from diabetes, hypertension, anemia, and asthma [17].

The findings of the current study revealed that depression was significantly associated with gender (p=0.035) and monthly income (p=0.003). The results show moderate to severe levels of depression among male participants as compared to females. These results are in contrast with some other studies which were conducted in Hong Kong and Pakistan [18, 19]. The implications of gender and socioeconomic factors on depression in preoperative patients highlight the necessity for nursing interventions to address the different psychological needs of male and female patients, and those patients who come from economic backgrounds. These interventions could cover preoperative counseling, provide emotional support, and enhance mental health services for susceptible patient subgroups.

In this study, the frequency of preoperative anxiety was 54.26% as recommended by a DASS score of more than 20 which showed that most of the study participants had extremely severe anxiety. These findings are parallel with the study by Mulugeta *et al.* (2018) conducted in Ethiopia which also showed 61% of severe anxiety among patients waiting for elective surgery [11]. The finding of the current study was higher than the previous study conducted in Addis Ababa, Ethiopia showed a 39.8% prevalence for preoperative anxiety [20]. No significant association was found between preoperative anxiety and demographic variables.

In this study, it was found that anxiety levels increase with a higher level of education. This finding is coherent with a previous study that also revealed that the level of preoperative anxiety appeared to be higher with enhancing the level of education [21]. In contrast, the results of the previous study illustrated the decreased level of anxiety among patients with higher levels of education [22]. This could be due to a higher ratio of anxious patients with a lower level of education level maybe because of their lack of knowledge related to anesthesia and surgical procedures.

This study showed no association between gender and preoperative anxiety. However, the results show that the male participants have higher levels of preoperative anxiety than females. Similar results were found in previous studies [15]. Furthermore, these results are dissimilar from other studies that revealed higher levels of preoperative anxiety levels among female participants as compared to male participants [23].

The findings of our study revealed that moderate levels of preoperative stress among study participants were 36%. This study also suggests that there were statistically significant differences among the levels of stress in preoperative surgical patients according to their age, gender, as well as educational level. Similar results found in a study which was performed by Rosiek *et al.* also showed moderate to high levels of stress among preoperative patients [24]. In contrast, study findings showed mild levels of stress. Likewise, the information assumed by patients before surgery helps the formation of positive thoughts toward the disease, proper responses to circumstances, effective participation in the decision-making process, and a perception of the future [25].

LIMITATIONS OF THE STUDY

The current study has its limitations. First, it was an analytical cross-sectional study conducted with a small sample size, hence, the findings cannot be generalized. Secondly, this study was conducted in two public sector tertiary care hospitals, therefore, the results are not constant with private sector hospitals.

CONCLUSION

This study concluded that patients before surgeries had different levels of depression, anxiety, and stress. Age is the only variable that showed a significant association with stress and depression. Furthermore, anxiety is the only domain that is not significantly associated with any demographic characteristics.

ETHICAL APPROVAL

This research is approved by the Institutional Review Committee, Institute of Nursing, Dow University of Health Sciences, Karachi, Pakistan (No: Ref. ION/ MSN/2019-07/-18-410). All procedures performed in studies involving human participants were by the ethical standards of the institutional and/ or national research committee and with the Helsinki Declaration.

CONSENT FOR PUBLICATION

Written informed consent was taken from the participants.

AVAILABILITY OF DATA

The data are not available to the public due to privacy, confidentiality, and ethical restrictions but can be presented on request from the corresponding author.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

All the authors contributed equally to the publication of this article.

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