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Depression among General Hospital Surgical Inpatients and its Effect on the Length of Hospital Stay

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Abstract: Depression is believed to complicate the care of general hospital patients on medical and surgical wards. This study was carried out to demonstrate the prevalence of depressive disorders in patients undergoing elective surgical operations and to investigate its effects on the length of hospital stay. One hundred inpatients of surgical wards of Emam and Sina general hospitals of Tabriz were selected through convenient sampling. The patients were evaluated by Beck depressive inventory. According to Beck scores, the patients were assigned to two groups, depressed and non-depressed. The mean length of hospital stay was determined in each group. The data were analyzed through t-test Out of 100 patients, 91 (50 males and 41 females) completed the study. According to Beck scores, 31 patients (34.07%) were evaluated as depressed and 60 (65.93%) as non-depressed. The depressed group had a mean length of stay of about 9.02 days versus 6.92 days in non-depressed group. A significant difference was noted between the 2 groups ($p<0.001$). The prevalence of depression on surgical patients was higher than general population and depression affects the length of hospital stay.

Key words: Depression, prevalence, surgical wards, hospital stay

INTRODUCTION

Depression is a common psychiatric disorder with a lifetime prevalence of 12-25% in women and 5-12% in men (Benjamin and Verginia, 2003). It has substantial negative impacts on individual's social and vocational function and is believed to be one of the most important causes of disability. Vocational problems and disturbed interpersonal relations are probably manifestations of masked and fundamental depressions (Benjamin and Virginia, 2000).

In the year 2000, unipolar depression was the fourth cause of losing jobs. Based on the studies conducted by WHO, it is estimated that in the year 2020 it will be the second debilitating illness among all medical and psychiatric illnesses namely more than road Accidents, cerebrovascular accidents and pulmonary obstructive disorders (Christopher and Alen, 1996). In the year 1992, total cost due to depression in US was estimated to be around 44 billion dollars (Vaeroy *et al*., 2003). Despite worldwide distribution of depression, around 50% of patients never seek treatment and therefore they are not treated. Failure in diagnosing and treating depression results in resistance and recurrence of the illness (Michael and James, 2002). Since depression is a complicated disorder with heterogeneous symptoms, it is not always an easy task to diagnose. There are many depressed patients who never complain of a dysphoric mood and their dominant clinical complaints include anxiety, somatic complaints, fatigue and vegetative symptoms like sleep and appetite disturbances. In some cases depression presents as psychosis (Michael *et al*., 2002). However, somatic symptoms of depression are less likely to be noticed. Prevalence of this disorder in medical and surgical wards is 2-3 times higher than in general population (Benjamin and Virginia, 2000; Vaeroy *et al*., 2003). Thirty to 60% of short-term hospitalized patients at internal and surgical wards suffer from either a psychiatric or psychosocial disturbance and in comparison depressed patients use medical resources 3 times more than non-depressed individuals namely there is a two-fold increase in costs and a seven-fold increase in the number of medical help seeking at emergency centers (Michael and James, 2002; Levenso *et al*., 1990). Unfortunately depression has negative impacts on both clinical course and outcome of many diseases and therefore increases the length of hospital stay (Takashi Hosaka *et al*., 1999). In one study carried out at medical and surgical wards, length of hospital stay in depressed patients was on average 10 days more than non-depressed patients. In the same study, it is demonstrated that in those depressed patients who went

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Table 1: Relationship of depression with hospital days in surgical inpatients

Beck score	Kind of depression	Group	Frequency (%)	Mean length of hospital days	p-value between 2 groups
5-9	Non Depressed	Non Depressed(G1)	28(30.76)	6.91	p<0.001
10-18	Mild Dep	Non Depressed(G1)	32 (35.16)	6.93	
19-29	Moderate Dep	Depressed(G 2)	22 (24.18)	8.9	
30-63	Sever Dep	Depressed(G 2)	9 (9.9)	9.14	

on either antidepressants or psychotherapy, the average days of hospital stay was 31.8 days fewer than those who didn't receive any treatments (Verbosky *et al*., 1993). There is an abundance of studies which show the impacts of depression on clinical course and outcome of medical and surgical illnesses (Ned *et al*., 1997). Besides in most studies treatment with antidepressants has been shown to be accompanied by better results (Ned *et al*., 1997). Nowadays surgeons are aware of psychological factors affecting their patients (Michael and James, 2002). The cares should be considered prior to the operation as well as in the time period following the surgery. Presence of severe anxiety and depression in the time period prior to the operation has substantial impacts on accepting the surgical operation, hospitalization and patient's cooperativeness. In the post-operational period, depression leads to loss of motivation and interest and diminishes patient's cooperation with treatment which in turn delays the recovery and extends hospital stay (Ned *et al*., 1997). Although surgery is potentially a surviving event, at the same time it is a traumatic event and is accompanied by fear, anxiety and depression. Psychiatric and psychological factors leave tremendous effects on the outcome of surgery (Rodin and Abbey, 2000).

Emotional and psychiatric conditions of patients play an important role in clinical symptoms, clinical course and outcome of every surgical operation (Rodin and Abbey, 2000). It should be taken into consideration that depression is a common reaction to illnesses but at times this reaction is not normal and is accompanied by an abundance of complications which need to be managed and treated (James *et al*., 2000). Depression has been in the center of greater attention in medical wards hence lots of studies have been conducted in this area but to the contrary its prevalence in surgical wards and its impact on clinical course and outcome of surgical illnesses need to be further studied (Balestrieri *et al*., 2002; Takashi *et al*., 1999). Regarding the above-mentioned issues and their importance we conducted this study to elucidate frequency of depression in general surgical wards as well as its effect on the length of hospital stay.

MATERIALS AND METHODS

This descriptive study was performed prospectively on 100 surgical inpatients of Emam and Sina teaching general hospitals of Tabriz. These hospitals are affiliated to Tabriz university of medical sciences. Patients were selected through convenient sampling among all inpatients admitted for elective surgical operations. Inclusion criteria were the ages between 18 and 65 years old and being indicated for operation regardless of their gender and diagnosis. Patients with a past history of either a psychiatric illness or substance abuse and emergency patients were excluded from the study. All patients were evaluated by Beck depressive inventory (version 2) which is compatible with DSM-IV criteria. On the first or second day of hospitalization the questionnaires were completed by patients. The patients filled out the questionnaires by themselves after they were instructed on how to do it. We used patients' hospital records for detailed personal demographic data and also the length of their hospital stays at the time of their discharge. Regarding the Beck scores the patients were assigned to 2 groups of depressed and non-depressed with the score ranges of 9 or higher and 5-9, respectively. In view of severity of depression, depressed patients were divided into 3 categories of mild, moderate and severe with scores of 10-18, 19-29 and 30-63, respectively. Scores of 0-4 were known as invalid. The two groups of depressed and non-depressed were compared with each other in terms of length of hospital stay. The difference between the two groups was then evaluated by t-test (Table 1). In order to diminish the number of false positive cases we excluded the mild depression and the patients with scores of 18 and greater entered the study and those with scores of 5-17 formed the non-depressed group (Table 1).

RESULTS

Out of 100 patients, 9 patients were excluded from the study for either being not cooperative or getting a score of 4 or lower at Beck test. Of 91 remaining patients, 50 patients (54.94 %) were men and 41 (45.06 %) were women. They were between the ages of 18 and 65 with mean age of 44 years old. Seventy percent were married and 30% were single. The results of analyzing Beck inventory are shown in Table 1. Table 1 indicates that frequency of depression among surgical patients is greater than general population which is estimated to be about 10-25%. In this study the average days of hospital stay rises as the depression becomes more severe and in

the non-depressed group it was 6.91 days while the average days of hospital stay in mildly, moderately and severely depressed groups was 6.93, 8.9 and 9.14, respectively. This increase was not statistically significant. In order to decrease the number of false positive depression, as mentioned above, we regarded the cut-off score of 18 in Beck test as an indication for depression and in this view 31 patients (34.07%) formed the depressed group while 60 other patients (65.93%) were placed in non-depressed group. The average days of hospital stay in this depressed and non-depressed groups were 9.02 and 6.92 days, respectively. The comparison of the latter figures were statistically significant ($p<0.001$). It is concluded that moderate and severe depression affect the hospital stay and that depressed patients stay in the hospital longer than non-depressed patients.

DISCUSSION

In this study, we demonstrated the prevalence rate of 69.24% for depression among inpatients of surgical wards by using Beck depression test regardless of gender and type of surgical illness for which they had been hospitalized. In depressed patients with Beck inventory scores of 18 and higher, the prevalence rate was 34.07%. In both condition prevalence of depression was higher than general population which is reported to be 10-25%. This higher prevalence is probably due to the stress caused by the disease, its imposed pain and suffering and effect of the disease on patient's function, income, career and quality of life. This finding is consistent with the results of most other studies in which the prevalence of depression in surgical and internal wards are reported high (Balestrieri *et al*., 2002). In most surveys, depression is shown to be one of the most common psychiatric disorders in surgical wards (Rodin and Abbey, 2000; Nair and Pillay, 1997) and its prevalence in China was 40.4% (Abiodan and Ogunremi, 1990). In another study in Nigeria the prevalence of psychiatric disorders in surgical wards was demonstrated to be 29.6% (Smith *et al*., 1988). There is a fact that most inpatients at training hospital wards belong to lower socioeconomic class of the society. Although, the correlation between prevalence of depression and various social classes is not clear, it is believed that poor socioeconomic condition has a substantial role in clinical course and prognosis of physical illnesses. Therefore, patients who belong to lower socioeconomic class receive fewer medical cares and as a result they are liable to more severe and end-stage of illnesses. This can be a reason for the higher probability of development of depression in this social class. On the other hand, depression can be caused by treatments used for medical conditions. Diagnostic measures like endoscopy, radiographic studies, angiography, biopsy and many others are associated with anxiety which in turn is a reason for mood changes (Ackerman *et al*., 1988). In preoperative period, the stress of surgery can cause depression and anxiety. Furthermore, negative emotions such as anxiety and depression have unfavorable effects on the primary illness as well as its course and outcome (Balestrieri *et al*., 2002). For instance post-MI mortality during a period of 6-18 months in depressed patients was four times greater than that of non-depressed patients (Ackerman *et al*., 1988; Balestrieri *et al*., 200l).

Interestingly, depressed women in comparison with their non-depressed peers had a lower bone density and a higher prevalence of osteoporosis. Similarly, depressed diabetic patients compared to non-depressed diabetic patients had a poorer control of blood sugar and they were predisposed to more diabetes complications like neuropathies (Ackerman *et al*., 1988; Balestrieri *et al*., 200l).

Finally, it has been shown that mortality due to any cause other than suicide is at least two times more in depressed patients compared to their non-depressed peers (Balestrieri *et al*., 2001; Hauser *et al*., 2006). Abundant studies show that depression is under-diagnosed in surgical and internal wards so it is less likely to be treated. In the same way consequences of depression and its effect on course and outcome of the diseases are usually overlooked (Balestrieri *et al*., 2001; Hauser *et al*., 2006). In this study in order to demonstrate the negative effects of depression on illnesses and their courses, the length of hospital stay was considered as the yardstick and it was compared between two groups of depressed and non-depressed patients in general surgery wards which were 9.02 and 6.92 days, respectively. These figures were statistically significant by t-test ($p<0.001$). They are entirely compatible with results of lots of other studies like Balestrieri and Verbosky (Balestrieri *et al*., 2001; Verbosky *et al*., 1993). Effects of depression on the course of disease is probably mediated by loss of motivation and cooperation with the treatment (Rodin and Abbey, 2000; Luber *et al*., 2000). Psychiatric cares in surgical patients should be exerted both before and after the operation. It is important to cut down on the fear and depression prior to the operation. Following the operation, depression might be due to anesthetic effects and post-operative complications such as pain, immobility and maladaptive responses to stress are also responsible (Fulop *et al*., 1998). Presence of past psychopathology also aggravates these kind of reactions (Jian *et al*., 2002; Levonso, 1990). Since, prolonged hospital stay decreases

patient's quality of life and imposes high costs on the patient, leads to decreased chance of hospitalization for other patients and less timely care and hospital admissions, the importance of treatment of depression is well indicated.

CONCLUSION

The prevalence of depression on surgical patients was higher than general population and depression affects the length of hospital stay, so specific plans need to be executed to prevent and treat depression in surgical wards.

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