



Original research

Prediction of anxiety and depression in general surgery inpatients: A prospective cohort study of 200 consecutive patients



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HIGHLIGHTS

- The definition of health pays a special attention to mental and social well-being.
- The objective was to assess anxiety and depression with HADS tool in surgical inpatients.
- Female gender, age over 35, low socioeconomic and education status were associated with anxiety.
- Low education and longer hospital stay (>7 days) were associated with depression.
- Based on psychological status of the patients, application of preventive measures should be considered.

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ABSTRACT

Introduction: Surgery is a major stress factor for patients, and is associated with significant anxiety or depression. The Hospital Anxiety and Depression Scale is one of the most common instruments used for assessment of patients' psychological stress. Here, we aimed to identify predictors of anxiety and depression in surgical inpatients.

Methods: The study group consisted of consecutive two-hundred patients who completed the Hospital Anxiety and Depression Scale questionnaire. A patient scoring more than cut-off values (10 for anxiety and seven for depression) was considered as being at risk of anxiety or depression. Demographical data, socioeconomic status, education level and diagnoses were recorded. The Chi-square, Fisher's exact, Mann–Whitney, Kruskal–Wallis tests and binary logistic regression analysis were used to identify the predictive parameters for anxiety and depression.

Results: It was found that female patients, patients older than 35 years, patients with low socioeconomic status and low education level had a relatively higher risk of anxiety. In addition, patients with low education and a hospital stay greater than seven days were at risk of depression. Logistic regression analysis revealed that socioeconomic status and education level were strongly predictive for anxiety. However, presence of anxiety was shown to be strongly predictive for depression.

Conclusion: Healthcare providers should be aware of their patients' psychology and, therefore, it is recommended to consider predictive factors for anxiety and depression.

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1. Introduction

The definition of health was made by the World Health Organization and entered into force in 1948. This definition pays special attention to mental and social well-being, not only the absence of disease [1]. Patients who are admitted to hospital experience acute psychological distress in addition to the burden of the disease condition. Hospitalized patients who undergo operation experience the physical trauma of surgery, as well as the fear and anxiety

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of possible outcomes [2]. Patients experience many challenges including the exact nature of the disease and proposed treatment modalities, uncertainty about the surgery, and postoperative period [3,4]. Anxiety in surgical patients has been well studied, with most such studies being performed by authors from nursing departments [5–10]. Given that the stabilization of anxiety and psychological condition in hospitalized patients is a routine part of nursing care, the psychology of patients can be easily overlooked by surgeons.

Illnesses may lead to mental, emotional, social or psychological side effects [11] and this effect is especially evident in patients admitted to surgical clinics. Surgery is a major trauma and stress factor for patients, and is associated with significant anxiety or depression. An elevated anxiety level increases the risk associated with surgery, including the morbidity and mortality [12]. Many physiologic systems including the central nervous, endocrine and immunologic systems are activated in response to a stress [13,14]. Consequently, wound healing delays, need for analgesia, risk of postoperative complications, and the length of hospital stay can all be increased by stress, ultimately increasing the risk of mortality and morbidity [15].

The department of general surgery provides comprehensive consultation and care in many subspecialties, including elective and emergency situations and both malignant and non-malignant conditions, offering operative and non-operative treatments according to the disease and condition of the patient. Therefore, the department of general surgery is continually addressing various stressful conditions and diseases. Such stresses often produce miscellaneous psychological problems. Although various aspects of preoperative anxiety in adults have been studied [5,16,17], predictive factors are not evident in general surgery inpatients.

Identification of the patients at risk of anxiety and depression by healthcare providers can be an important issue to deliver the optimum care. For this purpose, it was aimed to identify the level of anxiety and depression in patients admitted to the general surgery clinic, and to assess predictors of these conditions.

2. Material and methods

A descriptive design was used throughout the study. Patients that were admitted and hospitalized into the general surgery department for any reason were evaluated. Patients who give consent to join the study were included into the study group. Patients younger than 18 years-old were excluded from study. The study protocol was approved by the local ethical committee of the hospital. Demographical data were recorded. Socioeconomic status was recorded as either low or normal income. Education level was recorded as either unschooled, high school or university level. Diagnoses were divided into four categories: 1) elective malignancy; 2) elective non-malignant; 3) emergency trauma; and 4) emergency non-trauma. The elective malignancy subgroup included patients who were informed and prepared for surgery with the diagnoses of gastrointestinal, abdominal or breast malignancy. The elective non-malignant subgroup included patients who were prepared for operation (e.g., cholecystectomy, hernia repair and thyroidectomy). The emergency trauma subgroup included patients who were admitted to the hospital for emergency trauma. The emergency non-trauma subgroup included patients who required surgery or medical treatment with diagnosis of acute appendicitis, acute pancreatitis, gastrointestinal hemorrhage or diverticulitis. The length of hospital stay of the patients was recorded. Anxiety and depression was assessed using the Hospital Anxiety and Depression Scale (HADS) [18]. The HADS form was used at discharge of the patients. The form consists of 14 questions; with each statement have Likert-type answers of four responses,

which are graded from 0 to 3. The HADS is divided into two sections, one that addresses anxiety and one that addresses depression. The maximum possible score for each section is 21. A patient scoring 11 or more on either section was considered as being at risk of anxiety or depression [18,19]. The Turkish reliability and validity of the scale was assessed by Aydemir et al. [20] and new cut-off values (10 for anxiety and seven for depression) were proposed. The latter cut-off levels were used for defining the risk of the patients' anxiety and depression. This study designed as fully compliant with the STROBE criteria [21].

3. Statistics

Statistical calculations were performed using IBM SPSS 22 (IBM SPSS, USA). Variables are expressed as mean \pm standard deviations (SD) or as medians (range) depending on their distribution. Categorical variables were expressed as frequencies and percentages. The Chi-square and Fisher's exact tests were used for comparison of continuous parametric variables. The Mann–Whitney and Kruskal–Wallis tests were used for comparison of parametric variables without normal distribution. Binary logistic regression analysis, which involved age, sex, level of income and education, diagnoses, status of admission and operation and length of hospital stay, was used to identify the predictive value of anxiety and depression. The statistical results were presented with a 95% confidence interval. The differences were considered statistically significant if the *p*-value was less than 0.05.

4. Results

Two-hundred consecutive patients constituted the study group. The mean age of the patients was 46.3 ± 15.8 years-old and ranged from 18 to 75. One-hundred-nine of the participants (54.5%) were male and 91(45.5%) were female.

The Cronbach alpha coefficient of the HADS form used in this study is 0.81 for anxiety and 0.78 for depression. The mean HADS score of the patients was 6.83 ± 5.06 for anxiety and 7.43 ± 3.64 for depression (Table 1). Female gender, age >35 years, low socioeconomic status, unschooled educational status and non-operative treatment were significantly associated with higher anxiety scores. For depression, unschooled educational status, emergency admission, admission due to emergency trauma and hospitalization longer than two days were significantly associated with higher scores.

After cut-off level analysis, 62 (31%) and 112 (56%) patients had risk of anxiety and depression, respectively (Table 2). Female gender, age >35 years, low socioeconomic level, low education status, non-operative treatment and hospitalization longer than two days were the factors associated with an increased risk for anxiety. Logistic regression analysis for anxiety revealed that socioeconomic level and education level were the strongest predictive factors for anxiety with a Nagelkerke R^2 of 13.6% (Table 3). Low education status and length of hospital stay greater than seven days were the risk factors for depression. Logistic regression analysis for depression revealed that the presence of anxiety was strongly predictive for depression with an odd's ratio of 4.5 and Nagelkerke R^2 value of 13% (Table 3).

5. Discussion

In the present study, it can be possible to detect the incidence of anxiety and depression seen in surgical inpatients by using HADS, and to identify risk factors. The results of this study showed that approximately half of inpatients have depression and around one quarter have anxiety indicating that these conditions are not rare.

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