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Prevalence and predictors of depression among general surgery residents

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ABSTRACT

Background: Recent resident suicides have highlighted the need to address depression among medical trainees. This study sought to identify the prevalence and predictors of depression among surgical residents.

Methods: Surgical residents at a single institution were surveyed. Depression and personal traits were assessed using validated measures; participant demographics were also obtained.

Results: 73 residents completed the survey (response rate 63%). 36% met criteria for at least mild depression, of which 20% met criteria for moderate to severe depression. In multivariate linear regression analyses controlling for demographic factors, trait emotional intelligence alone was a significant inverse predictor of depression ($\beta = -0.60$, $p < 0.001$).

Conclusions: Depression is prevalent among general surgery residents. Identifying protective factors and at-risk populations may allow for effective initiatives to be developed to address depression, and optimize the mental health of trainees.

1. Introduction

There is growing recognition that the mental health of physicians and trainees is of critical importance. Not only do distressed physicians suffer personally, but their affliction can also detrimentally impact the quality of care they provide to their patients.[1] Resident physicians are especially at risk given the weight of mental, emotional, social, physical, and even financial strain imposed on them during medical training.[2,3] Depression is a known manifestation of the undue levels of stress that trainees face, and in some, consequences can be catastrophic and fatal. It has been estimated that one-third to one-half of trainees struggle with depression, with 8% admitting to suicidal ideation within the last 12 months.[4,5] Depression and suicide are indeed occupational hazards; tragically, 300 to 400 physicians die by suicide every year, amounting roughly to three medical school graduating classes. In the aftermath of a rash of resident suicides in 2014, the issue of mental health among physicians has been a subject of national concern, not only amongst the medical community but also the lay public.[6–10] Since then, the Accreditation Council for Graduate Medical Education has galvanized efforts to raise awareness, better characterize the problem, identify effective interventions, and develop a national policy aimed at improving mental health and wellness among residents. A recent meeting of the ACGME Council of Review Committee Residents highlighted the need for further study of the problem, as a deeper understanding of the issue will inform efforts to prevent and treat depression among residents.[8]

Surgery residents may be at a higher risk for depression than trainees of other specialties. Surgical residency is arguably the most arduous and lengthy of training programs. It has been posited that those who elect a surgical career are intrinsically more resistant to stress, more prepared to shoulder the lifestyle and workload, and have personalities that thrive better in a surgical environment.[11–14] However, it has been shown that surgical residents perceive a high degree of stress, unpredictability, and overload, with over 20% scoring above the 90th percentile and 68% above the 50th percentile of societal controls on a perceived stress scale.[15] In addition, the high and steady rate of attrition may reflect the substantial toll of residency training on aspiring surgeons.[16,17]

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The aim of this study is to identify the prevalence of depression specifically among surgery residents as well as risk factors that may predispose residents to developing depression. Determining the scope of the problem as well as protective and susceptibility factors serves as the initial step in formulating effective interventions to curb depression particularly in this high-risk population.

2. Material and methods

2.1. Procedure

This study investigated the prevalence and predictors of depression among general surgery residents. Surgery residents at a single institution over a period of two academic years (2013–2015) were invited to participate in the study on a voluntary basis at two time points (April 2014 and May 2015). Participants completed an electronic questionnaire that included a validated instrument screening for depression (Beck Depression Inventory-Short Form),[18] an established measure assessing personal and emotional traits (Trait Emotional Intelligence Questionnaire-Short Form),[19] as well as a demographics survey. The study protocol was approved by the university Institutional Review Board.

2.2. Survey measures

2.2.1. Beck Depression Inventory-Short Form (BDI-SF)

The Beck Depression Inventory-Short Form was used to screen for depression.[20,21] An abbreviated version of the original 21-item BDI, the Short Form is comprised of 13 items evaluating various manifestations of depression including sadness, pessimism, sense of failure, guilt, self-dislike, self-harm, social withdrawal, work difficulty, fatigability, and anorexia. For each item, respondents select one of four statements graded in severity from 0 to 3. The total score ranges from 0 to 39 with higher scores signifying more depressed mood. Per published cutoffs, a score of 0–4 indicates none or minimal depression, 5–7 mild depression, 8–15 moderate depression, and 16 or above severe depression.[18]

2.2.2. Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF)

The personality and behavioral characteristics of an individual were assessed using the Trait Emotional Intelligence Questionnaire-Short Form.[19] The TEIQue-SF is a trait-based instrument designed to capture personality facets and dispositions related to emotions, a construct also referred to as emotional self-efficacy. The Short Form is based on the long 153-item version and consists of 30 self-report items that are answered on a 7-point Likert scale. Personality facets measured by the TEIQue-SF include trait happiness, trait optimism, self-esteem, emotion perception, emotion regulation, stress management, social awareness and navigation.

2.3. Data analysis

Standard univariate statistics were used to describe the respondents. Descriptive statistics were utilized to calculate the prevalence of depression within the cohort. Comparisons of global BDI as well as individual BDI item scores between resident categories were performed using independent-samples Mann Whitney U and Kruskal-Wallis tests. Multivariate linear regression was performed to identify independent predictors of depression. All data were analyzed using SPSS version 21.0 software (SPSS Inc., Chicago IL).

3. Results

Seventy-three out of a total of 115 eligible residents participated in the survey (63% response rate). Table 1 presents descriptive data of the study cohort. Sixty-six fully completed the BDI; the median BDI score of the group was 3.0 [IQR 0.5,5.5]. Based on the scoring key established by Beck,[18] 64% percent of residents had no or minimal depression. However, 36.4% met criteria for at least mild depression. Specifically, 16.7% screened positive for mild depression, 12.1% for moderate depression, and 7.6% for severe depression (Table 2). There was a trend toward higher overall BDI scores in women than men (4.0 [2.0,6.0] vs.2.00 [0.0,4.0], $p = 0.06$). Single residents were significantly more depressed than married or divorced residents (single 3.5[2.0,6.0], married 2.0[0.0,5.0], divorced 3.0[1.5,4.0]; $p = 0.03$). Specifically, single residents reported more feelings of sadness/unhappiness (single 0.0[0.0,1.0], married 0.0[0.0,0.0], divorced 0.0[0.0,0.5]; $p = 0.03$), and fatigue (single 1.0[1.0,1.0], married 1.0[0.0,1.0], divorced 1.0[0.5,1.0]; $p < 0.01$). There were no significant differences in overall BDI score along categories of ethnicity, PGY level, or type of resident (categorical, designated preliminary, non-designated preliminary). BDI scores had a strong inverse correlation with trait emotional intelligence ($r = -0.69$, $p < 0.001$). Multivariate linear regression was performed to identify independent predictors of depression. Demographics (age, gender, ethnicity, marital status, whether the respondent had a child), resident characteristics (PGY level, type of resident), as well as TEIQue were included in the model. In the regression, TEIQue emerged as an inverse, and the only significant, predictor of depression ($\beta = -0.69$, $p < 0.001$) (Fig. 1). Other variables, including gender, martial status and its interaction (gender x marital status), were non-significant. Fifteen residents completed questionnaires at both time points; there was no significant overall change in BDI scores for these individuals from one year to the next.

Table 1
Summary of demographic information (participants, n = 73).

Demographic	Value
Age, years, mean ± SD	30.8 ± 3.22
Gender, n (%)	
Female	31 (42.5%)
Male	42 (57.5%)
Ethnicity, n (%)	
White	37 (50.7%)
Black	1 (1.4%)
Hispanic	3 (4.1%)
Asian/Pacific Islander	24 (32.9%)
Mixed Race	4 (5.5%)
Unknown	4 (5.5%)
Marital Status, n (%)	
Single, never married	32 (43.8%)
Married	29 (39.7%)
Divorced	3 (4.1%)
Unknown	9 (12.3%)
Have Children, n (%)	
Yes	12 (16.4%)
No	47 (64.4%)
Unknown	14 (19.2%)
PGY Level, n (%)	
1	34 (46.6%)
2	19 (26.0%)
3	5 (6.8%)
4	5 (6.8%)
5	5 (6.8%)
Research/Professional Development	5(6.8%)
Resident Type, n (%)	
Categorical general surgery	32 (43.8%)
Designated preliminary	31 (42.5%)
Undesignated preliminary	10 (13.7%)