

The Incidence of Anxiety and Depression in Physical Therapy Students. II. Hypothesis, Research Question and Literature Review

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Hypothesis

The incidence of anxiety and depression will be greater in physical therapy students than in the general public and that incidence will be similar to that seen in medical and law students.

Research Question

Physical therapy as a professional program has not been studied in terms of connecting the stress level inherent in this course of study with resultant anxiety and depression; therefore, the question remains: what is the incidence of anxiety and depression among physical therapy students?

Literature Review

Many studies can be found in the literature that have been conducted to explore the incidence of anxiety and depression in medical students. (Aktekin, Karaman, Senol, Erdem, Erengin & Akaydin, 2001; Becker, 1995; Clark & Zeldow, 1988; Clark & Zeldow, 1988; Hendrie, Clair, Brittain, & Fadul, 1989; Hojat, Glaser, Gang, Veloski & Christian, 1999; Lloyd & Gartrell, 1984; Lu, 1994; Mitchell, Matthews, Grandy, & Lupo, 1983; Notman, Salt & Nadelson, 1984; Parkerson, Broadhead & Tse, 1990; Russo, Miller & Vitaliano; 1985; Shapiro, Schwartz &

Bonner, 1998; Stewart, Betson Lam, Marshall, Lee, & Wong, 1997; Stewart, Betson, Marshall & Wong, 1995; Stewart, Lam, Betson, Wong & Wong, 1999; Tyssen, Vaglum, Gronvold & Ekeberg, 2001; Vitaliano, Majuro, Russo & Mitchell, 1988; Vitaliano, Majuro, Russo & Mitchell, 1989; Vitaliano, Majuro, Russo & Mitchell, 1989; Wolf, Scurria & Webster, 1998)

Medical school has long been known to be quite stressful and to cause significant distress for the students (Shapiro, et al., 1998).

Much of the distress experienced by these students is the result of trying to coordinate the demands of rigorous academic study while also trying to get enough sleep and, at the same time maintain interpersonal relationships. Most studies looking at the subject of medical school students anxiety, depression and stress have revealed that medical students do suffer from significant stress, anxiety and depression, more so than the general population (Hendrie, et al., 1989; Lloyd et al., 1984; Notman, et al., 1984; Parkerson, et al., 1990; Russo, et al., 1985; Shapiro, et al., 1998; Vitaliano, et al., 1988; Vitaliano, et al., 1989).

In a study of medical student distress by Vitaliano et al. (1989), measures were taken during September orientation as a baseline and repeated two weeks before May final exams. The group consisted of 196 men and 123 women who were entering the University of Washington Medical School. Distress was defined in terms of anxiety, depression, and daily stress as measured by the Symptom Checklist Anxiety Scale (Derogatis, 1977) and the Beck Depression Inventory (BDI, Beck & Beck, 1972).

It was found that depression increased in both men and women from September to May. By late

in the semester of the first year, mean scores had more than doubled. For the majority of students in the study, no major life events occurred in September or May. However, many students reported financial debt and/or change in residence to a different city in September or May. Distress was unrelated to gender in September, but by May, women reported more distress than men did. Distress in May was positively related to type A (anger suppressed) personalities. It was also found that students who were distressed in May were more likely to be distressed in September. Vitaliano's (1989) results also suggested that students who were distressed at the entrance to medical school were even more distressed at the end of their first year. Vitaliano's (1989) findings were consistent with other research (Russo, Miller & Vitaliano, 1985) in which female medical students reported more distress than male students. Certain studies suggest that this gender difference reinforces research indicating the special difficulties females have in a traditionally male-oriented medical environment (Miao, 1977).

Zoccolillo, Murphy and Wetzel, (1986) found a 12% prevalence of major depression or possible major depression during the first 2 years of medical school. The lifetime prevalence was 15%, 3 times the rate of the general population. Vitaliano's (1989) study concluded that, for a large number of students, medical school is a highly stressful experience. The study also concluded that the distress encountered was enduring rather than transitory.

In a longitudinal study conducted by Clark, Daugherty, Zeldow, Gotterer and Hedeker (1988), the authors examined the relationship between academic performance and depressed mood over a 4-year period, with a single medical school class. Their hypotheses are clearly and briefly stated; poor grades lead to depression and depression leads to poor grades.

The Beck Depression Inventory (BDI) was used to assess the severity of depressed mood. Undergraduate, first year medical school, and second year medical school GPAs, as well as third and fourth year GPAs were calculated. Also taken into account were the MCAT scores of the students. The results suggest three different types of causal relationships between depressed mood and academic performance. The inferential statistics suggest first that a better undergraduate academic performance contributed to fewer reported depressive symptoms throughout medical school in a manner that did not diminish from one year to the next. Second, a student's depressed mood as assessed under the considerable pressure of impending second year final examinations and Boards Part I (a major examination that is given after the first 2 years of academic coursework that covers all materials taught over the first 2 years of medical school) may have contributed to lower Boards scores. Finally, it suggests that students who performed less well on Boards tended to report more depressive symptoms in the months following receipt of their Boards scores.

The purpose of another study conducted by Clark and Zeldow (1988) was to determine the adverse effects of the medical education on physicians-in-training, by describing the vicissitudes, unpredictable changes in life, on depressed mood during four years of medical school. More specifically, the researchers questioned: What is the incidence of suicidal ideation? Does depressed mood vary as a function of gender? Are there markers (e.g. personality traits, family history) that predict vulnerability to depressed mood at the outset of medical school? What is the relationship between depressed mood and participation in psychotherapy? Does depressed mood diminish academic performance?

The Beck Depression Inventory (BDI) was used (N=121) as the main indicator of depression/dysphoria. Results indicated that dysphoria was lowest at initial assessment (4%), but never less than 12% thereafter during the first three years. In contrast, 25% of the class was dysphoric at the end of the second year. The results indicated that there were no significant gender differences within any assessment. However, in the fourth year, the mean neuroticism score (an abbreviated, six item adaptation taken from the neuroticism scale of the Eysenck personality Inventory, Eysenck, 1964) for males suddenly dropped. When severe depression was evaluated (BDI >21), the relationship between severe dysphoria and the act of quitting medical school was significant. The highest rate of positive response to the suicide item (N=95) was manifest at the end of the second year when 3 students yielded a score of 2 (“I would like to kill myself”). In terms of personality, men who described themselves as relatively independent, active, and competitive were less vulnerable to depressive symptoms. Women who described themselves as relatively aggressive, worldly, or not easily hurt were also less vulnerable to depressive symptoms. Familial history of depression, substance abuse, and academic performance was not found to have a significant correlation to depression. However, there was a significant association between greater dysphoria and use of psychotherapy during the first two years.

While the BDI is a valid measure of depression, the fact that not all students/subjects participated at each of the assessments begs the question of how conclusive is the data? A true baseline could not be established to determine the absolute effects of medical school “stress” on the amount of dysphoria experienced by the subjects. The researchers did not address the comparison of

dysphoria experienced by these medical students to medical students in other areas of the world, nor did they compare results from other studies to determine whether medical school is more or less stressful than, for example, law school. Therefore it is difficult to generalize the findings of the study to the general population or to future medical school students.

Chan (1991), conducted a study designed to determine the incidence of depression in Chinese medical students in Hong Kong. This study specifically aimed to identify the common depressive symptoms as assessed by the BDI, to examine the association between depression, obsessiveness, and assertiveness in medical students, and compare the BDI scores of medical and non-medical students along with assessing for any gender differences on depressive symptoms.

Three-hundred-thirty-five first to fourth year medical students (239 males, 96 females) and 213 first to fourth year non-medical undergraduate students (51 males, 162 females) participated in the study. All students were between the ages of 18-29. Results showed that the BDI score distribution did not differ significantly between the two groups of students, although a greater percentage of non-medical students scored in the severe range. Since gender distribution was significantly different ($p < .001$) with male students predominating in the medical sample and female students in the non-medical sample, comparisons were made between medical and non-medical students within each gender. There were no significant differences in BDI score distribution, distribution of student severity categories and mean BDI scores separately for male and female students. In comparison to American medical students, a comparable and possibly larger percentage of Chinese medical students scored in the depressed range as reported by

Zoccolillo, et al (1986) and Clark and Zeldow (1988), although elevated scores were not specific to Chinese medical students, as Chinese undergraduates in general reported equally elevated scores. The only difference in mean BDI was the significantly higher scores of female medical students than from female non-medical students in the severely depressed category. Therefore, the findings indicate that Chinese medical students are no more vulnerable to depressed mood than Chinese non-medical students. There was some evidence that obsessionality and non-assertiveness were associated with depressed mood among medical students to a greater degree than in the non-medical students. The findings in this study were consistent with other studies that have indicated that females in general suffer from depression to a significant degree more than males. (Russo et al, 1985; Vitaliano, 1989; Miao, 1977)

Richman and Flaherty (1985) investigated the question of whether personality and social support resources were independent or highly correlated. In addition they investigated what the relative contributions of social support resources were in protecting against depressive symptoms in beginning medical students. Medical school marks the beginning of new life stressors. Included is the experience of potential losses connected with the transition from previous educational and occupational roles to the role of medical student. Some students may experience some degree of initial uncertainty regarding one's capacity to perform effectively in a new and demanding setting. As a result, depression has been a common finding in medical students (Lloyd & Gartrell, 1984).

One-hundred-fifty-three first year students (70% male) from the University of Illinois College of Medicine were sampled during their first week of classes. Instruments assessing social supports,

personality characteristics (internal-external locus of control, interpersonal dependency), and depressive symptomatology were included in the questionnaire. Social supports were measured by the Social Support Network Inventory (SSNI, Flaherty et al., 1983). Locus of control was measured by the Rottor 23-item internal-external scale (Rottor, 1966). Depression was measured by the Center for Epidemiologic Studies Depression scale (CES-D, Weissman et al., 1977). It was hypothesized that because social supports and personality resources have generally been shown to buffer the effects of stress, that social supports would be inversely related to depressed symptoms. The other assumption was that a lack of adequate internal resources would be linked with difficulties mastering the stresses related to new role demands, and therefore lead to depression. The third hypothesis was that external locus of control and interpersonal dependency would each manifest a direct relationship to depressive symptoms.

The results showed that although personality was significantly correlated with depressive symptoms, social supports played a weaker role in protecting against depressive symptoms than was hypothesized. The authors suggest that perhaps this is due to the fact that beginning medical students have not yet had time to develop support among fellow students and may not be receiving the degree of empathy they desire from current members of their social network, who are likely to be less familiar with the medical school environment. Those students best protected from depressive symptoms appeared to be those students with strong internal resources, meaning the belief in one's capacity to shape the environment (as opposed to being controlled by it) and the capacity to function relatively autonomously (as opposed to being highly dependent on others for reassurance and esteem). The authors speculate that at a later point in medical school, when support from fellow students becomes more available, external resources may play a more

significant role and perhaps compensate for a lack of strong internal resources.

In a study by Hojat, et al. (1999), 1157 medical students (743 male and 414 female) completed a set of psychosocial questionnaires measuring intensity and chronicity of loneliness, general anxiety, test anxiety, neuroticism, depression, extraversion, self-esteem, locus of control, perceptions of parents, general health, and appraisals of stressful life events. The results of the study showed that males tested higher on the intensity of loneliness, and females tested higher on general anxiety, test anxiety, and neuroticism. There was no significant gender differences observed with chronicity of loneliness, depression, extraversion, self-esteem, external locus of control, general health, or perceptions of parents. The similarities in personality traits between genders could be due to the highly selective nature of students who apply to medical school; often medical schools choose students with distinct personalities who have the ability to compete in an extremely stressful environment. In this study, stressful life events were viewed more negatively for females than for the males. It was concluded that future research would enable healthcare providers to better recognize signs and symptoms of depression among medical students, and provide intervention when and where it is appropriate.

Medical students are not the only professional students who have been studied in reference to the incidence of anxiety and depression. Several studies have looked at law students, stress, anxiety and depression (Buick, 2000; Dammeyer, 2000; Dammeyer & Nunez, 1999; Frank, 1979; Gutierrez, 1985; Helmers, Danoff, Steinert, Leyton, & Young, 1997; Kellner, Wiggins & Pathak, 1986; McAleer, 1973; McIntosh, Keywell, Reifman & Ellsworth, 1994). Although certain personality characteristics may help students to adjust to the demands of law school, the

environment definitely plays a role in the stress, anxiety and depression experienced by many (Gutierrez, 1985). Law students experience unusually high levels of stress, anxiety, and depression as a function of the nature of legal training (Buick, 2000). Psychological services, when provided, have been noted to have been used for mild depression or anxiety by law students (McAleer, 1973).

Buick (2000), conducted a study to determine the extent and manner that depression, anxiety, and psychiatric distress classification could be explained by certain demographics variables including: gender, age, ethnicity, marital status, year in law school, grade point average, full or part-time attendance, scholarship status, and employment status. Findings revealed that the majority of law students were experiencing mild depression, mild anxiety and above average distress, although the rates were not considered to be at a “clinical level.” Female law students had higher Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) scores than male law students overall. Law students that were employed at the same time as they were in school had higher BDI scores than their non-working counterparts, and law students who had a low grade point average also scored higher on the BDI/BAI. These scores were, however, still within the normal range.

Dammeyer (2000) looked at self-reported levels of anxiety and depression among first-year law students. He hypothesized that law students would report higher levels of anxiety and depression than medical students, and that students attending law programs with high quality of life (QoL, Flanagan, 1978) ratings would report lower levels of anxiety and depression than students attending a school with low QoL ratings. Significant ($p < .001$) differences were found between

law and medical students, with law students reporting greater levels of distress. No support was found for the hypothesis that law student distress is related to QoL ratings at law schools.

Dammeyer et al. (1999) reviewed the literature to evaluate anxiety and depression among law students. They found that self-reports of anxiety and depression are significantly higher among law students than among either the general population or medical students. Another study (Helmers, et al., 1977) compared depression and stress levels of medical students, law students and graduate students at McGill University. Results showed that medical students had subjective feelings of stress that were marginally above the general population norms, but their total depression scores were below those of the general population, law students and graduate students. A final study looking at law students and stress (McIntosh, et al., 1994) examined gender differences in first year law students' reports of stress and psychological health. Women reported greater strain and displayed more depression and physical symptoms by the end of their first year of law school.

Other than medical and law students, only a couple of additional studies were found that looked at a relationship between graduate school in general, and incidence of stress, anxiety and depression. Goplerud (1980) reported that over half of the first and second year graduate students tested on the Social Readjustment Rating Scale (SRRS; Holmes & Masuda, 1974) reported life changes that placed them in the life crisis scale category. Factors contributing to this were changes in work, finances, living conditions, school and social relationships, which take place during the first few weeks of graduate study. Because of the substantial empirical support for links between major life changes and a long list of health and emotional disorders

(Dohrenwend & Dohrenwend, 1974) graduate school marks the beginning of a period of high risk for physical and psychological problems among first year students. After freshmen, graduate students have been shown to be the most frequent users of psychiatric services in the university community (Halleck, 1966). One avenue that has been shown to help minimize the negative effects of change has been support networks during high stress transition periods. Individuals who are linked to supportive groups have been found to perform both academically and professionally better than their more socially isolated colleagues (Hall, 1969), experience less emotional and physical distress (Arnold, 1967), and suffer fewer severe physical and psychiatric illnesses than socially isolated persons (Bloom, 1975).

Goplerud looked at the effect of social interaction on 22 graduate psychology students completed the study. Students who were more socially isolated reported more stressful events, more intense events and greater cumulative stress than did socially supported subjects. The more socially isolated students also reported a greater number of emotional and health problems than the socially supported students. Social support emerged as a major mediating variable in students' assessments of the stressfulness of events experienced during their first six months of graduate study and in the number of emotional and physical problems experienced during the same interval. Although the number of subjects in this study was small, social support appears to be a crucial variable that moderates negative consequences of the unavoidable life changes that occur during students' first year of graduate work. The author suggests that developing faculty awareness of their own critical influence on graduate students health and emotional well-being, and helping new students expand their socially supportive contacts appear to be important primary and secondary prevention strategies to reduce graduate students risk for stress-related

problems.

Parker (1979) looked at sex differences in non-clinical depression of 236 graduate students. Results indicated no significant differences in depression, self-esteem, trait anxiety, neuroticism or extraversion between the sexes. In another study (Miao, 1977), both male and female senior college students majoring in agriculture and human development showed significantly lower anxiety and depression levels when compared with male and female senior students majoring in engineering, humanities and economics. Self-perception of college achievement was significantly related to differential levels of anxiety as well as depressive reactions.

After a thorough search, no studies could be found examining physical therapy students and the incidence of distress, depression or anxiety. There was only one related study (Balogun, Helgemoe, Pellegrini & Hoerberlein, 1995) in which the reliability of a psychometric instrument designed to measure physical therapy student burnout was assessed. Although not the purpose of the study, results indicated that senior physical therapy subjects reported lower scores on personal accomplishment (not knowing as much didactic information as they thought they would) than the junior physical therapy subjects. The authors report this finding indicates a less than expected accomplishment, is experienced by senior students during their educational training.

Summary

The literature provides evidence that graduate school training, and more specifically medical and law school training, are stress-provoking endeavors that may result in anxiety and depression.

The incidence of anxiety and depression may be greater in female students possibly due both to the lack of role models and to a greater willingness to report symptoms of anxiety and depression. Professional graduate degree programs may also attract certain personality types that may be more vulnerable to feelings of anxiety and depression than the general population.