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Depression in medical students: reviewing its prevalence, risk factors, consequences, and management in order to provide student treatment recommendations for the Polish medical education system

Abstract

The information regarding the state of mental health among medical students, particularly regarding depression, is a significant cause for concern. In fact, current research shows that approximately twenty five percent of medical students in the United States exhibit symptoms of a mental health disorder and some reports suggest that the rate of depression among medical students is more than twice that of the general population. Furthermore, the rate of depression has been noted to increase throughout the course of medical school although some reports suggest that the transition years from basic-to-clinical sciences yield the highest prevalence numbers. Nonetheless, the ever-increasing academic demands of medical school can create significant stress for these students who often experience subjective anxiety, which co-occurs depression, and may ultimately influence their overall health and wellbeing.

However, medical students commonly underestimate the risk of depression associated with their population and although they are taught to view mental health disorders in a manner similar to any other disease, depressed students tend to associate a certain stigma with depression when coping with their own mental health issues. As a result, medical students with depression often remain undiagnosed and undertreated despite the availability of effective medications and confidential mental health services. The increased prevalence of depression and its under-diagnosis in this population may have negative consequences that extend beyond the individual student. This paper examines the prevalence of depression among medical students, possible reasons and consequences of their limited treatment, and solutions that have been proposed to help alleviate this burden. Particular emphasis is placed on the latter in order to provide recommendations for depressed medical student counseling and treatment options within the Polish medical education system.

Keywords: depression, medical students, treatment.

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Background and significance

The information regarding the state of mental health among medical students, particularly concerning depression, is a significant cause for concern. Depression and depressive symptoms are frequently noted among medical students and may influence deficiencies in their academic, professional, and social development [1-6]. In addition, the consequences can be much greater as depression in this student population is often under-reported, under-treated, and linked to an increased risk of suicide [7-9].

Prevalence

Research data estimates that approximately 25% of the more than 69,000 medical students in the United States experience symptoms of at least one mental health disorder [10]. Givens et al. noted a similar percentage with regards to depression when they surveyed 194 first and second year medical students using the Beck Depression Inventory at the University of California, San Francisco (UCSF), and found that nearly one in four students was depressed [7]. In New Delhi, 21.5% of a random sample of 237 medical students was noted to be depressive and 7.6% had major depressive disorder as determined by the Patient Health Questionnaire (PHQ-9) which is based on the Primary Care Evaluation of Mental Disorders (PRIME-MD Today) [11]. However, in India the prevalence of depression among medical students has been reported to be as high as 39% [12]. Further prevalence variations are noted in studies such as a South Korean investigation, where 9.4% of a sample of 7357 students suffered from depression, and a Swedish study that determined that 12.9% of their sample had the disorder [13,14]. The reported prevalence variations may be due to the different assessment instruments used to determine if an individual has depression or depressive symptoms.

Nonetheless, medical education and training have been directly associated with the development of depression [15]. Rosal and colleagues suggest that although the rate of depression among students entering medical school is comparable to that of non-medical students of similar ages, the prevalence of the disorder increases throughout the course

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of medical school [16]. Dahlin and colleagues suggest that US medical students often exhibit peaks in depression rates during years 2 and 4 of the traditional four-year program [14]. However, other cross-sectional studies indicate that medical students often experience increased depressive symptoms around the time of transition from the preclinical classroom to the clinical hospital rotations [17]. Similar observations regarding increased frequency of depression during the basic-to-clinical science transitional year were noted when comparing medical students to students in other forms of higher education.

Helmerset al. examined the prevalence of depressive and anxiety symptoms among medical students compared to other student populations such as law and various graduate studies [18]. The investigators noted that while medical students experienced less stress than colleagues in other higher education fields, the medical students did exhibit higher scores on stress and depressed mood inventories as they transition from their basic sciences to clinical training. Furthermore, the prevalence rate of depression among medical students contrasts significantly when compared to the general population, which is often reported as less than 10% [19,20]. In fact, Goebert et al. noted that the 21.2% depression prevalence reported from a sample of 2000 medical students was more than twice that of the general population [19]. Comparison studies dealing with demographic subgroups of the medical student population also highlight variations in depression rates with regard to gender and geography.

When examining and contrasting subsets of Swedish medical students, Dahlin and colleagues noted that female students had a higher occurrence rate of depressive symptoms with 16.1% compared to the 8.1% occurring among male students [14]. Dahlin et al. later compared Swedish and Argentinian medical students and found that female students of both nationalities exhibited more depressive symptoms than males from both countries [21]. It was also determined that Argentinian male medical students demonstrated higher scores regarding depressive symptoms compared to their Swedish male counterparts.

Other comparison studies have also shown a greater female susceptibility but Chandavarkar et al. suggest that their assessment of depressive symptoms before, during, and after medical school indicates that any notable gender differences may be getting narrower [22].It is interesting to note that there are inconsistencies regarding gender differences, as similar comparison studies did not demonstrate a significant association between prevalence of depression and gender [1,11,23,24]. For example, Hojat et al. did not find an important gender difference in depression rates among the 1,157 US medical students assessed in their study but they did recognize different patterns of stress response when comparing males to females [24]. The researchers suggest that further examination of gender differences among medical students may be necessary in order to address these variations and develop gender-specific programs aimed to prevent stress-related mental disorders.

Risk factors

Although there is an abundance of literature concerning the presence of both depression and depressive symptoms among medical students, the current data available is not sufficient enough to make conclusions regarding the causes of student distress [15]. However, from the admission process to graduation, medical students experience many sources of potential distress, which can contribute to the development of depression and depressive symptoms [1]. Also, duration of study prior to an individual's medical school admission may influence depression prevalence as it was found that studying for more than 2 years to get in medical school was a risk factor for depression [25,1]. Once accepted into medical school, the increased workload and significant changes in the student's lifestyle and daily habits may be contributing stressors, which ultimately lead to depression [14,16,26]. Other possible causes may include the competitive medical school environment often perceived by students, the continuous pressure of examinations and assessment, and feelings of inadequacy especially during the transition period from basic sciences to clinical rotations [1,27]. Students may also develop depressive symptoms as a result of dealing with ethical dilemmas or coping with death, dying, and the fear of acquiring diseases.

In addition to possible causes, specific personality characteristics and risk factors have been noted to contribute to the development of depression in medical students. With regard to personality traits, severe perfectionism is one such characteristic that has been shown to increase the level of distress in medical school and, therefore, elevate the risk for depressive disorders in students [28]. Another personality trait noted to contribute to possible depression in medical school is known as the 'impostor phenomenon', which is often noted when high achieving individuals continuously question their performance and fear that their colleagues will discover them to be intellectual impostors.

With regards to risk, one report shows that medical students commonly overestimate the risk of depression in the general population but underestimate the risk of depression among medical students [10]. Therefore, despite their increased risk, medical students often do not perceive themselves to be at a higher risk of developing depression compared to the general population [10,29]. Furthermore, symptoms of depression may be hard to distinguish for medical students as they often dismiss their depressive feelings as a normal emotional reaction to the academic demands required for medical school [30].

Under-recognized

Although depression is more frequently experienced in medical students, the condition in this population often goes undiagnosed and undertreated [13,30]. Roh et al. noted this in their investigation concerning the influences and attitudes towards treatment of depression in a sample of 7,357 South Korean medical students. The researchers assessed students using a survey, which included the Beck Depression Inventory (BDI) and determined that 9.4% were identified as having depression. However, of the depressed students, only 8.9% had been diagnosed with depression and 9.7% had received treatment for the disorder. Another study conducted at the University of Pennsylvania, showed that forty-nine out of 450 medical student participants were classified as depressed, but only 13 of these students reported treatment

for their depression [31]. In their UCSF investigation, Givens et al. noted that of the 46 medical students who were depressed only 22% of them were using mental health counseling services [7]. The reasons given for why the students were not making use of the counseling services included lack of time, possible lack of confidentiality, stigma connected with using mental health services, cost of counseling and treatment, fear of unwanted intermediation, and apprehension that the visits would be documented on the student's academic record.

Although students are taught to view mental health disorders in a manner similar to any other disease, depressed students tend to associate a certain stigma with depression when coping with their own mental health issues [7,23]. The stigma that somehow depression and mental health issues reveals a weakness in the medical student contributes to the likelihood that they will not seek treatment for depression in order to avoid being judged by student colleagues and faculty members.[32]. Another reason as to why medical students may be apprehensive to disclose or discuss their depression is that many fear it will be seen as a liability and may compromise their education or cause them to be less competitive for residency training positions [7]. This fear that a student's depression may threaten their careers may not be unfounded as one study suggests that a sample of residency directors questioned said they would be less likely to invite an applicant to an interview if that person had a history of psychological counseling [33]. Furthermore, when certifying physicians for medical licensure, state medical boards routinely ask candidates to disclose any medical conditions, including psychiatric illnesses, that they have which might impair their ability to practice [7]. Such conditions may deter students from seeking the professional assistance they may need. However, when they do seek assistance many students prefer to receive health care outside their training institution, often due to confidentiality concerns, and the majority commonly prefers health insurance, which allows off-site care [10].

Consequences

Sidana et al. observed that among the population they examined, students with either poor or excellent academic performance had higher rates of depression [11]. They suggested that depressed students with excellent academic performance might be experiencing distress due to the perceived competitive nature of medical school. Conversely, an early manifestation of depression regarding medical students is commonly a decline in academic performance [13]. Roh, et al. found that the chance of having a poor grade point average was almost two times higher for students who were depressed during the previous year compared to non-depressed students. However, it is not clear as to whether depression is a cause or effect of the students' poor academic performance.

A severe consequence of depression among medical professionals is suicide and although there is an increased risk of suicide among practicing physicians, research is lacking regarding prevalence and predictors of suicidal ideation among medical students and young doctors [34]. Therefore, Tyssen and colleagues designed a prospective study assessing 522 Norwegian medical students before and after their first postgraduate year to examine the prevalence of suicide ideation and attempts, perceived study stress, job stress, and personality. The results of the study indicated that each year prior to the student assessments the prevalence of suicidal thoughts was 14%. The lifetime prevalence of suicidal thoughts among participants was 43%, although 8% had planned suicide, and only 1.4% had actually attempted suicide. Suicidal ideation among medical students was predicted by factors such as anxiety and depression, negative life events, personality trait, single marital status, and the perception of a lack of control. During the first postgraduate year, anxiety and depression were the most significant predictors. However, prior to controlling for this variable, Tyssen states that job stress, less working hours, single status, and neuroticism were all independent predictors. Prospectively, neuroticism and suicidal thoughts during a student's medical education predicted postgraduate suicidal ideation. Tyssen's study determined that although the prevalence of suicidal thoughts was rather high, the number of suicide attempts was low. Nonetheless, preventive efforts should focus on enhancing students' abilities to successfully deal with the stress and demands of their training and should also enhance mental health services for young doctors.

Efforts to reduce prevalence

In an effort to help reduce the rates of depression and suicide ideation among medical students, the University of Hawaii, John A. Burns School of Medicine implemented several interventions including a specialized education program for both faculty and students and also increased individual counseling for students. Furthermore, an anonymous counseling process was implemented, which utilized volunteer psychiatrists who were not involved in students' education [35]. Other medical schools have developed education programs to help students learn to be mindful of their own health and to encourage them to seek assistance when necessary [30]. For example, administrators at Duke University, have introduced a wellness program focused on enhancing medical student performance including ways to improve hygiene, eating habits, stress reduction, sleep patterns, and mood regulation. UCSF has implemented a student well-being program, which includes "stress rounds" where students in their clinical rotations can share their experiences and discuss their emotional responses with professional facilitators. Students are also provided with support groups lead by psychiatrists and psychologists and are entitled to 10 free counseling sessions a year. Finally, the school also conducts an annual survey to assess the mental health of each class.

In order to improve treatment seeking for depression in this highly susceptible population, medical schools must address treatment issues and concerns expressed by medical students. For example, issues of anonymity in medical students can be addressed through forums such as the one that Duke University medical student, Sunjay Kansagra, organized in order to provide emotional support to depressed students while protecting their identities [30]. With the help of the University's associate dean for medical education, Kansagra arranged a 10-day online forum to provide

students with a platform where they could discuss their issues and help them to discover that they were not as isolated or alone regarding their depression as they may have thought. Students were given access to the forum for 10 days and posted anonymous messages that were reviewed by a psychiatrist in Duke's student counseling service. The forum received more than 100 posts and over 1000 hits throughout its short duration. Such a forum can help validate and normalize student concerns and be a catalyst to begin a discussion among medical students, who often hide their depression, as they may feel that caregivers are not supposed to be the ones with problems.

Furthermore, helping students identify and address problematic personality traits such as Perfectionism and Imposter Phenomenon may be a useful way to reduce the risk of depression among medical students. It has been noted that students with a well-developed sense of self-acceptance and a capacity for constructive self-criticism tend to be less likely to develop depression [36]. They are also more likely to relate to colleagues and patients with empathy, clarity, and enthusiasm as they have a reduced fear of embarrassment and self-consciousness. One of the goals of medical education is to cultivate independent professionals who are able to self-monitor their work and continued professional development. Therefore, in order to help avoid stressors that may trigger depression and to continue developing their knowledge and skillset several reflective and analytical processes are needed. For example, effective reflection upon a student's practical skills and knowledge will identify gaps in their training, which they need to improve. Self-analysis also requires that students devise and implement a coherent plan to address any problems and then assess what they have learned and how that knowledge has better prepared them for new practical situations. Finally, it requires that the student systematically and periodically reviews and updates their plan as they continue to learn from daily experiences. Although, self-awareness and self-analysis are difficult skills to cultivate, medical school workshops have been designed to aid the development of these skills in pre-clinical students. Students involved in such programs suggest that it provides a useful preparation and reference for clinical rotations, where the learning is primarily experience based, and where the environment and culture are less likely to be supportive and affirming of structured reflection.

Furthermore, while students may become depressed at any point throughout their medical education, they may be particularly vulnerable in years of transition or during their clinical rotations [30]. The demands of the hospital and the added stress of finding a residency or foundation training spot after graduation may add to the stress, which can cause depressive symptoms. Many instruments have been used to measure these symptoms and determine depression and other mental illnesses in this population, but they may not be completely adequate for evaluating healthy populations, such as medical students. It is known that there is an increased incidence of anxiety, obsessive-compulsive disorder, depression, and suicide among students through the course of their medical studies [37-39]. However, this pattern cannot be considered to be normal for the majority of medical students. Conversely, it has also been demonstrated that the incidence of psychosis and drug abuse is lower in the medical student population compared to the general population [40]. Although, when these do occur, they are often much more intense compared to the normal population and often result in more tragic outcomes given their attributions as medical professionals [25]. Therefore, Millan suggests that it is important to use appropriate personality tests in order to avoid biased analysis, such as the 16 Personality Factor Questionnaire, 5th edition (16 PF) which was used to assess personality traits and profiles of adolescent and adult populations, and the Thematic Apperception Test (TAT), which reveals unconscious impulses, feelings, emotions, conflicts, and complexes that make up a person's personality.

As is generally true in medicine, it is often easier to identify and assess a problem than to devise a viable and practical solution [41]. However, because Depression is more common and often induces more severe repercussions in medical students compared to the general population it is important for medical universities to be aware of and identify depression in medical students and to provide the mental-health support and treatment services needed to successfully cope with these problems[13].

Conclusion and suggestions to improve the standard of care in Poland

Medical students commonly experience significant psychological distress as the requirements of their education and training programs are quite extensive and students may feel as though they can never be wrong when making life and death decisions [32]. Furthermore, any sense of falling short of these expectations often causes anxiety, which may eventually manifest as depression. There are many other causes for depression among medical students and the data suggests that although depression in this population is common it may be undertreated [7]. Medical schools should address student concerns such as confidentiality, the stigma associated with using mental health services, academic record documentation, and provide free or cost effective counseling to those students who need it [7,30]. If schools address these concerns, students may be more prone to seek treatment and support, which may have wide-ranging benefits for the students, their colleagues, and their future patients.

With regards to the Polish medical education system, an extensive literature review, both in English and in Polish was performed and no information regarding depression rates among Medical Students in Poland was found. Indeed research is warranted to determine the actual rates of depression among medical students in Poland if counseling and treatment programs are to be incorporated into the services offered by Polish Medical Universities. An informal phone survey of academic Psychiatrists throughout Poland suggests that medical student mental health programs are rare and so the students must be willing to seek private treatment outside of their medical university if they are to overcome their disorder. There are currently eleven medical schools in Poland and the country's Ministry of Health estimates the number of Polish students attending these schools in 2011 was 66,700 [42]. In addition, many of the schools such as Poznan' University of Medical Sciences and the Medical University of Lublin offer additional English language

medical education programs to various foreign nationals in their US, Scandinavian, Taiwanese, and Saudi Programs.

The student attendance estimates for Poland are comparable to those of the United States and so it is then it is necessary for Polish medical universities to consider the possibility that a significant proportion of their student population may suffer from depression [10]. However, before the problem is addressed, an organized effort must be put into place to identify the prevalence of depression and treatment seeking in the Polish medical student population. After the prevalence is established then possible solutions, such as the education and treatment ideas referred to in this review article, can be examined and implemented. Furthermore, follow up assessment of the programs should be evaluated at regular intervals to determine if they are having an impact on the prevalence or treatment seeking among Polish Medical Students. Accurate information concerning depression and proper treatment modalities appears to be pertinent to medical students who seek professional treatment for their depression [13]. Therefore, the introduction of programs intended to improve medical students' knowledge regarding potential mental health problems for this population and possible treatments may help to facilitate treatment seeking and eventually decrease prevalence rates in this highly susceptible population. Furthermore, the implementation of such educational standards may encourage students to take greater initiative in their personal health and well-being and helps medical schools cultivate an atmosphere where it is understood that there is no dishonor in seeking help. These measures will reassure students that there does not need to be a stigma attached to their mental health issues and will create an environment that encourages acceptance and equal opportunity for medical students with depression.

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