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Research

Predictors of stress in doctor of pharmacy students: Results from a nationwide survey

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Abstract

Objective: To better understand the stress levels experienced by current students of pharmacy in the context of their program, grade point average (GPA), and demographic information (e.g., ethnicity, gender, year, and program type).

Methods: Current pharmacy students completed an online survey that included the Perceived Stress Scale and demographic information. The results were analyzed for relationships among the variables and compared to previous assessments of stress in pharmacy students.

Results: Women reported higher stress than did men. Asian students reported higher stress than did Caucasian students. Year in program (but not age) and GPA correlated negatively with stress levels. Direct entry students reported significantly higher stress than traditional or post-graduate programs students did.

Conclusion: Pharmacy programs and pharmacy educators would do well to monitor stress among their students. Further study is needed to be able to design interventions that are sensitive to the needs of students with different backgrounds and stages of career development. Interventions and assistance in the first two professional years of pharmacy school may be particularly effective.

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Introduction

Stress can be defined as one's perception that the demands of the environment exceed one's capacity to cope with, or tackle, those demands.¹ Stress can be both negative (distress) and positive (eustress), but, in excess, either can be deleterious.¹ It is well established that perceived stress is elevated in college students when compared with the general population, and that reported stress levels have increased over time.^{2,3} Sources of stress (stressors) in the undergraduate population include financial burdens, new and increased academic demands, increased independence, and adjustment to a new environment and culture.^{2,4}

Students of healthcare professions (e.g., medical, dental, nursing, and pharmacy students) report higher, more harmful levels of stress than other students.^{1,5–8}

While there has been some preliminary evidence to suggest that the pharmacy student stress levels are comparable to other students in healthcare training, this has not been fully explored. Specifically, there are numerous studies examining the predictors of academic success in pharmacy school, but the mental health of pharmacy students has rarely been taken into account in these studies.^{5,9} The Accreditation Council for Pharmacy Education (ACPE) sets standards for accreditation of pharmacy schools, and has recently updated these requirements of schools to assess "perceived stress in faculty, staff, and students and to evaluate the potential for a negative impact on programmatic outcomes and morale."^{10(p27)} As institutions and other researchers comply with this guideline, the resulting studies can address the ongoing concern that pharmacists may be

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“overtrained,” where a pharmacist’s training may give an unrealistic impression of what a career in pharmacy practice, particularly community pharmacy, may entail.^{11–13} There are several studies with results that suggest that recent graduates of pharmacy school, who had previously predicted high levels of eustress and activity in their job based on the stress they felt in school, went on to become dissatisfied with their career, particularly in community pharmacy, and had a strong likelihood of choosing to move into a different field.^{11,13,14}

As in other healthcare-related fields, pharmacy programs require an exceptional amount of work and have rigorous standards so that students can acquire a broad set of skills. This can result in high, sometimes extreme, levels of stress, which can ultimately be detrimental to the student’s health, ability to absorb information, and effective use of required skills.¹ However, the results of comparative studies inconsistently demonstrate where pharmacy students rank in terms of level of distress between these fields.^{4–7} This may be partly explained because there are relatively few studies examining the mental health of pharmacy students, and because stress is often measured using instruments that impede the ability to compare samples.^{5,15}

There are patterns of stress levels that have been found in students of healthcare professions that have not yet been fully established in the literature regarding pharmacy students. For example, medical students experience the highest levels of stress in their first year of medical school as they are expected to tackle high levels of work and pass difficult exams with minimal feedback or support during their progress.¹⁶ In contrast, nursing and dental student responsibilities increase as they progress through their programs and, as such, stress levels may be higher in later years.¹⁷ Pharmacy students may be similar to medical students in that advanced students report less stress than students in earlier years.^{1,8,9,15} However, Hirsch et al.¹⁸ did not observe this trend in their sample of pharmacy students, in that they found that second-year students reported less stress than first-year students.

Gender differences, in terms of stress level, have been inconsistently found in both students of healthcare professions, in general, and pharmacy students, in particular.⁸ Several studies have found that female pharmacy students report significantly higher stress levels than do male students,^{9,15} others have found no difference,^{1,8,19} while one²⁰ found women to be statistically less stressed in one of their samples (though this was likely an effect of overrepresentation of women in the sample).

Few studies could be found that addressed ethnicity as an independent variable for stress levels in pharmacy students. Dutta et al.¹ showed that ethnic minority status was protective for stress levels, while Henning et al.⁸ and Hirsch et al.¹⁸ found no difference between ethnicities. Thus, it remains to be seen how, or if, ethnic minority status may impact perceived stress in pharmacy students.

Other variables, such as age, grade point average (GPA), and program type, have not yet been fully explored in the

literature. Henning et al.⁸ found no association between age and stress levels. As well, Dutta et al.¹ found no correlation between GPA and stress levels. To date, no study has examined whether stress levels vary between direct entry (DE), traditional 2–4 (TF), or post-graduate (PG; where a student has already attained a bachelor degree upon entering pharmacy school) pharmacy programs.

The current study presents the results of a large, nationwide, survey of stress in pharmacy students in different program types and across four professional years (P1–P4). The results address some of the data gaps of previous research and demonstrate similarities and differences between pharmacy students and other students. This can help clarify whether the demands of pharmacy school are indeed excessive.

Methods

Participants and materials

Current student members of the American Pharmacists Association (APhA) in universities nationwide enrolled in the P1–P4 years were invited to participate in this online study in exchange for entry into a raffle for a \$50 gift card. Invitations to participate were distributed via email. The invitations were distributed to 4000 randomly selected students in each professional year (P1–P4) for a total of 16,000 invitations. Invited students were also distributed across geographic regions of the United States, including Puerto Rico and Guam. To ensure confidentiality, the APhA removed all identifying information, including geographic region and university, before the data were released to the authors. Thus, distribution of geographic area could not be assessed.

Materials

The questionnaire adopted was the 10-item version of the Perceived Stress Scale (PSS-10) by Cohen et al.²¹ that asks about perceptions of stress using a 4-point Likert-type scale of 0 (never) to 4 (very often). Thus, a range of scores (0–40) is possible to obtain upon completion of the instrument. Questions include, “In the last month, how often have you found that you could not cope with all the things that you had to do?” and “In the last month, how often have you felt you were on top of things?” It is a well-validated, reliable instrument for measuring nonclinical levels of stress in the university student population,^{21,22} and has shown significant predictive validity for chronic stress and health-related outcomes.^{3,23} It was chosen for its brevity and previous use with a variety of populations.^{3,21}

Demographic information collected in this study included age in years, ethnicity (White, Asian, Black or African American, Hispanic or Latino, Native American or Pacific Islander, or Other with an option to write in an ethnic identity), gender, program type (TF, DE, and PG),

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