RESEARCH

A Comparative Analysis of Perceptions of Pharmacy Students' Stress and Stressors across Two Multicampus Universities

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Submitted April 17, 2015; accepted July 1, 2015; published June 25, 2016.

Objective. To compare perceived levels of stress, stressors, and academic self-efficacy among students at two multicampus colleges of pharmacy.

Methods. A survey instrument using previously validated items was developed and administered to first-year, second-year, and third-year pharmacy students at two universities with multiple campuses in spring 2013.

Results. Eight hundred twenty students out of 1115 responded (73.5% response rate). Institutional differences were found in perceived student stress levels, self-efficacy, and stress-related causes. An interaction effect was demonstrated between institution and campus type (main or branch) for perceived stress and self-efficacy although campus type alone did not demonstrate a direct effect. Institutional and campus differences existed in awareness of campus counseling services, as did a few differences in coping methods.

Conclusion. Stress measures were similar for pharmacy students at main or branch campuses. Institutional differences in student stress might be explained by instructional methods, campus support services, institutional climate, and nonuniversity factors.

Keywords: multi-Campus, stress, pharmacy students

INTRODUCTION

Approximately 24% of colleges and schools of pharmacy have multicampus professional programs as of June 2015.¹ A multicampus program is a campus using technology to facilitate distance education between two or more campuses. Multicampus pharmacy schools expand clinical access and resources, promote interprofessional education, increase recruitment and retention of student pharmacists from different areas of the state (especially rural areas), and accommodate future workforce needs.¹ Teaching and learning is generally facilitated through synchronous and asynchronous technology. The establishment of multicampuses and the use of distance education technology have been instrumental for existing campuses to implement new programs, restructure students' learning environments, and foster student-student, student-faculty, and faculty-faculty interactions.¹ The Accreditation Council for Pharmacy Education (ACPE) Standards require that the multicampus curriculum, levels

of faculty and student support, communications, interprofessional teamwork, outcomes, and other factors be the same for each site.² Furthermore, ACPE guidelines encourage assessment of perceived stress in students (as well as in faculty members and staff) and provision of mechanisms to address underlying causes that negatively impact learning experiences and students' well-being.²

Several studies assess sources of stress and stressors of pharmacy and other health professional students.³⁻⁶ Beck et al compared common sources of stress and stressors in two nursing student programs, to those of pharmacy, nursing, medicine and, social work students.³ Five hundred fifty-two students in the second, third, or fourth year of their respective programs were given a written questionnaire that inquired about sources of stress using the Beck-Srivastava Stress Inventory, which asks students to describe stressful events related to the student role which occurred over the last month. The sources of stress were similar across each of the programs. The most common self-reported sources of stress and stressors by pharmacy students, in rank order, were heavy workload, long study hours, examinations/grades, lack of free time, difficulty of class work, perceptions of other professionals

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toward the pharmacy profession, financial responsibilities, negative personal habits, administrative responsiveness to students' needs and peer competition.³ Furthermore, Marshall et al's study of 135 third-year pharmacy students at one university found students self-reported additional stressors of family relationships, Monday morning examinations, outside assignments, and financial concerns.⁴

Student stress levels are also related to health-related quality of life and academic performance.⁴⁻⁶ Gupchup et al's study, in which a self-administered questionnaire was completed by 166 pharmacy students enrolled in the first three years of a pharmacy program, found a significant negative correlation between student-life stress and the mental component of the health-related quality of life measure.⁵ Because of the perceived heavy workloads, students tend to focus on short-term rather than long-term learning, resulting in a state of panic, anxiety, and the inability to recall information during test/examinations.⁴ Stress research affirms there is strong evidence indicating that higher levels of student stress impact academic performance negatively.⁶ Votta and Benau's nationwide study of student members of the American Pharmacists Association found lower grade point averages (GPAs) were significantly associated with higher stress levels as measured by the Perceived Stress Scale.⁶ LeBlanc's literature review proffered the theory that there is a strong link between stress and memory.⁷ According to the review, because memory is the ability to store, retain, and retrieve information, it is critical for students in health professions, and others who are in medical professions training, to avoid situations that impair memory. Furthermore, the review indicated that many clinicians anecdotally report that some experiences during their training or clinical practice, which they thought they would have remembered, were forgotten or were never encoded because of the stress surrounding the events.⁷

Severe stress among pharmacy students resulted in the use of prescription and nonprescription drugs and abuse of alcohol.^{8,9} Frick et al's survey of 95 second-year pharmacy students enrolled in a 3-year accelerated PharmD program found that 30.5% of the respondents used prescription or nonprescription drugs to alleviate anxiety or aid sleep, and 41.1% used alcohol for stress.⁸ Oliver et al's cross-sectional survey of 349 students found that pharmacy students who self-reported using alcohol as a means of coping were more likely to also report hazardous or harmful use of alcohol.⁹ This finding is consistent with other research on the role motives play in alcohol use and alcohol related issues.^{10,11} Shapiro et al's review of literature on stress management in medical education also reported that medical students

and postgraduate medical trainees use drugs and alcohol as coping mechanisms.¹²

Student stress could also impact self-efficacy in terms of accomplishing a task successfully.¹³ Self-efficacy is defined as the confidence and belief about one's ability to organize thoughts, feelings, and actions to execute and manage a desired outcome and is inversely related to stress, with studies indicating moderate to strong negative associations.¹⁴

Some students in the health professions (including pharmacy students) may suffer from imposter syndrome or phenomenon, a psychological trait where high-achieving students question their self-efficacy and abilities fearing that others will see them as frauds.^{15,16} These personality traits typically occur when high achieving students set high standards for themselves, placing them at high risk for psychological distress if their expectations for themselves are not met. They believe they are not as intelligent and competent as their peers, that their success is unrelated to their intelligence and simply luck, and that they are frauds and that they will eventually be discovered as such. For example, students who exhibit the trait of perfectionism may experience feeling of helplessness, which may in turn affect their locus of control and self-efficacy and, as a result, diminish their motivation to succeed.¹⁵ Henning et al investigated the impact of imposter syndrome and perfectionism as stressors among 477 pharmacy, medical, dental, and nursing students.¹⁶ They found the level of stress of students in these fields was harmful, meaning they were at a higher risk for clinical levels of psychological distress than students in other majors.¹⁶ Approximately 27.5% of all the students experienced psychological levels of distress. Particularly noteworthy was the fact that 50% of pharmacy students scored in the high range for psychological distress and scored higher on socially prescribed perfectionism (the perception that others expect a great deal of you and will criticize any signs of failure) than other health professional students. Students with imposter syndrome become overly stressed about their academic abilities compared with their peers.

Little research exists on the stress and stressors of pharmacy students at multicampus institutions. Ried et al demonstrated that pharmacy students at the founding campus reported more burnout than students at the distance campuses,¹⁷ but their study did not identify reasons why students were burnt out. The purpose of this study was to examine levels of self-efficacy, perceived stress, and stressors for pharmacy students at two multicampus universities in the upper Midwest, comparing findings for pharmacy students at main or branch campus settings and across institutions.

METHODS

The study setting involved two pharmacy programs (university A and university B). The colleges of pharmacy at both universities were founded in the nineteenth century and both had main campuses in urban settings and one branch campus. Universities A and B are similar, both located in comprehensive academic health centers and part of intensive research institutions, with pharmacy students enrolled at the two campuses. For each university, the multisite pharmacy campuses are regarded as one and treated as such without distinction other than location. Most times, pharmacy faculty members from the main campuses use distance technology to facilitate teaching and learning for students at the branch campus. In some cases, faculty members from the main campus drive to the branch campus to give their lectures. Students at both campuses have electronic and in-person access to faculty members at their respective campuses, although a wider range of disciplines is located at the branch campus of university B (UB-Branch) than the branch campus at university A (UA-Branch). The UB-Branch has a substantial faculty presence of each of the pharmacy college's departments. The UA-Branch has tenured and clinical-track faculty members from three of the four college departments. In May 2014, UA-Branch graduated its first cohort of pharmacy students while UB-Branch graduated its seventh class. Both the UA-Branch and UB-Branch campuses were started with a rural emphasis to provide pharmacists to less populated areas in their respective states.

The initial survey instrument was pilot-tested on a sample of prepharmacy students (n=45) at the main campus of university A (UA-Main) in February 2013. Their responses and comments resulted in a shortened questionnaire (ie, elimination of some items from original scales used) and minor item clarifications. The survey instrument was developed by adapting items from previously validated scales on college student stress and items from other validated and often used stress questionnaires.

The survey instrument consisted of six sections. Section I comprised two multiple-choice items on pharmacy school campus and class year. Section II measured stress using nine questions adapted from the 10-item Perceived Stress Scale (PSS).¹⁸ Also included in section II were 17 questions adapted from the College Stress Inventory (CSI).¹⁹ The items on the CSI combined a life event checklist with appraisals asking respondents to evaluate the degree of stress experienced with regard to common academic life events, which are often used together with the PSS.¹⁹ All response choices in section II used a 5-point

scale ranging from 1=never to 5=very often. Section III consisted of 13 questions adapted from the College Self-Efficacy Inventory scale. Students were asked to respond on a 5-point scale ranging from 1=not at all confident to 5=extremely confident.²⁰

Section IV measured perceived stressors with 29 items adapted from the Dental Environmental Stress (DES) questionnaire developed by Garbee et al.²¹ and modified by Westerman et al.²² The DES is considered a reliable and valid instrument because of its flexible design and consistent findings in independent investigations.²³ The questions are classified into six stress causal categories: academic performance, faculty relations, patient and clinic responsibilities (this category was excluded for this study as not relevant to the subjects of this study), personal life issues, professional identity, and financial obligations. Students responded using a 5-point scale ranging from 1=not applicable to 5=very stressful. These items measured stressors of having children at home, forced postponement of marriage, discrimination based on sexual orientation, having a dual role of spouse/parent/partner and student, marital/relationship adjustment problems, discrimination based on race or ethnic group, amount of cheating in professional school, and lack of home atmosphere in living quarters. Most of these personal life issues did not apply to the majority of respondents in the final study. Ignoring the valid response code of "not applicable" would have resulted in a small sample size as a result of removing a substantial subset of respondents from the factor analysis. To retain more in the sample and as a result of consultation with staff of the University of Illinois Survey Research Laboratory (Champaign, IL), we assumed a "not applicable" response was an indicator of stress level and that it signified less stress than the next scale option of "not stressful." Therefore, items were recoded using a 5-point scale ranging from 0=not applicable to 4=very stressful. Finally, section V consisted of six dichotomous (yes/no) items on awareness and coping with stress, and section VI included seven multiple-choice items on student demographics.

The final survey instrument was administered to a sample of first-year, second-year, and third-year pharmacy students enrolled at UA-Main, UA-Branch, UB-Main, and UB-Branch in April 2013. We used a non-randomized, convenience sample wherein all enrolled pharmacy students in the first three professional class years were eligible to participate. Class time was set aside for survey completion, and student participation was anonymous and voluntary. Data were collected only for students in the first three pharmacy class years as the UA-Branch campus did not yet enroll fourth-year students, and waiting until 2014 would have placed UB's first-year

pharmacy students under a revised curriculum different than their institutional cohorts. Institutional review board approval was received from both institutions.

Results were analyzed using SPSS, v22 (IBM, Armonk, NY). The level of significance was set at $\alpha \leq 0.05$. Descriptive statistics are reported. Statistical tests for the primary analyses included chi-square for tests of association (with adjusted residual analysis using absolute z values ≥ 1.96 to reveal higher or lower cell frequencies for tables larger than two rows and two columns) and 2-way analysis of variance (2-way ANOVA) based on the explanatory factors of institution (ie, UA or UB) and campus type (main or branch). Most reliability statistics were determined with Cronbach alpha (α), with a cut-off point of ≥ 0.7 for acceptable scale reliabilities for the coefficient alpha. The reliability of one 2-item scale was estimated with Spearman rho (ρ).

RESULTS

Four hundred thirty-nine of 614 students from UA-Main and UA-Branch campuses responded to the survey for a combined 71.5% response rate. At UB-Main and UB-Branch, 404 of 501 students completed the survey for a response rate of 80.6%. After the exclusion of 23 survey instruments, which were returned blank or mostly incomplete, usable responses were received from 820/1115 (73.5%) pharmacy students at the four UA and UB campuses. As shown in Table 1, there were no significant differences across the campuses on responses of students by campus type, year in school, gender, age, and citizenship. Significantly more students were found in the self-reported lower GPA category at UA-Branch than in other campuses, and higher self-reported GPAs were reported at UA-Main. The main campus at university A was significantly more racially diverse with no one group being in the majority and also had a significantly greater proportion of single students than the others. The branch campus at university B had significantly more students whose parents had an education level of high-school or less.

Table 2 lists stress scale reliabilities and subscales with item loadings from principal axis factoring, oblique rotations (ie, promax method) for our measures. Overall, reliabilities are reported (inclusive of all items within the scale), as well as subscale reliabilities that met acceptable reliability levels. For the stress items, the four factors listed accounted for 54.5% of the variance (39.6% by factor 1). For the self-efficacy inventory, the three factors accounted for 62.6% of the variance. Finally, the five factors listed under stressors in pharmacy school and other environments represented 51.1% the variance.

Table 3 lists comparative descriptive summaries across scale values for the four campuses. Two-way ANOVA demonstrated consistent institutional (ie, university) differences in perceived student stress levels ($F=63.40, p<0.001$), self-efficacy ($F=19.12, p<0.001$) and total stress-related causes (ie, stressors, $F=23.16, p<0.001$), with students at university A demonstrating higher stress and stressors for each measure. For section II (perceived stress levels), mean (SD) values were 2.73 (0.55) at university A and 3.04 (0.59) at university B (higher score indicated lower stress). For self-efficacy, where higher scores indicated higher self-efficacy, mean (SD) values were 3.41 (0.59) for students at university A and 3.53 (0.57) at university B. Finally, for section IV scales on stressors in pharmacy school and other environments (higher scores indicating higher stress), university A measures were 1.98 (0.47), compared with university B scores of 1.80 (0.47). However, 2-way ANOVA found no main effect differences in perceived stress levels, self-efficacy, or stressors between pharmacy students across campus types (main vs branch) in scale comparisons for sections II (perceived stress levels, $F=0.18, p=0.67$), III (self-efficacy, $F=2.59, p=0.11$), and IV (stressors in pharmacy school and other environments, $F=0.72, p=0.40$). This scale included eight items for which large numbers of respondents indicated “not applicable.”

A significant interaction effect was found between institution and campus type for two scales: perceived stress levels ($F=7.63, p=0.006$) and student self-efficacy ($F=19.25, p<0.001$). As listed in Table 3, students at UA-Branch campus indicated the highest perceived stress and lowest self-efficacy, and students at UB-Branch campus demonstrated the lowest perceived stress and highest self-efficacy scores across campus by institutional type. Limiting analyses to “within institution” when examining differences between main and branch campuses at the same university, most comparisons demonstrated overlapping confidence intervals (which indicated no significant differences) with one exception. At UB-Branch campus, students exhibited higher self-efficacy scores (see Table 3 for point estimates), 95% CI [3.61, 3.79], than their UB-Main peers, 95% CI [3.36, 3.50], with the nonoverlapping CIs indicating significant differences. A significant Pearson correlation, [$r=0.46 (p<0.001)$], was found between survey items in section II (perceived stress) and section III (perceived self-efficacy), though the relationship was actually inverse as items were worded and coded, as expected by theory. Higher stress was associated with lower self-efficacy.

Two-way ANOVA was used to examine stress, self-efficacy, and stressors across campus types and the

Table 1. Professional and Personal Demographics of Students at Two Multicampus Universities

Variable	Campus (%)			
	UA-Main N=325	UA-Branch N=92	UB-Main N=254	UB-Branch N=149
Professional Demographics				
Campus	39.6	11.2	31.0	18.2
Year in School				
First	32.6	29.3	31.9	35.6
Second	27.7	33.7	35.4	27.5
Third	39.7	37.0	32.7	36.9
Self-Reported Grade Point Average				
≤2.50-3.00	17.5	39.8 ^a	13.7 ^a	17.4
3.01-3.50	35.0 ^a	31.8	46.3	50.7 ^a
3.51-4.00	47.5 ^a	28.4 ^a	40.0 ^a	31.9
Personal Demographics				
Gender				
Male	36.6	33	31.5	38.9
Female	63.4	67	68.5	61.1
Race				
White	46.7 ^a	69.7 ^a	66.2 ^a	71.6 ^a
Asian	38.8 ^a	21.3	23.4 ^a	17.6 ^a
Other*	14.5	9.0	10.4	10.8
Age				
<21-25	66.5	63.1	58.2	60.4
26-30	21.5	22.8	26.4	31.3
31->40	12.0	14.1	15.4	8.3
Marital Status				
Single	83.5 ^a	79.3	73.6 ^a	76.7
Married	16.5 ^a	20.7	26.4 ^a	23.3
Citizenship				
US	92.9	90.1	89.3	93.3
Non-US	7.2	9.9	10.7	6.7
Parental Education				
Father				
≤High School	19.9	29.2	19.9	18.5
College				
No Degree	11.7	23.6 ^a	10.9	15.8
2- or 4-year Degree	40.3	25.9 ^a	44.1	43.8
Graduate Degree	23.6	12.4 ^a	22.3	21.2
Mother				
≤High School	26.6	30.3	20.4	20.4
College				
No Degree	12.3	25.8 ^a	9.6	18.4
2- or 4-year Degree	43.2	31.5 ^a	48.9	49.6
Graduate Degree	17.0	10.1 ^a	18.9 ^a	10.2 ^a

* Other includes African American/Black, Hispanic/Latino, American Indian/Native American, bi-racial and other

^aRows with the same superscript are significantly different via chi-square analysis with adjusted residual absolute z values ≥1.96)

demographic variables. No differences ($p>0.05$) were found by pharmacy class year (ie, first-year, second-year, or third year students) across any of the scales. No differences ($p>0.05$) were found in race/ethnicity for stress or stressors. Differences were demonstrated in items for college self-efficacy. A main effect for self-efficacy was found by race ($F=5.55$, $p=0.004$). Mean (SD) self-efficacy

scores were: White 3.54 (0.57), Asian 3.35 (0.58), and other (ie, combined category for African American/Black, Hispanic/Latino, American Indian/Native American, Bi-racial, and other) 3.43 (0.55). Comparing 95% confidence intervals, self-efficacy scores were significantly higher for White students (3.50, 3.60) compared with Asian students (3.27, 3.46). The 95% CI for the “other”

Table 2. Stress-related Scale Reliabilities and Subscale Factors of Students at Two Multicampus Universities

Factors	N items	Reliability Statistics, α	Scale (1-5) ^a Mean (SD)
Perceived Stress and College Stress Inventory	31	0.95	2.88 (0.65)
Factor 1. Responsibilities and pressures	7	0.88	
Factor 2. Coping ability	8	0.78	
Factor 3. Positive feelings	6	0.83	
Factor 4. Irritability and restlessness	7	0.85	
College Self-Efficacy	13	0.88	(scale 1 to 5) ^b 3.47 (0.28)
Factor 1. Communicating and participating with faculty members and class	5	0.86	
Factor 2. Academic performance	5	0.76	
Factor 3. Social efficacy	3	0.81	
Stressors in pharmacy school and other environments	29	0.89	(scale 0 to 4) ^c 1.84 (0.47)
Factor 1. Workload and leisure time	6	0.88	
Factor 2. Academic environment and faculty relations	6	0.75	
Factor 3. Career and professional future	5	0.80	
Factor 4. Marriage and children	3	0.72	
Factor 5. Discrimination based on demographic characteristics	2	$\rho=0.63$	

^aScale items coded or recoded such that higher scores indicate lower stress

^bScale items coded or recoded such that higher scores indicate higher self-efficacy (and theoretically lower stress)

^cScale items coded or recoded such that higher scores indicate higher stress

racial/ethnic group category (primarily underrepresented minorities) (3.35, 3.61), showed values that overlapped with the self-efficacy CIs for both White and Asian students and thus, was not considered to differ significantly from either racial group.

Table 4 shows a greater proportion of pharmacy students at UB-Main (89.8%) and UB-Branch (85.2%) and UA-Branch (82.4%) were aware of campus counseling services compared with 65.7% at UA-Main ($p<0.001$). Approximately 33% of students at each campus except for UA-Branch used alcohol to reduce stress, and between 17-27% used meditation or yoga to cope with stress. No differences were found across campus types and institution regarding use of campus counseling services, nor most stress coping mechanisms (ie, using alcohol or recreational drugs, and seeking religious counseling), $p>0.05$.

DISCUSSION

This study examined levels of perceived stress, stressors, and self-efficacy at two multicampus universities. When comparing the direct effects of matriculation at main or branch campuses, no differences were found in perceived stress and stressors for students across campus types within institutions, but significant differences were found across the institutions. Students at university A perceived higher stress and lower self-efficacy than students at university B. This may be a result of factors in and outside the control of the respective colleges, such as institutional support and family or social support. University A had a more racially and ethnically diverse student body. More self-identified Asian students scored lower on self-efficacy. This is not necessarily problematic for this group as Klassen's review of self-efficacy from a cross-cultural interpretative framework suggests why students

Table 3. Scale Summaries by Campus Type

Stress Scale	University and Campus Type [N, mean (SD)]			
	UA-Main	UA-Branch	UB-Main	UB- Branch
Perceived Stress and College Stress Inventory ^a	N=3172.76 (0.55)	N=882.61 (0.54)	N=2513.00 (0.59)	N=1473.10 (0.60)
College Self-Efficacy ^{a,b}	N=3193.43 (0.58)	N=893.31 (0.63)	N=2503.43 (0.53)	N=1473.70 (0.57)
Stressors in pharmacy school and other environments ^c	N=3191.98 (0.48)	N=891.97 (0.45)	N=2481.83 (0.47)	N=1481.77 (0.47)

^aHigher scores indicate lower stress

^bHigher scores indicate higher self-efficacy

^cHigher scores indicate higher stress

Table 4. Methods of Coping with Stress among Students at Two Multicampus Universities

Method	Campus (%Yes)			
	UA-Main	UA-Branch	UB-Main	UB-Branch
Aware of campus counseling services	65.7 ^a	82.4	89.8	85.2
Seek campus counseling services	9.3	8.8	8.7	9.4
Use alcohol to reduce stress	33.0	23.3	32.7	32.9
Use recreational drugs to reduce stress	4.9	2.2	2.8	1.3
Seek counseling from spiritual leaders	5.6	4.4	2.0	7.4
Use meditation or yoga	27.2	16.5	24.1	20.8

^aSignificantly different from UB-Main and UB-Branch (chi-square analysis with adjusted residual absolute z-values ≥ 1.96)

of Asian descent score lower in the self-efficacy domain.²⁴ Klassen postulates that lower self-efficacy beliefs from collectivist cultures, such as some Asian cultures, do not always correspond to lower academic performance, but instead are based on cultural differences and how collectivist groups perceive self. This suggests that the concept of self-efficacy may not mean the same for all cultural groups.

One factor within the control of the college is the institutional climate. The climate of the college, that is, the psychological atmosphere of the environment, can have significant effects on participants' perceived experiences.²⁵ The climate of an organization consists of factors such as the amount of trust management placed on employees, the levels of morale of the employees, and the support employees' experience.²⁶ The manner in which faculty members, staff, and students interact both in and outside class influences the learning environment. Using focus group interviews with students who received a "D" or "F" in a pharmacy course, a written survey instrument was developed by Payacacha et al and administered to all students enrolled at one pharmacy program to investigate student help-seeking behavior.²⁷ Perceived faculty "helpfulness" was directly and positively associated with the likelihood of students' seeking academic help. Respect, accessibility, approachability, and friendly demeanor were key elements associated with perceived faculty "helpfulness."²⁷ Moreover, faculty members in Magolda's study, who addressed the classroom atmosphere and respected the faculty-student mentoring relationships, reported that students had a more satisfying learning experience.²⁸ Therefore, we recommend that pharmacy school faculty members and administrators investigate the college climate (including potential differences at multiple campuses within an institution) to learn if it might provide some answers that address pharmacy student stress. This can be done through periodic student focus groups that look at students' perceptions of their classroom environment, for example, faculty teaching styles and approachability, comfort asking

faculty members questions in class and seeking help without the risk of being judged, and student-to-student interactions in and outside of the classroom.

Interestingly, a significant interaction effect was found between institution type and campus type with students at UA-Branch reporting the highest perceived stress and the lowest self-efficacy scores, while students at UB-Branch demonstrated the lowest stress and highest self-efficacy scores across the four campuses. Further, students at UB-Branch obtained higher self-efficacy scores than colleagues at their main campus. This latter finding may be explained by findings from a study by Ried et al, which indicated that branch campuses typically have smaller class sizes that give students more social support and interaction.¹⁷ This was not the case at UA-Branch perhaps because of the newness of the campus site and because students had not yet had the chance to form a class identity. In addition, there were fewer faculty members at this campus available for students to engage with in meaningful and sustained interactions. Adding more faculty members (challenging in light of budgetary considerations) or having more accessible faculty members at the main campus may encourage greater connection between faculty members and students. Furthermore, the addition of diverse faculty members should be considered, which may foster greater connection with the diverse student body.

The students at UA-Branch were more likely to be first-generation college students. The need for increased outreach and recruitment of pharmacy students was one of the reasons for starting this branch campus, and these students may need more support from faculty members and administration. Many of these students have more trouble finding positions as pharmacy technicians in the branch city setting and travel long distances commuting between work and school. Therefore, many do not have the same amount of time to devote to their studies. Special attention should also be paid at university A in general to determine why students experienced more stress and stressors and to determine if programmatic issues

negatively influence stress, such as instructional methods, awareness of campus counseling services, campus selection methods, and college/institutional climate. The findings around self-efficacy are particularly interesting in that students at UA-Branch also obtained lower self-efficacy scores. This group may have been particularly vulnerable to the imposter syndrome and may have put more stress on themselves. Further research is needed to determine if this is the case and if there are ways programs can help students overcome these feelings.

The educational process in a pharmacy program is stressful. While some stress is useful, assisting students with developing coping mechanisms helps them when they enter a stressful health career such as pharmacy.^{29,30} It is concerning that at least 33% of the students at three of the campuses used alcohol to manage stress. This is analogous with other research that has linked the role of student stress to high tobacco,³¹ alcohol,^{8,9,32} and drug use.^{8,33} Oliver et al demonstrated that more hazardous alcohol consumption was prevalent among pharmacy students at the main campus than students in the branch campus.⁹ Alcohol may be the drug of choice for coping with workload stress, and schools should develop workshops or programs that show students other ways to manage stress and encourage students to seek out these resources. If faculty members and staff are seen as approachable, students may be more likely to turn to them for assistance when stress levels get too high. Faculty members and students can also work together to spread out workload so students study throughout the semester rather than waiting until the last moment to prepare for examinations or complete assignments. All four campuses in this study have policies to ensure course coordinators do not schedule major examinations on the same day for each class. The mean values for stress and stressor scales imply that faculty members and administrators responsible for student life/institutional climate should continue to examine reasons for stress among pharmacy students. Longitudinal research could investigate if there are significant changes among subjects over time.

We acknowledge several limitations to this study. A nonrandomized sample, wherein responding students voluntarily (and anonymously) agreed to participate, may have caused selection effects. Nonresponse bias may exist when certain individuals choose not to complete the survey, resulting in use of estimates from the data unreflective of either the population as whole or specific groups within the population.³⁴ While the authors cannot completely control for the nonresponse bias on the dependent variables, we are confident the student sample is representative of the larger student population given our high overall response rates. For the 2-way ANOVA, we used

parametric statistics on scale means. Differing thoughts exist as to whether it is acceptable to treat ordinal scales (such as the Likert-type scales used in these analyses) as interval-level data. Scale originators developed the scales based on parametric tests.¹⁸⁻²² Scholars state parametric statistics are robust across types of scales and/or note the pragmatic need to use parametrics with ordinal scales to produce fruitful results.³⁵⁻³⁷

CONCLUSION

Pharmacy student enrollment at main or branch campuses of two universities did not demonstrate a direct effect on stress, stressors, or self-efficacy though institutional differences were found. A significant interaction effect was found, with students at respective branch campuses demonstrating both the highest stress, lowest self-efficacy, and vice-versa compared with peers at the main campuses. The results can be shared with students, faculty members, and administrators to explore how the pharmacy schools with multiple campuses can mitigate causes of stress and stressors for the students.

ACKNOWLEDGMENTS

The contributions of staff at the University of Illinois Survey Research Laboratory (Champaign, IL) are acknowledged in data analysis assistance for section IV survey items.

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