



Stress profile and university performance of pharmacy students

Elham Alshammari*

Department of Pharmacy Practice, Faculty of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia

Article History:

Received on: 24.03.2019

Revised on: 03.06.2019

Accepted on: 07.06.2019

Keywords:

Stress management,
academic stress,
cognitive,
social scores

ABSTRACT

The objective of the study was to examine the stress profile and university performance of pharmacy students. The study was necessary since high academic expectations among pharmacy students can expose them to stressful conditions. In return, stress can affect their level of performance. A quantitative approach was used to meet the objective of the study. A survey questionnaire was electronically administered to the study participants (n=591) to collect socio-demographic data, the student's overall academic cumulative GPA, and stress indicators. The collected data was analysed quantitatively through the use of SPSS, more so using descriptive statistics and correlation tests. The study first examined the relationship between academic performance and stress and found no correlation between these two variables. The relationship between age and academic stress was also examined, and no correlation was evident. In addition, the year of study was compared to academic stress, and a significant relationship was found to exist between the two variables. Additionally, the year of study was also found to affect cognitive as well as social and interpersonal scores. The findings of the study, therefore, demonstrated the existence of no correlation between academic performance, stress, and age. These findings were unexpected, considering the general assumption that many pharmacy students experience elevated levels of stress compared to their counterparts pursuing less intensive courses. In sum, only the year of study was found to contribute to perceived stress among pharmacy students. Since academic factors are directly under the control of learning institutions, it is key that the management puts in place measures to minimize the resulting stress.



*Corresponding Author

Name: Elham Alshammari

Phone:

Email: ejalshammari@pnu.edu.sa

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v10i4.1522>

Production and Hosted by

IJRPS | <https://ijrps.com>

© 2019 | All rights reserved.

INTRODUCTION

Stress has been extensively discussed in relation to healthcare students, and there have been many reports regarding high levels among this group. All students, more so those undertaking a pharmaceutical course experience the tough demands of coursework, exposure to new people and a novel environment, as well as the demand to manage financial, emotional, and social requirements (Gallagher *et al.*, 2014). Healthcare students may also experience additional sources of stress, such as the emotions involved in dealing with patients and learning the required applied clinical skills (Birks *et al.*, 2009). Other identified causes of such stress are

academic-related, personal events as well as the student's prevailing economic condition, including debt and student loans. In many cases, stress has a significant financial impact on healthcare professionals due to the expenses involved in the training process. Therefore, it would seem vital to identify students who experience their course as being more stressful than their peers to target them early for help and support.

A growing body of research shows that stress is likely to lead to devastating effects on the life of the student, including depression, anxiety and above all, declining academic performance (Bayram and Bilgel, 2008; Suldo *et al.*, 2009). Despite its overriding impacts on the student's overall wellbeing, few, if any, research have been undertaken amongst pharmacy students. Majority of the studies have focused on medical (Eva *et al.*, 2015; Goldhagen *et al.*, 2015), nursing (Alzayyat and Al-Gamal, 2014; Riet *et al.*, 2015; Sun *et al.*, 2016) and dentistry students (Babar *et al.*, 2015; Alzahem *et al.*, 2014; Crego *et al.*, 2016). Eva *et al.* noted that the curriculum of lectures, mentoring, simulations, and hands-on experience used to teach medical students contributed to the unintended negative consequences on their physical and emotional health (Eva *et al.*, 2015). In addition, Babar and colleagues observed that dental students undergo rigorous training, which is quite stressful and associated with both physical and psychological distress, burnout, as well as emotional exhaustion (Babar *et al.*, 2015). The study by van der Riet *et al.* particularly identified nursing students as being vulnerable to the stressors that are associated with university recruitment (Riet *et al.*, 2015).

In contrast to the reviewed studies, one scholarly work compared the level of stress amongst medical, dental as well as the pharmacy students. The study found that pharmacy students were more prone to stress, an aspect which drastically reduced their overall academic performances (Al-Dubai *et al.*, 2011; Sun and Zorah, 2015). Previous researches have also indicated that many of these students wake up very early to study, which translates into a reduced time of sleep at night. A combination of inadequate relaxation, as well as socialization, has been reported to have a deteriorating effect on the overall quality of life of the students (Opoku-Acheampong *et al.*, 2017; Lou *et al.*, 2015; Sariyildiz *et al.*, 2014). To clearly understand this issue, the correlation between stress and low grades needs to be addressed.

In this study, the Scale for Assessing Academic Stress (SAAS) tool (Sinha *et al.*, 2001) will be used to score

stress in addition to students' cumulative GPA. Correlation of the results with a year of study and age will help in pooling different conclusions. Students will be asked for their opinions of what might help in resolving university stress and come up with useful recommendations to help educators as well as learners.

MATERIALS AND METHODS

The undergraduate program in pharmacy is scheduled to take a minimum of six years. All the students that were enrolled in the program were incorporated in the study. In total, the student populations in the study were 591 in number. This prospective research was approved by the University Institutional Review Board IRB. All 591 students received the self-report tool electronically. The study subjects were taken through the purpose of the research, and their consent acquired subsequently. The self-completed questionnaire responses were anonymous with the research undertaking the highest level of confidentiality adherence.

This research used a survey questionnaire which was electronically administered to the study participants. The questionnaire was subdivided into three sections: section one collected the student's socio-demographic data comprising of age and year of study. The second section assessed the student's overall academic cumulative GPA. The third section, on the other hand, assessed the stress indicators numbered 1 to 30, where the students were expected to indicate a "Yes" or "No" to the indicators. These responses target cognitive, affective, physical, social, and motivation indicators of stress. An optional section was also included where the students were expected to give a short description about university stress where they give their opinion as to why stress does happen and their reserved opinion on the best way to manage it while pursuing pharmacy program.

The collected data are analyzed through the use of the Statistical Package for Social Sciences (SPSS) version 24. In addition, descriptive statistics were performed to explain the results and establish a correlation with GPA. A descriptive presentation of all these data was undertaken through frequencies and percentages.

RESULTS AND DISCUSSION

Demographic characteristics of the sample

A total of 240 respondents from different study years were involved in the study. The sample distributed across the six study years as follows: 1st

year (n = 34), 2nd year (n = 25), 3rd year (n = 24), 4th year (n = 22), 5th year (n = 90) and 6th year (n = 45). The mean age of the participants was 21.66 years (range 18–30, SD 2.09).

The relationship between academic stress, age and academic performance

Since all the considering variables are scale in nature, in order to identify the relationship between academic stress factors and the age and GPA, the Pearson correlation was used (see Table 1).

As in the following table, age had no significant relationship with any of the factors, age vs. cognitive ($r = -.056, p > .05$), age vs. affective ($r = .031, p > .05$), age vs. physical ($r = -.01, p > .05$), age vs. social/interpersonal ($r = -.10, p > .05$) and age vs. motivation ($r = -.072, p > .05$).

When the GPA was considered, it showed the same results as above where GPA had no relationship with any of the academic stress factors, GPA vs. cognitive ($r = .061, p > .05$), GPA vs. affective ($r = -.049, p > .05$), GPA vs. physical ($r = .000, p > .05$), GPA vs. social/interpersonal ($r = .03, p > .05$) and GPA vs. motivation ($r = -.017, p > .05$).

The relationship between academic stress and the academic year

In order to identify this relationship, a one-way MANOVA was used (see Table 2 and 3). As indicated by the MANOVA, there was a significant effect of the studying year on academic stress, Wilks' Lambda = .833, $p < .05$.

As in the Table 3, studying year has affected significantly on two factors; cognitive, ($F = 3.075, p < .05$) and social/interpersonal ($F = 4.888, p < .05$).

The following Figures 1 and 2 show the existed significant difference between studying years in cognitive scores where 3rd year had a significantly higher cognitive score (M = 4.67, SD = 1.88) compared to 5th-year students (M = 3.50, SD = 1.94), Mean Difference = 1.17, $p < .05$. This is the only significant difference that existed between study years.

Summary of Findings

There was no relationship between academic performance and academic stress. There was no relationship between age and academic stress. There was a significant relationship between studying year and academic stress. Especially studying year has affected the cognitive and social/interpersonal scores.

The study found no relationship between academic performance and academic stress. These findings are quite surprising considering the common belief

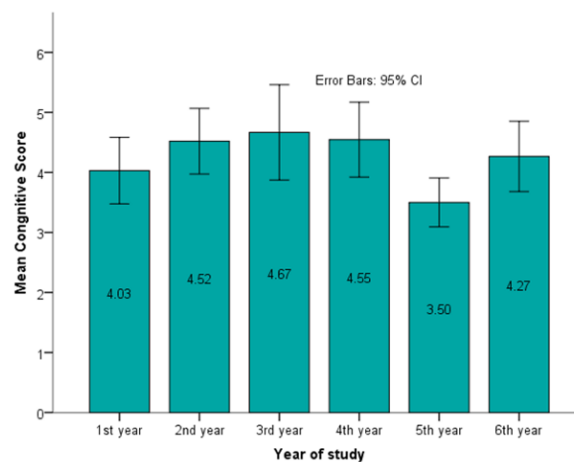


Figure 1: Studying year and the mean cognitive score

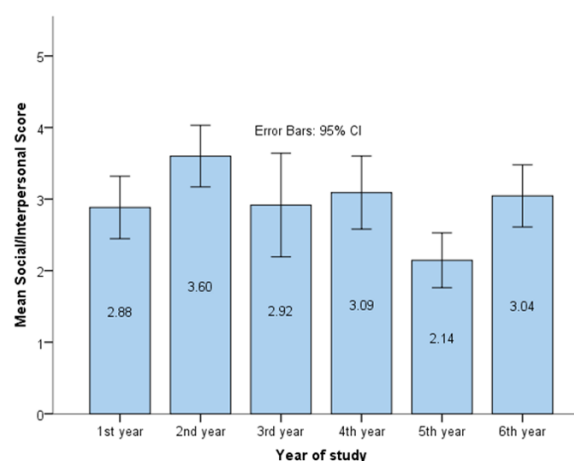


Figure 2: Studying year and the mean social/interpersonal score

that healthcare students, more so those undertaking a pharmacy program, have elevated stress levels when compared to peers pursuing other courses as well as the general populations. These findings contradicted those of Eva et al. who argued in their study that students who experienced a relatively high level of personal distress further reported adverse outcomes on their academics, health, professionalism, and competency (Eva et al., 2015). Even though the current study found no correlation between academic performance and academic stress, it is imperative that pharmacy college educators understand the incidences as well as the causes of distress among their students which could lead to negative effects on the health of the learners.

The study findings also indicated no relationship between age and academic stress. These findings contradicted the traditional perception that as an individual age, they are likely to encounter a lot of

Table 1: Correlations

| | | Age | GPA | Cognitive | Affective | Physical | Social/ Interpersonal | Motivation |
|--------------------------|-----------------|------|------|-----------|-----------|----------|--------------------------|------------|
| Age | Pearson | 1 | - | -.056 | .031 | -.010 | -.104 | -.072 |
| | Correlation | | .238 | | | | | |
| GPA | Sig. (2-tailed) | | .000 | .389 | .635 | .876 | .108 | .266 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| GPA | Pearson | - | 1 | .061 | -.049 | .000 | .027 | -.017 |
| | Correlation | .238 | | | | | | |
| Cognitive | Sig. (2-tailed) | .000 | | .346 | .452 | .997 | .681 | .788 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Cognitive | Pearson | - | .061 | 1 | .624 | .291 | .520 | .523 |
| | Correlation | .056 | | | | | | |
| Affective | Sig. (2-tailed) | .389 | .346 | | .000 | .000 | .000 | .000 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Affective | Pearson | .031 | - | .624 | 1 | .355 | .515 | .552 |
| | Correlation | .049 | | | | | | |
| Physical | Sig. (2-tailed) | .635 | .452 | .000 | | .000 | .000 | .000 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Physical | Pearson | - | .000 | .291 | .355 | 1 | .264 | .353 |
| | Correlation | .010 | | | | | | |
| Social/ Interpersonal | Sig. (2-tailed) | .876 | .997 | .000 | .000 | | .000 | .000 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Social/ Interpersonal | Pearson | - | .027 | .520 | .515 | .264 | 1 | .547 |
| | Correlation | .104 | | | | | | |
| Motivation | Sig. (2-tailed) | .108 | .681 | .000 | .000 | .000 | | .000 |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Motivation | Pearson | - | - | .523 | .552 | .353 | .547 | 1 |
| | Correlation | .072 | .017 | | | | | |
| | Sig. (2-tailed) | .266 | .788 | .000 | .000 | .000 | .000 | |
| | | 240 | 240 | 240 | 240 | 240 | 240 | 240 |

Correlation is significant at the 0.01 level (2-tailed)

challenges. Most of these challenges are likely to be characteristics of the transition from adolescence to adulthood, particularly, relationship challenges. These findings also contradicted those of (Riet *et al.*, 2015) who found a correlation between age and stress management program (Riet *et al.*, 2015). The authors noted that most of the mature age students (around the age of 35 years), had many demands linked to caring for family and children. Academic stress, therefore, created an additional load that necessitated enrollment in stress management or meditation programs. Even though the findings of

the current study are inconsistent with those of previous studies, the age range used in the research was much younger (18-30 years), with an average of 21.66 years. We can possibly argue that most of the participants in the current study were young and did not experience other demands of life that would contribute to increased levels of academic stress.

Even though the pharmacy students did not report significant total stress levels due to academic stress, their overall perceived stress level is higher than that in the overall populations. Evidently, stress

Table 2: Multivariate Tests

| | Effect | Value | F | Hypothesis df | Error df | Sig. |
|-----------|--------------------|-------|---------|---------------|----------|------|
| Intercept | Pillai's Trace | .890 | 372.617 | 5.000 | 230.000 | .000 |
| | Wilks' Lambda | .110 | 372.617 | 5.000 | 230.000 | .000 |
| | Hotelling's Trace | 8.100 | 372.617 | 5.000 | 230.000 | .000 |
| | Roy's Largest Root | 8.100 | 372.617 | 5.000 | 230.000 | .000 |
| Year | Pillai's Trace | .173 | 1.680 | 25.000 | 1170.000 | .019 |
| | Wilks' Lambda | .833 | 1.725 | 25.000 | 855.914 | .015 |
| | Hotelling's Trace | .193 | 1.761 | 25.000 | 1142.000 | .012 |
| | Roy's Largest Root | .146 | 6.841 | 5.000 | 234.000 | .000 |

Table 3: Tests of between-subjects effects

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|----------------------|-------------------------|-----|-------------|----------|------|
| Corrected Model | Cognitive | 49.364 | 5 | 9.873 | 3.075 | .010 |
| | Affective | 18.767 | 5 | 3.753 | 1.479 | .198 |
| | Physical | 3.951 | 5 | .790 | .444 | .818 |
| | Social/Interpersonal | 58.719 | 5 | 11.744 | 4.888 | .000 |
| | Motivation | 27.592 | 5 | 5.518 | 1.307 | .262 |
| Intercept | Cognitive | 3432.357 | 1 | 3432.357 | 1069.045 | .000 |
| | Affective | 2977.594 | 1 | 2977.594 | 1173.058 | .000 |
| | Physical | 2065.979 | 1 | 2065.979 | 1160.163 | .000 |
| | Social/Interpersonal | 1646.109 | 1 | 1646.109 | 685.129 | .000 |
| | Motivation | 3798.881 | 1 | 3798.881 | 899.971 | .000 |
| Studying Year | Cognitive | 49.364 | 5 | 9.873 | 3.075 | .010 |
| | Affective | 18.767 | 5 | 3.753 | 1.479 | .198 |
| | Physical | 3.951 | 5 | .790 | .444 | .818 |
| | Social/Interpersonal | 58.719 | 5 | 11.744 | 4.888 | .000 |
| | Motivation | 27.592 | 5 | 5.518 | 1.307 | .262 |
| Error | Cognitive | 751.298 | 234 | 3.211 | | |
| | Affective | 593.966 | 234 | 2.538 | | |
| | Physical | 416.699 | 234 | 1.781 | | |
| | Social/Interpersonal | 562.214 | 234 | 2.403 | | |
| | Motivation | 987.741 | 234 | 4.221 | | |
| Total | Cognitive | 4713.000 | 240 | | | |
| | Affective | 4232.000 | 240 | | | |
| | Physical | 3074.000 | 240 | | | |
| | Social/Interpersonal | 2414.000 | 240 | | | |
| | Motivation | 5522.000 | 240 | | | |
| Corrected Total | Cognitive | 800.663 | 239 | | | |
| | Affective | 612.733 | 239 | | | |
| | Physical | 420.650 | 239 | | | |
| | Social/Interpersonal | 620.933 | 239 | | | |
| | Motivation | 1015.333 | 239 | | | |

peaks at varied times as one progress from one academic year to the next which provides a further rationale to undertake more multi-institutional as well as longitudinal researches to undertake a broader study of stress among students pursuing pharmacy programs. These findings were consistent with those of Babar et al. even those these authors used a dataset of dental students (Babar et al., 2015). The authors noted a significant difference in the levels of stress among students belonging to the 3rd, 4th, and 5th years of study. At different levels of study, students are likely to be worried by factors, such as the fear of failing a course, facing parents after failure, success in pharmacy subjects, challenges in learning precision skills, difficulty in understanding literature, as well as increasing patient and clinic responsibilities among other factors (Babar et al., 2015). Comparative research on pharmacy students, in more than one learning institution, would be appropriate in assessing the general effects of the various curriculum structures on the respective levels of stress on the students pursuing them.

The findings of this study are also consistent in terms of the number of participants or respondents from previous research studies using a data set of undergraduate Pharm. D. students from Princess Nourah Bint Abdul Rahman University. While the sample size in this study was 591, only 240 responses were obtained from the undergraduate students. This is consistent with the study by Alshammari, where out of a sample size of 703 Pharm. D. students, only 179 took part in the shortened questionnaire (Alshammari, 2018). The two studies are, however, different in the sense that this research compared stress levels and academic performance while Alshammari examined the benefits of group work learning in preparation for the pharmacy profession. Even so, findings from this study and that of Alshammari may present certain challenges regarding the role of gender since Princess Nourah Bint Abdul Rahman University (PNU) is a female-only university.

In sum, the results of this study find academics or the year of study to be the major source of perceived stress amongst the student populations that were involved in the study. Even though other variables had varying levels of impacts on a student's academic performance, academic factors are directly under the control of the management of the learning institution, and thus there is a greater possibility to vary such predisposing factors to the advantage of the overall students' stress levels. However, further research will be of greater necessity to determine whether it will be possible or even desirable.

CONCLUSION

The purpose of the study was to examine the stress profile and university performance of pharmacy students. A survey questionnaire was electronically administered to the study participants (n=591) to collect socio-demographic data, the student's overall academic cumulative GPA, and stress indicators. Following quantitative analysis of the collected data, the study findings were as follows: no relationship was found between academic performance and academic stress; no correlation between age and academic stress; and a significant relationship was found between the year of study and academic stress. The year of study was found to contribute to different worries, such as the fear of failing a course, facing parents after failure, success in pharmacy subjects, challenges in learning precision skills, difficulty in understanding literature, as well as increasing patient and clinic responsibilities among other factors. The findings from this study will inform future development of stress management programs targeting pharmacy students.

Ethics Approval

The study approval was granted by the IRB with KACST, KSA (log number: 18-0334).

ACKNOWLEDGMENT

This research was funded by the Deanship of Scientific Research at Princess Nourah bint Abdulrahman University through the Fast-track Research Funding Program.

REFERENCES

- Al-Dubai, S. A. R., Al-Naggar, R. A., Alshagga, M. A., Rampal, K. G. 2011. Stress and coping strategies of students in a medical faculty in Malaysia. *Malaysian Journal of Medical Sciences*, 18(3).
- Alshammari, E. 2018. Quality of group work learning: Pharm. D. students' experience from Saudi Arabia. *International Research Journal of Pharmacy*, 9:50–52.
- Alzahem, A., Molen, Alaujan, Boer 2014. Stress management in dental students: a systematic review. *Advances in Medical Education and Practice*, 4(5):167–176.
- Alzayyat, A., Al-Gamal, E. 2014. A review of the literature regarding stress among nursing students during their clinical education. *International Nursing Review*, 61(3):406–415.
- Babar, M. G., Hasan, S. S., Ooi, Y. J., Ahmed, S. I., Wong, P. S., Ahmad, S. F., Malik, N. A. 2015. Per-

- ceived sources of stress among Malaysian dental students. *International Journal of Medical Education*, 6:56–61.
- Bayram, N., Bilgel, N. 2008. The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology*, 43(8):667–672.
- Birks, Y., McKendree, J., Watt, I. 2009. Emotional intelligence and perceived stress in healthcare students: A multi-institutional, multi-professional survey. *BMC Medical Education*, 9(1):61.
- Crego, A., Carrillo-Diaz, M., Armfield, J. M., Romero, M. 2016. Stress and Academic Performance in Dental Students: The Role of Coping Strategies and Examination-Related Self-Efficacy. *Journal of Dental Education*, 80(2):165–172.
- Eva, E. O., Islam, M. Z., Mosaddek, A. S. M., Rahman, M. F., Rozario, R. J., Iftekhar, A. F. M. H., Haque, M. 2015. Prevalence of stress among medical students: a comparative study between public and private medical schools in Bangladesh. *BMC Research Notes*, 8(1):327.
- Gallagher, C. T., Mehta, A. N. V., Selvan, R., Mirza, I. B., Radia, P., Bharadia, N. S., Hitch, G. 2014. Perceived stress levels among undergraduate pharmacy students. *Currents in Pharmacy Teaching and Learning*, 6(3):437–441.
- Goldhagen, B., Kingsolver, K., Stinnett, S., Rosdahl, J. 2015. Stress and burnout in residents: Impact of mindfulness-based resilience training. *Advances in Medical Education and Practice*, 6:525–532.
- Lou, P., Qin, Y., Zhang, P., Chen, P., Zhang, L., Chang, G., Zhang, N. 2015. Association of sleep quality and quality of life in type 2 diabetes mellitus: A cross-sectional study in. *China. Diabetes Research and Clinical Practice*, 107(1):69–76.
- Opoku-Acheampong, A., Kretchy, I. A., Acheampong, F., Afrane, B. A., Ashong, S., Tamakloe, B., Nyarko, A. K. 2017. Perceived stress and quality of life of pharmacy students in the University of Ghana. *BMC Research*, 10(1):115.
- Riet, P., Rossiter, R., Kirby, D., Dluzewska, T., Harmon, C. 2015. Piloting a stress management and mindfulness program for undergraduate nursing students: Student feedback and lessons learned. *Nurse Education Today*, 35(1):44–49.
- Sariyildiz, M., Batmaz, I., Bozkurt, M., Bez, Y., Cetincakmak, M., Yazmalar, L., et al. 2014. Sleep quality in rheumatoid arthritis: the relationship between the disease severity, depression, functional status and the quality of life. *Journal of clinical medicine research*, 6(1):44.
- Sinha, U. K., Sharma, V., Nepal, M., et al. 2001. Development of a scale for assessing academic stress: a preliminary report. *Journal of the Institute of Medicine*, 23:102–5.
- Suldo, S. M., Shaunessy, E., Thalji, A., Michalowski, J., Shaffer, E. 2009. Sources of stress for students in high school college preparatory and general education programs: Group differences and associations with adjustment. *Adolescence*, 44(176):925–948.
- Sun, L., Gao, Y., Yang, J., Zang, X. Y., Wang, Y. G. 2016. The impact of professional identity on role stress in nursing students: A cross-sectional study. *International Journal of Nursing Studies*, 63:1–8.
- Sun, S. H., Zorah, A. 2015. Assessing Stress among Undergraduate Pharmacy Students in the University of Malaya. *Indian Journal of Pharmaceutical Education and Research*, 49(2):99–105.