



## Perceived Stress Levels and Stressors in Undergraduate Pharmacy Students' at a Nigerian Tertiary Institution

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A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation; D – writing the article; E – critical revision of the article; F – final approval of article.

### Abstract

**Background:** While everyone can be affected by stress, there is evidence to suggest that students might be more prone.

**Objective:** To assess perceived stress levels and well-being among undergraduate pharmacy students' of Ahmadu Bello University, in addition to identifying common stressors and coping mechanisms used by the students.

**Methods:** A survey was conducted on second to fifth year undergraduate pharmacy students of the institution from August to November 2019. A self-administered questionnaire was used to collect data about the students' socio-demographic characteristics, stress levels (Perceived Stress Scale-10), well-being (World Health Organization-5 well-being index), stressors and coping strategies. Student t-tests, analysis of variance (ANOVA) and Pearson's bivariate correlation were used to compare means and correlations between variables.  $P < 0.05$  was considered as statistically significant.

**Results:** Of the 350-questionnaire distributed, 328 were returned producing a 93.7% response rate. Majority of respondents were males (63.1%), and in their third year of study (29.3%). The mean PSS-10 score was  $18.4 \pm 4.9$ , and a statistically significant difference in scores were seen across gender ( $p = 0.001$ ). Over half of the participants (72.8%) also scored 51% or higher on the WHO-5 index. Their most common stressors were volume of course materials 184 (56.1%) and financial constraints 158 (48.2%) respectively. More than half of respondents (64.5%) also sought for emotional support from their families to cope with stress. A statistically significant ( $p < 0.001$ ) negative weak correlation (-0.3) was seen when PSS-10 and WHO-5 scores were compared.

**Conclusion:** Perceived stress levels in female undergraduate pharmacy students were higher than those in their male counterparts, and most of the students had at least good well-being.

**Keywords:** Nigeria; Perceived stress; Pharmacy students; Stressors; Well-being

### INTRODUCTION

Stress can be defined as any situation(s) that disturb the equilibrium between a living organism and its environment (Ranabir and Reetu, 2011), while stressors are environmental factors/situations that can trigger stress (Felman 2020). While often associated with negative life events, even positive changes such as a work promotion or the birth of a child can produce stress (Felman, 2020).

Stress is a normal part of everyday life, and only becomes pathological when it exceeds the handling capacity of the human body, and begins to cause physiological or emotional signs and/ symptoms (Felman, 2020). These effects may range from mild symptoms like headaches and dizziness to more serious ones involving multiple body systems and leading to life threatening conditions and death (Yaribeygi *et al.*, 2017). Research has shown the presence of a relationship between stress and increased levels of depression, drug abuse, anxiety and even

suicide (Racic *et al.*, 2017). There is also evidence showing that higher levels of stress increase the likelihood of onset of type 2 diabetes, heart and other circulatory diseases (APA, 2018). Thus, it is not surprising that the World Health Organization (WHO) is of the opinion that mental health diseases including stress disorders will be the second leading cause of disabilities by 2020 (Saraceno *et al.*, 2005).

Research has revealed that students often experience a substantial amount of stress, which in turn can lead to negative academic outcomes, poor quality of life or health problems (Hanna *et al.*, 2018; Alkatheri *et al.*, 2020). This stress can interfere with the students' physical and mental health, academic success and other aspects of their life unless they learn appropriate coping strategies (Khan *et al.*, 2013). Research on stress levels in undergraduate students has been increasing over the years (Elias *et al.*, 2011; Al Rasheed *et al.*, 2017; Reddy *et al.*, 2018; Ribeiro *et al.*, 2018) with available evidence suggesting that several environmental, academic, economic and personal factors either singly or in combination, contribute to the development or perpetuation of the moderate to high stress levels often encountered in this population (James *et al.*, 2017; Hanna *et al.*, 2018).

While several studies from all over the world (Assaf, 2013; Gallagher *et al.*, 2014; Votta and Benau, 2013; AlShagga *et al.*, 2015; Opoku-Acheampong *et al.*, 2017) have assessed perceived stress levels in pharmacy students, it is somewhat difficult to

authoritatively conclude on this phenomenon due to variations in the instruments used to measure stress and differences in study populations. There is however some evidence to suggest that pharmacy students demonstrate a comparatively higher prevalence of perceived stress than other students (Mardea *et al.*, 2020), and this stress can adversely affect their health and quality of life (Assaf, 2013). In Nigeria, not much research has been done on stress levels and related outcomes (e.g. quality of life) in pharmacy students. Okoro *et al.*, (2020) studied the quality of life of pharmacy students in three pharmacy schools in Northern Nigeria, and concluded that the students surveyed had fair overall quality of life. Aluh *et al.*, (2020) also studied the prevalence of depression, anxiety and stress in pharmacy students from seven universities within the country, using the 21-item Depression, Anxiety and Stress Scale (DASS) questionnaire. They found out that less than 20% of their respondents had moderate to severe levels of stress. Since there is still insufficient information about perceived stress levels and related outcomes among pharmacy students in Nigeria (especially using the Perceived Stress Scale (PSS-10) and WHO-5 well-being index), the aim of this study was to assess perceived stress levels and well-being of undergraduate pharmacy students of Ahmadu Bello University, Zaria, in addition to identifying common stressors and coping mechanisms used by these students.

## METHODOLOGY

### *Study site and population*

The study was conducted at the Faculty of Pharmaceutical Sciences of Ahmadu Bello University, Zaria, Nigeria. The faculty currently runs a five-year Bachelor of Pharmacy (BPharm) program with about six hundred and fifty students. All second to fifth year students of the faculty were eligible to participate if they were willing. The faculty has a total of 830 students, using Raosoft online sample size calculator for a population of less than 1000, 263 was the calculated sample size which was scaled up to 350 to cover for any loss or incomplete data and a simple random sampling was used to select participants across the levels.

### *Study design*

The study was a descriptive survey utilizing a questionnaire which was carried out from August to November 2019.

### *Study instrument*

A self-administered structured questionnaire was used to collect data. The questionnaire had five sections. The first section collected demographic information

about the respondents including age, gender, level of study, mode of entry into the university etc. The second section collected information about respondents' well-being using the World Health Organization (WHO-5) well-being index. It is one of the most commonly used tools worldwide to assess subjective psychological well-being of individuals (Topp *et al.*, 2015). All the statements in the index are positively worded and framed in relation to how an individual felt within the past two weeks. These statements are completed using responses on a six-point scale, ranging from all of the time to at no time. The raw score is calculated by totaling the figures of the answers and can range from 0-25, this is the multiplied by 4 to obtain the percentage where 0% denotes worst quality of life and 100% denotes best quality of life. For this study we grouped 0-50% as having poor well-being and 51-100% as good well-being. Section three collected information about respondents' perceived stress levels using the Perceived Stress scale PSS-10 (Cohen *et al.*, 1983).

This instrument has been widely validated and used in the measurement of stress perception across various populations. The instrument contains 10 questions (both positively and negatively worded) that ask respondents about various aspects of their feelings and thoughts over the last month. These questions are answered using a five-point scale that ranges from never (scored 0) to very often (scored 4). Sections four and five collected information about factors that could cause stress to respondents (stressors), and stress-coping mechanisms used by them, respectively. These questions were adapted from earlier studies (Yasmin *et al.*, 2013; Awé *et al.*, 2016; Opoku-Acheampong *et al.*, 2017; Hanna *et al.*, 2018), and participants were given the choice to select as many options as applied to them.

#### *Data collection*

Students were approached by one of the researchers (a final year student) in the designated lecture theater for their class during lecture free periods, and the objectives of the study briefly described to them. They were then asked if they would be willing to participate, and those who agreed were given the questionnaire and allowed seven days to complete it. They were informed to return the completed questionnaires back to their class representative, where they were eventually retrieved.

#### *Data analysis*

Data collected was coded and analyzed using SPSS version 22, IBM Corporation. Participants' well-being assessed using the WHO-5 well-being index was calculated by assigning numeric values (ranging from 5 to 0) to each of the responses on the 6-point scale.

## **RESULTS**

Of the 350 questionnaires distributed, 328 were fully completed and returned indicating a response rate of 93.7%. Majority of the respondents were males (63.1%), and their mean perceived stress score was  $17.8 \pm 4.8$  (Table 1). However, the mean perceived stress score for females was higher ( $19.6 \pm 4.9$ ), and showed a statistically significant difference ( $p < 0.01$ )

Thus, any respondent could have a total raw score ranging from 0 to a maximum of 25. This raw score was then multiplied by 4 to obtain the well-being index score as a percentage, which was then categorized. For the PSS-10 scale, while responses to the negatively worded questions were scored using the numeric values from 0-4 assigned to each of the five possible responses, positively worded items (items 4, 5, 7 and 8) were scored by reversing scores to the responses of those items (i.e., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0). A total score for each participant was then obtained by summing across all ten scale items, and participants could have a total score ranging from 0-40.

Descriptive statistics (frequencies, percentages and means) were used to present the results for demographic data, stressors and stress coping mechanisms. Student t-tests and analysis of variance (ANOVA) and Pearson's bivariate correlation were used to compare means and correlation between PSS-scores and some demographic information like gender, level, mode of entry, and also wellbeing, a p value  $< 0.05$  was considered significant for all analyses.

#### *Ethical considerations*

Ethical approval was obtained from the Human Research Ethics Committee of Ahmadu Bello University prior to the commencement of the study (Approval number: ABUCUHSR/2019/UG/004). In addition, no information that could be used to identify respondents was collected, and all information collected was securely handled and used only for study purposes.

when compared with the average score for males. Majority of participants were in their third year of study (29.3%) and had the highest mean stress scores in their category ( $19.0 \pm 5.3$ ), even though there was no statistically significant difference in mean PSS scores across the year of study category as also seen in Table 1.

**Table 1: Average scores for participant’s perceived stress by demographic characteristics (n=328)**

Variable	n (%)	Mean Perceived Stress Scores ± SD	p- value
<i>Gender</i>			
<b>Male</b>	207 (63.1)	17.8 ± 4.81	0.001
<b>Female</b>	121 (36.9)	19.6 ± 4.94	
<i>Religion</i>			
<b>Islam</b>	261 (79.6)	18.3 ± 4.8	0.288
<b>Christianity</b>	67 (20.4)	19.9 ± 5.6	
<i>Year of study</i>			
<b>Year 2</b>	91 (27.7)	18.8 ± 4.9	0.190
<b>Year 3</b>	96 (29.3)	19.0 ± 5.3	
<b>Year 4</b>	75 (22.9)	18.3 ± 4.6	
<b>Year 5</b>	66 (20.1)	17.4 ± 4.7	
<i>Age (years)</i>			
<b>15-20</b>	93 (28.4)	19.1 ± 4.8	0.449
<b>21-25</b>	173 (52.7)	18.3 ± 4.9	
<b>&gt;25</b>	62 (18.9)	17.8 ± 5.1	
<i>Secondary education</i>			
<b>Public</b>	199 (60.7)	19.2 ± 4.8	< 0.001
<b>Private</b>	129 (39.3)	17.3 ± 4.9	
<i>Mode of entry</i>			
<b>Unified Tertiary Matriculation Examination</b>	252 (76.8)	18.6 ± 5.0	0.430
<b>Direct entry</b>	76 (23.2)	18.1 ± 4.6	

When participants were assessed using the WHO-5 well-being index scale, majority of the participants 239 (72.8%) had good well-being as their well-being index falls between the ranges of 51-100. When total scores from both the PSS-10 and WHO-5 well-being index were correlated, a statistically significant ( $p < 0.01$ ) weak correlation of -0.3 was also seen.

Sources of stress to the study participants is shown below in Table 2. Generally, some of the more common stressors for the students were degree related, and had to do with volume of course materials (56.1%), their lecture schedules (55.8%) and practical (53.1%). Other common general stressors included finance (48.2%) and personal health issues (43.6%).

**Table 2: Sources of stress in participants**

<b>Class</b>	<b>Specific stressor</b>	<b>n (%)</b>
<b>General stressors</b>		
	Financial	158 (48.2)
	Parental expectations	82 (25.0)
	Employment opportunities	49 (14.9)
	Health	
	a) Personal	143 (43.6)
	b) Friends	33 (10.1)
	c) Family	69 (21.0)
	Relationship problems	
	a) Romantic	69 (21.0)
	b) Family	43 (13.1)
	c) Issues with friends	94 (28.7)
	Issues related to use of social media	94 (28.7)
<b>Degree specific stressors</b>		
	Continuous assessments	169 (51.5)
	Working relationship	
	a) With peers/ other students	109 (33.2)
	b) With staff	30 (9.1)
	Lecture Schedule	183 (55.8)
	Volume of course materials	184 (56.1)
	Practical sessions	174 (53.1)
	Giving oral presentations	72 (22.0)

Stress coping mechanisms used by the participants are outlined below in Table 3. The most common coping

mechanisms used by the students included seeking for emotional support from their families (64.5%) and friends (39.3%), and praying (41.5%).

**Table 3: Stress coping mechanisms used by participants**

Coping Mechanism	n (%)
Emotional support from	
a) Family	211 (64.5)
b) Friends	129 (39.3)
Talking to health care professionals	62 (19.0)
Talking to staff Advisors	64 (19.5)
Alcohol intake	10 (3.0)
Making plans to deal with it	32 (9.8)
Cigarette smoking	13 (4.0)
Weed/Hashish	13 (4.0)
Extracurricular activities	
a) Sports	102 (31.1)
b) Meditation	84 (25.6)
c) Prayers	136 (41.5)
Making fun out of the situation	105 (32)
Over the counter drug use	63 (19.2)

## DISCUSSION

This study assessed perceived stress levels and well-being among undergraduate pharmacy students of Ahmadu Bello University, in addition to identifying common stressors and coping mechanisms used by them. Study findings include that the mean PSS-10 score for participants was  $18.4 \pm 4.9$ , and statistically significant differences in mean PSS scores were seen across gender and type of secondary school attended by the participants. Well-being of majority of them was categorized as good based on their WHO-5 index scores. The most commonly reported degree-specific and general stressors were volume of course materials and financial constraints, respectively. Finally, more than half of respondents primarily sought for emotional support from their families to cope with stress.

Even though the PSS is not a diagnostic instrument and it can only be used to make comparisons between samples, higher scores are believed to predict greater stress levels (Gallagher *et al.*, 2014). In this study, the overall mean perceived stress score was  $18.4 \pm 4.9$ , and mean PSS scores were significantly higher in females. Other studies that have assessed perceived stress levels in pharmacy students using the PSS-10 scale have reported somewhat similar mean score values of between 18-20 for their respondents (Votta and Benau, 2013; Opoku-Acheampong *et al.*, 2017;

Hanna *et al.*, 2018); although a few studies (Gallagher *et al.*, 2014; Alshagga *et al.*, 2015) have reported higher values, with mean values going as high as 30. Several of these studies have equally reported higher mean PSS scores in female respondents (Gallagher *et al.*, 2014; Beall *et al.*, 2015; Opoku-Acheampong *et al.*, 2017; Hanna *et al.*, 2018).

The WHO-5 well-being index measures psychological well-being (Topp *et al.*, 2015), which is believed to be related to quality of life. Using this index, the mean score of respondents in this study was around 60%, with majority of them scoring 51% or higher. This is very similar to the results from a study in Romanian dental students that also reported a 60% mean score (Preoteasa *et al.*, 2015). In addition, when mean scores from both the PSS-10 and WHO-5 well-being index were compared, inverse proportionality was seen, implying that lower well-being was associated with higher perceived stress scores. This finding is to be expected as quality of life would be expected to decrease as perceived stress levels increase, and this effect has been reported in other studies (Opoku-Acheampong *et al.*, 2017; Alkatheri *et al.*, 2020).

Some of the more common stressors identified by participants in this study were volume of course materials and financial constraints. This is consistent with findings from Opoku-Acheampong *et al.*, (2017)

and Hanna *et al.*, (2018) in Ghana and Ireland respectively, where the students also identified large volume of study materials and financial constraints as some of their most common stressors. Other studies by Yasmin *et al.*, (2013) and Beall *et al.*, (2015) also reported that assessments and examinations, as well as personal health concerns were also stressors for pharmacy students.

The coping strategies used by majority of the respondents in this study included seeking for emotional support from their families and praying.

## CONCLUSION

It can be concluded that perceived stress levels in female undergraduate pharmacy students of Ahmadu Bello University Zaria, were higher than those in their male counterparts, and most of the students had at least good well-being. Common stressors for them included financial issues and course material volume, while

Emotional support from family and/ friends seems to be a major stress coping strategy for pharmacy students, as this finding has been reported in several other studies (Yasmin *et al.*, 2013; Beall *et al.*, 2015; Opoku-Acheampong *et al.*, 2017; Hanna *et al.*, 2018). On the other hand, very few participants in this study reported smoking weed/ hashish and using alcohol to cope with their stress. This was contrary to other findings (Beall *et al.*, 2015; Awé *et al.*, 2016; Hanna *et al.*, 2018), where alcohol intake was used by a third or more of respondents as a stress coping mechanism.

family support was their most reported stress coping strategy. There may be a need to review the undergraduate pharmacy curriculum, with a view towards reducing the quantity of materials provided to the students, in addition to establishing a financial support scheme to assist them

## REFERENCES

- Alkatheri, A., Bustami, R., Albekairy, A., Alanizi, A., Alnafesah, R., & Almodaimegh, H. et al. (2020). Quality of Life and Stress Level among Health Professions Students. *Health Professions Education*, 6(2), 201-210. doi: 10.1016/j.hpe.2019.11.004
- Al Rasheed, F., Naqvi, A., Ahmad, R., & Ahmad, N. (2017). Academic Stress and Prevalence of Stress-Related Self-Medication among Undergraduate Female Students of Health and Non-Health Cluster Colleges of a Public Sector University in Dammam, Saudi Arabia. *J Pharm Bioallied Sci*, 9(4), 251-258. doi: 10.4103/jpbs.JPBS\_189\_17
- AlShagga, M., Nasir, N., Behzadnia, A., Jasamai, M., Al-Absi, A., & Al-Dubai, S. (2015). Perceived stress and sources of stress among pharmacy students in Malaysian public and private universities: a comparative study. *Pharmacy Education*, 15(1), 64-68.
- Aluh, D., Abba, A., & Afosi, A. (2020). Prevalence and correlates of depression, anxiety and stress among undergraduate pharmacy students in Nigeria. *Pharmacy Education*, 20(1), 236-248. doi: 10.46542/pe.2020.201.236248
- APA. (2018). Stress effects on the body. Retrieved 18 September 2020, from <https://www.apa.org/topics/stress-body>
- Assaf, A. (2013). Stress-induced immune-related diseases and health outcomes of pharmacy students: A pilot study. *Saudi Pharm J*, 21(1), 35-44. doi: 10.1016/j.jsps.2012.02.006
- Awé, C., Gaither, C., Crawford, S., & Tieman, J. (2016). A Comparative Analysis of Perceptions of Pharmacy Students' Stress and Stressors across Two Multicampus Universities. *Am J Pharm Educ*, 80(5), 82. doi: 10.5688/ajpe80582
- Beall, J., DeHart, R., Riggs, R., & Hensley, J. (2015). Perceived Stress, Stressors, and Coping Mechanisms among Doctor of Pharmacy Students. *Pharmacy*, 3(4), 344-354. doi: 10.3390/pharmacy3040344
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *J Health Soc Behav*, 24(4), 385-396. doi: 10.2307/2136404
- Elias, H., Ping, W., & Abdullah, M. (2011). Stress and Academic Achievement among Undergraduate Students in Universiti Putra Malaysia. *Procedia - Social and Behavioral Sciences*, 29, 646-655. doi: 10.1016/j.sbspro.2011.11.288
- Felman, A. (2020). Stress: Why does it happen and how can we manage it?. Retrieved 18 September 2020, from <https://www.medicalnewstoday.com/articles/145855>
- Gallagher, C., Mehta, A., Selvan, R., Mirza, I., Radia, P., Bharadia, N., & Hitch, G. (2014). Perceived stress levels among undergraduate pharmacy students in the UK. *Curr Pharm Teach Learn*, 6(3), 437-441. doi: 10.1016/j.cptl.2014.02.004
- Hanna, L., Wilson, M., Hall, M., & Hanna, A. (2018). A Questionnaire Study to Investigate Stress among Future Pharmacists by Gender and Year Group. *Pharmacy*, 6(3), 75. doi: 10.3390/pharmacy6030075

- James, B., Thomas, I., Omoaregba, J., Okogbenin, E., Okonoda, K., & Ibrahim, A. *et al.* (2017). Psychosocial correlates of perceived stress among undergraduate medical students in Nigeria. *Int J Med Educ*, 8, 382-388. doi: 10.5116/ijme.59c6.3075
- Khan, K., Gulzar, S., & Yahya, F. (2013). Crucial Factors Affecting Stress: A Study among Undergraduates in Pakistan. *International Journal of Asian Social Science*, 3(2), 428-442.
- Mardea, N., Widayanti, A., & Kristina, S. (2020). Stress level comparison between pharmacy students and non-pharmacy students in Indonesia. *International Journal of Pharmaceutical* 12(3):204-209  
[10.31838/ijpr/2020.12.03.026](https://doi.org/10.31838/ijpr/2020.12.03.026)
- Okoro, R., Muslim, J., & Biambo, A. (2020). Quality of life of pharmacy students in Northern Nigeria. *Int J Pharm Pract*, 28(4), 395-404. doi: 10.1111/ijpp.12624
- Opoku-Acheampong, A., Kretchy, I., Acheampong, F., Afrane, B., Ashong, S., Tamakloe, B., & Nyarko, A. (2017). Perceived stress and quality of life of pharmacy students in University of Ghana. *BMC Res Notes*, 10, 115. doi: 10.1186/s13104-017-2439-6
- Preoteasa, C., Mircescu, G., Buzea, M., & Preoteasa, E. (2015). Sources of Stress and Well-being in Dental Students. *Romanian Journal of Oral Rehabilitation*, 7(1), 28-32.
- Ranabir, S., & Reetu, K. (2011). Stress and hormones. *Indian J Endocrinol Metab*, 15(1), 18-22. doi: 10.4103/2230-8210.77573
- Reddy, K., Menon, K., & Thattil, A. (2018). Academic Stress and its Sources among University Students. *Biomed Pharmacol J*, 11(1), 531-537. doi: 10.13005/bpj/1404
- Racic, M., Todorovic, R., Ivkovic, N., Masic, S., Joksimovic, B., & Kulic, M. (2017). Self-perceived stress in relation to anxiety, depression and health-related quality of life among health professions students: A cross-sectional study from Bosnia and Herzegovina. *Zdr Varst*, 56(4), 251-259. doi: 10.1515/sjph-2017-0034
- Ribeiro, Í., Pereira, R., Freire, I., de Oliveira, B., Casotti, C., & Boery, E. (2018). Stress and Quality of Life among University Students: A Systematic Literature Review. *Health Professions Education*, 4(2), 70-77. doi: 10.1016/j.hpe.2017.03.002
- Saraceno, B., Levav, I., & Kohn, R. (2005). The public mental health significance of research on socio-economic factors in schizophrenia and major depression. *World psychiatry: official journal of the World Psychiatric Association (WPA)*, 4(3), 181-185.
- Topp, C., Østergaard, S., Søndergaard, S., & Bech, P. (2015). The WHO-5 Well-Being Index: A Systematic Review of the Literature. *Psychother Psychosom*, 84(3), 167-176. doi: 10.1159/000376585
- Votta, R., & Benau, E. (2013). Predictors of stress in doctor of pharmacy students: Results from a nationwide survey. *Curr Pharm Teach Learn*, 5(5), 365-372. doi: [10.1016/j.cptl.2013.06.014](https://doi.org/10.1016/j.cptl.2013.06.014)
- Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T., & Sahebkar, A. (2017). The impact of stress on body function: A review. *EXCLI J*, 16, 1057-1072. doi: 10.17179/excli2017-480
- Yasmin, R., Asim, S., Ali, H., Quds, T., & Zafar, F. (2013). Prevalence of Perceived Stress among Pharmacy students in Pakistan. *International Journal of Pharmaceutical Sciences Review and Research*, 23(2), 343-347.

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