

REVIEW

A Scoping Review of Well-being Assessment and Interventions in Student Pharmacists

Katelynn Mayberry, PharmD,^a Lorenzo Villa Zapata, PharmD, PhD,^a Michael Byers,^a Maria Miller Thurston, PharmD^{a,b}

^a Mercer University, College of Pharmacy, Atlanta, Georgia

^b Editorial Board Member, American Journal of Pharmaceutical Education, Arlington, Virginia

Submitted June 29, 2021; accepted August 31, 2021; published August 2022.

Objective. To review the literature assessing student pharmacist well-being and the impact of well-being-associated interventions.

Findings. Of the 15 studies included, six assessed student pharmacist well-being while nine evaluated the impact of a well-being intervention. While various approaches exist to assessing student pharmacist well-being, the body of literature suggests, overall, that student pharmacist well-being is poor. Since well-being is multifaceted and individualized, some pharmacy schools have identified various ways to incorporate tailored well-being activities, including mindfulness, into required, elective, and cocurricular experiences within the Doctor of Pharmacy program, with varying outcomes.

Summary. This review highlights the limited and variable information available on the assessment of student pharmacist well-being as well as unique strategies to incorporate well-being initiatives into Doctor of Pharmacy curricula. Schools of pharmacy should identify the well-being needs of student pharmacists through a standardized well-being assessment instrument and provide meaningful well-being resources and interventions within the curriculum. There is a growing need for faculty to invest in student pharmacist mental wellness in addition to academic success. Future accreditation standards will inform the Academy on how to advance well-being initiatives.

Keywords: Student pharmacist, well-being, wellness, mindfulness, curriculum

INTRODUCTION

Well-being is a state of health encompassing the physical, emotional, and mental conditions of an individual. In 1954, the World Health Organization (WHO) originally defined health as “not merely the absence of disease or infirmity, but a state of complete physical, mental, and social well-being.”¹ The WHO later updated the definition to “a state of well-being in which every individual realizes his/her/their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his/her/their community.”² The WHO acknowledges that there is no universally accepted definition of well-being due to differing cultural perspectives and concepts, which range from socioeconomic status and quality of personal relationships to simply being happy.³ When a person’s well-being becomes compromised over a long period of time, mental health issues may arise. These

conditions contribute to job burnout, decreased work productivity, as well as feelings of exhaustion and depletion.

Mental health and well-being are of special importance to colleges and schools of pharmacy. Within the Accreditation Council for Pharmacy Education (ACPE) standards for Doctor of Pharmacy degree programs, Standards 14 and 15 mention health and wellness in regard to promoting wellness and healthy behaviors in the management of various disease states focused on patient care. The Standards also call for pharmacy programs to have appropriate resources to promote student success and well-being.⁴

In 2019, the American Association of Colleges of Pharmacy (AACP) collaborated with the ACPE, the American Pharmacists Association, the National Association of Boards of Pharmacy, and the National Alliance of State Pharmacy Associations to provide recommendations for student pharmacist well-being. This consensus report underscored the importance of applying strategies that address self-care techniques for well-being and preventing burnout, rewards and incentives for engaging in well-being activities, and formal training to address behavioral

Corresponding Author: Maria Miller Thurston, Mercer University, College of Pharmacy, 3001 Mercer University Dr., DuVall 161, Atlanta, GA 30341. Tel: 678-547-6253. Email: Thurston_mm@mercer.edu

health. These types of interventions are more valuable than ever due to the stress pharmacists and student pharmacists have experienced while serving communities during the COVID-19 pandemic.⁵

It is imperative to assess and understand the well-being of student pharmacists to best craft methods of outreach, support, and intervention. Such methods may help student pharmacists avoid negative coping strategies in practice and, thus, provide optimal levels of patient care and support. However, well-being is extremely difficult to quantify because well-being has a dynamic, evolving definition tied to many subjective factors. Multiple survey instruments have been developed in an attempt to appropriately assess well-being.⁶⁻⁹

The objective of this scoping review is twofold; in order to determine the gaps and limitations in available literature, the review aims to examine current assessments and measurements of student pharmacist well-being and evaluate interventions used to improve student pharmacist well-being.

METHODS

Following the Arksey and O'Malley framework,¹⁰⁻¹¹ this scoping review was undertaken to identify studies that assessed student pharmacists' well-being and any well-being-associated interventions employed in the pharmacy curriculum. This review was conducted in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR).

Three electronic databases (PubMed, ERIC, and Embase) were searched using a combination of keywords and Medical Subject Headings (MeSH). Due to the limited amount of literature available, the initial search term of *student pharmacist well-being* yielded insufficient evidence. The authors broadened the search to all health care professionals and higher education students to retrieve a sufficient number of articles for screening. In order to capture all the possible well-being literature on this novel topic, the authors did not set a time limit on the articles retrieved. Keywords included the following terms: *students, public health/psychology, students, medical/psychology, students, pharmacy/psychology, burnout, psychological, health, health promotion, wellness, wellbeing, well-being, and well being*. MeSH terms included *student/pharmacy, health, and health promotion*. To further identify articles assessing student pharmacist well-being or targeted well-being interventions, the investigators also conducted a manual review of references of the included articles to identify relevant articles not found in the initial search.

One hundred twenty-seven results were imported into the reference management software Zotero, (Corporation for Digital Scholarship). Screening was undertaken by four reviewers. Each member reviewed all imported articles and scanned the reference list of each included article to identify other potential articles. Studies were included if they pertained to assessments of well-being in student pharmacists or reported on curricular activities in pharmacy education that focused on well-being. Studies that involved interprofessional education were included if pharmacy was one of the disciplines evaluated. The investigators considered articles published only in the English language. All study designs were eligible. Studies were excluded if they did not focus on student pharmacists' well-being. The assessments of well-being strategies described in each paper were tagged with appropriate keywords and were also categorized with subheadings of the well-being domains defined by the Centers for Disease Control and Prevention (CDC) (physical, economic, social, emotional, psychological, life satisfaction, and engaging activities).¹² The process of tagging studies to well-being categories was accomplished through prospective discussions among the reviewers about the studies' parameters. For example, studies that assessed students' perceptions of stress using the Perceived Stress Scale were tagged to both the survey/questionnaire and stress/stress management categories, while an article describing how a well-being mindfulness activity was incorporated into the curriculum was tagged to the mindfulness/curriculum/intervention category.

RESULTS

Screening in the abstract phase excluded 75 results, leading to 52 results for potential eligibility (Figure 1). Each of the included studies and were reviewed in detail by the research team. After a detailed full-text review of the 52 articles, 15 (n = 2309 students) were included in the results based on the set criteria and tagged accordingly (Appendix 1).

Of the 15 articles included in this review, seven of the studies (n = 507 students) were conducted in the United States, and eight (n = 1555 students) were conducted internationally. Six of the studies sought to assess student pharmacist well-being using various rating scales (n = 1589 students). Four other studies incorporated a well-being intervention into the pharmacy curriculum (n = 193 students), while the effects of mindfulness implementation were assessed in the remaining five studies (n = 280 students). Investigating student pharmacist well-being is a fairly new concept, as all included studies except one were published after 2019.

Six studies assessed the well-being of student pharmacists (Appendix 2), and each study chose a different

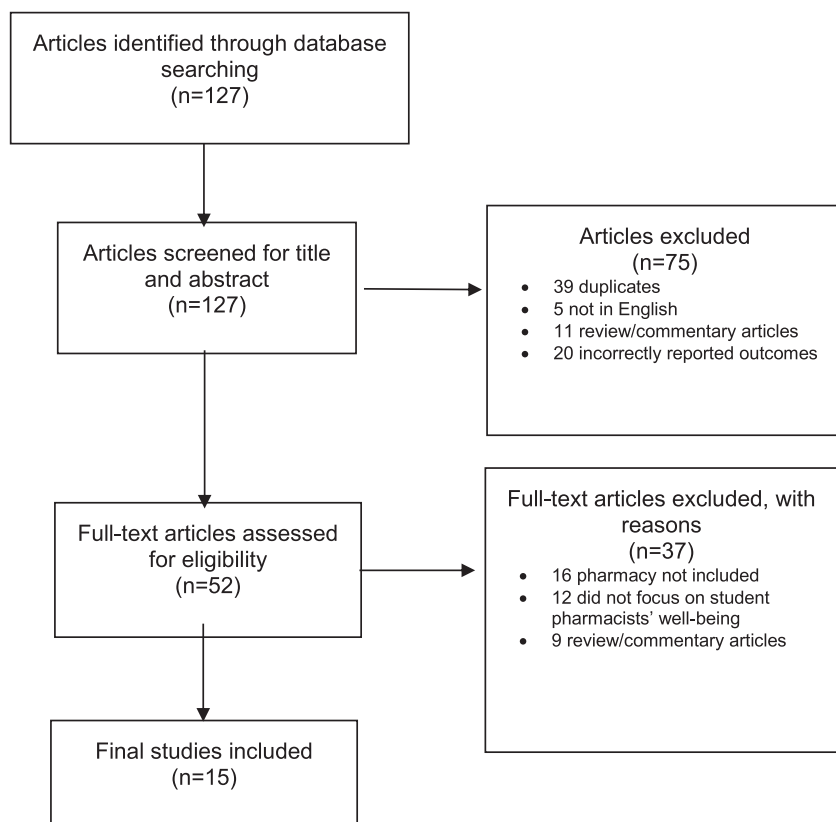


Figure 1. Flowchart of study selection according to PRISMA-ScR guidelines.

approach to assessing it. One study evaluated the quality of life (QOL) of 711 student pharmacists as a predictor of well-being by using a validated WHO-BREF instrument.¹³ The investigators found that 82.1% of the students had a fair overall QOL and poor well-being in all four domains. The RAND 36-Item Health Survey (RAND-36) is another widely used scale that measures QOL. One pharmacy school assessed 104 first- and third-year student pharmacists (representing 53% of study participants) using the RAND-36, which assesses the domains of emotional well-being, physical pain, and emotional functioning, and found a decline in well-being in third-year student pharmacists.¹⁴ In another study, other schools of pharmacy assessed psychological well-being in 447 student pharmacists (representing 98.9% of study participants) as a composite of three survey instruments: the Diener Mood Rating Scale (MRS), the Rosenberg Self-Esteem Scale (SES), and Satisfaction with Life Scale (SWLS). By using a composite result of these domains, the investigators drew conclusions regarding student pharmacists' psychological well-being and its positive relationship with burn-out.¹⁵ Another study conducted a qualitative assessment of 49 (36.8% of the study participants) first-year student pharmacists' well-being was conducted through thematic analysis of student pharmacists' reflections on personal

well-being. Investigators conducted the analysis by coding the student pharmacists' reflections of their own well-being and developing unique factors of well-being based on their specific student population. Factors of well-being discovered through the thematic analysis included workload, learning environment culture and values, meaningful pharmacy school experiences, relationships, and personal factors.¹⁶ While the aforementioned studies assessed student pharmacists' well-being at a single point in time, only one study assessed student pharmacists' well-being longitudinally. In this study, a longitudinal assessment of 76 first-year student pharmacists (100% of study participants) was conducted with a survey instrument that defined well-being by the Gallup well-being domains and assessed the students for 29 weeks. By assessing student pharmacists' well-being over time, the investigators discovered that different domains of well-being can fluctuate throughout the course of a year.¹⁷ The final study included was conducted at the University of Ghana and evaluated student pharmacists at two time points in order to discern a relationship between perceived stress and how it impacted quality of life.¹⁸

Recent literature is raising awareness that many student pharmacists are experiencing poor well-being; to address this, colleges and schools of pharmacy have

implemented different strategies to incorporate well-being activities into pharmacy curricula (Appendix 3). Some studies have included semester-long interventions, while others have incorporated one-day activities. Certain schools have opted to include well-being activities within a cocurricular experience, while others have embedded well-being initiatives within a required or elective course. Nine studies included in this analysis developed a targeted intervention to improve student pharmacist well-being. In Finland, one school of pharmacy incorporated a seven-week optional course that was structured in an acceptance and commitment therapy (ACT) format. The ACT course format included an introduction to the psychoeducational method, audio and visual experiential exercises, and participant reflections. The investigators found that for 40 students (86% of study participants), well-being and time management increased during the course.¹⁹ Another example of a longitudinal well-being activity was performed at the University of Kentucky, where four, month-long well-being activities were introduced in a required pharmacy course in which participation was optional for extra credit. These well-being activities involved a single, month-long challenge that students incorporated into their daily routines and wrote reflections on at the end of each month, which were aimed at “nudging” long-term behavioral changes to improve well-being. The 126 students (93% of the study participants) that completed the challenges reported that they attempted to continue the healthy habits, as they found them useful.²⁰ As an alternate strategy, another study incorporated a single well-being activity into a required course. The University of Waterloo incorporated a single “Check-In” activity into a required course; the Check-In consisted of a background reading, an in-person lecture component, and a faculty-student mentoring session.²¹ The investigators found that the 76 student pharmacists (63% of study participants) reported the Check-In activity as rewarding, and both students and faculty reported it as a positive experience. Finally, at one school of pharmacy, 49 first-year student pharmacists (36% of study participants) wrote reflections on personal well-being in one of the required courses in the curriculum. These reflections were then used to find common themes (availability and accessibility of institutional resources, personal time management and organizational strategies, personal mental health and physical health strategies, and activities that maintain social relationships), and a discussion and lecture on well-being then followed.²² All of the aforementioned strategies have unique benefits and limitations.

Of the nine studies that included a targeted intervention in the curriculum to improve student pharmacists’ well-being, five studies specifically focused on mindfulness and meditation, which are techniques that have been

used to help nurture well-being. The strategy of mindfulness meditation in particular has been used for decades to help reduce stress and promote overall well-being.²³ Some pharmacy schools have incorporated mindfulness activities to promote well-being in student pharmacists, such as in one study, which incorporated use of the mindfulness meditation app Headspace. In this study, 92 student pharmacists (70% of study participants) voluntarily practiced 10 minutes of mindfulness meditation in the app every day for four weeks as an extracurricular activity. Results demonstrated enhanced mental well-being as well as decreased perceived stress.²⁴ Another university incorporated a voluntary, extracurricular six-month yoga and meditation class to help improve student well-being through anxiety and stress reduction.²⁵ Seventeen students, including nine students (53% of study participants) from the school of pharmacy experienced an improvement in their mindfulness and a decrease in their perceived stress scores. Finally, in another study, a school of pharmacy in Ireland incorporated a voluntary four-week mindfulness course into the pharmacy curriculum.²⁶ Compared to the 48 control participants who did not engage in the mindfulness course, the 51 student pharmacists who did realized a significant decrease in stress and increase in mindfulness. This mindfulness course originated from ideas generated through the thematic analysis of contributions from focus groups, in which student pharmacists vocalized interest in incorporating mindfulness as a coping skill for stress reduction.²⁷ The thematic analysis of feedback from 20 student pharmacists revealed five key elements: so much to do with so little time, the role of lecturers, wanting to do well, learning by doing, and using mindfulness as a coping tool. This mindfulness course consisted of a two-hour class session with group discussions followed by 20-minute at-home exercises each week. After incorporating the in-person mindfulness course, the pharmacy school also developed a four-week online delivery version of the same course with similar results. Fifty-two student pharmacists (37% of study participants) experienced a significant increase in professional efficacy and observation skills and a decrease in stress levels.²⁸

DISCUSSION

The concept of assessing and promoting wellness in health care professionals, such as nursing and medical students, is not new. Numerous publications have also assessed and highlighted the mental health challenges experienced by student pharmacists, which include stress, anxiety, depression, and burnout. However, literature focused specifically on student pharmacists’ well-being is limited.²⁹⁻³⁰ Although the authors of this review have found publications on how to assess the well-being of

student pharmacists, each publication used a different assessment tool, which may be because well-being is multifactorial in nature, and the term has no universally accepted definition.

Since promoting well-being is multifaceted, the approach can be varied and individualized to meet the unique needs of the individuals involved. Our results yielded diverse interventional approaches to help promote the well-being of student pharmacists. Additionally, since well-being is subjective to the individual, debate may exist on how to best incorporate well-being initiatives that meet the needs of a diverse student body. One approach is to incorporate unique well-being activities into the required curriculum or cocurricular activities. Most schools of pharmacy already require a seminar class or professional development course as part of their curricula, which may serve as a useful location for such programming. Other approaches include making targeted well-being experiences an elective or optional activity in which students can voluntarily participate. Out of the targeted interventions reviewed, all yielded positive feedback from the students who participated.

Initiatives involving student well-being seem to have gained traction in 2017-2018, when the charge to the AACP Student Affairs Standing Committee was to develop a resource guide for its members on how to implement well-being strategies for student pharmacists. The report recommended discussions and programming on the topic of well-being, the creation of a well-being task force, and the curricular integration of well-being.³¹ In 2018-2019, the AACP Academic Affairs Standing Committee was charged with assessing and promoting student pharmacists' well-being.³² The 2018-2019 Academic Affairs Report recommended that the AACP should consider developing programs that can evaluate student pharmacists' well-being and identify factors affecting well-being.³² The standing committee's reports have led to the development of policies for schools of pharmacy that may influence future well-being initiatives,³³ and in 2018, the AACP hosted a Fall Institute on strategies to promote a culture of well-being among students and faculty. The committee's charge for 2022 is to develop a resource guide for member institutions to help with implementing holistic well-being strategies for all students, faculty, and staff.³⁴ The newly created AACP Well-being and Resiliency Community is also developing a Well-being Toolkit for its member institutions.³⁵

The American Pharmacists Association (APhA) published its recommendations from its National Consensus Conference, including that schools should offer ongoing education and training on student pharmacist well-being and that ACPE standards require annual well-being assessments for student pharmacists to guide organizational initiatives.⁵

In response to this, the draft of Standards 2025 addresses student pharmacists' well-being specifically in Standards 14 and 15, which emphasize the importance of developing organizational resources and services to support well-being as well as specific policies to promote a well-being-friendly environment.³⁶ Once finalized, these future accreditation standards will likely include more defined key elements associated with student pharmacist well-being. In the meantime, schools of pharmacy can use the aforementioned AACP Policies on Professional Education as guidance.³³

Promoting well-being is needed now more than ever, especially for student pharmacists. With the inclusion of well-being recommendations in the draft of Standards 2025, it is crucial now for all major organizations/associations to collaborate on well-being initiatives for standardization. After reviewing the literature, it would be helpful for colleges of pharmacy to share a standard definition of student pharmacist well-being that is incorporated into its governing documents. Future researchers could develop a standardized and validated instrument to assess well-being, specifically geared toward student pharmacists. If a standard definition and assessment can be determined, this would lead to a possible secondary meta-analysis to measure impactful interventions and their associated outcomes. One limitation to standardization is that the interpretation of individual well-being is contingent upon subjective experiences and diverse backgrounds.

Experts have also proposed possible approaches to nurturing well-being in student pharmacists. One expert stated, "Well-being initiatives in a college of pharmacy should focus on decreasing student perceived stress and increasing perceptions of satisfaction and fulfillment."³⁷ Well-being initiatives for student pharmacists can come from interested individuals, dedicated faculty, and student organizations in schools of pharmacy. One thematic analysis of first-year student pharmacists yielded four individual approaches on how to cope with stress and well-being. The four main areas that students identified as fruitful for promoting well-being were in personal health, time management, socialization, and the use of institutional resources.²² The investigators found that student pharmacists who were more involved in cocurricular activities studied more, had higher GPAs, and had stronger relationships with faculty, staff, and peers.¹⁶ Religion and spirituality of student pharmacists also positively affected their emotional and mental well-being, which are also important for student success.³⁸ Another recommendation was for the establishment of faculty and staff cohorts that assist and support students who have low resilience and well-being. Student organizations can also develop events to promote resilience and well-being supplemental to curricular teachings; these events could include healthy meal offerings,

organized exercise activities, outside speakers, social events, and community service.³⁹ Identifying and recruiting students, faculty, and staff members to lead these initiatives would provide diverse perspectives on well-being and would decrease the burden on individual students.⁴⁰

It is imperative for schools of pharmacy to identify opportunities for targeted interventions tailored specifically to the needs of their own students rather than adopting a universal intervention. It is unlikely that a universally accepted well-being intervention will be practically relevant for all students. Common themes that arose from this review suggest that well-being interventions could address the availability of organizational resources, offer personal self-help strategies, and incorporate mindfulness within the curriculum. These themes could help guide schools of pharmacy when crafting institution-specific well-being interventions. One example of meeting the organizational resource need is that schools could incorporate a certified Mental Health First Aid (MHFA) training course for their students. The MHFA training program has been shown to help mitigate the stigma of mental health struggles and nurture a well-being culture within a school of pharmacy.⁴¹ The APhA has also partnered with the Mayo Clinic for students to use the My Well-being Index Assessment app, which allows individuals to track their well-being and plot their progress over time. Not only does it keep a record of one's progress, but it also shows how one's well-being compares to the average well-being scores of all pharmacists. Additionally, the app provides tailored resources to meet identified well-being needs.⁴² This app is an example of how to support students with self-help strategies.

Well-being and COVID-19

The COVID-19 pandemic has taken a toll on student pharmacists' career well-being, social well-being, financial well-being, physical well-being, and community well-being, as outlined by Gallup.⁴³ With new virtual and remote learning environments, students may have increased anxiety about completing their coursework efficiently. The ever-changing landscape of pharmacy education amid COVID-19 has led to a delay in research opportunities as well as missed professional meetings and ceremonies. Students have also become anxious about how they will conduct their experiential rotations and take licensing examinations. Schools of pharmacy may need to assist students with potential well-being challenges arising from the COVID-19 pandemic, such as by helping students focus on what they can control, such as maintaining a regular schedule, and promoting emotional well-being by doing something they enjoy each day.⁴⁴

CONCLUSION

Promoting student pharmacists' well-being is a multifaceted initiative. Several avenues exist for assessing well-being and for providing impactful interventions based on the perceived needs and the culture of a student body. Student pharmacists are the future of the pharmacy profession, and schools of pharmacy must nurture students' well-being, not only in terms of academic performance but also emotional health. Incorporating a "well-being curriculum" is critical for student success following the COVID-19 pandemic. Pharmacy faculty are well positioned to talk to students and advise them that well-being challenges may arise during their time in pharmacy school. During these conversations, caring, openness, and understanding are of the utmost importance.

REFERENCES

1. Misselbrook D. W is for wellbeing and the WHO definition of health. *Br J Gen Pract.* 2014;64(628):582. doi:10.3399/bjgp14X682381
2. Herrman H, Saxena S, Moodie R, World Health Organization, Victorian Health Promotion Foundation, University of Melbourne, eds. *Promoting Mental Health: Concepts, Emerging Evidence, Practice.* World Health Organization; 2005.
3. Multilateral agencies launch a joint plan to boost global health goals. WHO International. <https://www.who.int/news/item/24-09-2019-multilateral-agencies-launch-a-joint-plan-to-boost-global-health-goals>. Accessed August 11, 2022.
4. Accreditation Council for Pharmacy Education. *Accreditation Standards and Key Elements for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree ("Standards 2016").* Published February 2015. <https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf>. Accessed August 11, 2022.
5. Enhancing Well-Being and Resilience Among the Pharmacist Workforce: A National Consensus Conference. *Pharmacist.com.* <https://aphanet.pharmacist.com/enhancing-well-being-and-resilience-among-pharmacist-workforce-national-consensus-conference>. Accessed August 11, 2022.
6. Mirza W, Mirza AM, Saleem MS, et al. Well-being assessment of medical professionals in progressive levels of training: derived from the WHO-5 well-being index. *Cureus.* 2018;10(12):e3790. doi:10.7759/cureus.3790
7. Garcia-Williams AG, Moffitt L, Kaslow NJ. Mental health and suicidal behavior among graduate students. *Acad Psychiatry.* 2014; 38(5):554-560. doi:10.1007/s40596-014-0041-y
8. Huo T, Guo Y, Shenkman E, Muller K. Assessing the reliability of the short form 12 (SF-12) health survey in adults with mental health conditions: a report from the wellness incentive and navigation (WIN) study. *Health Qual Life Outcomes.* 2018;16(1):34. doi:10.1186/s12955-018-0858-2
9. Sabourin AA, Prater JC, Mason NA. Assessment of mental health in doctor of pharmacy students. *Curr Pharm Teach Learn.* 2019; 11(3):243-250. doi:10.1016/j.cptl.2018.12.004
10. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Meth.* 2005;8(1):19-32. doi: 10.1080/1364557032000119616
11. Levac D, Colquhoun H, O'Brien D. Scoping studies: advancing the methodology. *Implement Sci.* 2010;5:Article 69.

12. CDC. Well-Being Concepts. Centers for Disease Control and Prevention. Published 2019. <https://www.cdc.gov/hrqol/wellbeing.htm>. Accessed August 11, 2022.
13. Okoro RN, Muslim JO, Biambo AA. Quality of life of pharmacy students in Northern Nigeria. *Int J Pharm Pract*. 2020;28(4):395-404. doi:10.1111/ijpp.12624
14. Edgell ET, Caplette MD, Gregor KJ, Flynn MT, Coons SJ. Well-being and functional status of pharmacy students: a preliminary assessment. *J Phary Tech*. 1997;13(2):84-88. doi:10.1177/875512259701300210
15. Cho E, Jeon S. The role of empathy and psychological need satisfaction in pharmacy students' burnout and well-being. *BMC Med Educ*. 2019;19(1):43. doi:10.1186/s12909-019-1477-2
16. Abraham O, Babal JC, Brasel KV, Gay S, Hoerneke M. Strategies first year doctor of pharmacy students use to promote well-being. *Curr Pharm Teach Learn*. 2021;13(1):29-35. doi:10.1016/j.cptl.2020.08.005
17. Hagemeyer NE, Carlson TS, Roberts CL, Thomas M. A longitudinal analysis of first professional year pharmacy student well-being. *Am J Pharm Educ*. 2020;84(7):ajpe7735. doi:10.5688/ajpe7735
18. Opoku-Acheampong A, Kretchy IA, Acheampong F, et al. Perceived stress and quality of life of pharmacy students in University of Ghana. *BMC Res Notes*. 2017;10(1):115. doi:10.1186/s13104-017-2439-6
19. Asikainen H, Kaipainen K, Katajavuori N. Understanding and promoting students' well-being and performance in university studies. *Journal of University Teaching and Learning Practice*. 2019;16(5):4-19. doi:10.53761/1.16.5.2
20. Cain J. Effectiveness of Issuing Well-being Challenges to nudge pharmacy students to adopt well-being protective behaviors. *Am J Pharm Educ*. 2020;84(8):ajpe7875. doi:10.5688/ajpe7875
21. Fernandes HVJ, Richard C, Bynkoski K, Ewan B, Houle SKD. Check-in: an educational activity to address well-being and burnout among pharmacy students. *Pharmacy*. 2020;8(4):184. doi:10.3390/pharmacy8040184
22. Babal JC, Abraham O, Webber S, Watterson T, Moua P, Chen J. Student pharmacist perspectives on factors that influence wellbeing during pharmacy school. *Am J Pharm Educ*. 2020;84(9):ajpe7831. doi:10.5688/ajpe7831
23. Jon Kabat-Zinn. MBSR Mindfulness Training Research- Mindfulness Training. *MBSR Mindfulness Training Research*. <https://mbsrtraining.com/mbsr-mindfulness-training-research/>. Accessed August 11, 2022.
24. Zollars I, Poirier TI, Paidden J. Effects of mindfulness meditation on mindfulness, mental well-being, and perceived stress. *Curr Pharm Teach Learn*. 2019;11(10):1022-1028. doi:10.1016/j.cptl.2019.06.005
25. Lemay V, Hoolahan J, Buchanan A. Impact of a Yoga and Meditation Intervention on Students' Stress and Anxiety Levels. *Am J Pharm Educ*. 2019;83(5):7001. doi:10.5688/ajpe7001.
26. O'Driscoll M, Sahn LJ, Byrne H, Lambert S, Byrne S. Impact of a mindfulness-based intervention on undergraduate pharmacy students' stress and distress: Quantitative results of a mixed-methods study. *Curr Pharm Teach Learn*. 2019;11(9):876-887. doi:10.1016/j.cptl.2019.05.014
27. O'Driscoll M, Byrne S, Kelly M, Lambert S, Sahn LJ. A Thematic Analysis of Pharmacy Students' Experiences of the Undergraduate Pharmacy Degree in Ireland and the Role of Mindfulness. *Am J Pharm Educ*. 2019;83(1):6457. doi:10.5688/ajpe6457
28. O'Driscoll M, Byrne S, Byrne H, Lambert S, Sahn LJ. An online mindfulness-based intervention for undergraduate pharmacy students: Results of a mixed-methods feasibility study. *Curr Pharm Teach Learn*. 2019;11(9):858-875. doi:10.1016/j.cptl.2019.05.013
29. Garber MC, Huston SA, Breese CR. Sources of stress in a pharmacy student population. *Curr Pharm Teach Learn*. 2019;11(4):329-337. doi:10.1016/j.cptl.2019.01.014
30. Hirsch JD, Nemlekar P, Phuong P, et al. Patterns of Stress, Coping and Health-Related Quality of Life in Doctor of Pharmacy Students. *Am J Pharm Educ*. 2020;84(3):7547. doi:10.5688/ajpe7547
31. Miller ML, Boyer C, Emerson MR, et al. Report of the 2017-2018 Student Affairs Standing Committee. *Am J Pharm Educ*. 2018;82(7):7159. doi:10.5688/ajpe7159
32. Gregory DF, Boje KM, Carter RA, et al. Leading Change in Academic Pharmacy: Report of the 2018-2019 AACP Academic Affairs Committee. *Am J Pharm Educ*. 2019;83(10):7661. doi:10.5688/ajpe7661
33. American Association of Colleges of Pharmacy House of Delegates. *AACP Policies on Professional Education*; 2020. https://www.aacp.org/sites/default/files/2021-04/hod_commulative_policy_1980_2020.pdf. Accessed August 11, 2022.
34. American Association of Colleges of Pharmacy Committees. *AACP Standing Committees*.; 2022. <https://www.aacp.org/article/aacp-committees>. Accessed August 11, 2022
35. American Association of Colleges of Pharmacy. AACP Connect. Wellbeing and Resiliency Community; 2021. <https://connect.aacp.org/communities/groupdetails?CommunityKey=2e163c71-d2c8-4cbe-a178-2f8337c7723f&Token=3A26398D-270C-43D1-A0EC-C11D41A6D9AF>. Accessed August 11, 2022
36. Accreditation Counsel for Pharmacy Education. ACPE Standards 2025 Revision Feedback; 2021. https://acep-accredit.formstack.com/forms/standards_revision. Accessed August 11, 2022
37. Haas J, Pamulapati LG, Koenig RA, Keel V, Ogbonna KC, Caldas LM. A call to action: Pharmacy students as leaders in encouraging physical activity as a coping strategy to combat student stress. *Curr Pharm Teach Learn*. 2020;12(5):489-492. doi:10.1016/j.cptl.2020.01.001
38. Purnell MC, Johnson MS, Jones R, et al. Spirituality and Religiosity of Pharmacy Students. *Am J Pharm Educ*. 2019;83(1). doi:10.5688/ajpe6795
39. Kang K, Lopez CFO, Fear BS, Granko RP. Tactics to improve resilience and well-being among pharmacy students. *Am J Health Syst Pharm*. 2019;76(18):1374-1376. doi:10.1093/ajhp/zxz143
40. Schlesselman LS, Cain J, DiVall M. Improving and Restoring the Well-being and Resilience of Pharmacy Students during a Pandemic. *Am J Pharm Educ*. 2020;84(6):ajpe8144. doi:10.5688/ajpe8144
41. McCormack Z, Gilbert JL, Ott C, Plake KS. Mental health first aid training among pharmacy and other university students and its impact on stigma toward mental illness. *Curr Pharm Teach Learn*. 2018;10(10):1342-1347. doi:10.1016/j.cptl.2018.07.001
42. My Well-being Index. *Pharmacist Well-being Index*. Mayo Clinic. <https://www.mywellbeingindex.org/versions/pharmacist-well-being-index>. Accessed on August 11, 2022.
43. Stone JK, Pate AN. The Impact of COVID-19 Through the Eyes of a Fourth-Year Pharmacy Student. *Am J Pharm Educ*. 2020;84(6):ajpe8146. doi:10.5688/ajpe8146
44. Brazeau GA, Frenzel JE, Prescott WA Jr. Facilitating Wellbeing in a Turbulent Time. *Am J Pharm Educ*. 2020;84(6):ajpe8154. doi:10.5688/ajpe8154

Appendix 1. Descriptions of Studies Pertaining to the Well-being of Student Pharmacists

Citation and Tags	Objective	Population
Well-being assessment		
Okoro, 2019 ¹³ QOL of pharmacy students in Northern Nigeria Tags: Pharmacy student Well-being Survey and questionnaire self-assessment Quality of life	To assess the QOL of Nigerian pharmacy students To investigate QOL predictors	Student pharmacists from three schools in Nigeria (n=711)
Edgell, 1995 ¹⁴ Well-Being and functional status of pharmacy students: A preliminary assessment Tags: Pharmacy student Well-being Survey and questionnaire Self-reported	To investigate how pharmacy education affects the health status of student pharmacists	First- or third-year student pharmacists at the University of Arizona College of Pharmacy (n=196)
Cho and Jeon, 2019 ¹⁵ The role of empathy and psychological need satisfaction in pharmacy students' burnout and well-being Tags: Pharmacy student Burnout Empathy Well-being Survey and questionnaire Self-assessment	To examine the relationship between student pharmacists' empathy and psychological need satisfaction, levels of burnout, and psychological well-being	Student pharmacists from five South Korean universities (n=452)
Babal and Abraham, 2020 ¹⁶ Student pharmacist perspectives of factors that influence well-being during pharmacy school Tags: Pharmacy student Well-being Stress Curriculum Student reflection Thematic analysis	To explore first-year student pharmacists' perspectives on the influence of individual, educational system, and health care system factors on their well-being	First-year student pharmacists at the University of Wisconsin in a required course who consented to participate during the study period February-June 2019 (n=49)
Hagemeier, 2020 ¹⁷ A longitudinal analysis of first professional year pharmacy student well-being Tags: Pharmacy student Well-being Survey and questionnaire Self-assessment Cantril self-anchoring scale Gallup well-being domains	To assess and characterize student pharmacists' well-being across the first professional year To determine the relationship between the number of exams taken, GPA, and well-being scores	First-year student pharmacists at East Tennessee State University (n=76)

(Continued)

Appendix 1. (Continued)

Citation and Tags	Objective	Population
<p>Opoku-Acheampong, 2017¹⁸ Perceived stress and QOL of pharmacy students in University of Ghana</p> <p>Tags: Pharmacy student Well-being Survey and questionnaire Self-reported Quality of life</p> <p>Required curricular well-being interventions</p>	To assess the relationship between stress and QOL of student pharmacists	Student pharmacists at the University of Ghana (n=110)
<p>Asikainen, 2019¹⁹ Understanding and promoting students' well-being and performance in university studies</p> <p>Tags: Pharmacy student Well-being Stress Curriculum Student reflection Survey and questionnaire</p>	To examine student pharmacists' experiences of a small ACT-based intervention that was implemented as a seven-week course with weekly online modules	Student pharmacists from the University of Helsinki, Finland (n=40)
<p>Cain, 2020²⁰ Effectiveness of issuing well-being challenges to nudge pharmacy students to adopt well-being protective behaviors</p> <p>Tags: Pharmacy student Well-being Curriculum Survey and questionnaire</p>	To assess the effectiveness of well-being challenges in a pharmacy management course To influence student adoption of positive well-being behaviors	Third-year student pharmacists at the University of Kentucky (n=136)
<p>Fernandes, 2020²¹ Check-In: An educational activity to address well-being and burnout among pharmacy students</p> <p>Tags: Pharmacy student Well-being Curriculum Student reflection</p>	To develop an active-learning activity, called <i>Check-In</i> , to teach and reflect on health care provider burnout	Student pharmacists from University of Waterloo School of Pharmacy (n=120)
<p>Abraham, 2020²² Strategies first year Doctor of Pharmacy students use to promote well-being</p> <p>Tags: Pharmacy student Well-being Curriculum Student reflection Thematic analysis</p>	To assess strategies that first-year student pharmacists utilize to manage stress and promote well-being throughout the program	First-year student pharmacists from the University of Wisconsin (n=49)

(Continued)

Appendix 1. (Continued)

Citation and Tags	Objective	Population
Mindfulness cocurricular well-being interventions		
Zollars, 2019 ²⁴ Effects of mindfulness meditation on mindfulness, mental well-being, and perceived stress Tags: Pharmacy student Well-being Mindfulness Survey and questionnaire Self-assessment Headspace Perceived stress	To investigate the effects of mindfulness meditation using the Headspace app on mindfulness, mental well-being, and perceived stress in student pharmacists	First- through third-year student pharmacists at Southern Illinois School of Pharmacy (n=92)
Lemay, 2019 ²⁵ Impact of a yoga and meditation intervention on students' stress and anxiety levels Tags: Pharmacy student Well-being Stress management Mindfulness Survey and questionnaire Self-assessment Yoga	To evaluate the impact of a six-week yoga and meditation intervention on college students' stress perception, anxiety levels, and mindfulness skills	Students from the University of Rhode Island, including student pharmacists (n=20)
Mindfulness elective curricular well-being interventions		
O'Driscoll, 2019 ²⁷ A thematic analysis of pharmacy students' experiences of the undergraduate pharmacy degree in Ireland and the role of mindfulness Tags: Pharmacy student Well-being Focus groups Stress management Thematic analysis Mindfulness	To determine student pharmacists' experiences of stress as a part of the current pharmacy degree To explore the potential of incorporating the principles of mindfulness into the curriculum	Student pharmacists in all years from five schools in Ireland (undergraduate degree) (n=20)
O'Driscoll 2019 ²⁶ Impact of a mindfulness-based intervention on undergraduate pharmacy students' stress and distress: Quantitative results of a mixed-methods study Tags: Pharmacy student Well-being Mindfulness Curriculum Survey and questionnaire Self-assessment	To assess the quantitative effects of a mindfulness-based intervention on student pharmacists' stress, distress, burnout, and mindfulness levels	Student pharmacists from one school of pharmacy in Ireland (n=99)

(Continued)

Appendix 1. (Continued)

Citation and Tags	Objective	Population
O'Driscoll, 2019 ²⁸ An online mindfulness-based intervention for undergraduate pharmacy students: Results of a mixed-methods feasibility study Tags: Pharmacy student Well-being Survey questionnaire Mindfulness Curriculum Stress management Self-assessment	To assess the feasibility and acceptability of an online mindfulness-based intervention To determine its effect on student pharmacists' well-being	Student pharmacists from four schools in Ireland (undergraduate degree) (n=139)

Abbreviations: ACT=acceptance and commitment therapy; GPA=grade point average; QOL=quality of life

Appendix 2. Results of Studies Assessing Student Pharmacist Well-being

Citation	Design/Tools	Results ^a	Comments
Okoro, 2019 ¹³ QOL of pharmacy students in Northern Nigeria	Cross-sectional descriptive study WHOQOL-BREF questionnaire Multiple linear regression analysis identified predictors of QOL	Response rate was 81.2% QOL mean (SD) score out of 100 was 76.94 (17.65) Being Christian, a fifth-year student, and having a current illness/problem negatively affected overall QOL ($p<.05$) Schooling in the state of residence, active involvement with student organizations/clubs, and having a current illness/problem negatively affected the environment domain ($p<.05$)	Students had a fair overall QOL and poor well-being in all four domains Religion, state of residence, year of study, organizations/clubs and current illness/problem were the significant predictors of QOL Limitations: Cross-sectional design instead of longitudinal cohort to assess well-being at an individual level may have resulted in recall bias related to historical information
Edgell, 1995 ¹⁴ Well-being and functional status of pharmacy students: A preliminary assessment	Well-being was assessed using the RAND 36-Item Health Survey	Response rate was 84% No significant mean score differences were found between the classes, and the mean scores for the first-year class remained stable during the semester ($p=.53$) The third-year class's mean scores for the emotional well-being and emotional problem-related role functioning scales decreased	Pharmacy school may affect students' functioning and well-being in different and unique ways Limitations: Small sample size and students did not have to participate in both surveys

(Continued)

Appendix 2. (Continued)

Citation	Design/Tools	Results ^a	Comments
		significantly during the semester ($\Delta 7.3, p=.04$)	
Cho and Jeon, 2019 ¹⁵ The role of empathy and psychological need satisfaction in pharmacy students' burnout and well-being	Students were surveyed with several scales and results used structural equation modeling The Jefferson Scale of Empathy (Health Professions Students version) assessed empathy The Activity-Feeling States Scale assessed psychological need satisfaction The Maslach Burnout Inventory Student Survey assessed burnout Mood Rating Scale, Self-Esteem Scale, and Satisfaction with Life Scale assessed psychological well-being	Response rate was 98.9% (n=447) Empathy was positively associated with psychological well-being ($\beta=0.18$) Perceived satisfaction of psychological needs was positively related to psychological well-being ($\beta=0.59$) Perceived satisfaction or psychological needs was strongly and negatively related to burnout ($\beta=-0.71$)	This study assessed well-being from a mood rating scale, self-esteem scale, and satisfaction with life scale Education systems should consider students' empathy and psychological needs for student success and well-being Limitations: Results used mean scores instead of individual items and were correlations, thus not allowing for determination of a causal relationship
Babal and Abraham, 2020 ¹⁶ Student pharmacist perspectives of factors that influence well-being during pharmacy school	Student pharmacists were required to submit reflective essays detailing the factors that most significantly contributed to their well-being Qualitative thematic analysis was performed using open and axial coding, hierarchical categorization, and representative theme determination	36.8% (n=49) students submitted reflective essays for analysis Five themes were identified for pharmacy student well-being: workload; learning environment culture and values; meaningful pharmacy school experiences; relationships; and personal factors Student pharmacists did not consistently identify health care system factors as influencing well-being	This study assessed well-being through thematic analysis Student pharmacists identified both education system and individual factors that influenced well-being Limitations: Small sample size of only first-year students at a single institution
Hagemeier, 2020 ¹⁷ A longitudinal analysis of first professional year pharmacy student well-being	Students answered six questions (Likert scale 1-7) during each two-hour weekly class session (29 weeks) Questions based on Gallup-defined well-being domains: career well-being, community well-being, financial well-being, physical well-being, and social well-being Score of 1-2 equaled suffering, 3-4 equaled struggling and 5-7 equaled striving	100% (n=76) students completed the study All domains decreased by the end of fall semester (career mean= 5.5 vs 4.8, $p>.001$; community mean= 5.4 vs 4.5, $p<.001$; financial mean= 4.7 vs 3.9, $p=.001$; physical mean= 5.0 vs 4.1, $p<.001$; social mean= 5.5 vs 5.0, $p=.016$; overall mean= 5.3 vs 4.8, $p=.003$) Social well-being increased after winter break (mean= 4.5 vs 4.8, $p=.018$) Physical well-being was the largest predictor of overall well-being in the fall Social/career well-being was the largest predictor for overall well-being in the	This study assessed well-being with a Likert scale from Gallup-defined well-being domains Demonstrated well-being fluctuates throughout the semester Limitations: Small sample size of only first-year students at a single institution

(Continued)

Appendix 2. (Continued)

Citation	Design/Tools	Results ^a	Comments
Opoku-Acheampong, 2017 ¹⁸	The 10-item PSS and the WHOQOL scale were administered to the same participants at two time points: Time 1 (four weeks into the semester) and Time 2 (eight weeks afterward)	<p>spring</p> <p>Overall well-being was positively affected by number of exams ($r=.56, p<.05$)</p> <p>71.4% (n=110) students completed the study</p> <p>The mean stress scores were higher at Time 2 compared to Time 1</p> <p>No significant difference in stress for different year group ($p=.44$)</p> <p>Female students had higher stress scores compared to male students (19.6 vs 17.4)</p> <p>The main stressors identified were large volume of material to be studied, laboratory report writing, constant pressure to maintain good grades, and lack of leisure time</p>	<p>The study reported relationships between stress and various domains of QOL</p> <p>Limitations: Only one school of pharmacy was surveyed and study did not account for nonresponse bias</p>

^a *p* values are reported when available

Abbreviations: PSS=Perceived Stress Scale; QOL=quality of life; WHOQOL-BREF=World Health Organization Quality of Life Instrument

Appendix 3. Results of Studies Evaluating the Impact of Well-being Interventions on Student Pharmacists

Citation	Design/Tools	Results ^a	Comments
Asikainen, 2019 ¹⁹	Students' well-being, experiences of stress, organized studying, and psychological flexibility were measured with questionnaires at the beginning and end of a course	45.7% (n=21) consented to analysis	This study demonstrated that online course interventions can foster students' well-being and study skills
Understanding and promoting students' well-being and performance in university studies	Students' experiences of how the course affected studying were analyzed from open-ended responses and reflective journaling	Students' well-being and time management increased during the course ($\Delta 4.66, p=.001$)	More research is needed to identify the long-lasting effects
Cain, 2020 ²⁰	Well-being activities were implemented into a required course with an extra credit point for each completion (0.2%)	Students experienced that the course affected their studying	Limitations: Small sample size and potential reporting bias
Effectiveness of issuing well-being challenges to nudge pharmacy students to adopt well-being protective behaviors	Focused on four challenges: cell phone use, feelings of gratitude, sleep, and exercise	93% (n=126) student pharmacists completed at least one activity, and 21% (n=28) completed all four activities	This promotes a strategy to include optional well-being assignments in a required course
	Postactivity survey captured completion, intention to continue, and purpose for doing said activity	Main reason for completion was for extra credit followed by promoting well-being	"Low cost" assignments led to a shift in positive well-being behaviors
		46%-66% of participants stated intent to continue the well-being habits	Limitations: The success of long-term adoption was based on self-reported data

(Continued)

Appendix 3. (Continued)

Citation	Design/Tools	Results ^a	Comments
Fernandes, 2020 ²¹ Check-In: An educational activity to address well-being and burnout among pharmacy students	Check-In course comprised a 20-minute online lecture on health care provider burnout, two prereadings on burnout among physicians, and an optional one-on-one session between individual students and faculty or staff member Students rated their current mental health on a 10-point scale from reflection guide and reflected on questions focusing on energy expenditure, self-care, and self-compassion within the past, present, and future	63% (n=76) student pharmacists participated in the activity Check-In was reported as rewarding and overall positive for students and faculty The personal connection with members from the school and the placement of the activity within the curriculum contributed to the success of the activity	Limitations: Short duration of individual sessions and feedback was self-reported
Abraham, 2020 ²² Strategies first-year Doctor of Pharmacy students use to promote well-being	Students were enrolled in the second semester of their first year of a four-year PharmD program Students were required to write a two-page reflection before a small group discussion and lecture on their overall well-being while in a social and administrative sciences course Open and axial coding was conducted on the reflections using qualitative thematic analysis	36.8% (n=49) student pharmacists reported multiple strategies to help cope with stressors and improve their well-being Four themes emerged, including availability and accessibility of institutional resources; personal time management and organizational strategies; personal mental and physical health strategies; and activities that maintain social relationships	First-year students are actively thinking about and participating in well-being activities Colleges and schools of pharmacy need to understand well-being strategies students use and identify approaches for supporting student needs Limitations: Single school of pharmacy included and low participation rate
Zollars, 2019 ²⁴ Effects of mindfulness meditation on mindfulness, mental well-being, and perceived stress	Meditation using the Headspace app for at least 10 minutes per day for four weeks Students at baseline completed the HPLP Data was collected from the pre- and postintervention surveys using the FFMQ, WEMWBS, and Cohen PSS	70% (n=92) student pharmacists completed the study Data revealed the intervention was associated with enhanced mindfulness and mental well-being and decreased perceived stress ($p<.001$) Further analysis indicated that controlling for various health-promoting lifestyle behaviors preserves the positive impact of mindfulness meditation as demonstrated	Mindfulness meditation improved the participants' overall mental health The data indicate benefits to pharmacy schools adopting these practices in their curriculum Limitations: Students volunteered instead of being selected and potential incentive bias

(Continued)

Appendix 3. (Continued)

Citation	Design/Tools	Results ^a	Comments
Lemay, 2019 ²⁵ Impact of a yoga and meditation intervention on students' stress and anxiety levels	Six-week pilot program of a 60-minute vinyasa flow yoga class once weekly, followed by guided meditation by trained faculty members Students completed pre- and postintervention questionnaires to evaluate changes in stress levels, anxiety levels, and mindfulness skills The questionnaires consisted of the BAI, the PSS, and the FFMQ	85% participants completed the study (n=17) Nine of the students were enrolled in the Doctor of Pharmacy program and eight were enrolled in other academic programs Students' anxiety and stress scores decreased significantly, while their total mindfulness increased significantly (BAI median scores=-9, $p<.001$; PSS median scores=-8, $p<.001$; FFMQ median scores=4.0, $p<.001$) Changes in categorical data from pre- to postintervention on the BAI and PSS were significant, with no students scoring in the "high" category for stress or anxiety on the postintervention questionnaire	Results suggest adopting a mindfulness practice may reduce stress and anxiety in student pharmacists Limitations: Small sample size, short duration, and self-reported outcomes
O'Driscoll, 2019 ²⁷ A thematic analysis of pharmacy students' experiences of the undergraduate pharmacy degree in Ireland and the role of mindfulness	Focus groups and transcripts were coded using the Braun and Clarke method to find themes	20 student pharmacists (no response rate provided) from all classes at three of the five schools were represented Themes included "so much to do; so little time," "role and availability of lecturer," "fear of failure," "learning by doing," and "mindfulness and coping tool" Students were not aware of the support currently provided by the schools and welcomed the idea of a mindfulness course and stress prevention	This study precipitated the incorporation of a mindfulness course in the curriculum Limitations: Not all pharmacy schools in Ireland were represented in the study population
O'Driscoll 2019 ²⁶ Impact of a mindfulness-based intervention on undergraduate pharmacy students' stress and distress: Quantitative	A four-week MBSR course consisting of a two-hour lecture plus 20 minutes of practice was built into the curriculum Stress was measured by PSS, mental distress by GHQ,	39.9% (n=99) student pharmacists' responses were analyzed Results showed that student pharmacists improved in all scales, but only the GHQ was statistically significant	Small sample size and not meeting power could have led to less-than-optimal results Limitations: Potential self-selection bias

(Continued)

Appendix 3. (Continued)

Citation	Design/Tools	Results ^a	Comments
results of a mixed-methods study	empathy by JSPE, burnout by MBI-SS, and mindfulness by FFMQ	($F=15.3, p<.005$) Course evaluations were all positive that students felt they experienced benefit	
O'Driscoll, 2019 ²⁸ An online mindfulness-based intervention for undergraduate pharmacy students: Results of a mixed-methods feasibility study.	Adapted online mindfulness-based four-week course with one-hour online classes and 20 minutes of daily practice Optional nongraded course Stress was measured by PSS, mental distress by GHQ, empathy by JSPE, and mindfulness by FFMQ	37% (n=52) student pharmacists completed the course Results showed improvement in PSS, GHQ, JSPE, FFMQ, but not at a significant level Qualitative analysis revealed that students found the most benefit in stress reduction	Follow-up intervention study from focus group Limitations: 62% dropout rate and small sample size that did not meet power led to insignificant results

^a *p* values are reported if available in the study

Abbreviations: ACT=acceptance and commitment therapy; BAI=Beck Anxiety Inventory; FFMQ=Five Facet Mindfulness Questionnaire; GHQ=General Health Questionnaire; GPA=grade point average; HPLP=Health-Promoting Lifestyle Profile; JSPE=Jefferson Scale of Physician Empathy; MBI-SS=Maslach Burnout Inventory-Student Survey; MBSR=Mindfulness-Based Stress Reduction; PSS=Perceived Stress Scale; WEMWBS=Warwick Edinburgh Mental Well-being Scale; WHO=World Health Organization; WHOQOL-BREF=World Health Organization Quality of Life Instrument