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# Evaluation of a student pharmacist–led depression screening program in a community pharmacy

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## Abstract

**Introduction:** One in 5 adults in the United States have depression and are at risk for suicide, the 11th leading cause of death in the United States. Community pharmacy settings are ideal for increasing access to mental health services. Our objectives were to assess PHQ-9 scores and evaluate participant satisfaction in a student pharmacist–led depression screening program in a community pharmacy.

**Methods:** Student pharmacists trained in mental health first aid recruited participants 18 to 90 years old in a community pharmacy to complete the PHQ-9 and provided mental health education, referrals, and resources. A 2-week follow-up was completed, and participants reported on actions taken since the initial visit. Descriptive statistics, independent *t* tests, and $\chi^2$ tests were used in data analysis.

**Results:** Twelve depression screening events were held, and 70 participants completed the screenings. The mean age was 52 years, and 75.7% were female. PHQ-9 scores ranged from 0 to 24 with an average of 3.96. Most participants (92.9%) reported the depression screening program was helpful. More than 90% of participants completed the 2-week follow-up, and 92.3% reported being comfortable seeking mental health services from a pharmacist. About half (53.8%) reported reading the educational materials, 24.6% helped a friend or family member, and 16.9% made an appointment with their health care provider.

**Discussion:** Student pharmacists successfully provided depression screenings and mental health education in a community pharmacy. Most participants had low PHQ-9 scores, found the program helpful, and are willing to utilize mental health services in a community pharmacy.

**Keywords:** depression screening, community pharmacy, student pharmacists, pharmacists, mental health

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## Introduction

More than 14 million Americans throughout the United States are living with a serious mental illness (SMI), depression being one of the most prevalent.[1,2] Despite its ubiquity and multitude of treatment avenues, up to two thirds of patients with depression are undiagnosed and only 39% receive treatment for depression.[3] The U.S. Preventative Services Task Force recommends that all adults be screened for depression in a system that allows for adequate diagnosis, treatment, and follow-up.[4] Limited access to care or feeling challenged by the mental health stigma are just some of the many possible explanations for this unmet treatment need. Suicide is often a consequence of untreated SMI with depression and suicide having one of the highest risk correlations.[5-7] Suicide is the second leading cause of death for people ages 25 to 34 and the 11th leading cause of death overall.[7] Given the elevated rates of undiagnosed

and untreated depression as well as the concomitant risk for suicide, there is a significant need to screen for SMI, such as depression, in settings beyond the physician's office.

Community pharmacists are in a key position to address this gap in care and provide mental health screening services, considering that nearly 90% of people live within 5 miles of a community pharmacy and pharmacists are visited up to 2 times more often than other health care providers.[8,9] Furthermore, pharmacists may be particularly important in identifying patients at risk for suicide. One study by Witry and Carpenter[10] found that 23.8% of community pharmacists reported they had encountered a patient who made concerning statements about suicide in the past year. Whereas pharmacists have a high chance of encountering patients with suicide risk factors, only 38% of pharmacists had previous training in suicide prevention. Pharmacists with training had greater confidence in their ability and were more likely to perform suicide prevention intervention behaviors.[10] Therefore, it may be beneficial for pharmacists to receive additional training to provide optimal mental health services, including depression screenings, in a community pharmacy.

Literature indicates that the provision of depression screenings and mental health education in a community pharmacy is feasible and effective in improving patient care.[11,12] To date, 3 studies have evaluated the implementation and feasibility of depression screenings in community pharmacy populations with follow-up.[13-15] The depression screening tools used included the PHQ-9, the World Health Organization Well-being Index 5, the Beck Depression Inventory, the Harvard Department of Psychiatry/National Depression Screening Day Scale, the Beyondblue Depression Checklist, and the Geriatric Depression Scale. According to O'Reilly and colleagues,[14] the PHQ-9 was the depression screening tool used most often as pharmacists report that it is the most comprehensive though it may pose challenges for patients with lower health literacy levels. These studies show promising findings; however, there are a limited number of studies describing pharmacist-led depression screening interventions in community pharmacy settings. To our knowledge, no previous studies have used student pharmacists to administer depression screening services in this setting. Given the high prevalence of patients with depression or suicidal ideation that community pharmacists may encounter, it is critical to evaluate methods that will enhance pharmacy-based interventions aimed at identifying at-risk patients and facilitating access to mental health care.

## Objectives

Our objectives were to assess PHQ-9 scores and evaluate participant satisfaction in a student pharmacist–led depression screening program in a community pharmacy.

## Methods

### Mental Health First Aid Training

The American Pharmacists Association-Academy of Student Pharmacists (APhA-ASP) at the Eugene Applebaum College of Pharmacy and Health Sciences at Wayne State University (WSU) hosted Mental Health First Aid Training (MHFA) training at the college of pharmacy. MHFA training educates participants about depression and mood disorders, anxiety disorders, substance use disorders, and more; it guides participants on recognizing risk factors and warning signs and creating action plans for crisis and noncrisis situations.[16] This training provides practitioners with the skills and confidence to navigate mental health conversations in community-based settings. In addition to the traditional curriculum of the MHFA training, the participants practiced using and interpreting the PHQ-9.[17] The PHQ-9 is a validated, 9-item questionnaire used in a variety of settings, including community pharmacies, to screen for symptoms of depression. Two 8-hour MHFA training sessions were conducted by a counseling and psychological services (CAPS) licensed master of social work, who is a certified MHFA instructor. A total of 25 student pharmacists and 10 community pharmacists and faculty preceptors attended the training sessions to participate in the depression screening events. Participants were required to pass a posttest after the training to receive the MHFA certification.

### Depression Screening Program: #ATimeToTalk

WSU APhA-ASP student pharmacists conducted 12 depression screening events, approximately 5 hours each, from June 1 through July 27, 2023, at a single supermarket chain community pharmacy located in Livonia, Michigan. The screening events were scheduled on various weekdays from midmorning to midafternoon to capture a wider participant population. From the pool of MHFA-trained students and preceptors, there were 3 student pharmacists and 1 faculty preceptor at each event. The student pharmacists recruited participants, aged 18 to 90 years, by distributing a study information flyer to pharmacy patients and shoppers inside the supermarket. The flyer presented information regarding the program offerings, study requirements, and monetary incentive. The participants were also recruited by visiting the depression screening program table that was set up near the pharmacy, independent of the student pharmacist recruitment efforts. Participants provided informed consent on a printed document and received a QR code to complete a demographics questionnaire and the PHQ-9 on their personal devices. After completion, the student pharmacist reviewed the PHQ-9 results with the participant in a private consultation room and provided counseling, mental health educational materials, and referral information based on the participant's preferences and top mental health priorities. Each participant received a mental health resource guide, a booklet created by the student pharmacists

that contained information regarding local behavioral health clinics, support groups, and support hotlines. Fact sheets from the National Institute of Mental Health were used to provide information regarding the symptoms of depression and anxiety, coping strategies, and warning signs of suicide. At the end of the visit, participants answered questions developed by the research team regarding their screening experience (Table 1). Each participant was asked to complete a 2-week follow-up encounter via phone or email to gather information about actions taken since the initial visit and overall satisfaction with the program, at which time participants received a $20 incentive (Table 1). A crisis protocol was developed in collaboration with a mental health professional and psychiatric pharmacist. The protocol was used if a participant was identified as at risk, defined as a score greater than 0 for item 9 on the PHQ-9 (item 9: "thoughts that you would be better off dead or of hurting yourself") or presented with other risk factors associated with suicidal ideation. Per the protocol, a faculty preceptor developed a safety plan with the participant if the participant was considered low risk (ie, participant did not have active suicidal ideation). Safety plans consisted of contacting a friend or family member, the participant's primary care or other health care provider, or providing resources for local outpatient behavioral health clinics. If a participant was considered high risk (ie, medical emergency, active suicidal ideation, refused to agree to a safety plan, or refused to be evaluated), emergency services would be contacted. This protocol was approved by the community pharmacy legal team. All data was deidentified and collected via Research Electronic Data Capture (REDCap).[18] Descriptive statistics, independent *t* tests, and $\chi^2$ tests were used in data analysis with JMP Pro 17 software. Statistical tests were performed on PHQ-9 data based on age (greater or less than age 55) and history of depression. The institutional review board has reviewed and approved this study protocol.

**TABLE 1: Participant satisfaction questions**

| Initial Visit Satisfaction Questionnaire |
|---|
| 1. Was it helpful to attend the #ATimeToTalk event at the pharmacy? |
| ○ Yes |
| ○ No |
| 2. Did you feel comfortable talking about mental health with the pharmacy staff? |
| ○ Yes |
| ○ No |
| 3. Would you like to see more of these services or events provided at your local pharmacy? |
| ○ Yes |
| ○ No |
| 4. Do we have your permission to follow-up with you in 2 weeks? If so, please select and enter your preferred contact information. |
| ○ Yes, I will provide my contact information—this information will also be used to issue your electronic gift card after the follow-up is complete in 2 weeks. |
| ○ Yes, |
| • Full name _____ |
| • What is your preferred method of contact? Please provide your preferred contact information. |
| ■ Email _____ |
| ■ Telephone _____ |
| ■ No preference |
| ○ No, I do not wish to provide my contact information for a follow-up |
| **Follow-up Encounter Questionnaire** |
| 1. How satisfied were you overall with the #ATimeToTalk event at the pharmacy? |
| ○ Very satisfied |
| ○ Satisfied |
| ○ Neutral |
| ○ Dissatisfied |
| ○ Very dissatisfied |
| 2. Are you comfortable seeking out these services from a pharmacist in the future? |
| ○ Yes |
| ○ No |
| ○ Somewhat |
| 3. Would you refer a friend or family member to use these services and resources? |
| ○ Yes |
| ○ No |
| 4. What actions did you take following your initial screening? Select all that apply. |
| ○ Made an appointment with primary care provider or sought additional provider care for further discussion |
| ○ Utilized the mental health hotline |
| ○ Attended a support group |
| ○ Read educational materials |
| ○ No actions necessary |
| ○ Helped a friend or family member |
| ○ Other, please specify _____ |

## Results

A total of 70 participants consented to the study and completed the depression screenings; the mean age was 52 years, and 75.7% were female (Table 2). The PHQ-9 scores ranged from 0 to 24 with an average ± SD of 3.96 ± 4.44, which falls below the cutoff of 4 and represents a minimal level of depression severity (Table 3). The average PHQ-9 score was 3.96, 71.4% had minimal depressive symptoms, 17.1% had mild symptoms, 8.6% had moderate symptoms, and 2.9% had moderately severe or severe symptoms. Three participants met the at-risk criteria to initiate the crisis protocol, all of whom did not require referral for emergency services, including 1 patient with severe depressive symptoms. We then consulted with a mental health professional and psychiatric pharmacist to ensure the appropriate recommendations were provided. Participants 55 years and older (51.4%, n = 36) had lower PHQ-9 scores compared with those less than 55 years of age (2.80 ± 3.38 versus 5.18 ± 5.12, $P = .0246$). Participants with a history of depression (25.7%, n = 18) had higher PHQ-9 scores compared with those without a history of depression (6.94 ± 5.67 versus 2.92 ± 3.42, $P = .0006$). Nearly all participants (92.9%) reported that the depression screenings were helpful, and 98.6% reported that they would like to see more of these

**TABLE 2: Participant demographics**

| Participant Demographics | Baseline (N = 70) Mean ± SD or n (%) |
|---|---|
| **Age, y** | 52 ± 19.54 |
| **Gender** | |
| Male | 17 (24.3) |
| Female | 53 (75.7) |
| **Race** | |
| American Indian or Alaska Native | 4 (5.7) |
| Asian | 1 (1.4) |
| Black or African American | 28 (40) |
| White | 38 (54.3) |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) |
| Middle Eastern or Arab American | 1 (1.4) |
| Other | 2 (2.9) |
| **Ethnicity** | |
| Hispanic | 5 (7.1) |
| Non-Hispanic | 65 (92.9) |
| **Past Medical History** | |
| High Blood Pressure | 25 (36.2) |
| High Cholesterol | 18 (26.1) |
| Diabetes | 14 (20.3) |
| Heart Disease | 3 (4.3) |
| Cancer | 7 (10.1) |
| COPD or Asthma | 16 (23.2) |
| Other | 6 (8.7) |
| None | 26 (37.7) |
| **History of Mental Illness** | |
| Depression | 18 (25.7) |
| Anxiety | 20 (29.0) |
| Posttraumatic Stress Disorder | 3 (4.3) |
| Schizophrenia | 0 (0.0) |
| Bipolar Disorder | 6 (8.7) |
| Attention Deficit/Hyperactivity Disorder | 6 (8.7) |
| Other | 1 (1.4) |
| None | 42 (60.9) |
| **Medical Insurance Coverage** | |
| Insured – Private Insurance | 35 (50.7) |
| Insured – Medicare | 22 (31.9) |
| Insured – Medicaid | 8 (11.6) |
| Uninsured | 4 (5.8) |
| **Prescription Insurance Coverage** | |
| Yes | 60 (88.2) |
| No | 8 (11.8) |
| **Average Number of Prescription Medications** | 3 ± 2.47 |

services provided at their local pharmacy and that they were comfortable talking about mental health with the pharmacy staff. A total of 65 out of 70 participants completed the 2-week follow-up. At follow-up, 92.3% of participants reported they are comfortable seeking mental health services from a pharmacist, and 95.4% reported that they would refer a friend or family member to use these services and resources. When asked about their satisfaction with the depression screening program at the pharmacy, 98.4% of participants stated they were very satisfied or satisfied. About half (53.8%) reported reading educational materials, and 24.6% helped a friend or family member (Figure). Some participants (16.9%) made a follow-up appointment for care after their initial visit or sought additional provider care for further discussion. Of these participants, 38.9% had a history of depression. It was statistically more likely that participants with a history of depression would make a follow-up appointment ($P = .0033$).

**TABLE 3: Number of participants by PHQ-9 score classification**

| Level of Depression Severity | PHQ-9 Score | Number of Participants |
|---|---|---|
| Minimal | 0 to 4 | 50 |
| Mild | 5 to 9 | 12 |
| Moderate | 10 to 14 | 6 |
| Moderately Severe | 15 to 19 | 1 |
| Severe | 20 to 27 | 1 |

## Discussion

This study describes the first-ever student pharmacist–led depression screening intervention in a community pharmacy. Whereas most participants had minimal levels of depression, the results indicate that most participants thought the depression screening program was helpful, and they are willing to utilize mental health services from a pharmacist in the future. Taken together, the findings here demonstrate an innovative student pharmacist–led model to increase access to depression screenings, education, and referral services within a community pharmacy setting. Such an approach has the potential to be applied during experiential rotations, internships, and as stand-alone community outreach events, depending on the community pharmacy's capabilities.

The methods used in this study have considerable unique components compared with other published studies. First, the use of student pharmacists within our study may be useful in solving potential time constraints related to pharmacists providing a clinical service in a community pharmacy. Whereas 1 study by Ballou and colleagues[19] incorporated student pharmacists in a community pharmacy depression screening program, their involvement was limited to participant recruitment. In contrast, our study used student pharmacists to provide interventions such as administering the depression screening, counseling patients, and providing referrals under the supervision of a faculty preceptor. Another notable component of our study includes the 2-week follow-up encounter to assess actions taken by the participant, and more than 90% of the 70 participants completed the 2-week follow-up. Most published studies do not include a follow-up encounter. In a study by Hare and colleagues,[13] pharmacists screened 18 shoppers in a community pharmacy setting, and based on the findings, followed up by mail or telephone with 17 participants to recommend making an appointment with their primary care provider to discuss the results of the screening further. However, they did not assess any participant actions taken based on the screenings. A study by Knox and colleagues[20] surveyed participants' likelihood of reading the information provided by the pharmacist following a depression screening, and 80% of participants reported they

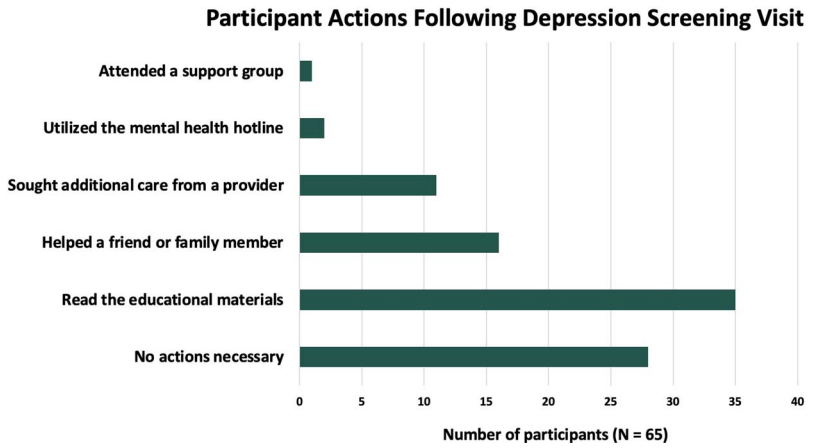


**FIGURE: Participant actions reported during the 2-week follow-up encounter**

are somewhat likely or very likely to read the information. Finally, during the follow-up in our study, 53.8% of participants reported reading the mental health educational materials. Subsequently, about one fourth of participants reported using the education and resources acquired through the program to help a friend or family member. This positive finding shows that participants are willing to read mental health resources provided in a community pharmacy and use the information to help others. Another important component in our study, consistent with the community pharmacy population studies described, is training pharmacists and student pharmacists in mental health education. Training appears to be a critical aspect to successful screening efforts and enhanced patient care responsibilities related to depression.[21]

The average PHQ-9 score (3.96) aligns with other depression screening studies conducted in community pharmacy general populations.[13,19] Despite the low PHQ-9 mean of the included participants, the distribution of PHQ-9 scores suggests that the screening efforts are reflective of general population screening.[22] Consistent with epidemiological studies, our study results revealed nearly 2 times higher PHQ-9 scores in participants younger than 55 years of age.[21] Causes for this are likely multifactorial, but data derived from the PHQ-9 survey obtained with the National Health and Nutrition Examination Survey suggests that people between the ages of 18 and 55 have a higher probability of reporting increased frequency of feeling tired, having trouble sleeping, or showing decreased interest.[23] This could be due to the higher proportion of individuals with a history of depression in the under-55 age group (n = 13, 38%) compared with individuals over the age of 55 (n = 5, 14%). The data here also revealed that participants with a history of diagnosed depression had PHQ-9 scores 2 times higher than those without a history of depression. This reflects both data from the initial validation of the PHQ-9 as well as more recent reliability and validity data.[17,24]

Community pharmacist–led depression screenings are useful to identify and refer patients who require further intervention. As demonstrated by Rosser and colleagues,[15] community pharmacists conducted depression screenings for patients in health-management programs using the PHQ-9 and subsequently referred patients to their primary care provider based on their scores. As a result of the pharmacist's intervention, 35% of patients initiated treatment for depression, and 26% modified therapy.[15] Although subsequent intervention information was not collected in our study, 16.9% made a follow-up appointment with their care provider after the depression screening. This presents an opportunity for pharmacists to provide clinical interventions, education, and referrals based on the PHQ-9 score. Future work should expand on the student pharmacist–led model detailed here by combining positive depression screenings with pharmacist-based interventions.

Most participants in this study reported that they found the depression screening program helpful, they are comfortable seeking out these services from a pharmacist, and they would like to see more services like this offered in the pharmacy. These results align with a community pharmacy depression screening study reporting that 82% (n = 14) of patients were either very satisfied or satisfied with the screening service.[13] Another study evaluated comfort with taking the depression screening and concluded that 92% of patients (n = 25) were very comfortable taking the screening and discussing the results with a pharmacist.[20] The participant satisfaction questionnaire utilized in our study asked questions about the pharmacy and the pharmacist as opposed to comfort with taking the PHQ-9; nevertheless, 92.9% indicated the screening was helpful. Gide and colleagues[25] found 4 key themes that highlight barriers to providing depression screenings in community pharmacies, 1 of them including training needs. One important element in our study that may have contributed to the positive questionnaire responses was the MHFA training of the study pharmacists and student pharmacists. Training appears to be a critical aspect to successful screening efforts and enhanced patient care responsibilities related to depression.[21]

The results of our study should be considered within the context of various limitations. This was a pilot study conducted

over 2 months to discover if the implementation of a depression screening program by student pharmacists would be feasible in a community pharmacy setting. The screening was offered to all shoppers in the community pharmacy setting and not limited to pharmacy patients. Therefore, the results may not be generalizable to only patients who fill prescriptions at the pharmacy. This may also be a strength because the results reflect a higher degree of depression severity in younger participants who are less likely to be on chronic medication. We did not collect information about participants' current antidepressant medications or if they were previously under the care of a mental health provider. Although recruitment was successful, this pilot study included a small sample size of participants. Depression screening events were mainly offered on weekdays and did not include any evening screening events, which may have affected the participant population. The PHQ-9 is a validated depression screening tool and widely used in practice, but the results of the questionnaire are subjective to self-reporting and the participant's interpretation of the question, potentially creating response bias. Additionally, some community pharmacies may present with liability concerns regarding the inquiry of suicidal ideation on depression screening if the appropriate protocols and resources are not in place to navigate a crisis. Alternative patient health questionnaires are available that do not include item 9, such as the PHQ-8. The participant satisfaction questions used were developed by the study investigators and not previously validated. Pretesting may have revealed the possibility of nonspecific choices on question 4 of the follow-up questionnaire. For example, "reading materials" could be construed as any material, not the materials provided by the investigators at the screening. We did not measure the length of time required for the student pharmacist to conduct the initial visit with each participant, which can present as a barrier in these settings. The success and feasibility of this study are based on the following considerations: The MHFA training was provided in kind by CAPS, and the study was funded by a student grant. Future long-term studies are needed to evaluate the feasibility and effect of student pharmacist–led mental health services.

## Conclusion

Student pharmacists successfully implemented a depression screening program and provided increased access to mental health services in a community pharmacy setting. Most participants had a PHQ-9 score that reflected a minimal level of depression severity, found the depression screening program helpful, and are willing to utilize these services in a community pharmacy setting.

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