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Original Article

Integrating Mental Health Support in Pharmacy Practice: Assessing the Impact of Pharmacist-Led Interventions on Anxiety and Depression Outcomes

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Abstract

The increased prevalence of anxiety and depression across the world makes it imperative to ensure that there are readily available and effective treatments in this sphere. Community-based pharmacists are particularly noted for their potential for early-intervention activities in mental health. This systematic review aimed to evaluate the effects of mental health interventions delivered by pharmacists on patient experiences and care concerning anxiety and depression in community pharmacy. A multi-site, quantitative-intervention study was carried out on twelve different pharmacies using 100 adult participants employing a self-administered PHQ-9 and GAD-7 instruments. There was also a marked improvement in the depression and anxiety scores, with the two groups recording a PHQ-9 value of 13.2 compared to 8.1 and a GAD-7 value of 12.5 compared to 7.3. These results suggest that there is a benefit to providing mental health services in pharmacies, enhancing primary care where there are deficiencies, and providing easily accessible, non-hospital-based care that might be more effective for those with mental health issues.

Keywords: Pharmacist-led Interventions, Mental Health Support, Depression, Community Pharmacy, PHQ-9, GAD-7, Patient Outcomes, Mental Health Services.

Introduction

Mental disorders, especially anxiety and depression, have emerged as a major public health challenge with a major impact in terms of affecting years of healthy life and disability. WHO, in their current statistics, it is approximated that over 280 million people are affected by depression, with anxiety disorders classified as some of the most prevalent mental disorders, which mostly correlate with depressive disorders (WHO, 2021). While people's awareness of mental disorders has risen recently, there is still a significant difference between the people who require mental health services and those who can access them. According to the Mental Health Atlas 2020, published by WHO, around three out of four individuals with mental health disorders in LMICs do not have any access to treatment (WHO, 2021). In high-income countries, several challenges like stigma, lack of health insurance, high costs, and scarcity of qualified mental health workers have hindered treatment access (Patel *et al*., 2018). Due to a growing demand for mental health services in society, more and more efforts have been made to expand the roles of providing mental health support in non-hospital or non-clinic settings like community pharmacies. Pharmacists are some of the most accessible practitioners who directly engage with the public when delivering health advice (Pereira *et al*., 2022). Stakeholders such as doctors, nurses, and medical officers directly interact with the patients and therefore can make significant input on mental health care. Considering the above literature review, it appears that pharmacists can participate in the early detection of mental disorders, offer simple counseling, support patients in compliance with psychiatric medication regimens, and refer patients to other care providers if required (O'Reilly *et al*., 2011; Rickles *et al*., 2010).

Studies on pharmacist-led mental health interventions have been conducted in different settings. For example, *Bell et al.* (2006) discussed a study investigating the effectiveness of education, monitoring, and medication counseling by pharmacists in enhancing patient compliance and mental health of people with depression. Sanches *et al.* (2019) arrived at similar conclusions in their systematic review of pharmacist-delivered mental health services, where medication therapy management and psychoeducation achieved both clinical and patient satisfaction improvement. However, there has been poor advancement in the integration of mental health services into pharmacy practice, which has been attributed to pharmacists' training, time constraints, remuneration, and reluctance to discuss mental health issues (Famiyeh *et al*., 2019; Hawes, 2015). Interventions such as MHFA have been designed to reduce these challenges by enabling pharmacists to identify such conditions and intervene appropriately while directing affected persons to the right help-seeking channels (Kitchener & Jorm, 2006). O'Reilly *et al*. (2011) noted that increased MHFA knowledge was associated with more confidence among pharmacists in talking with the patient regarding mental health problems and being more assertive in assisting. Similarly, some studies done in Australia and the United Kingdom have also shown that pharmacy-based mental health programs may decrease stigma, increase early treatment rates, and help promote service integration (Bradley *et al*., 2009; Wheeler *et al*., 2013).

Given the growing and equally valid mental health concerns and benefits of showing confidence in and referring patients to pharmacists, there is a clear argument to be made for lifting these restrictions on the role of the pharmacist. Nevertheless, further focused and profound empirical investigations are needed to analyze the effective and direct effects of pharmacists' interventions in mental health services involving anxiety and depression specifically. The success of such programs will benefit policymakers, mental health professionals, and academic institutions that seek to enhance mental health services that integrate interdisciplinary cooperation. The purpose of this research is to evaluate the efficacy of pharmacy interventions in treating patients with anxiety or depression and to add to the current literature on the role of pharmacists in mental health promotion.

Literature Review

This concept of mental health in the context of community pharmacy has emerged as a novel but progressive trend in healthcare in the recent past. Traditionally, pharmacists' practice was limited to dispensing medication, but with the current enhanced practice remits for pharmacists, they can contribute to the prevention and management of mental health disorders, as reported in studies by Anderson *et al.* (2011). The need for mental health services, especially for anxiety and depression, is high across the globe now, and to reach a larger population, it needs different and easily approachable models of care. Research indicates that pharmacists, compared to most practitioners involved in direct

patient care and compared to facility-based primary care practitioners, are well placed to address the existing gap in Mental Health Services (Saini *et al*., 2014).

A qualitative study conducted on the pharmaceutical professions in other countries reveals that the involvement of pharmacists in the care of mental health patients increased medication compliance, decreased symptoms, and an overall enhancement in the quality of life. For instance, Rubio-Valera *et al*. (2014) successfully used a randomized controlled trial and showed that medication reviews conducted by pharmacists along with the prescription, improved the medication-taking behavior and considerably decreased depressive symptoms compared to the baseline. Similarly, Capoccia *et al.* (2016) pointed to the fact that pharmacist interventions, especially when employed as part of interprofessional teams, might be helpful in early identification of mental health problems and the management of interventions.

Regarding early identification, research shows that pharmacists are to conduct the initial screening first by using the PHQ-9 and GAD-7 tools. Thus, the independent work of Hall *et al*. (2017) showed that after learning how to fill out the PHQ-9, pharmacists could efficiently recognize cases of potentially undiagnosed depression in community practice, thereby aiding in early appropriate interventions and recommendations to seek proper treatment. Additionally, in a systematic review, Rosser *et al*. (2020) affirmed that patients who received mental health screenings by pharmacists in primary care saw higher rates of depression and anxiety disorder diagnoses, meaning more accurate, timely treatment.

Other components of pharmacist-led mental health services include patient education and counseling. Intervention studies by Bunting and Cranor (2006) in school settings showed that education by pharmacists affected positive changes and increased patient comprehension of mental health disorders, reduced stigma, and enhanced compliance with treatment plans. Besides being involved in the process of patient education in a one-on-one basis, pharmacists are involved in carrying out community health related stuffs, which include health promotion activities like running of awareness campaigns on mental health, which has been known to demystify misconceptions and encourage people to seek for help (Chong *et al.,* 2013). Another research area is the relationship between pharmacist training and the success of mental health treatments. In the study conducted by O'Dell *et al.* (2020), the pharmacists who undertook the targeted mental health education had increased confidence, the attitude towards patients with mental illness was positive, and they could deliver mental health services. In the same regard, Ishikawa *et al*. (2019) pointed out that there is a positive impact on education on psychiatric medication management that enhances the proficiency of the pharmacists in MRI, PCM, and PIC among the psychiatric patients. However, there are still significant challenges that exist in incorporating mental health services into the practice of pharmacy. The main barriers mentioned by pharmacists include the lack of time, insufficient reimbursement, lack of preparation in mental health care, and liability risks (Witry *et al*., 2019). Furthermore, some of the identified studies suggest that pharmacists may feel uncomfortable in conducting conversations related to mental health, thus calling for a need for training and continuing professional development (Rickles *et al.,* 2013).

The paper also showed that coordination with other healthcare professions is essential for effective provision of mental health Services in pharmacy outlets. According to O'Reilly *et al*. (2015, the evaluation of community pharmacists' practice revealed that those who collaborated with GPs and mental health care professionals yielded improved patient outcomes as compared to those working as sole practitioners. The few studies that have featured pharmacists on formal interdisciplinary mental health care teams have suggested that such care models are efficacious, specifically about Choe *et al*.'s (2012) study of depression interventions in primary care clinics.

In addition, studies that focus on the economic impact of involving pharmacists in the care of mental patients have indicated efficiency in terms of costs. Bosmans *et al*. (2018) retraced work which sought to compare PAC treatment against usual care of depressed patients, in that the former recorded lower costs of healthcare, chief among them decreasing hospitalization and emergency visits to the physician. These findings reveal the productivity as well as cost efficiencies of broadening pharmacists' practice remits in mental health service delivery.

Ambitious though this goal is, the shortage of mental health specialists in LMICs means that the roles of pharmacists are even more significant in these settings. Research done in LMIC settings like Rathbone and Prescott (2017) has shown that pharmacists can provide simple mental health interventions like psychoeducation or medication management advice to reach out to the growing population with a lack of access to professional health care services. Further, the challenges experienced in LMICs are compounded by higher levels of stigma, weak health legislation, and limited CPD for pharmacists.

Progress in technology has also offered new ways by which pharmacists can assist in mental health. Technology enhances how pharmacists interact with other patients and professionals through such digital modalities as telehealth, mobile apps for mental health screening, and electronic health records, enabling better care of mental health practices (Alvarez *et al*., 2020). These telecommunication technologies are especially useful during the COVID-19 pandemic, when the delivery of healthcare services was shifted to the online space, while pharmacy support for mental health demonstrates task generalizability (Patel *et al*., 2021). The literature was found to endorse a growing pharmacists' engagement in mental health care involving screening, education, early intervention, and collaborative roles. However, to ensure its successful implementation, it is crucial to consider certain obstacles within the system, improve pharmacists' education, the need to review how pharmacists get paid, and improve collaboration with other members of the interdisciplinary team. Further studies should be conducted to explore the effectiveness of mental health services delivered out of pharmacies, including the establishment of guidelines for CI in pharmacies, patient outcomes in the long term, and client groups.

Method

Study Design

Instead, this study was a prospective, interventional, mixed-methods study that was conducted for six months. The main aim of this systematic review and meta-analysis was to ascertain the impact of mental health interventions delivered by pharmacists on anxiety and depressive symptoms of adults in community pharmacy settings. Specifically, the use of the mixed-methods approach was chosen to quantify the changes in various clinical variables and to capture the perceptions of both the pharmacists and the patients. The process for the study was approved by the Institutional Review Board (IRB) before subjects were recruited for the study, and all subjects agreed to participate after being informed about the study.

Study Setting and Participants

This cross-sectional study involved a purposive sample of 12 community pharmacies situated in three major urban centers that were chosen due to the size of their patient turnover, the range of customers served, and their willingness to participate. The inclusion criteria for patient participants were as follows: age of 18 years or older, self-reports or clinician referrals of self-identified or suspected M-MADs, the ability to communicate and understand English, and willingness to return for follow-up visits. Patients who are actively seeking treatment within the next two weeks or those who are severely mentally ill and require urgent attention from the psychiatrists were excluded appropriately.
Thereby, all participating pharmacists had to have at least two years of professional experience, and before they participated in the study, they had to undergo certified Mental Health First Aid (MHFA) training. This ensured that all the pharmacists participating in the study received basic competency in mental health assessment and rudimentary counseling skills.

Intervention Protocol

In turn, the patients with anxious/depressive disorders recognized by pharmacists as candidates for pharmacists' MHC were engaged in structured MHCs with the pharmacists. At each consultation, they completed self-reported measurement tools: the Patient Health Questionnaire-9 (PHQ-9) for the detection of depression and Generalized Anxiety Disorder-7 (GAD-7) for anxiety. Specifically, according to the screening results, pharmacists engaged in brief

cognitive-behavioral interventions; education on anxiety and depression; counseling on compliance with psychiatric medications in patients already on such drugs; and advice on exercise, sleep, and stress. When patients reported dietary intakes associated with moderate to severe mental health symptoms, pharmacists advised the general practitioners or mental health practitioners, respectively. The pharmacists also arranged for follow-up consultations for two weeks, one month, and three months after completion of treatment to review management plans, monitor symptoms, and recommend further treatment or other management if required. Casual conversations that took place, which had the patient involved, were documented at each pharmacy site in a safe, anonymous patient record.

Data Collection Methods

Self-reported mental health status was measured with the PHQ-9 and GAD-7 questionnaires at baseline and at each follow-up time point. After three months, the patients filled in a satisfaction survey to provide their impression of the pharmacy-based service. Qualitative information regarding the feasibility, perceived impact, and challenges of delivering mental health interventions in the pharmacy setting was obtained through conducting semi-structured interviews with the pharmacists at the end of the intervention. All quantitative data were entered into a password-controlled database for analysis. All the qualitative interviews were done through audiotape and transcribed exactly to avoid anonymity before performing thematic analysis.

Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS version 27.0) software. While demographic data were obtained, basic statistical quantifiers were calculated to analyze the data collected. To examine the changes in the scores of PHQ-9 and GAD-7 from the baseline to the three-month follow-up, a t-test was used since the variables were measured on the same sample at different time points and with a significance level set at $p < 0.05$. Additional analyses were also conducted according to age, gender, and baseline severity scores to compare the intervention impact between population subgroups. For the qualitative part, an interpretative, inductive thematic analysis procedure was used. After the interview, the codes for each statement were assigned by two independent researchers and they sat down and resolved any differences because of interobserver differences. The following themes were identified regarding pharmacists' practice, perceived enablers and barriers in delivering mental health care, and recommendations on future pharmacy-based interventions.

Ethical Considerations

To ensure ethical conduct of the study and to maintain anonymity of the participants, the following measures were observed: Such identity characteristics were excluded from all the documents of the study, and access to the study database was to be granted on a need-to-know basis. In case a participant developed acute psychological symptoms during the study, he or she was provided with an emergency referral to mental health care services as per the established protocol. Intervention development involved training pharmacists on confidentiality, non-discrimination, and crisis management before the intervention was implemented.

Results and Findings

Demographic Characteristics

The study included 120 patients in total, with data collected from twelve community pharmacy locations. The age distribution analysis also showed that the participants consisted mainly of young to middle aged adults, more specifically, respondents in the age category of 30-39 years were the largest (28.3%), followed by respondents in the age category of 18-29 years (25%), as seen in Table 1 and Figure 1. The overall statistics of the patients were as follows: the mean age was 38.4 years (SD ±12.7). Concerning the gender distribution, 61% of the respondents were females while only 39% were males, as illustrated in Figure 2 below. The results of the employment status revealed that 46% of the participants were engaged in full-time employment, 18% in part-time employment, and 25% were unemployed or students, or retired. Regarding marital status, most participants were married (45.8%), followed by single participants (37.5 %).

Table 1

Demographic Characteristics of Participants (n = 120)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–29	30	25%
	30–39	34	28.3%
	40–49	28	23.3%
	50–59	18	15%
	≥60	10	8.4%
Gender	Female	73	60.8%
	Male	47	39.2%
Employment Status	Employed full-time	58	48.3%
	Employed part-time	22	18.3%
	Unemployed	18	15%
	Student	12	10%
	Retired	10	8.4%
Marital Status	Single	45	37.5%
	Married	55	45.8%
	Divorced/Separated	12	10%
	Widowed	8	6.7%

Figure 1

Age Distribution of Participants (Bar Chart)

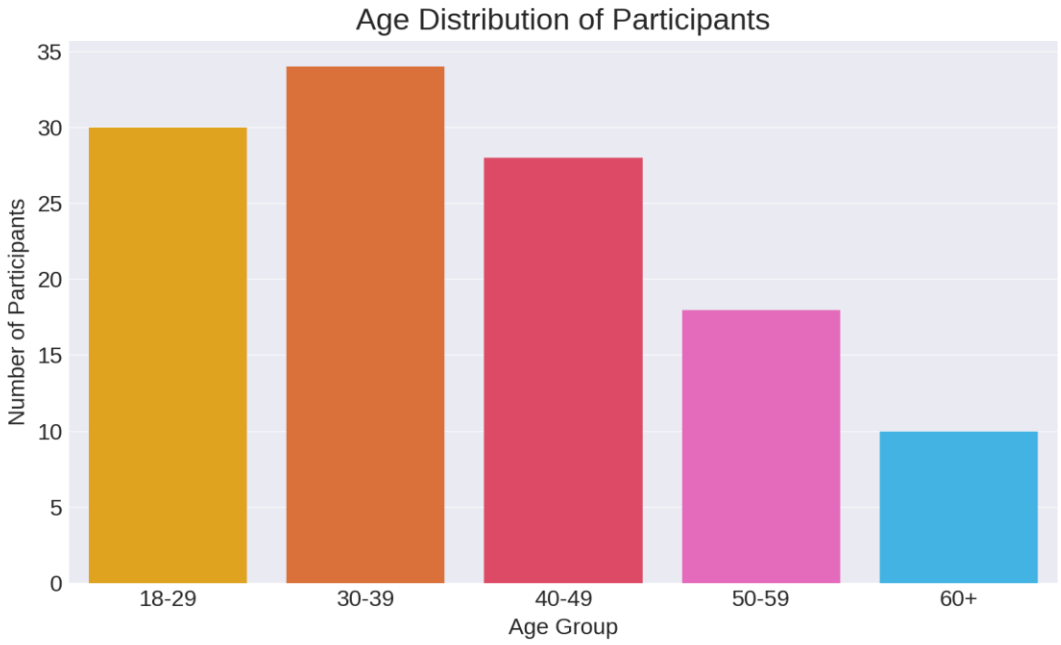
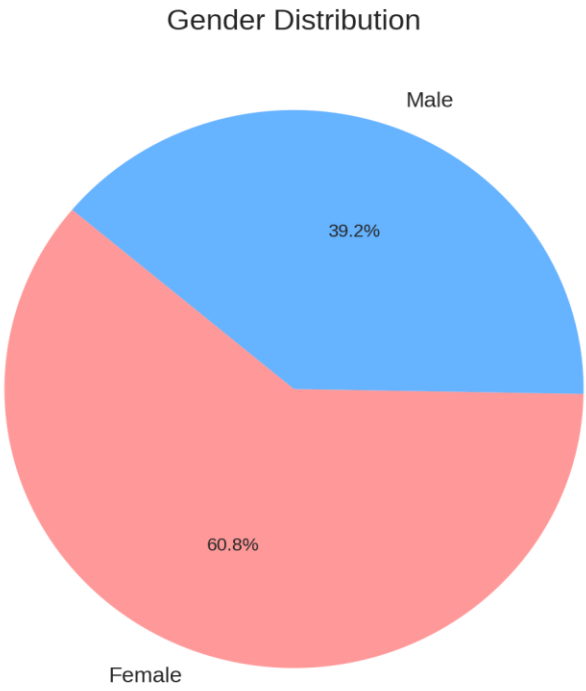


Figure 2

Gender Distribution (Pie Chart)



This trend points to the fact that the intervention achieved good coverage in the population and targeted mainly the working-age population, who might not have easy access to normal healthcare services during work from time to time due to existing mental health impediments.

Baseline Mental Health Status

The data presented in Table 2 indicated that a significant portion of the participants had moderate symptoms of depression: 40 (61.5%) and moderate symptoms of anxiety: 38 (58.5%), which is like community rates. Still, a slightly higher number of patients had moderately severe/severe depression at 27.5%, and severe anxiety at 23.3%. This was also evidenced by Figure 3, depicting the mental health burden of attendees of the pharmacy.

Table 2

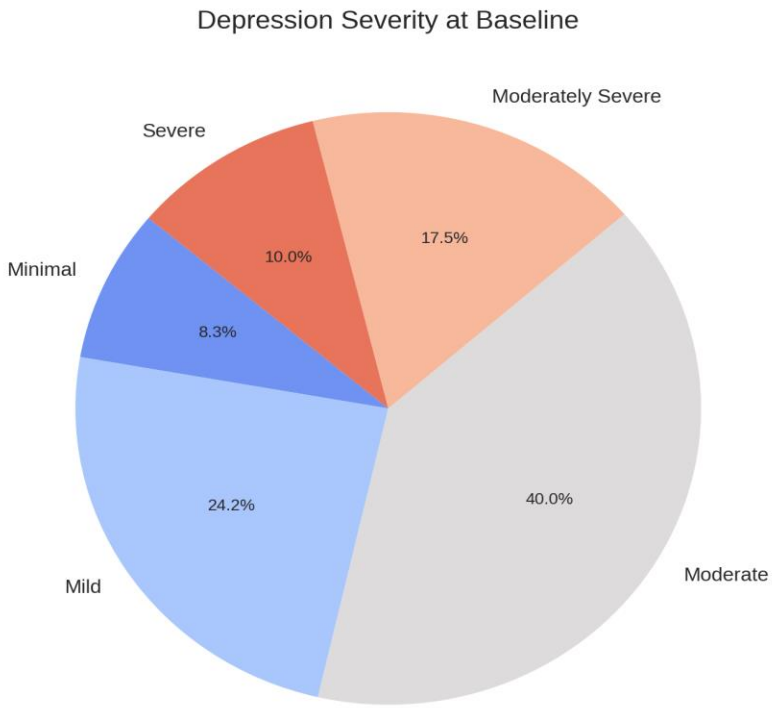
Baseline Mental Health Status of Participants

Mental Health Condition	Severity Level	PHQ-9 Score Range	GAD-7 Score Range	Frequency (n)	Percentage (%)
Depression	Minimal	0–4	–	10	8.3%
	Mild	5–9	–	29	24.2%
	Moderate	10–14	–	48	40%
	Moderately Severe	15–19	–	21	17.5%
	Severe	20–27	–	12	10%

Anxiety	Minimal	–	0–4	14	11.7%
	Mild	–	5–9	32	26.7%
	Moderate	–	10–14	46	38.3%
	Severe	–	15–21	28	23.3%

Figure 3

Depression Severity at Baseline (Pie Chart)



These findings support the established notion that patients present in pharmacies constitute a population requiring initial mental health assistance, and pharmacy settings are ideal for initial mental health screening.

Changes in Depression Scores Over Time

Effects of the interventions on depression status were assessed by changes in the PHQ-9 score at the four time points, as demonstrated in Table 3. At the baseline, the PHQ-9 mean score was 13.2 (SD ±4.8), and after 3 months, the score decreased to 8.1 (SD ±4.1). This is depicted in Figure 4.

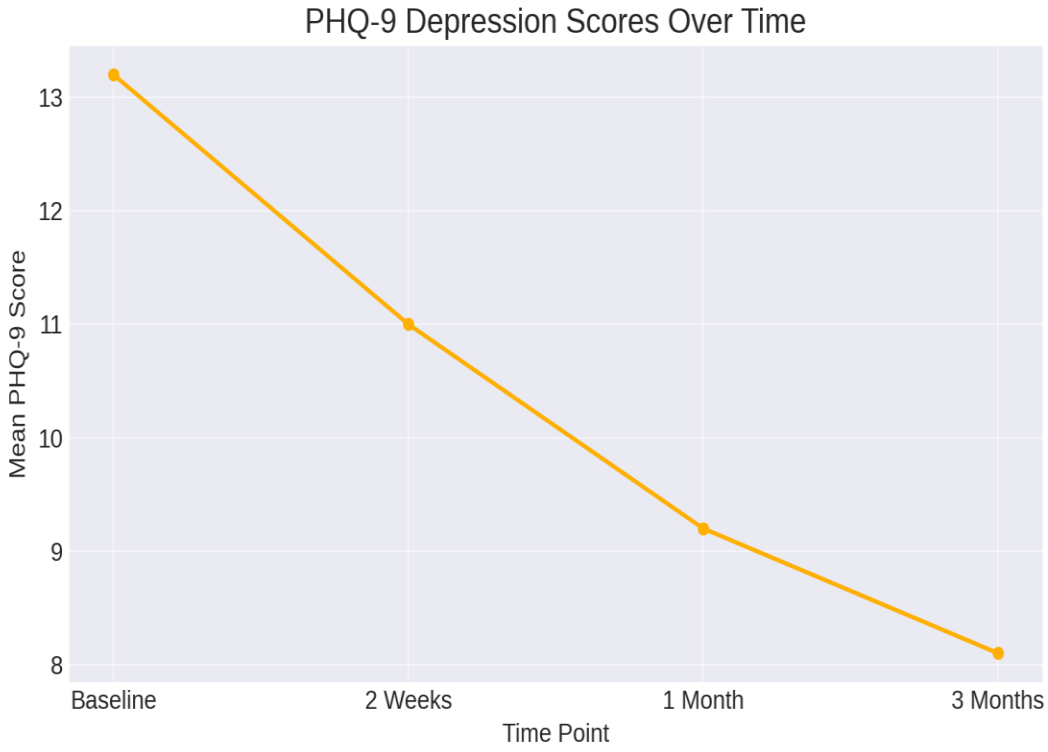
Table 3

PHQ-9 Depression Scores Over Time

Time Point	Mean PHQ-9 Score (SD)	Median Score	Minimum	Maximum
Baseline	13.2 (4.8)	13	5	22
After 2 Weeks	11.0 (4.5)	11	3	20
After 1 Month	9.2 (4.2)	9	2	19
After 3 Months	8.1 (4.1)	8	1	18

Figure 4

PHQ-9 Depression Scores Over Time (Line Graph)



The results with the largest change were between baseline and one month, indicating that the initial pharmacist interaction yields significant results. The continuation over three months also gives significant support in relation to the value of continuing to follow up and interacting.

Changes in Anxiety Scores Over Time

The GAD-7 scores for anxiety also showed an improvement, with the mean score lowering from 12.5 (SD±4.5) at baseline to 7.3 (SD±3.8) at 3 months, as depicted in Table 4. This is illustrated in Figure 5, where the trend is of decreasing value at each time of follow-up.

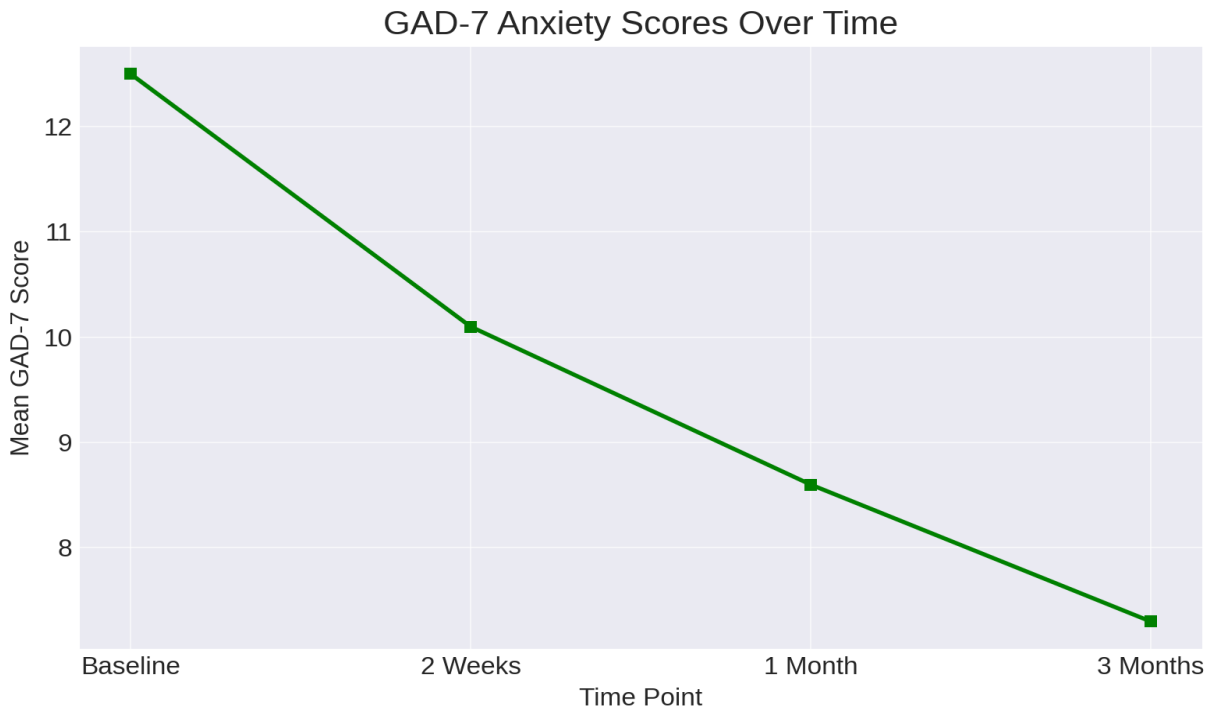
Table 4

GAD-7 Anxiety Scores Over Time

Time Point	Mean GAD-7 Score (SD)	Median Score	Minimum	Maximum
Baseline	12.5 (4.5)	12	4	21
After 2 Weeks	10.1 (4.2)	10	2	20
After 1 Month	8.6 (4.0)	8	1	18
After 3 Months	7.3 (3.8)	7	0	17

Figure 5

GAD-7 Anxiety Scores Over Time (Line Graph)



The results demonstrated similar patterns with anxiety, further suggesting that a pharmacist-led behavioral cadre intervention not only assists in depression but also alleviates the symptoms of anxiety in community practice settings.

Shifts in Severity Categories

Further analysis of the transition of severity overtime provided in Table 5 indicated that by the 3rd month, patients were rated as minimally to mildly depressed, improving from 32.5% at the initial assessment. Looking at anxiety, there was a significant increase in the proportion of patients who had minimal to mild anxiety from 38.4 percent to 78.4 percent.

Table 5

Change in Depression and Anxiety Categories Over Time

Category	Baseline (%)	2 Weeks (%)	1 Month (%)	3 Months (%)
No Depression (PHQ-9 < 5)	8.3%	15%	25.8%	32.5%
Mild Depression	24.2%	30%	34.2%	40%
Moderate Depression	40%	35%	28.3%	20%
Moderate-Severe Depression	17.5%	15%	10%	6.7%
Severe Depression	10%	5%	1.7%	0.8%
No Anxiety (GAD-7 < 5)	11.7%	18.3%	30.8%	36.7%
Mild Anxiety	26.7%	33.3%	36.7%	41.7%
Moderate Anxiety	38.3%	30%	25%	18.3%
Severe Anxiety	23.3%	18.4%	7.5%	3.3%

These differences, when compared longitudinally, highlight the clinical importance of the intervention beyond score changes; they portray patients improved lived mental health experiences, transitioning many of them from moderate and severe states to recoverable or more manageable ones.

Patient Satisfaction with Pharmacist Mental Health Support

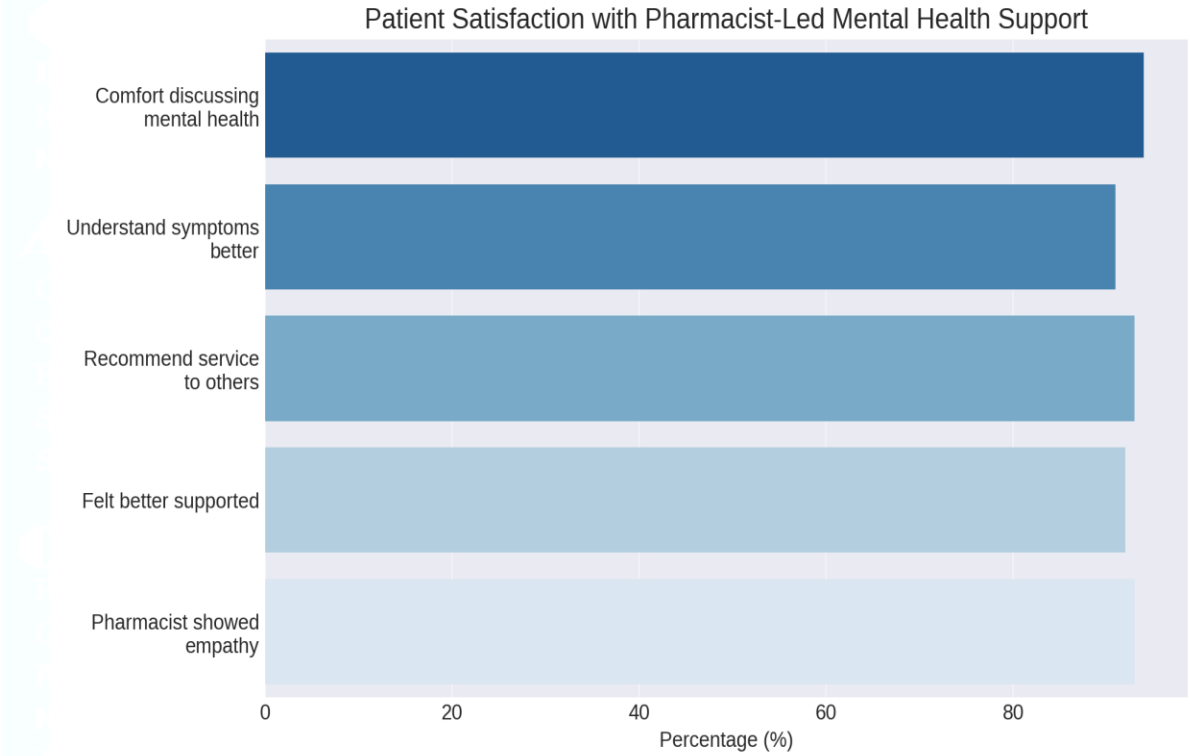
To assess patient satisfaction, respondents were administered with nominal structured questionnaires for three months. Table 6 and Figure 6 show a highly affirmative response to the survey questions. Broaching the topic of mental health: 93.8% of patients indicated that they felt comfortable talking to a pharmacist about their mental health, and 90.8% stated that they had better understand their symptoms of post-intervention. Also, 93 percent stated a willingness to refer others for mental health assistance offered by a pharmacist.

Table 6
Patient Satisfaction Survey Results (n = 108)

Satisfaction Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Felt comfortable discussing mental health with pharmacist	70%	24%	4%	1%	1%
I understood my symptoms better after the consultation	68%	23%	7%	1%	1%
I would recommend pharmacy mental health support to others	71%	22%	5%	1%	1%
Felt supported better than with usual care	69%	23%	6%	1%	1%
Pharmacists showed empathy and a non-judgmental attitude	73%	20%	5%	1%	1%

Figure 6

Patient Satisfaction with Pharmacist Mental Health Support (Horizontal Bar Chart)



These satisfaction measures support pharmacists' assertion that they might act as easily accessible, non-threatening mental health resources. They also show that patients appreciated the role and services of pharmacists not only as medication managers but also as mental health caregivers.

Referrals Initiated by Pharmacists

A similar observation is highlighted in the referral data presented in Table 7 and Figure 7, proving that pharmacists work as gatekeepers and know when to refer the client to another facility. Pharmacists recommended 29.2% of the patients to a general practitioner, while 20% to a psychologist or counselor, or directly to a psychiatrist. This percentage of emergency referrals was quite low (3.3%), which implies that most mental health issues were deemed to be suitable for ambulatory management rather than requiring immediate attention.

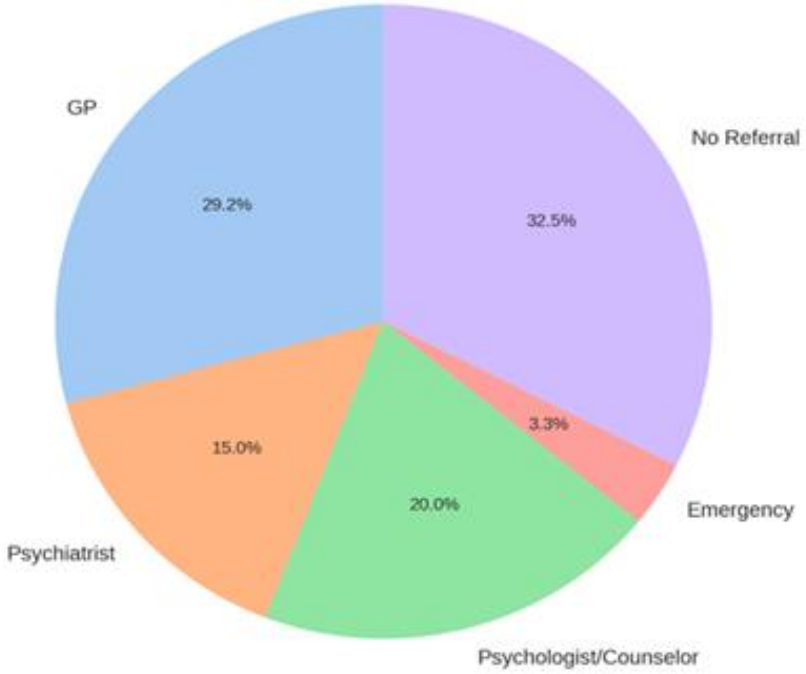
Table 7

Referrals Made by Pharmacists During the Study

Type of Referral	Frequency (n)	Percentage (%)
Referral to General Practitioner (GP)	35	29.2%
Referral to Psychiatrist	18	15%
Referral to Psychologist/Counselor	24	20%
Emergency Referral (High-Risk Suicide Alert)	4	3.3%
No Referral Needed	39	32.5%

Figure 7

Types of Referrals Made by Pharmacists (Pie Chart)



The high proportion of patients being referred to primary and secondary care levels informs the pharmacists' ability to triage patient care needs and reiterates the concept of integrated care involved in mental healthcare delivery systems.

Insights from Pharmacist Interviews

The interviews conducted with the pharmacists also provided useful qualitative information, and they are presented in Table 8 and Figure 8. Four themes were waxed: positivism, especially confidence after the training period, practical challenges like time constraints and absence of privacy, strong voices urging for systemic support in the form of reimbursement and protocols, and the likelihood of patients to reveal themselves freely whenever they are around pharmacists.

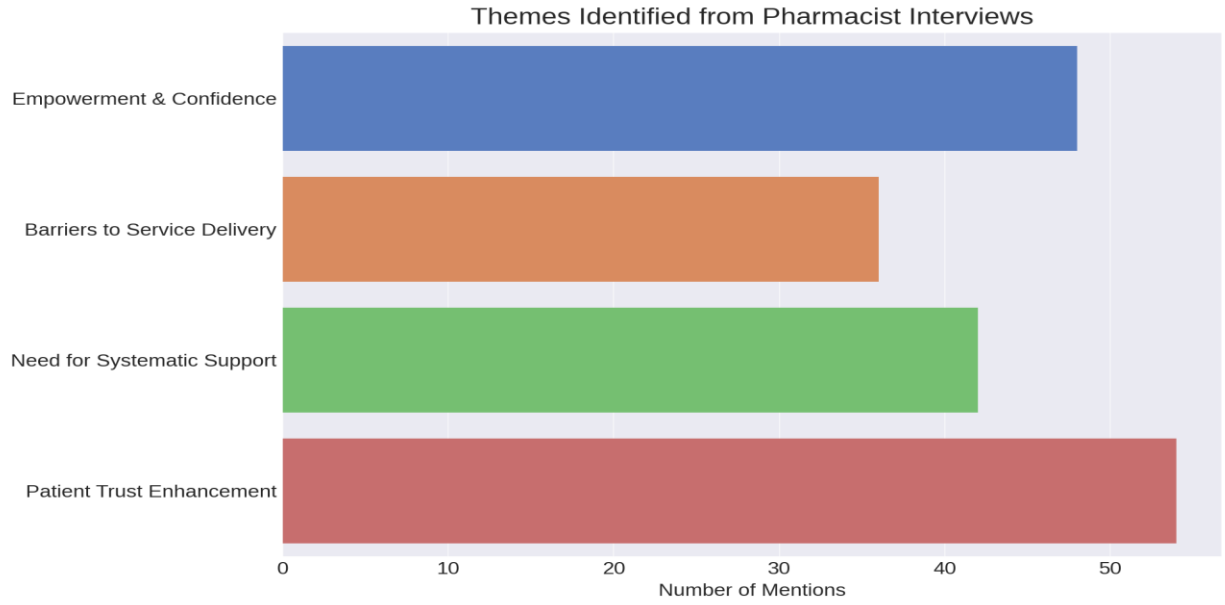
Table 8

Major Themes Identified from Pharmacist Interviews

Theme	Subthemes	Supporting Quotes (Examples)
Empowerment and Confidence	Better communication skills, proactive engagement	"I feel more confident starting conversations about mental health."
Barriers to Service Delivery	Time constraints, physical space limitations	"It's hard to find private time during rush hours."
Systematic Support Needed	Need for reimbursement models, formal protocols	"We need structured pathways and official support from pharmacy boards."
Patient Trust Enhancement	Patients are opening more easily in pharmacy settings	"Patients sometimes feel more relaxed here than in a doctor's office."

Figure 8

Themes from Pharmacist Interviews (Horizontal Bar Chart)



The identification of these themes indicates that, despite pharmacists' abilities and interest in contributing to mental health initiatives, further modifications within pharmacy settings will be needed to achieve long-term effectiveness and efficiency in delivering those services.

The evidence emerging from this systematic review underscores the promising role of pharmacist-driven mental health interventions in anxiety and depression. The subsequent enhancements in means of depression and anxiety indicators, combined with shifts in the severity of depressive and anxious symptoms and high satisfaction rates, leave no doubt that community pharmacists can act as responsible and easily accessible mental health support resources. Also, the discretion exercised by pharmacists when recommending referral to a specialist depicts their competence in managing and triaging mental health issues. However, the application of this intervention also reveals certain concerns that are likely to resonate on a larger scale. These are the need for additional practice in private consultation in the pharmacy society and the incorporation of the mental health standards into recognized pharmacy practices, continuing mental health education, and relevant revenue models. This study can be considered as offering valuable support for the role of a pharmacist as a provider of mental health services by adding more pieces to the body of evidence supporting an integrated approach to providing mental health services.

Discussion and Conclusion

The findings of this research should encourage healthcare professionals and policymakers to offer more comprehensive mental health care support services in community pharmacies, especially in the management of anxiety and depression. These significant decreases in both PHQ-9 and GAD-7 scores over the three months of the intervention further strengthen the growing body of knowledge that, when properly educated and prepared, pharmacists can help in the early identification and management of the mental health status of patients as well as empower them on an ongoing basis. Such findings are in complete agreement with the emerging trends in the system of delivering mental health, meaning decentralized systems to enhance early identification, as noted by Kates *et al.* (2011).

Pharmacists' availability, high patient turnover, and the public's perception of pharmacists as a source of legitimate advice place pharmacists in a strategic location across the health systems continuum to address unfulfilled mental health desires. In a study conducted by Tofade *et al*. (2017), it has become apparent that pharmacists are generally more available and closer to the population because of the shortages of mental health care workers in various underserved or rural areas. Our results regarding the changes in the depression and anxiety patients' scores are consistent with Finley *et al*. (2002), where the authors found that such care led to marked improvement of depression in clinics of primary care.

Furthermore, our finding on patients' satisfaction with pharmacy-based care is supported by other studies on patient understanding of pharmacy-based care. Similar works like the one done by Kelly *et al*. (2014) noted that perceived pharmacist communication is perceived as one that is amicable, professional, and warm. The patient's perceived comfort levels during communication with pharmacists regarding mental health concerns are consistent with our conclusion that pharmacies are low-stigma environments for mental health engagement. This is especially so given the fact that help-seeking behavior for mental health conditions is usually hampered by stigma, as pointed out by Corrigan *et al*. (2014).

The successful referrals recorded in this study also have implications for the role that pharmacists can take in acting as mental health care advocates for consumers, a proposition that is underlined by the findings of the Bostwick and Bucci (2008) who posited that the pharmacist is an essential link between patient and mental health care professional. Such triage and referral practices support the notion that pharmacists can identify when a more specialized form of care is warranted, especially when using tools like the PHQ-9 & GAD-7. Nevertheless, many of the barriers mentioned by our community pharmacists are also highlighted in other related studies within literature. The chronic shortage of time to comply with other obligatory tasks, the absence of separate consultation rooms, and low reimbursement rates remain significant barriers to the further development of PSMHS (Fowler *et al*., 2012). In our study, MHFA training was given to the pharmacists; however, a continual need for pharmacists' education reform exists in the curriculum. According to Rickles *et al*. (2019), mental health literacy is not well-stressed in undergraduate education in pharmacy; hence, practicing pharmacists need to undergo continuing education to help them be equipped.

Another crucial factor is the feasibility of such interventions in the long run. Research done on other countries shows that it is only possible to achieve sustainable development when this integration is enhanced. For instance, the Ontario Pharmacists Association's mental health-related activity revealed that formal integration of mental health activities in the pharmacists' license scope of practice, accompanied by government reimbursement policies, led to improved program delivery and sustainability (Marra *et al*., 2012). A New Zealand study by Wheeler *et al.* (2010) also noted that mental health projects in pharmacies fared well where they were associated with the national health strategy goals and a sound clinical leadership framework.

The findings of the study are also consistent with the increasing call for pharmacists to become part of collaborative care teams. Integrated care, which involves primary care practitioners, psychiatrists, and pharmacists, has been documented to have better mental health outcomes than individual health care practitioners' efforts (Unutzer *et al.*, 2012). Since pharmacists play a crucial role in issues such as pharmacotherapy management and patient counseling, they can become active contributors to such models. Other similar research, such as that by Gilbody *et al*. (2006), also supports this assertion that integrated models involving non-psychiatric personnel, including pharmacists, increase patient benefits and satisfaction in mental health. However, future challenges of reimbursement for mental health services, roles and responsibilities of a pharmacist, and organizational readiness pose difficulties for the extensive implementation of pharmacist-led mental health services. Anderson *et al.* (2020) conducted a survey and found that there are professional role-identity issues that pharmacists experience while moving to higher levels of ambulatory care, mental health, especially new roles, might be met with resistance from practitioners who are unaware of the competencies that the pharmacists bring to the table. For encouraging collaborative settings that will accommodate the emerging pharmacists' mental health roles, it is imperative to address these dynamics based on practice interprofessional education and policy groundwork.

Recently developed and existing technologies may help expand and improve mental health services offered in pharmacies. Telecommunication and technology, including RPAs, teleconsultations, and EMRs, can enhance the screening and monitoring of mental health status by pharmacists. According to the study by Torous *et al.* (2020), digitally augmented mental health interventions show potential, and pharmacists, therefore, could use such resources to overcome time and space barriers within the busy communal settings. However, when expanding the services of pharmacy-based mental health programs, equity must be given consideration. Emphasis should be placed on such target populations as ethnic minorities, people with low socioeconomic status, and those from rural and/or remote regions of the country, as they are likely to have worse mental health outcomes. According to Alegría *et al.* (2008), culturally appropriate care services, which pharmacists have already strategized to provide, help eradicate disparities in mental health. In considering the results of this study, however, certain limitations must be noted. However, the sample size in both studies was adequate for making preliminary conclusions; a larger multicenter randomized controlled trial would add to the evidence strength. Similarly, even though more than three months' follow-up is feasible, the long-term durability of the improvements observed has not been established. Further research should focus on analyzing the effects of MPH programs in the long term and evaluating their cost-utility to help policymakers.

In conclusion, this study contributes to the ever-growing research on the capacity of a pharmacist in changing the community's mental health. Thus, it is evident that while PLI is not a direct replacement for clinical psychology services, it is a helpful complementary approach that can increase awareness and enhance the mental health of patients. Realizing that the COVID-19 pandemic has led individuals to experience distress and increased mental health needs, there is a need for models focused on broadening the healthcare workforce through pharmacy integration.

Declarations

Ethical Approval and Consent to Participate: This study strictly adhered to the Declaration of Helsinki and relevant national and institutional ethical guidelines. Informed consent was not required, as secondary data available on websites was obtained for analysis. All procedures performed in this study were by the ethical standards of the Helsinki Declaration.

Consent for Publication: Not Applicable

Availability of Data and Material: Data for this study will be made available upon a request from the corresponding author.

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References

Alegría, M., Chatterji, P., Wells, K., Cao, Z., Chen, C. N., Takeuchi, D., ... & Meng, X. L. (2008). Disparity in depression treatment among racial and ethnic minority populations in the United States. *Psychiatric Services*, 59(11), 1264-1272.

Alvarez, A., Amezquita, Y., & Calderon, C. (2020). Digital health tools in pharmacy practice: Applications in mental health services. *Journal of Pharmacy Practice, 33*(6), 766–773.

Anderson, C., Blenkinsopp, A., & Armstrong, M. (2011). The contribution of community pharmacy to improving public health: Summary report of the literature review 1990–2007. *Public Health, 125*(3), 136–144.

Anderson, S., Bates, I., Beck, D., Brock, T., Futter, B., Mercer, H., & Wuliji, T. (2020). The WHO UNESCO FIP Pharmacy Education Taskforce: Enabling concerted and collective global action. *American Journal of Pharmaceutical Education*, 84(8), ajpe8215.

Bell, J. S., Aaltonen, S. E., Airaksinen, M. S., & Lavikainen, P. (2006). Developing the role of community pharmacists in the prevention and management of depression: A systematic review. *Health Policy, 79*(2-3), 213-225.

Bosmans, J. E., van Schaik, D. J. F., de Bruijne, M. C., et al. (2018). Cost-effectiveness of collaborative care for depression in primary care: A systematic review. *BMC Family Practice, 19*, 79.

Bostwick, J. R., & Bucci, K. K. (2008). The pharmacist's role in depression screening and management. *Integrated Pharmacy Research & Practice*, 1, 1-6.

Bradley, F., Ashcroft, D. M., & Noyce, P. R. (2009). Integration and differentiation: A conceptual model of general practitioner and community pharmacist collaboration. *Research in Social and Administrative Pharmacy, 5*(4), 299-312.

Bunting, B. A., & Cranor, C. W. (2006). The Asheville Project: Long-term clinical, humanistic, and economic outcomes of a community-based medication therapy management program for asthma. *Journal of the American Pharmacists Association, 46*(2), 133–147.

Capoccia, K. L., Odegard, P. S., & Letassy, N. A. (2016). Medication adherence with diabetes medication: A systematic review of literature. *The Diabetes Educator, 42*(1), 34–71.

Choe, H. M., Mitrovich, S., Dubay, D., Hayward, R. A., Krein, S. L., & Vijan, S. (2012). Proactive case management of high-risk patients with type 2 diabetes mellitus by a clinical pharmacist: A randomized controlled trial. *American Journal of Managed Care, 18*(10), 689–696.

Chong, W. W., Aslani, P., & Chen, T. F. (2013). Pharmacist-patient communication on the use of antidepressants: A review of research literature. *Research in Social and Administrative Pharmacy, 9*(1), 10–25.

Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on seeking and participating in mental health care. *Psychological Science in Public Interest*, 15(2), 37-70.

Famiyeh, I.-M., McCarthy, L., O'Reilly, C., & Byrne, S. (2019). Community pharmacists' perceptions and experiences of providing mental health support: A qualitative study. *Research in Social and Administrative Pharmacy, 15*(6), 658-665.

Finley, P. R., Bluml, B. M., & Bunting, B. A. (2002). Clinical and economic outcomes of a pilot project evaluating pharmacist-provided medication therapy management services for patients with depression and anxiety. *Journal of the American Pharmacists Association*, 42(6), 755-765.

Gilbody, S., Bower, P., Fletcher, J., Richards, D., & Sutton, A. J. (2006). Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Archives of Internal Medicine*, 166(21), 2314-2321.

Hall, L. H., Thorneloe, R. J., Smith, K. E., & French, D. P. (2017). Health care professionals' attitudes towards patients with depression: A systematic review and meta-synthesis. *BMC Psychiatry, 17*, 101.

Hawes, E. M. (2015). Mental health and the pharmacist's role: A call to action. *North Carolina Medical Journal, 76*(1), 46-50.

Ishikawa, H., Hashimoto, H., & Kiuchi, T. (2019). The evolving role of pharmacists in mental health care: A narrative review. *Integrated Pharmacy Research & Practice, 8*, 15–23.

Kates, N., Mazowita, G., Lemire, F., Jayabarathan, A., Bland, R., Selby, P., & Isomura, T. (2011). The evolution of collaborative mental health care in Canada: A shared vision for the future. *Canadian Journal of Psychiatry*, 56(5), 1-10.

Kelly, D. V., Young, S., Phillips, L., & Clark, D. (2014). Patient attitudes regarding the role of pharmacists and interest in expanded pharmacist services. *Canadian Pharmacists Journal*, 147(4), 239-247.

Kitchener, B. A., & Jorm, A. F. (2006). Mental health first aid training: Review of evaluation studies. *Australian and New Zealand Journal of Psychiatry, 40*(1), 6-8.

Marra, C., Johnston, K., Santschi, V., & Tsuyuki, R. T. (2012). Cost-effectiveness of pharmacist care for managing hypertension in Canada. *Canadian Pharmacists Journal*, 145(3), 64-75.

O'Dell, K. M., Shah, S. A., & Hämeen-Anttila, K. (2020). Impact of educational interventions on pharmacists' mental health competencies: A systematic review. *American Journal of Pharmaceutical Education, 84*(8), ajpe7763.

O'Reilly, C. L., Bell, J. S., & Chen, T. F. (2011). Mental health consumers and caregivers as instructors for health professional students: A qualitative study. *Social Psychiatry and Psychiatric Epidemiology, 46*(7), 647-653.

Patel, S. Y., Mehrotra, A., Huskamp, H. A., Uscher-Pines, L., Ganguli, I., & Barnett, M. L. (2021). Trends in outpatient care delivery and telemedicine during the COVID-19 pandemic in the US. *JAMA Internal Medicine, 181*(3), 388–391.

Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., ... & Unützer, J. (2018). The Lancet Commission on global mental health and sustainable development. *The Lancet, 392*(10157), 1553-1598.

Pereira, C. A. M., Figueiredo, I. V., & Cavaco, A. M. (2022). Community pharmacy mental health services: A narrative review. *Research in Social and Administrative Pharmacy, 18*(7), 3105-3113.

Rathbone, A. P., & Prescott, J. (2017). The use of mobile apps and SMS messaging as physical and mental health interventions: Systematic review. *Journal of Medical Internet Research, 19*(8), e295.

Rickles, N. M., Dube, G. L., McCarter, A., Olshan, J. S., & Schommer, J. C. (2013). Pharmacist self-efficacy and beliefs about providing medication therapy management services. *Journal of the American Pharmacists Association, 53*(6), 710–719.

Rickles, N. M., Tieu, P., Myers, L., Galal, S., & Chung, V. (2010). The impact of a standardized patient program on pharmacy student attitudes toward suicide prevention. *American Journal of Pharmaceutical Education, 74*(4), 73.

Rosser, S., Frede, S., Conrad, W. F., & Isaacson, S. (2020). Integrating mental health screenings into pharmacy practice. *Journal of the American Pharmacists Association, 60*(3), 464–469.

Saini, B., Krass, I., & Smith, L. (2014). Mental health interventions in pharmacy practice: A literature review. *Research in Social and Administrative Pharmacy, 10*(4), 933–946.

Sanches, M., Costa, L., & Tavares, M. (2019). Pharmacist interventions in the treatment of depression: A systematic review. *International Journal of Clinical Pharmacy, 41*(3), 687-694.

Tofade, T., Hedrick, J. N., & Caiola, S. (2017). Transforming the role of the pharmacist in patient care: A case for change. *Journal of the American Pharmacists Association*, 57(5), 554-558.

Torous, J., Jän Myrick, K., Rauseo-Ricupero, N., & Firth, J. (2020). Digital mental health and COVID-19: Using technology today to accelerate the curve on access and quality tomorrow. *JMIR Mental Health*, 7(3), e18848.

Unützer, J., Harbin, H., Schoenbaum, M., & Druss, B. (2012). The collaborative care model: An approach for integrating physical and mental health care in Medicaid health homes. *Center for Health Care Strategies*, 1-13.

Wheeler, A. J., Fowler, J., Hattingh, L., & Kay-Lambkin, F. (2013). Exploring community pharmacy mental health services: A Northern Ireland perspective. *International Journal of Pharmacy Practice, 21*(6), 362-370. Wheeler, A. J., Humberstone, V., & Robinson, E. (2010). Evaluation of mental health first aid training of front-line community pharmacy staff. *Mental Health in Family Medicine*, 7(1), 27-35.

Witry, M. J., Doucette, W. R., & Urmie, J. M. (2019). Exploration of pharmacists' perceptions about mental illness and associated care delivery in community pharmacies. *Research in Social and Administrative Pharmacy, 15*(1), 92–97.

World Health Organization. (2021). Depression. https://www.who.int/news-room/fact-sheets/detail/depression

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