

Pharmacists' and Mental Health, Between Perceptions and Practice: A Cross-Sectional Study

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Research Article

Keywords: mental health, pharmacist, Jordan

Posted Date: August 18th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-805582/v1>

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Abstract

Background

Mental health issues such as depression and anxiety are usually underdiagnosed and undertreated. Medications are one primary modality in the management of mental health problems. Hence, pharmacists have a vital role in supporting patients regarding medications' efficacy and safety. However, the potential role of pharmacists in managing mental health issues in Jordan has not been well established.

Aim

This study aimed at assessing attitudes and actual practices of Jordanian pharmacists regarding providing mental health services.

Method:

This was a cross-sectional study that used a convenience sample of 347 pharmacists using a self-reported-based questionnaire, which took place in Amman, the capital of Jordan.

Results

Participating pharmacists had a positive attitude towards providing care for patients with mental health problems. However, their actual practice did not resonate with their enthusiasm, especially when it comes to long-term follow-up of disease symptom, medications' side effects and adherence. Pharmacists were eager to collaborate with their colleagues, but the level of actual cooperation was less than desired. The most commonly reported barrier was the lack of education on mental health issues (71.5%), followed by lack of privacy in the pharmacy settings (53.9%). To effectively involve pharmacist in the care of mental health patients, pharmacists should receive adequate education/training in the mental health topics, and pharmacies should be redesigned to provide a private area for patient counseling.

Conclusion

To effectively involve pharmacist in the care of mental health patients, pharmacists should receive adequate education/training in the mental health topics, and pharmacies should be redesigned to provide a private area for patient counseling.

Impact Of Findings On Practice

- Pharmacists are not competent enough with mental health issues and related medications, which may in turn lead to poor patients' outcomes.
- There is an urgent need to actively involve pharmacists in the care of patients with mental health issues by providing more education and promoting collaboration with other healthcare professionals.

Introduction

Mental health issues such as depression and anxiety are usually underdiagnosed and undertreated [1], both in high-income and low-to-middle Income Countries (LMICs) [1]. Many barriers may mitigate the ability of patients with mental health disorders to approach proper health care services and contribute directly to worsening their symptoms and poor quality of life [2]. However, studies have shown that pharmacists may play a pivotal role in improving patients' access to these services and significantly impact their mental health management [3, 4]. Especially, that pharmacists are considered easily accessible primary health care providers compared to others [5]. Pharmacists are equipped with knowledge about medications to treat these issues, as well as adequate skills to facilitate adherence to antipsychotic medications, and reduce their polypharmacy, provides counseling to patients about their disease and medications [6]. A study conducted by Bingham et al. demonstrated that pharmacists had a substantial improvement in the adherence of diabetic-mental health patients' to the psychotropic medications [7]. In patients with depression, pharmacists' intervention focused on educating the patient about their conditions, adherence to medications, efficacy and potential adverse drug reactions [8]. Specifically, pharmacists' efforts were centered on the management of adverse drug reactions, and altering the dose based on the safety and efficacy of medications. Pharmacist-led interventions showed a lower rate of non-adherence to antidepressants. However, there was no difference in the depression symptoms level nor the intervention's acceptability [8]. In schizophrenic patients, pharmacists' intervention lead to decrease in the number as well as the dose of antipsychotic medications [9]. Recommendations about the role of pharmacists in the care of patients with depression were well-described [10]. The latter include collecting data about depression patients regarding their demographics, clinical conditions and medications. In addition to identifying treatment-related problems (TRPs), and ensure safe and effective use of medications and finally, follow-up patients for long-term efficacy and safety, evaluate adherence, and the emergence of potential and/or actual TRPs. Unfortunately, in real practice, there were gaps to the application of full pharmaceutical care as pharmacists' role was limited to distribution of prescriptions, providing information about medications and managing side effects. There were two major unmet expectations. Firstly, there was a lack of privacy during the pharmacist-patient encounter and lack of patients' counselling throughout the treatment period. From patients' perspectives, the pharmacists should actively provide counseling and advice to depressive patients during their treatment instead of waiting for them to ask questions [11], [12].

In LMICs, there is a paucity of evidence about the prevalence and management of mental health disorders in these countries and various challenges in the management of these illnesses were identified. Health care providers, including pharmacists, suffer from the lack of training. Therefore, the education and training of pharmacists to deal with this mental health issue is very important in these countries [13]. Other challenges include lack of governmental support [14], conflicts, immigration, and economic crises (lack of resources) [15], [16]. Furthermore, stigma [17] that is associated with mental health illness and the level of discomfort with providing these services seems like a common barrier in LMICs and developed countries [18], [19].

Medications are one primary modality in the management of mental health problems. Hence, pharmacists have a vital role in supporting patients regarding medications' efficacy and safety and thus reducing the burden related to mental health. However, the potential role of pharmacists in managing mental health issues in Jordan has not been well established.

Aim

The study's aims are to evaluate attitudes and the actual practice of Jordanian pharmacists towards the care of patients with mental health issues.

Ethics approval

The study was conducted according to the Declaration of Helsinki. The Institutional Review Board granted ethical approval at the Applied Science University of Jordan (Approval number 2021-PHA-5).

Method

Study Design and Participants

A cross-sectional study was conducted in February 2021 using convince sampling methods. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was utilized as guidelines for reporting methods and results. The participants were recruited through social media platforms and online self-administered questionnaire of closed-ended questions was distributed to them via this platforms. Pharmacist in Jordan created these social media groups for general and professional communication especially during the COVID-19 pandemic. These included Jordan Pharmacist Association Facebook® group and miscellaneous pharmacists group on WhatsApp messenger. The questionnaire ensured the anonymity and confidentiality of participants so no identifier data about pharmacists were collected such as names, phone numbers, physical addresses, or emails. The first page of the questionnaire included comprehensive information about the study description and objectives, the researchers and their affiliations, eligibility criteria for participation, voluntary nature of participation and withdrawal from the study, benefits and risks, privacy and confidentiality aspects, data handling, as well as the contact details for any enquiry, thereafter an informed consent letter was presented and should be accepted as a prerequisite to proceed in participation. Questions were entered into and distributed via SurveyMonkey® Inc. (San Mateo, California, USA). No form of compensation was offered to participants upon their involvement in our study. Internet-based survey was selected due to the current pandemic restrictions on paper use and face-to-face communication. In addition, using the internet and social media for the recruitment and sampling procedures has shown to be an effective and time-efficient method to reach inaccessible potential participants from different Jordanian regions [20]. Pharmacists were included in this study if they were practicing Jordanian pharmacists and residing in Jordan during the pandemic crisis.

Instruments and Measures

The online questionnaire was created using SurveyMonkey® and was constructed in modern standard Arabic. The questionnaire was adopted from a previous survey, with modifications, [21] and consisted of three sections. The first section had questions about sociodemographic information including age, gender, marital status and region of residence, study level, job sector, and years of practice as well as professional experience. Professional experience was measured by the estimating the frequency at which pharmacists encountered patients with mental health issues (including depression, anxiety, post-traumatic stress disorder (PTSD)) in their practice (on a 5-point Likert scale ranging from 1, never, to 5, daily). The second section included questions about the role of pharmacists in mental health care in practice as well as attitudes towards these roles. Attitude items were assessed on a 5-point Likert scale with responses ranging from strongly disagree to strongly agree. Practice items were assessed on a 4-point Likert scale ranging from “I provide. .. to no patients” to “I provide. .. to all patients.” No “undecided” option was available for practice items, because these items concerned facts, not attitudes. In the third section, pharmacists were asked to indicate perceived barriers (from a list including pharmacist-, patient-, and system-level barriers) in taking up these roles. In the later section, pharmacists were asked with which partners they wanted to collaborate in the care of an individual patient with mental health and what the current level of cooperation was with these partners (using a 5-point Likert scale ranging from 1, indicating no cooperation, to 5, discussing how to deal with individual patients). Finally, perceived barriers to this cooperation were listed. A first version of the survey was piloted in a group of pharmacists who did not participate in the main study, and content and face validity were discussed with experts in the field. Based on the feedback, minor modifications were made to produce the final version.

Data Management And Analysis

Completed questionnaires were extracted from SurveyMonkey® and were then incorporated into SPSS version 24.0 (IBM, United States). Descriptive analysis and summary statistics were used in which categorical variables were described as frequency and percentage. Two-tailed t test was used to test the association between sociodemographic characteristics and current practices among participants in the care of patients with mental health issues. The confidence level was set at 95% and a P-value less than 0.05 was considered statistically significant.

Results

Sociodemographic characteristics

A total of 347 questionnaires were included in the final analysis. The majority of the participants were females (n = 264, 76.1%), aged between 21–29 years old (n = 236, 68%) and were living in the central region of Jordan (n = 183, 52.7%). Prominently, 71.8% of the participating pharmacists were holding a bachelor's degree (n = 249), 64.6% employed (n = 224) and 58.2% have 6–10 years of working experience (n = 202). More than half were working in community pharmacy settings (n = 127, 56.7%), with a salary between 300–599 JOD (n = 113, 50.4%). Around forty-five percent of them used to work for more than 40 hours per week (n = 101). Depression and anxiety were the most reported mental health conditions that pharmacist provides the pharmaceutical care for, 64.6 and 46.1%, respectively (Table 1).

Table 1
Sociodemographic characteristics of participants (n = 347)

Sociodemographic characteristics		n (%)
Gender	<i>Male</i>	83 (23.9%)
	<i>Female</i>	264 (76.1%)
Age (years)	<i>21–29</i>	236 (68%)
	<i>30–39</i>	48 (13.8%)
	<i>40–49</i>	50 (14.4%)
	<i>Above 50</i>	13 (3.7%)
Region	<i>North</i>	123 (35.5%)
	<i>Central</i>	183 (52.7%)
	<i>South</i>	41 (11.8%)
Marital Status	<i>Single/never married</i>	208 (59.9%)
	<i>Married/previously married</i>	139 (40.1%)
Highest education degree	<i>BPharm</i>	249 (71.8%)
	<i>PharmD</i>	46 (13.2%)
	<i>Postgraduate degree</i>	52 (15%)
Working experience (years)	<i>Less than 3 years</i>	53 (15.3%)
	<i>3–5 years</i>	28 (8.1%)
	<i>6–10 years</i>	202 (58.2%)
	<i>More than 10 years</i>	64 (18.4%)
Employment Status	<i>Employed</i>	224 (64.6%)
	<i>Unemployed/retired</i>	123 (35.4%)

* These characteristics were measured for currently employed participants (n = 224)

Sociodemographic characteristics		n (%)
Monthly income (in JOD)*	<i>Less than 300</i>	38 (17%)
	<i>300–599</i>	113 (50.4%)
	<i>More than 600</i>	73 (32.6%)
Practice setting*	<i>Community pharmacy</i>	127 (56.7%)
	<i>Hospital pharmacy</i>	33 (14.7%)
	<i>Others</i>	64 (28.6%)
Working hours/week*	<i>Less than 30 hours</i>	29 (12.9%)
	<i>30–40 hours</i>	94 (42%)
	<i>More than 40 hours</i>	101 (45.1%)
Conditions that you provided pharmaceutical care for patients with mental illness	<i>Depression</i>	224 (64.6%)
	<i>Anxiety</i>	160 (46.1%)
	<i>Attention deficit hyperactivity disorder (ADHD)</i>	37 (10.7%)
	<i>Eating disorders</i>	29 (12.9%)
	<i>Addiction</i>	48 (13.8%)
	<i>Post-partum depression</i>	60 (17.3%)
	<i>Obsessive compulsive disorder (OCD)</i>	69 (19.9%)
	<i>Schizophrenia</i>	36 (16.1%)
* These characteristics were measured for currently employed participants (n = 224)		

The Role Of Pharmacists In Mental Health Support Services

The participating pharmacists demonstrated a substantially positive attitude towards their potential role in mental health support, especially for depression and anxiety (Table 2). Among the total eleven roles, at least 70.8% (n = 246) of the pharmacists have agreed/strongly agreed on the need for service provision. The majority (n = 338, 97.5%) agreed/strongly agreed on the role of the pharmacist in advising the patient to consult the physician upon worsening of symptoms. In comparison to the pharmacist attitude for the eleven roles, the current practice was relatively low. Hence, the pharmacist reported providing many services for few or no patients. About 68.6% (n = 238) and 72% (n = 250) of the

participants provide a long-term follow-up for the symptoms of mental health problem/side effects and medication adherence, respectively, for few or no patients. On the other hand, more than 69% of them were prone to practice the following services for most or all the patients including providing support/listen to the patient, advising the patients to consult a physician when the symptoms worsen and when the pharmacist recognizes symptoms.

Table 2

Attitudes and current practices among participants in regard to their potential roles in the care of patients with mental health problems.

	Attitude			Current practice	
	<i>Strongly agree/agree</i>	<i>Neutral</i>	<i>Strongly disagree/disagree</i>	<i>No patients or up to a few patients</i>	<i>Most or all patients</i>
Maintain a trusting relationship	331 (95.4%)	14 (4%)	2 (0.6%)	127 (36.6%)	220 (63.4%)
Know the patient's medication history	320 (92.2%)	24 (6.9%)	3 (0.9%)	184 (53%)	163 (47%)
Provide information on condition (symptoms, causes, and treatment)	305 (87.9%)	33 (9.5%)	9 (2.6%)	147 (42.4%)	200 (57.6%)
Provide information on medication for treatment (side effects and duration)	334 (96.2%)	11 (3.2%)	2 (0.6%)	123 (35.4%)	224 (64.6%)
Short-term follow-up symptoms and side effects (2–4 weeks)	309 (89.1%)	32 (9.2%)	6 (1.7%)	211 (60.8%)	136 (39.2%)
Long-term follow-up symptoms and side effects	261 (75.2%)	72 (22.1%)	28 (8.1%)	238 (68.6%)	109 (31.4%)
Short-term follow-up medication adherence (2–4 weeks)	292 (84.1%)	43 (12.4%)	12 (3.5%)	216 (62.2%)	131 (37.8%)
Long-term follow-up medication adherence	246 (70.8%)	73 (21%)	28 (8.2%)	250 (72%)	97 (28%)
Provide support and listen to the patient	321 (92.5%)	22 (6.3%)	4 (1.2%)	107 (30.8%)	240 (69.2%)
Advise patient to consult a doctor when the pharmacist recognizes symptoms	336 (96.8%)	11 (3.2%)	-	82 (23.6%)	265 (76.4%)
Advise patient to consult a doctor when symptoms worsen	338 (97.4%)	7 (2%)	2 (0.6%)	73 (21%)	274 (79%)

In regard to the cooperation of pharmacists with other health care partners in serving patients with mental health problems, 94.8% (n = 329) reported the desire cooperation with Psychiatrists and 92.5% (n = 321) have chosen the pharmacists colleagues (Table 3). The current level of cooperation was relatively low with most of the partners, except

with the pharmacist and patients' relatives. Hence, the cooperation rate was more than 70%, ranged from the 'merely collegial relationship' to 'Pharmacist and partner discuss treatment medication of individual patients'. More than half of the participants confirmed the lack of cooperation with psychologists, community health care services and health insurance companies, 56.2%, 56.8% and 63.4%, respectively.

Table 3
Participants reported current level and desired level of cooperation with other partners in providing care for patients with mental health problems

	Desired Cooperation	The current level of cooperation				
		<i>No cooperation</i>	<i>Merely collegial relationship</i>	<i>Pharmacist receives general advice on treatment medication of patients</i>	<i>Pharmacist and partner share information about individual patients</i>	<i>Pharmacist and partner discuss treatment medication of individual patients</i>
General practitioners	294 (84.7%)	147 (42.4%)	95 (27.4%)	44 (12.7%)	26 (7.5%)	35 (10.1%)
Patients' relatives	279 (80.4%)	82 (23.6%)	n/a	n/a	265 (76.1%)	-
Psychiatrists	329 (94.8%)	166 (47.8%)	81 (23.3%)	31 (8.9%)	41 (11.8%)	28 (8.1%)
Psychologists	315 (90.8%)	195 (56.2%)	65 (18.7%)	36 (10.4%)	38 (11%)	13 (3.7%)
Pharmacist colleagues	321 (92.5%)	51 (14.7%)	105 (30.3%)	75 (21.6%)	66 (19%)	50 (14.4%)
Community health care services	306 (88.2%)	197 (56.8%)	65 (18.7%)	34 (9.8%)	35 (10.1%)	16 (4.6%)
Health insurance companies	267 (76.9%)	220 (63.4%)	66 (19%)	23 (6.6%)	23 (6.6%)	15 (4.3%)

Table 4 demonstrates the statistically significant association between the pharmacists' current practices and sociodemographic characteristics. The role "Know the patient's medication history" was significantly affected by gender, training in the mental health domain and length of working experience. Besides, the participants' gender and training in mental health significantly affected the short-term and long-term follow-up symptoms, side effects and medication adherence.

Table 4

Statistically significant association between sociodemographic characteristics and current practices among participants in the care of patients with mental health issues

Demographic variable	current practices among participants in the care of patients with mental health issues	Demographic variable subcategories		P-value
Gender		Male	Female	
	Maintain a trusting relationship	2.16 ± 0.97	1.82 ± 0.99	.008
	Know the patient's medication history	1.75 ± 0.88	1.44 ± 0.85	.005
	Short-term follow-up symptoms and side effects (2–4 weeks)	1.53 ± 0.95	1.23 ± 0.92	.012
	Long-term follow-up symptoms and side effects	1.40 ± 1.04	1.04 ± 0.93	.003
	Short-term follow-up medication adherence (2–4 weeks)	1.52 ± 0.95	1.16 ± 0.93	.030
	Long-term follow-up medication adherence	1.23 ± 0.99	0.94 ± 0.91	.016
Training in mental health		No previous training	Received a training	
	Know the patient's medication history	1.49 ± 0.76	1.72 ± 0.82	.043
	Provide information on condition (symptoms, causes, and treatment)	1.67 ± 0.84	2.0 ± 0.92	.008
	Provide information on medication for treatment (side effects and duration)	1.80 ± 0.82	2.07 ± 0.94	.028
	Short-term follow-up symptoms and side effects (2–4 weeks)	1.23 ± 0.81	1.58 ± 0.96	.005
	Long-term follow-up symptoms and side effects	1.07 ± 0.89	1.35 ± 0.94	.031
	Short-term follow-up medication adherence (2–4 weeks)	1.21 ± 0.85	1.49 ± 0.98	.037
	Long-term follow-up medication adherence	0.94 ± 0.92	1.22 ± 0.86	.029
Working experience		< Five years	≥ Five years	
	Know the patient's medication history	1.69 ± 0.88	1.46 ± 0.86	.037

The pharmacist perceived barriers to provide care for patients with mental health problems

Concerning the pharmacist perceived barriers to providing care for patients with mental health problems, Fig. 1 illustrated that the main barrier was the lack of education about the mental health problem (71.5%). While, more than 50% reported the lack of privacy in the pharmacy (53.9%), social stigma (48.4%), lack of enough information about the patient (45.2%) and lack of time for individual attention for patients (41.5%), as main barriers. Most of the answers were not substantially different between the two genders, except in the reporting of lack of time for individual attention and insufficient valorization of providing the mental health services, males were prominent over females.

Moreover, the perceived barriers to collaboration between pharmacists and other partners were assessed. Figure 2 clarifies that more than half of the study participants (58.8%) perceived the collaboration as unusual relation. Only,

5.2% disclosed the unnecessary need for cooperation with health partners. Noteworthy, more than half the participants with working experience of fewer than 5 years documented that time constraints (51.9%) and professional secrecy (61.7%) were the most perceived barriers.

Discussion

This study aimed to quantitatively describe the pharmacist's role in providing mental health services in Jordan, through assessing discrepancies between pharmacists' attitudes and current practices. Jordan is considered a LMIC with 64 mental health outpatient facilities and four mental hospitals established until 2012 [22]. However, there is a lack of mental health training for primary health care workers and interactions between the primary care and mental health systems are rare [22]. Pharmacists in Jordan are well-trained health care providers, with two bachelor programs (BPharm and PharmD) are found in Jordanian universities besides postgraduate programs (MSc and Ph.D.) [23]. Thus, we hypothesized that pharmacists in Jordan hold the potential to provide care to mental health patients.

Statement of key findings

Among seven other mental health conditions captured (anxiety, attention deficit hyperactivity disorder, eating disorders, addiction, post-partum depression, obsessive-compulsive disorder, schizophrenia), depression was reported as the most prevalent condition in Jordan, for which pharmacists provide pharmaceutical care services. Typically, this is seen in LMICs and can be explained by different factors like economic difficulties and the low socioeconomic status of the LMIC population [16]. In contrast, in industrial countries, anxiety seems to be the most prevalent mental disorder [24].

In our study, we showed that most pharmacists recruited in this study, 89% on average, endorsed a positive attitude toward their potential role in mental health care. Given this estimate, they perceive their role as more important than they practice in the real world. More than two-thirds of the included pharmacists were highly motivated; their willingness was to cover long-term follow-up medication adherence while most pharmacists (approximately 97%) were at least agreed to advise patients to consult a doctor when symptoms worsen or when the pharmacist recognizes symptoms.

The highest discrepancy in scores was observed in some items between pharmacists' attitudes and their current practice. This was when 70.8% of pharmacists strongly agreed on providing long-term follow-up medication adherence to mental health patients, and the same pharmacists saw that this initiative is away from the reality and few or no patients are provided long-term follow-up, same with the item of long-term follow-up symptoms and side effects. Same perspective was noticed with other two studies which underscore how the ongoing follow-up of antidepressant treatment adherence monitoring is still unmet in pharmacists' daily practice [25]; [26]. On the other hand, most pharmacists showed relatively lower discrepancy scores between their attitudes and practice when they were asked about providing support to their patients, advising their patients to consult doctors whether when the pharmacist recognizes symptoms or when symptoms worsen.

In Jordan, pharmacists believe that cooperation with psychiatrists is more important than cooperation with other health care providers. However, in practice, most pharmacists and partners share information about individual patients. Also, cooperation at different levels (receiving, sharing, or discussing information) is frequently seen between pharmacist and their colleagues. In Jordan, cooperation between pharmacists and psychologists, community health care services, and health insurance companies are lacking. This could be explained by different reasons like the low number of psychologists in Jordan [22], cultural sensitivity toward visiting psychologists, limited number of community health care facilities [27].

All responding pharmacists in Jordan perceived a lack of education in mental health issues as the most challenging barrier to providing care for patients with mental health. This was consistently seen in the literature [28], [29] and it was shown in our study that the high discrepancy in the scores between the attitude of pharmacists to provide long-term follow-up for symptoms, treatment side effects, and the current practice is due to lack of education programs. If pharmacists receive training on mental health issues and treatment, they can be involved more in the eleven roles evaluated in our study starting from maintaining a trusting relationship to advise when symptoms get worse. Pharmacists in Jordan also showed their need for some privacy in community pharmacies to discuss personal issues with their patients. The social stigma was perceived as the third barrier and this can be resolved by psychological awareness campaigns [27].

Nearly half of pharmacists made it clear that the unusual collaboration with other partners (patients or providers) and difficulty to get information from partners are considered the most challenging barriers for them to get involved in mental health care. The lack of collaboration between pharmacists and partners was observed by Scheerder *et al.* [21]. Different mechanisms were suggested to increase pharmacist-partner collaboration like treatment pathways utilizing a multidisciplinary team as per Locke *et al.*[30]. However, as a caution, any attempt to increase pharmacist-partner collaboration must need to consider the issue of patient confidentiality.

Strengths and weaknesses

This study, for the first time, provides an insight about a new role of pharmacists in the care of patients with mental health problems in a fair number of pharmacists in different settings. Our study has limitations. The cross-sectional nature of the study hinders us from withdrawing and cause-effect or temporal relationship between variables. Survey responses were online and self-reported; recruited pharmacists may have been biased toward the topic of depression; while the sample size of participating pharmacists is sufficient, the results of this study are limited to Jordanian settings, and therefore results cannot be generalizable to other countries. The results of this study can be considered exploratory and further research is needed to reveal the association between variables.

Interpretation

This study, for the first time, provides an insight about a new role of pharmacists in the care of patients with mental health problems in Jordan. Although Jordanian pharmacists endorsed a positive attitude toward their potential role in mental health care, their actual practice is not a reflection of this willingness. Pharmacists to be more involved in the care of patients with mental health. More active collaboration with other healthcare providers such as psychiatrics and psychologists. Pharmacists should receive further education and training in the mental health issues, and pharmacies should be redesigned to offer a private area for counseling of patients with mental health issues.

Future research

Future research should assess the effect the implementation of training and education in mental health issues on the actual clinical pharmacy practice within this scope. Also, the quality of mental health services provided by pharmacists as perceived by mental health patients and psychiatrics should be evaluated.

Declarations

Acknowledgement: authors would like to thank pharmacists who participated in this study.

Funding: No funding was received to produce this manuscript.

Conflict of interest: Authors have no conflict of interest to declare.

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Figures

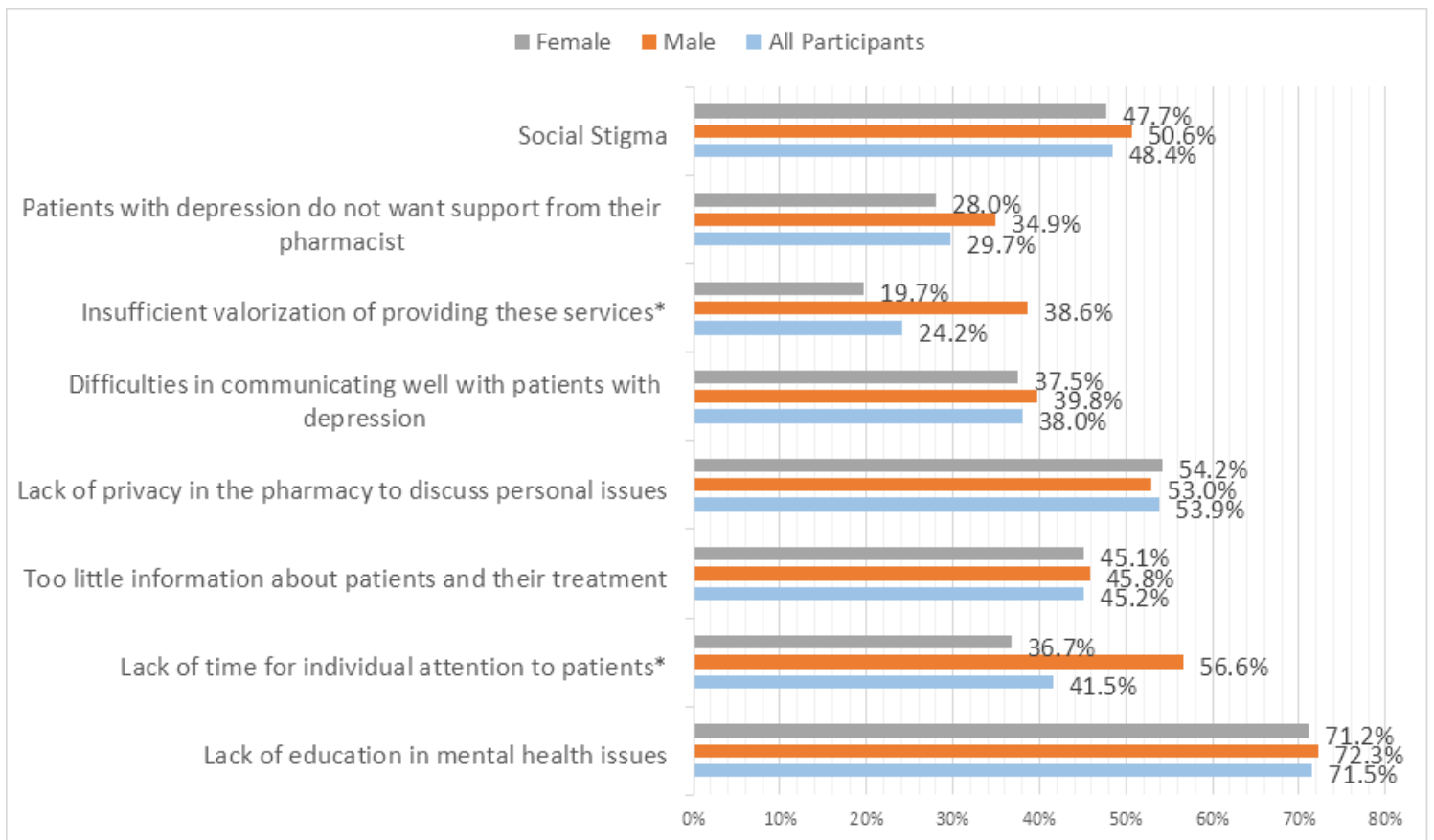


Figure 1

Pharmacists' perceived barriers to providing care for patients with mental health issues * p-value < 0.05

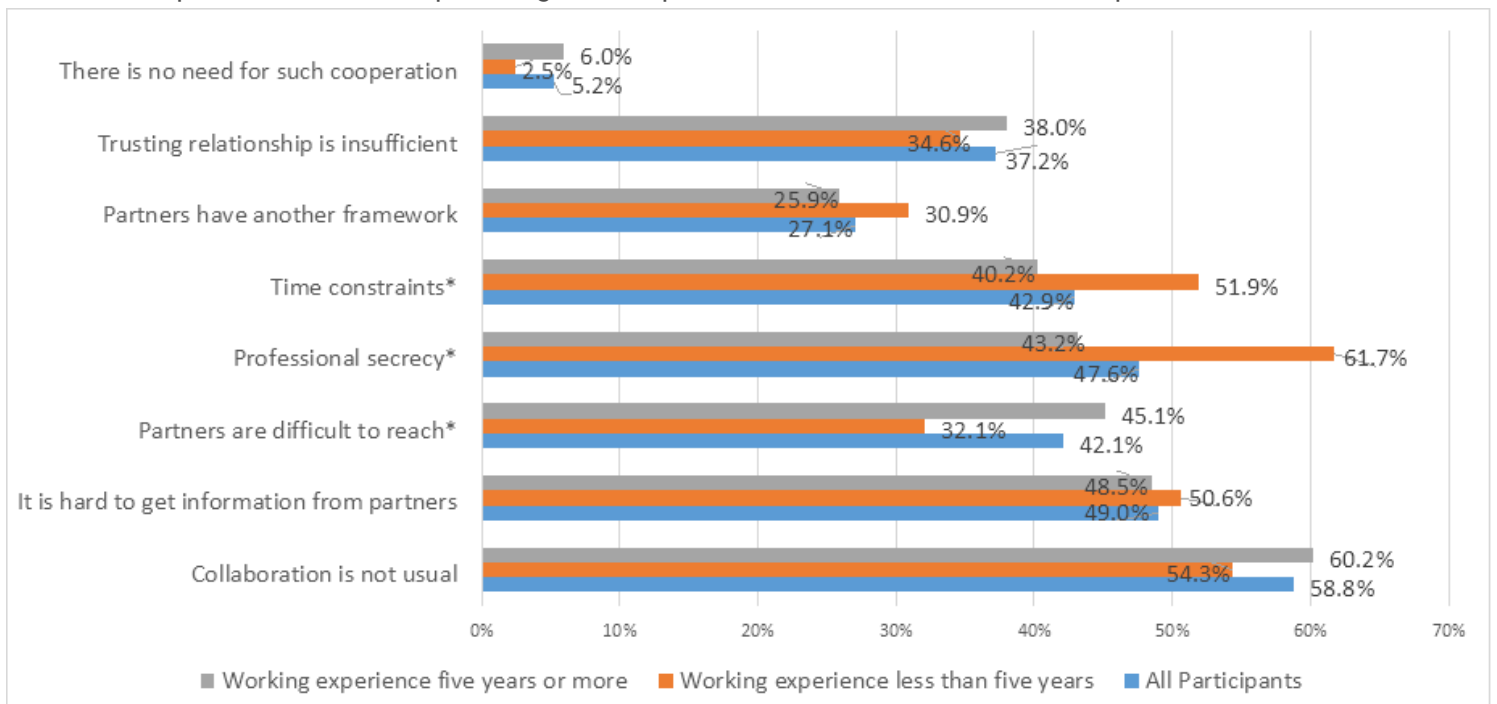


Figure 2

Perceived barriers to collaboration between participating pharmacists and other partners * p-value < 0.05