

Evaluating pharmacy students' perceptions of depression and psychotropic medicines in the Hashemite Kingdom of Jordan

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ABSTRACT

Background: Although enhancing of pharmacy students' knowledge and perceptions of mental illness is important for future career development, the pharmacy curricula in Jordan are largely deficient in mental health courses and no study has examined the attitudes of pharmacy students towards mental illness and their knowledge on psychotropic medicines in Jordan. **Objective:** To evaluate pharmacy students' knowledge on depression and psychotropic medicines and to assess their attitudes towards providing pharmaceutical care (PPC) to patients with depression. **Method:** A cross-sectional emailed survey was conducted on a purposive sample of 200 pharmacy students who were in 4th and 5th level in one Jordanian university. The questionnaire included four sections; demographics, knowledge on depression, attitude towards PPC to patients with depression, and knowledge on psychotropic medicines. Chi-square testing was used to determine significant relationships between demographics and other statements. **Results:** A total of 134 responses were received (response rate 67%). Most of students believed that patients with depression will not take antidepressants forever (n=104, 77.6%). Less than half (n=60, 44.8%) of students thought that antidepressants do not cause addiction. Eighty-seven students (64.9%) were able to monitor efficacy and adverse effects of antidepressants. Only about a third (n=52, 38.8%) of students knew venlafaxine, and 47.0% of students (n=63) didn't know vortioxetine. Having training courses on psychiatry were significantly associated with knowledge of pharmacy students in psychiatry (p<0.05). **Conclusion:** Despite students expressed positive attitude towards PPC to patients with depression, pharmacy students should improve their knowledge on psychiatric pharmacotherapy. Policy makers should include courses on psychiatric disorders and pharmacotherapy in university curricula.

Keywords: Attitudes, depression, mental illness, pharmacy students, pharmaceutical care, perception.

INTRODUCTION

The positive dimension of mental health is illustrated in the World Health Organization's (WHO) definition as: "health is not merely the absence of disease or disability but it is a condition of complete well-being whether physical, mental and social well-being". However, mental

illness is defined as "clinically significant conditions characterized by fluctuating in thinking, emotions and behaviour related with personal distress and/or impairment in function".^[1-2]

Depression is a common mental illness that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Moreover, depression is a major cause of disability across the world. This disorder is fundamentally interconnected with physical and social functioning and health outcomes.^[3-4]

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In Jordan, there is no main mental health authority in the country. The Head of Mental Health Specialty and the Director of the National Center for Mental Health in the Ministry of Health are the main authorities. The National Center for Mental Health (Karama) is the lead agency for the provision of mental health services, treatment and awareness, supervision and training^[5]. A majority (three of four) of the mental hospitals are organizationally integrated with mental health outpatient facilities, meaning only that each hospital has its own outpatient clinic. There is only one-day care center for mental health and it is private, and there are no community-based psychiatric inpatient units or community residential facilities^[6]. According to WHO (2017), depression was the second most common mental illness after anxiety in Jordan. The total estimated number of people living with depression in Jordan was more than 287 thousand (4.0% of the population)^[3].

Notably, the bachelor of pharmacy (BPharm) curricula in the Jordanian universities comprised of 3 main departments: Biopharmaceutics and Clinical Pharmacy, Pharmaceutics and Pharmaceutical Technology, and Medicinal Chemistry and Pharmacognosy. In addition to 1440 hours of practice training in community pharmacies, hospitals, or industry. These curricula focus on over-the-counter drugs (OTC) and chronic physical diseases such as asthma, diabetes, or hypertension. However, these curricula are largely deficient in mental health courses and clinical training.^[7-8]

Several studies investigated the attitude of pharmacy students towards PPC to patients generally^[9-10]. Other studies investigated the attitude of pharmacy students towards mental illnesses and suggested more training courses on psychotropic medicines and mental health to prepare pharmacy students to PPC to this population^[11-12-13-14].

Understanding the attitude of pharmacy students towards PPC to patients with depression and their knowledge on psychotropic medicines are very important to develop the future role of pharmacists in psychiatry^[15].

This study will add valuable information to the literature and can be used as a frame of reference for future studies as it is the first study to investigate pharmacy students' perceptions and knowledge of psychiatry in Jordan.

Objective

The purpose of this study was to evaluate pharmacy students' attitude towards PPC to patients with depression and their knowledge on depression and psychotropic medicines.

Method

A cross-sectional emailed survey was sent to all 200 pharmacy students (fourth and fifth year) in one Jordanian university. Those who were in the 1st, 2nd and 3rd year were excluded because they have not yet studied pharmacotherapy nor undertaken community pharmacy placements.

Ethics approval was obtained from the Institutional Review Board (IRB) at the University of (REDACTED) on 18th of July 2018. The consent to participate was implied by the act of completing and returning the e-survey.

Development of survey instrument

Following an extensive literature review on studies covering the evaluation of pharmacy students' perceptions of mental illness, a draft of an electronic survey was designed in order to cover the areas of our interest in this study. The consent to modify the questionnaire was obtained from Marshall Cates in March 2018^[16]. The questionnaire was written in two languages; it was written in the English language because it is the medium of instruction in Jordanian universities and was translated to the Arabic language as Arabic is the first language in Jordan. The translation was validated by the Translation Department at the University followed the standard 'forward-backward' procedure. The final version of the questionnaire was further tested for content validity by experts in the field who gave their constructive suggestions, positive feedback for the process^[17]. To ensure practicality, a pilot study was conducted by administering the survey to 10% of the parent sample (n=20) not included in the full survey^[18]. The survey was divided into

the following sections: Demographic section gathered information about pharmacy students' characteristics. Section I included questions to establish students' knowledge on depression. Section II measured students' attitude towards PPC to patients with depression. This section included a set of statements for which respondents were asked to indicate their agreement using a 3-point Likert scale. For the purpose of analysis, responses showing more interest or willing to do in the future (agree) as well as for the less interest and willing to do in the future (disagree and neutral) were combined. According to the 3-point Likert Scale, the minimum possible mean for each item was 1.00, and the maximum possible mean for each item was 3.00. The mean for each item was measured. The author judged that the answer was "agree" when the mean range was 1.00-1.66, which indicated to a "positive attitude". On the other hand, when the mean range was 1.67-3.00, the author judged that the answer was "disagree or neutral", which indicated to a "negative attitude". Section III included questions to evaluate students' knowledge on the most commonly psychotropic medicines prescribed in Jordan. Correct answers in the knowledge questions (section I and III) were based on the British National Formulary 2018 (a standard pharmaceutical reference book used in Jordanian pharmacy faculties).

Description of sample

The electronic survey was sent to 200 students studying in the Faculty of Pharmacy in the University of (REDACTED). Only who were in 4th and 5th level were included. Those who were studying in the 1st, 2nd and 3rd year were excluded because they did not study pharmacotherapy courses and they did not have training courses in the simulated model pharmacy or community pharmacies. One month later the survey was resent to the 200 students to increase the response rate.

Sample Size Determination

All the pharmacy students who were in the fourth and fifth year in the Faculty of Pharmacy at the University of (REDACTED) constituted the population of the study. The

formula which used to calculate the sample sizes was;

$$n = N / (1 + N(e^{-2}))$$

A confidence level of 95% was used to calculate the sample size. With a population size of 200 students, the necessary sample size was determined to be 132 students (www.raosoft.com).

Statistical analysis

The data were analysed using IBM SPSS 24. The internal reliability was evaluated by measuring the Cronbach's alpha. The descriptive analysis was performed using frequency/percentage for qualitative variables. Chi-Square testing was used to determine the relationship between the demographics and other statements.

Results

Response and respondent characteristics

A total of 134 completed the survey. The response rate was 67% (134/200). Respondent characteristics are shown in **Table 1**. The majority of students were female (n=81, 60.4%). Around two-thirds of students (n=87, 64.9%) were in the fifth year. Only 38.8% (n=52) had received a training course on psychotropic medicines and 27.6% (n=37) of students had received training on mental illness. More than half of students (n=77, 57.5%) knew someone who had experienced mental illness.

The knowledge of pharmacy students on depression

The majority (n=101, 75.4%) of students thought that depression is a common illness in Jordan and 112 students (83.6%) believed that children are able to experience depression. Only 48.5% (n=65) of the students believed that side effects of antidepressants are not worse than depression, and less than half (n=60, 44.8%) of them thought that antidepressants do not cause addiction. Less than half of students (n=66, 49.2%) believed that people with depression understand the information provided by pharmacists about their medications. The students who think that patients with depression will not take

antidepressants forever were 104 (77.6%) (**Fig 1**). Reliability for this section, as evidenced by Cronbach's alpha, demonstrated relatively high internal consistency ($\alpha=0.71$)^[19].

The attitude of pharmacy students towards providing pharmaceutical care to patients with depression

In general, 59.0% (n=79) of students were keen to obtain a medication history for patients with depression and to monitor efficacy and adverse effects of antidepressants. There were 84 students (62.7%) who were able to give patients with depression enough time to discuss their medications. Additionally, most students (n=83, 61.9%) were able to talk to patients with depression in a private area about their medications. The students were almost evenly split between able and not able to suggest antidepressants or changes in antidepressants dosages to doctors (**Fig 2**). The internal consistency for pharmacy students' attitude demonstrated high reliability ($\alpha=0.73$)^[19].

The knowledge of pharmacy students on psychotropic medicines

There were 44 students (32.8%) who agree that mood stabilizers are not first line for depression treatment and 71 students (53.0%) answered (I don't know) for this statement. Only 38.8% of students (n=52) knew vortioxetine and venlafaxine and 47% (n=63) didn't know quetiapine. Students were almost evenly split between those who knew anxiolytics, such as alprazolam and diazepam and the students who didn't know the correct answers (**Fig 3**).

Relationship between pharmacy students' variables

There were no major findings in regard to comparing demographics with students' attitudes. However, there were a number of statistically significant demographics when they were cross-tabulated with the students' knowledge. The age group 24-25 years had a higher percentage of correct answers compared with other groups ($p\text{ value} < 0.0001$). Women tended to answer correctly 2-3 times higher than men ($p\text{ value} = 0.002$). The students

who had a training course and answered correctly were 1.5-2 times more than those who did not have any training course and answered correctly ($p\text{ value} = 0.001$). However, the students who did not have a course answered "I do not know" 2-4 times higher than the students who had a course.

Discussion:

In the present study, we aimed to evaluate pharmacy students' perceptions of depression and their knowledge on psychotropic medicines.

In this study, most of students incorrectly believed that antidepressants cause addiction. This may be because the majority of the students had not received any training course on psychiatry or psychotropic medicines. Since most of the students mistakenly thought that antidepressants cause addiction, they have also incorrectly believed that side effects of antidepressants are worse than depression itself. Traditional pharmacy education, including lectures and tutorials-led by pharmacists, additionally, new models of pharmacy education involving greater participation of students in psychiatric clinics may well be useful to improve students' knowledge on psychiatry pharmacy practice. Previous research suggested that more comprehensive education and training programmes were important to develop the comprehension of pharmacy students about mental illness to meet the needs of mentally ill patients^[11-12-13-20]. Most of students in our study believed that patients with depression don't understand information provided by pharmacists about their medications. This answer was reflective of the negative perception towards mentally ill people. This could have made most of students abstain from following up with patients regarding their medications in future. According to the Modified Theory of Planned Behavior (MTPB)^[21], knowledge significantly affects attitude, and consequently attitude affects behaviour.

Pharmacy students expressed good, unprejudiced attitude towards PPC to patients with depression. This finding was consistent with several studies^[9-10-22],

Alarifi's study showed positive attitudes towards PPC by students in Saudi Arabia [10]. Most students in our study were keen to give patients with depression enough time to discuss their medications and talk to those patients in a private area about their medications. This result was congruent with a previous study in the UK, which indicated that more than half of the students were confident to discuss mental health issues with patients [22]. On the other hand, the students in our study acknowledged that they were not able to suggest antidepressants to doctors. This was consistent with other studies [23-24], which revealed less positive attitudes in decision-making about psychotropic medications. This might be due to students' poor knowledge on psychotropic pharmacotherapy; as more than two-thirds of the students did not have any training course on psychiatric medications. Any negative attitude of pharmacy students towards PPC is considered as a potential barrier towards dealing with mentally ill patients in future.

Expectedly, the majority of students were not sufficiently informed about psychotropics. The lack of mental health pharmacy education could be considered as the major reason behind poor knowledge. This was consistent with Farmer *et al* who revealed that students had poor knowledge regarding psychotropic medications [25]. Pharmacists are frequently consulted on psychotropics within their communities. Medication counselling can improve patient's adherence to medications used for mental illnesses in particular. Hence, if the pharmacy students haven't had appropriate knowledge on psychiatry pharmacotherapy, this could well enhance the stigma towards and miscommunication with the mentally ill patients.

We failed to find a relationship between the level of study and students' attitude towards PPC to patients with depression. Unsurprisingly, having a training course on psychotropic medicines or mental illness was the most significant factor. This means that the students improved their knowledge to some extent on psychiatric

pharmacotherapy by attending related courses, which emphasises the need to focus on psychiatric pharmacotherapy courses to increase students' familiarity with mental illness, and thereby boosting their positive attitude towards the mentally ill. Bell and Cate revealed the positive impact of psychiatric clinical rotation on students' attitude towards mental illness [14-26]. Gable *et al.* (2011) argued that advanced training in mental conditions is vital to develop pharmacy students' perceptions and prepare them to provide unbiased patient-centered care [12].

Our study added valuable information to the literature, since this study highlights, for the first time in Jordan, the perception of pharmacy students about depression and psychotropics. Therefore, it can be used as a frame of reference for future studies.

Several limitations of our study must be taken into account. First, the e-survey was sent to students in one particular location. Therefore, the students' attitudes or knowledge may not be representative of all pharmacy students in Jordan. Second, the questionnaire contained questions about specific types of psychotropic medications rather than covering all types of psychotropic medications.

Future Research Recommendations:

Understanding the attitudes of pharmacy students toward people with mental disorders is very important for developing the future role of the pharmacist in supporting people with a mental illness. Larger studies investigating pharmacy students' perceptions on mental illness using a larger sample size at other universities in Jordan should be conducted. Future studies should evaluate specific educational experiences within the undergraduate curriculum using before/after study design. Following up with students during their experiential education clerkships and again after graduation would also be beneficial. Further studies should be conducted to investigate their perceptions of other mental illness such as schizophrenia and obsessive-compulsive disorder.

Conclusion

In general, pharmacy students expressed overall

positive attitudes towards PPC to patients with depression. They, however, had poor knowledge on depression and psychotropic medicines. The results of our study suggested more educational programmes that address and develop pharmacy students' knowledge on psychiatric pharmacotherapy. Policymakers should include courses on mental illness and related medications in university

curricula for pharmacy students. New educational strategies may be also required to foster students' attitudes toward people with mental illness.

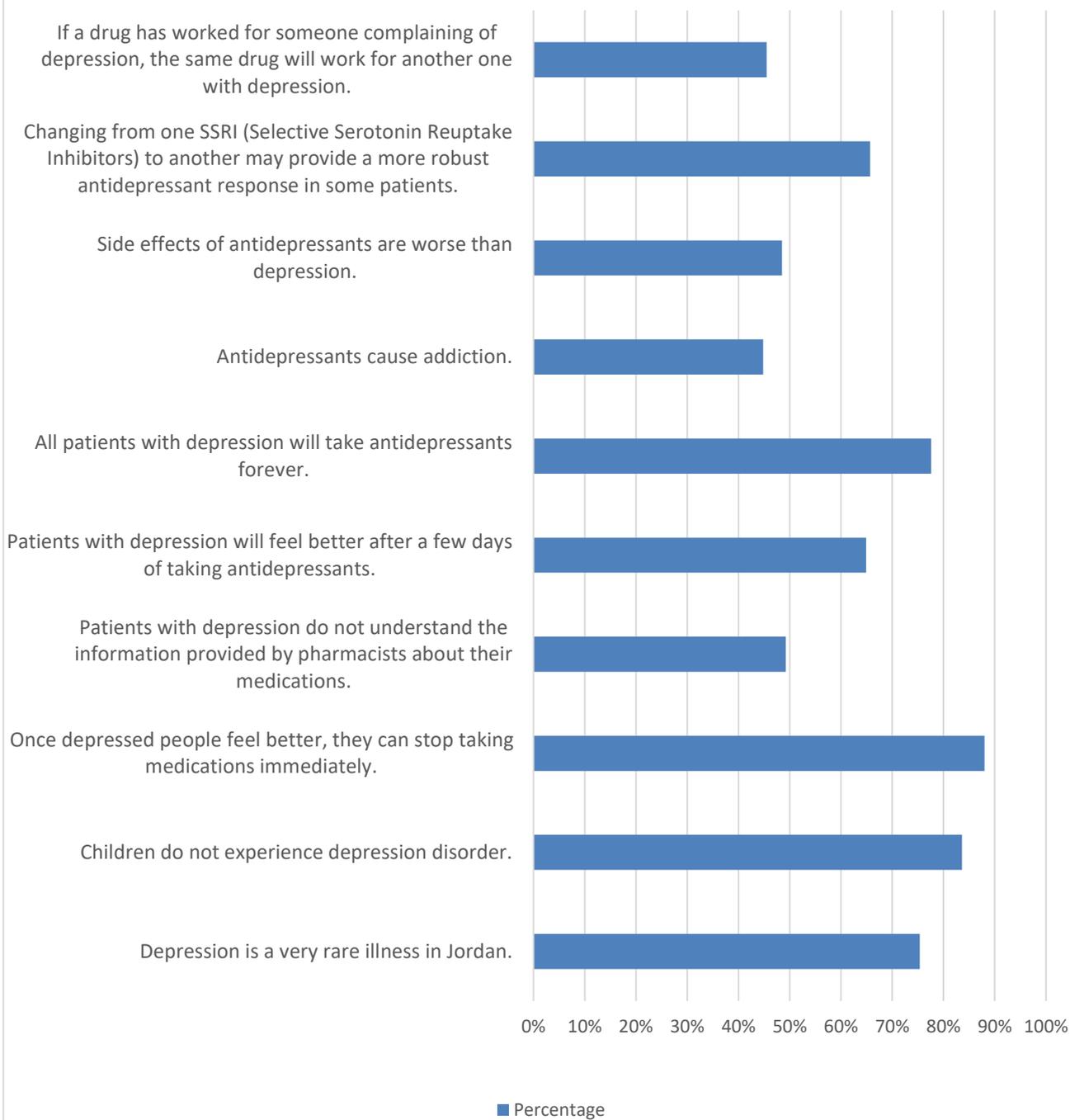
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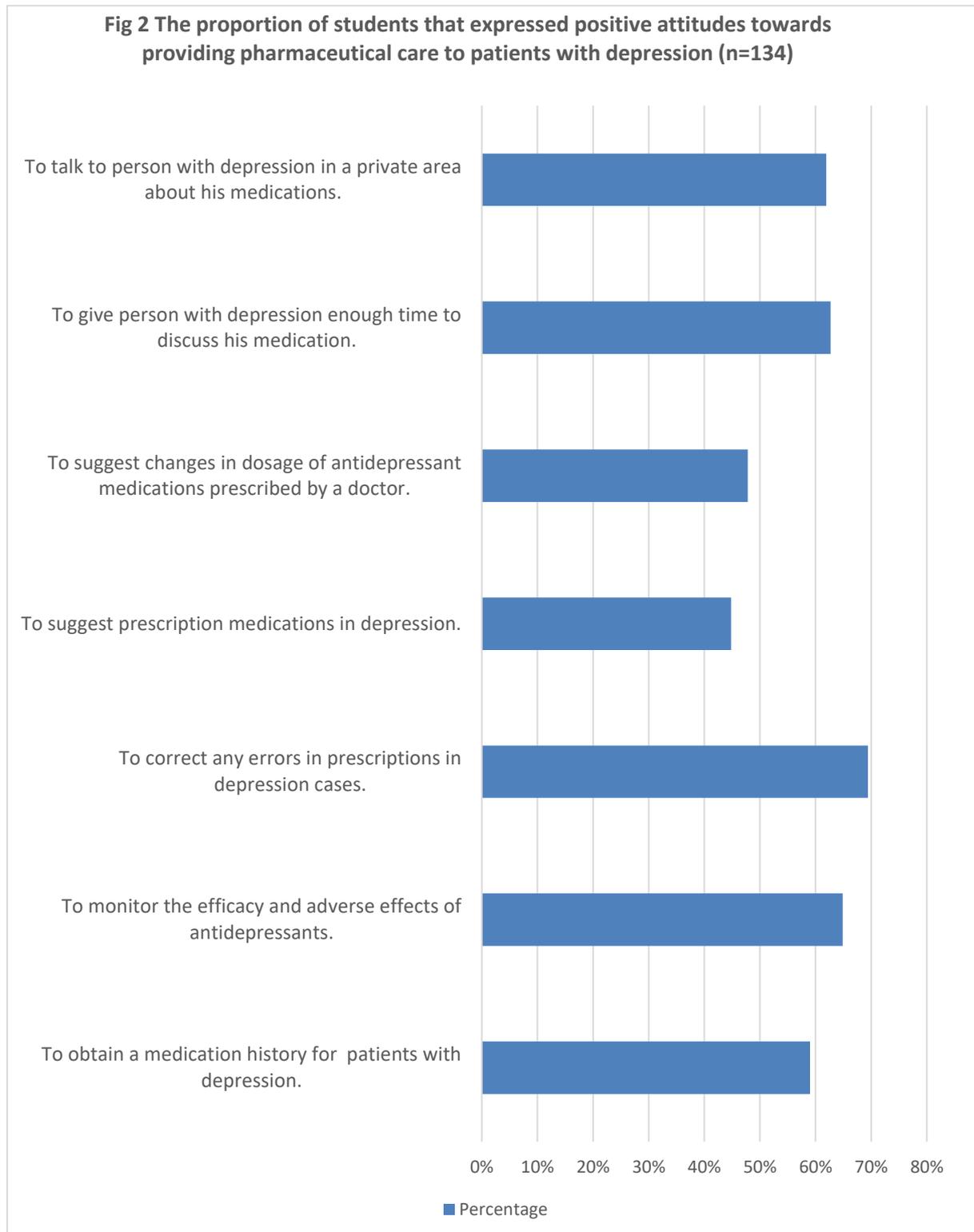
We thank all pharmacy students who participated and provided insight that greatly assisted the research.

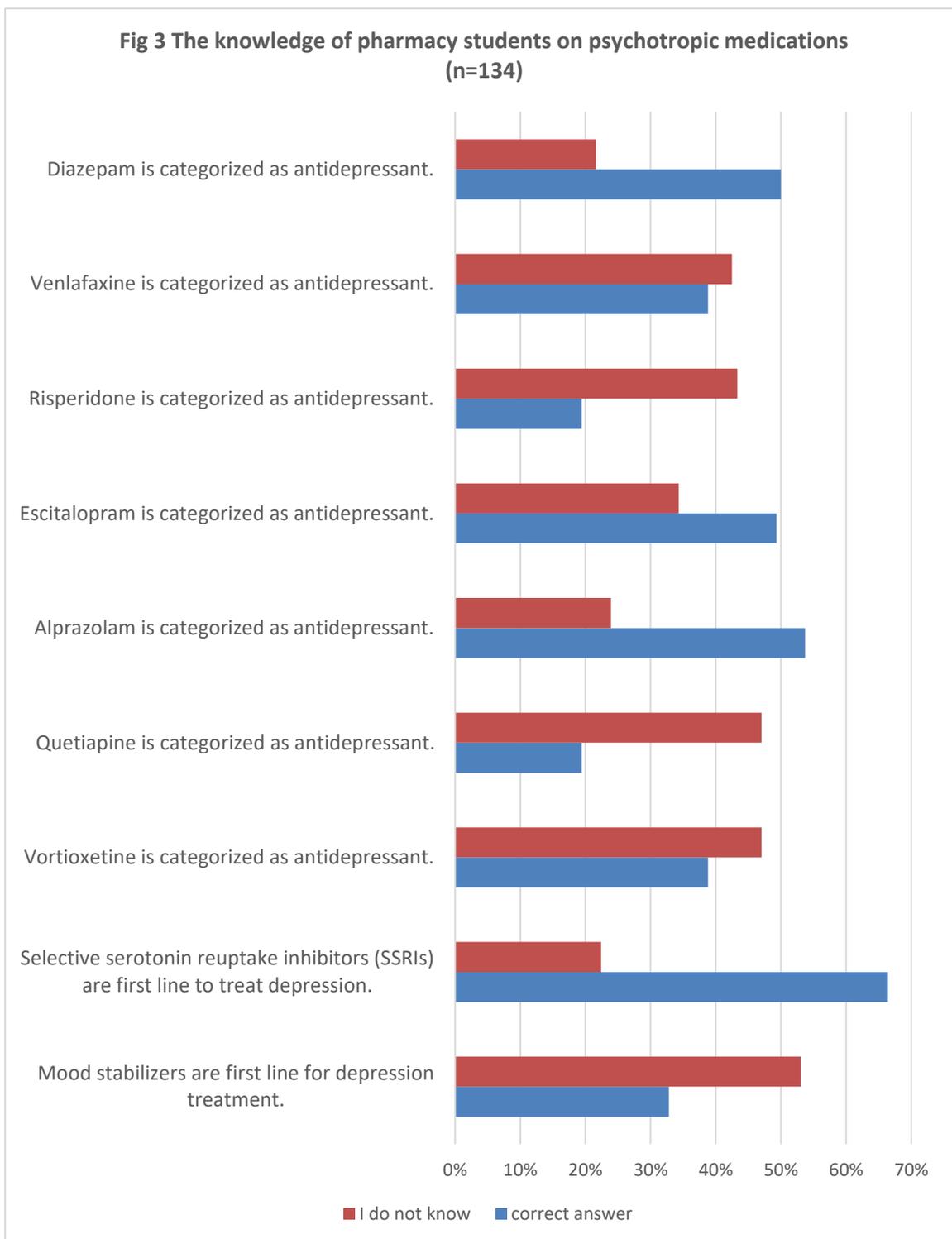
Table 1. Demographic variables for students' sample (n = 134)

<i>Characteristic</i>	<i>n (%)</i>
<i>How old are you?</i>	
<20	7 (5.2)
20-21	37 (27.6)
22-23	43 (32.1)
24-25	47 (35.1)
<i>What's your gender?</i>	
Female	81 (60.4)
Male	53 (39.6)
<i>Which university year are you in now?</i>	
Fourth year	47 (35.1)
Fifth year	87 (64.9)
<i>Have you ever visited an institution for patients with mental illness?</i>	
Yes	19 (14.2)
No	115 (85.8)
<i>Have you ever had a training course on psychiatric medications at a university or another venue?</i>	
Yes	52 (38.8)
No	82 (61.2)
<i>Have you ever had a training course on mental health conditions at a university or another venue?</i>	
Yes	37 (27.6)
No	97 (72.4)
<i>Have you ever known someone with a mental illness?</i>	
Yes	77 (57.5)
No	57 (42.5)

Fig 1 The proportion of students that displayed correct knowledge on depression (n=134)







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تقييم تصورات طلاب الصيدلة للاكتئاب والأدوية النفسية في المملكة الأردنية الهاشمية

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ملخص

الخلفية: على الرغم من أن تعزيز معرفة طلاب الصيدلة وتصورتهم للأمراض العقلية أمر مهم للتطوير الوظيفي في المستقبل، إلا أن مناهج الصيدلة في الأردن تعاني من نقص كبير في دورات الصحة العقلية ولم تدرس أي دراسة مواقف طلاب الصيدلة تجاه الأمراض العقلية ومعرفتهم بالأدوية العقلية في الأردن.

الهدف: تقييم معرفة طلاب الصيدلة بالاكتئاب والأدوية النفسية وتقييم مواقفهم تجاه توفير الرعاية الصيدلانية للمرضى الذين يعانون من الاكتئاب.

الطريقة: تم إجراء مسح عبر البريد الإلكتروني على عينة مؤلفة من 200 طالب صيدلانية كانوا في السنة الرابعة والخامسة في جامعة أردنية واحدة. وتضمن الاستبيان أربعة أقسام؛ خصائص العينة، والمعرفة بشأن الاكتئاب، والموقف تجاه تقديم الرعاية الصيدلانية للمرضى الذين يعانون من الاكتئاب، ومعرفة طلاب الصيدلة حول الأدوية العقلية. تم استخدام اختبار-Chi square لتحديد العلاقات الهامة بين الترخصائص العينة والبيانات الأخرى.

النتائج: ورد ما مجموعه 134 رداً (معدل الاستجابة 67 في المائة). يعتقد معظم الطلاب أن المرضى الذين يعانون من الاكتئاب لن يتناولوا مضادات الاكتئاب إلى الأبد (ن = 104 ، 77.6%). أقل من نصف (ن = 60 ، 44.8%) من الطلاب يعتقدون أن مضادات الاكتئاب لا تسبب الإدمان. فقط حوالي ثلث (ن = 52 ، 38.8%) من الطلاب يعرفون فينلافاكسين، و 47.0% من الطلاب (ن = 63) لا يعرفون فورتوكسيتين. وارتبطت الدورات التدريبية في الطب النفسي ارتباطاً كبيراً بمعرفة طلاب الصيدلة في الطب النفسي (ص > 0.05).

الخلاصة: على الرغم من أن الطلاب أعربوا عن موقف إيجابي تجاه PPC للمرضى الذين يعانون من الاكتئاب، يجب على طلاب الصيدلة تحسين معرفتهم بالعلاج الدوائي النفسي. وينبغي أن يدرج واضعو السياسات دورات عن الاضطرابات النفسية والعلاج الدوائي في المناهج الجامعية.

الكلمات الدالة: المواقف، الاكتئاب، الأمراض العقلية، طلاب الصيدلة، الرعاية الصيدلانية، الإدراك .

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