



Research article

Undergraduate health profession students attitudes toward illicit substance users in Jordan

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ABSTRACT

Background: The use of illicit substances is a critical international issue that must be addressed by healthcare systems worldwide. Today, the problem of illicit substance use is increasingly becoming a burden on healthcare systems in both developed and developing countries. The aims of this study were: (1) to describe the attitudes of health major undergraduate students (the study participants) toward illicit substance users; (2) to describe the discriminatory behaviors among the study participants toward illicit substance users; and (3) to examine the relationship between the attitudes and the actual discriminatory behaviors of the study participants.

Method: A cross-sectional descriptive design was used to investigate the attitudes and behaviors of health professional undergraduate students enrolled at university in Jordan.

Results: Students who were younger and identified as female were generally more positive toward illicit substance users versus those students who were older and identified as male.

Conclusion: The findings of this study supported the literature that students who were younger and identified as female were generally more positive toward illicit substance users versus those students who were older and identified as male. It is therefore important to determine whether the type of courses in health majors available for undergraduate students affects their attitudes toward illicit substance users.

1. Introduction

The use of illicit substances is a critical international issue that must be addressed by healthcare systems worldwide. Today, the problem of illicit substance use is progressively becoming a burden on healthcare systems in both developed and developing countries, including Jordan. The use of illicit substances is increasingly significant in the Jordanian population. According to the Anti-Narcotics Department (2016), more than 3,500 Jordanians use illicit substances every year, with most using hashish (an extract from the cannabis plant) and prescription drugs such as tranquilizers. Moreover, the Anti-Narcotics Department (2016) estimates that more than 16 percent of undergraduate students in Jordanian universities are illicit substance users. It has also been estimated that more than 85 percent of illicit substance users in Jordan do not receive appropriate treatment (Gallagher et al., 2007). These large numbers serve as an indicator that the emerging healthcare professional must be ready to care for such patients in Jordan.

To address the increasing need to care for illicit substance users in Jordan, it is necessary to train the students in health majors at the undergraduate level to care for these patients, as well develop and implement culturally appropriate healthcare. Future healthcare providers, specifically nurses and physicians, should be properly trained to provide care to people who suffer from illicit substance use. It is reported that many health major undergraduate students hold negative attitudes toward illicit substance users, which leads to degrading and discriminatory behavior (Gilchrist et al., 2011). It is also reported that stigma towards illicit substance users affects their decision to seek treatment (Knaak et al., 2017; Abuhammad et al., 2018). To make effective change in the attitudes of undergraduate students, it is important to understand their attitudes and potential discriminatory behaviors before they become licensed healthcare providers.

Like other societies, Jordan struggles with the issue of illicit substances, and the ambivalence about illicit substances may intensify the shame and discrimination experienced by illicit substance users (Ahmad and Dardas, 2016). Healthcare professionals may also have a

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negative attitude toward illicit substance users. Gilchrist et al. (2011) found that negative attitudes toward drug users are higher when compared to attitudes to patients with chronic diseases (such as cancers, hypertension, and diabetes mellitus). Similarly, McLaughlin et al. (2006) examined healthcare provider satisfaction when working with illicit substance users and found a negative attitude and unwillingness to work with such patients. Ford et al. (2008) and Rao et al. (2009) also reported poor satisfaction and motivation among healthcare workers in caring for illicit substance users compared to caring for patients with chronic diseases.

Negative attitudes to drug users may be present in healthcare providers. Negative attitudes are generally related to difficulties experienced while working with this type of patient compared to patients with other disorders (Ford et al., 2008). Russell Crane and Payne (2011) found that United States (US) physicians believed more strongly in helping illicit substance users compared to physicians in the United Kingdom. The researchers also believed that having a personal or professional experience in dealing with substance users might have enhanced their ability to care for them more effectively. Earlier studies in the US and Australia found that many healthcare providers, especially physicians in healthcare centers, had a positive non-discriminatory attitude toward illicit substance users (Pinikahana et al., 2002; Seitz et al., 2010). These healthcare providers repudiated the stereotypical discriminatory behaviors toward these patients and recommended providing them with the most efficient interventions for treating their illicit substance use (Pinikahana et al., 2002; Seitz et al., 2010).

Healthcare providers' attitudes toward illicit substance users may have a negative impact on treatment outcomes and the patient's self-esteem. Curtis and Harrison (2001) indicated that healthcare providers unwittingly impose their beliefs and prejudices on the illicit substance user, which consequently impedes the trust relationship between the healthcare provider and the illicit substance user. In Arab cultures, such as Egypt, problems of illicit substance use are considered an inter-subjective issue rather than an intra-psycho issue; less blame is placed on the individual; substance use becomes a threat to social status, leading to isolation and refusal to seek treatment (Coker, 2005; Gang et al., 2014; Robson et al., 2013).

Cultural differences were found between western countries such as the US and developing countries such as Egypt regarding drug use. Marrow and Luhrmann (2012) describe that many factors, such as family honor, shame, moral responsibility, and the cultural acceptance of treatment, may cause families to hide family members with psychiatric problems and substance use. Considering these factors: cultural differences, negative attitudes towards those with substance use disorder and the increasing problem of substance use, it is vital that the emerging professional be well-equipped to care for these types of patients in a culturally sensitive way (Cintas et al., 2012; De Micheli and Formigoni, 2004). However, data on the attitude of undergraduate health majors towards drug use is lacking in northern Jordan.

Therefore, the purpose of this study was to identify and describe the attitudes and discriminatory behaviors of students in undergraduate health majors toward illicit substance users since most of the studies regarding this issue in the world are old. The objectives include: (1) Describe the attitudes of health professional undergraduate students (the study participants) toward illicit substance users; (2) Describe the discriminatory behaviors among the study participants toward illicit substance users; (3) Examine the association between the attitudes and the actual discriminatory behaviors of the study participants.

2. Method

2.1. Design

A cross-sectional descriptive design was used to study a convenience sample of undergraduate students in health majors.

2.2. Setting and sample

Participants were recruited from students enrolled in health majors at Jordan University of Science and Technology, which has a body of 25,000 undergraduate students from 64 nationalities. Only Jordanian students were recruited because students of other nationalities may have different experiences and cultural attitudes toward illicit substance users. The inclusion criteria were 1) Jordanian undergraduate students in health majors, and 2) must be 18 years or older. The sample size was calculated based on multiple linear regression analyses using G. power 4.0 software, which found that 145 participants were needed for moderate effect size of .2; alpha .05, a power of .80. Students from all healthcare professions, including medicine, dentistry, nursing, midwifery, pharmacology/pharmacy, and other health majors (radiology, medical laboratory, occupational therapy) participated in the study. A total of 251 students volunteered to participate and signed the informed consent form.

2.3. Ethical consideration

This study was approved by the IRB of Jordan University of Science and Technology (IRB # 2017232). The participants were informed about the purpose of the study, the volunteer nature of the study, how the data would be used, data security, and the plans for disseminating the results of the study. Those willing to participate signed a consent form.

2.4. Procedure and data collection

Undergraduate students (Health major) were recruited from Jordan University of Science and Technology in Irbid City after approval from the Institutional Review Board (IRB). The following strategies were used to recruit participants.

A flyer with information about the study was developed and sent to the professors/heads of departments in health majors at Jordan University of Science and Technology via email, informing them about the study and asking permission to visit their classroom to speak to the students about the study. If the head of department agreed, the researchers visited their classroom and spoke to the students, explained the purpose of the study and answered any questions. Those who were interested were given a packet consisting of a survey (described below) and an informed consent form. The participants signed the consent form. The students had the option to complete the survey in the school or drop it off later in designated boxes provided in their departments. It was estimated that they could complete the survey in 30–45 minutes. Data were collected between October 2017 and March 2018 and stored in a locked cabinet in the principal investigator's office.

2.5. Measures

Participants completed a structured questionnaire that consisted of three parts: (1) a socio-demographic form, (2) the Attitudes toward Acute Mental Health Scale (ATAMHS, Baker et al., 2005) and (3) the Devaluation-Discrimination Scale (DDS; Link et al., 1989).

Socio-demographic characteristics: This section of the survey collected descriptive information about the participants, including age, gender, academic level, family income, father's education, mother's education, and personal and professional experiences with illicit substance users.

2.5.1. Attitudes toward Acute Mental Health Scale (ATAMHS)

Mental health researchers consider illicit substance use as a mental health illness and have used the ATAMHS to assess attitudes toward them (Alvidrez et al., 2009; Baker et al., 2005). The ATAMHS consists of 21 items in 5 subscales designed to measure the attitudes toward patients who use illicit substances (Baker et al., 2005). The subscales include (1) care or control (12 items; e.g. 'Alcohol abusers have no self-control'); (2) semantic differentials (seven items; e.g. Indicate on a line how

'dangerous' or 'safe' nurses considered illicit substance users to be in general); (3) therapeutic perspectives (six items; e.g. 'Psychiatric treatments cause patients to worry too much about their symptoms'); (4) hard to help (four items; e.g. 'Illicit substance uses are genetic in origin'); and (5) positive attitudes (four items; e.g. 'People are born vulnerable to illicit substance use'). The reliability of ATAMHS was found to be a Cronbach's alpha of .72 (Baker et al., 2005).

2.5.2. Devaluation-discriminatory scale

The extent of perceived Devaluation-discriminatory behaviors toward illicit substance users was assessed by using the DDS (Link et al., 1989). This scale is more generally used for illicit substance illness but also applies to substance use problems in general (Luoma et al., 2008). This measure is composed of 12 items, which assess the extent of rejection expectations – more specifically, the belief that most individuals will devalue or discriminate against an illicit substance user. A five-point Likert scale, ranging from “never” to “always” is employed. The internal consistency of the DDS was found to be .76 (e.g., Alvidrez et al., 2009).

The ATAMHS and DDS were originally in English and permission to use and translate both these tools from the original authors to the Arabic language was obtained. The original tools were translated into Arabic, reverse translated and verified for accuracy and consistency by two professors fluent in English and Arabic.

2.6. Data analysis

Data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS v. 24; IBM). Descriptive statistics and percentages

were used to describe the participants. Linear regression analysis was used to determine whether attitudes could significantly predict the discriminatory behaviors of the participants toward illicit substance users. The statistical significance level was set at $p < .05$.

3. Results

Students from all healthcare professions participated in the study. A total of 251 students signed the informed consent form and participated in the study.

3.1. Socio-demographic and medical characteristics

A total of 251 students from all major health professions participated in the study. The mean age of the participants was 21.34 (± 2.68) years; 67.3% were female, and 89.6% were single. The majority were nursing and midwifery students (37.5%), and 31.5% were in medicine and dentistry. More than one-third (33.1%) were fourth-year students. Around 40.2% indicated that their mothers had primary or secondary education, and 35.1% indicated that primary or secondary education for their fathers. More than one-third (33.9%) of the participants had a very high income compared to Jordanian people. A detailed description of the demographic data is found in Table 1. About 30.7% knew a person using illicit substances and 21.1% knew a friend using illicit substances. Only 15.9% had experienced caring for an illicit substance user.

Students' attitudes towards illicit substance users in Jordan was examined, and each item and the mean score are given in Table 2. Agree and strongly agree are clustered together for reporting. Most students agreed that alcohol users have no self-control (73.6% Item #1 agree and

Table 1. Demographic characteristics for the sample based on gender; mean \pm SD or frequency (percentage).

Variable	Total N (%)	Male N (%)	Female N (%)	P-value
Age	M = 21.3 \pm 2.7	M = 22.1 \pm 2.2	M = 21.0 \pm 2.8	.001
Marital Status				
Single	225 (89.6)	69 (84.1)	156 (92.3)	
Married	12 (4.8)	4 (4.9)	8 (4.7)	
Divorced	14 (5.6)	9 (11.0)	5 (3.0)	
Income (annual)				.29
\leq 3600 JD	116 (46.2)	34 (41.5)	82 (48.5)	
>3600 JD	135 (53.8)	48 (58.5)	87 (51.5)	
Education				.001
\leq 3rd year	131 (52.2)	31 (37.8)	100 (59.2)	
\geq 4th year	120 (47.8)	51 (62.2)	69 (40.8)	
Specialty				<.001
Nursing/Midwifery	94 (37.5)	19 (23.2)	75 (44.4)	
Medicine/Dentistry	79 (31.5)	40 (48.8)	39 (23.1)	
Pharmacy/Pharmacy D	30 (12)	14 (17.1)	16 (9.5)	
Other	48 (19.1)	9 (11.0)	39 (23.1)	
Father Education				.04
Primary or secondary	131 (52.2)	35 (42.7)	96 (56.8)	
Bachelor or more	120 (47.8)	47 (57.3)	73 (43.2)	
Mother Education				<.001
Primary or secondary	157 (62.5)	38 (46.3)	119 (70.4)	
Bachelor or more	94 (37.5)	44 (53.7)	50 (29.6)	
Know person with use				<.001
Yes	77 (30.7)	38 (46.3)	39 (23.1)	
No	174 (69.3)	44 (53.7)	130 (76.9)	
Experience caring for addicted person				<.001
Yes	53 (21.1)	21 (25.6)	19 (11.2)	
No	198 (78.9)	61 (74.4)	150 (88.8)	
Attitude toward drugs, Total Score	69.7 \pm 11.7	66.6 \pm 14.4	71.2 \pm 9.8	.01
Devaluation, Total Score	36.7 \pm 5.1	36.9 \pm 4.9	36.6 \pm 5.3	.71

M = mean.

strongly agree), and people who abuse drug are incapable of looking after themselves (Item #2; 63.2%). Many agreed with the following conclusions: that members of society are at risk from the illicit substance users (Item # 3; 81.6%), and illicit substance users have no control over their emotions (Item # 4; 72.4%).

Stigma towards illicit substance users (Question #3) was examined on this 5-point scale, where the lower mean score indicates more discrimination. Most students indicated that they rarely (or sometimes) accept a former illicit substance user as a close friend ((Item # 1), believe that an illicit substance user is just as intelligent as the average person (Item # 2; 64.8%) and are willing to accept a fully recovered illicit substance user as a teacher of young children in a public school (Item # 3; 64.4%). Most of the students (90.8%) do not consider that entering an

addiction facility is a sign of personal failure. The detailed report on this scale is given in Table 3.

3.2. Attitude, experience, and stigma toward substance users

The relationship between attitude and stigma toward illicit substance users was tested, and the details are given in Table 4. There was a significant positive correlation between attitude and stigma toward substance users ($r^2 = -0.167$, $P = .008$). To determine the effect of knowing or experiencing an illicit substance user, a t-test was performed, which found that students who knew a person (mean: 34.45, SD : 7.75) or friend (mean: 35.35, SD : 7.54) using illicit substances had more perceived discriminatory behaviors against a person using illicit substances than

Table 2. Attitude of Jordanian Undergraduate Health major Students towards illicit substance users (on a scale of 1–5; 1 = Strongly disagree; 5 = Strongly agree).

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	
1. Drug addiction patients have no self control	8	3.2%	23	9.2%	36	14.3%	113	45.0%	71	28.3%	3.86
2. Patients with drug addiction are incapable of looking after themselves	4	1.6%	37	14.7%	52	20.7%	109	43.4%	49	19.5%	3.65
3. Members of society are at risk from drug addiction patients	6	2.4%	16	6.4%	25	10.0%	77	30.7%	127	50.6%	4.21
4. Drug addicted patients have no control over their emotions	7	2.8%	12	4.8%	51	20.3%	114	45.4%	67	26.7%	3.88
5. Drug addiction occurs in people with a weak personality	25	10.0%	61	24.3%	65	25.9%	54	21.5%	46	18.3%	3.14
6. The cause of many Drug addiction patients is bad nerves	25	10.0%	52	20.7%	65	25.9%	73	29.1%	36	14.3%	3.17
7. Drug addiction patients are more likely to harm someone else than themselves	9	3.6%	10	4.0%	19	7.6%	115	45.8%	98	39.0%	4.13
8. Addiction centers are little more than prisons	33	13.1%	45	17.9%	82	32.7%	59	23.5%	32	12.7%	3.05
9. Drug addiction is the result of adverse social circumstances	14	5.6%	38	15.1%	48	19.1%	104	41.4%	47	18.7%	3.53
10. Many normal people would become drug addiction patients if they had to live in a very stressful situation	43	17.1%	79	31.5%	66	26.3%	46	18.3%	17	6.8%	2.66
11. Those with a drug addiction patients' history should never be given a job with responsibility	29	11.6%	56	22.3%	56	22.3%	68	27.1%	42	16.7%	3.15
12. Violence mostly results from drug addiction.	15	6.0%	22	8.8%	75	29.9%	93	37.1%	46	18.3%	3.53
13. Drug addiction patients are generally difficult to like	41	16.3%	44	17.5%	67	26.7%	63	25.1%	36	14.3%	3.04
14. Drug addiction treatment cause patients to worry too much about their symptoms	17	6.8%	37	14.7%	84	33.5%	78	31.1%	35	13.9%	3.31
15. It is difficult to negotiate care plans with drug addiction patient	22	8.8%	79	31.5%	67	26.7%	65	25.9%	18	7.2%	2.91
16. It is hard to help patients who are drug addiction	62	24.7%	85	33.9%	47	18.7%	40	15.9%	17	6.8%	2.46
17. Drugs addiction medication are used to control disruptive behavior	12	4.8%	32	12.7%	71	28.3%	102	40.6%	34	13.5%	3.45
18. Drug addiction are genetic in origin	108	43.0%	63	25.1%	27	10.8%	30	12.0%	23	9.2%	2.19
19. Drug addiction deserves as much attention as physical illness	16	6.4%	20	8.0%	32	12.7%	101	40.2%	82	32.7%	3.85
20. The manner in which you talk to patients affects their drug addiction capability	7	2.8%	20	8.0%	43	17.1%	99	39.4%	82	32.7%	3.91
21. People are born vulnerable to drug addiction.	78	31.1%	50	19.9%	53	21.1%	36	14.3%	34	13.5%	2.59

Table 3. Perceived Stigma of Jordanian Undergraduate Health major Students towards illicit substance users (DDS on a scale of 1–5; 1 = Never; 5 = Always).

	Never		Rarely		Sometime		Usually		Always	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
1. I would willingly accept a drug addicted patient as a close friend.	90	35.9%	64	25.5%	62	24.7%	21	8.4%	14	5.6%
2. I would believe that a person who has been in Addiction center is just as intelligent as the average person.	34	13.5%	46	18.3%	82	32.7%	68	27.1%	21	8.4%
3. I believe that a former drug addicted patient is just a trustworthy as normal person	19	7.6%	27	10.8%	52	20.7%	66	26.3%	87	34.7%
4. I would accept a fully recovered former drug addicted patient as a teacher of young children in a public school	73	29.1%	40	15.9%	48	19.1%	49	19.5%	41	16.3%
5. I believe that entering a drug addiction center is a sign of personal failure. (R)	153	61.0%	45	17.9%	29	11.6%	15	6.0%	9	3.6%
6. If would not hire a former drug addicted patient to take care of their children, even if he or she had been well for some time. (R)	29	11.6%	48	19.1%	55	21.9%	70	27.9%	49	19.5%
7. I think less of a person who has been in Addiction centers. (R)	18	7.2%	67	26.7%	86	34.3%	66	26.3%	14	5.6%
8. If I were an employer, I would hire a former drug addicted patient if s/he is qualified for the job.	85	33.9%	51	20.3%	49	19.5%	39	15.5%	27	10.8%
9. If I were an employer, I would pass over the applicant of a former drug addicted patient in favor of another applicant. (R)	144	57.4%	47	18.7%	38	15.1%	10	4.0%	12	4.8%
10. I would treat a former drug addicted patient just as they would treat anyone.	39	15.5%	61	24.3%	61	24.3%	57	22.7%	33	13.1%
11. I would be reluctant to date a man who has been hospitalized for drug addiction.	85	33.9%	53	21.1%	54	21.5%	42	16.7%	17	6.8%
12. If I knew a person was in a drug addiction center most people will take his or her opinions less seriously	38	15.1%	56	22.3%	66	26.3%	63	25.1%	28	11.2%

those who did not know a person (mean: 31.22, SD: 6.81) or a friend (mean: 31.37, SD: 6.95) using illicit substances ($t = 3.31, p = 0.001$ and $t = 3.63, p = 0.000$, respectively). Moreover, students who had personal or professional experience in caring for an illicit substance user had more perceived discriminatory behaviors against those who use illicit substances (mean: 34.95, SD: 9.26) compared to students who had not had this type of experience (mean: 31.70, SD: 6.70), ($t = 3.88, p = 0.000$) determine the effect of having an experience or knowledge about illicit substance users. In addition, multivariate regression analysis was used to identify the factors that affect the attitude and stigmatic behaviors, and it was significant, which means many factors impact stigma and

discriminatory behaviors, and these are given in Tables 5 and 6. Age ($p = 0.038$) and experience of caring for someone with drug use problems ($p = 0.14$) are significant factors that determine the attitude to drug users. Parental education or incomes were least associated with the attitude. Knowing an illicit drug user was significantly associated with devaluation behavior ($p = 0.003$).

4. Discussion

This study examined the perceived attitude and devaluation behavior of undergraduate students in health majors at Jordan University of

Table 4. Correlations between scale A and scale D.

		Attitudes	Discrimination
Attitudes	Correlation	1	-0.167
	Significant		0.008
Discrimination	Correlation	-0.167	1
	Significant	0.008	

Pearson correlation was used to analyses of data.

Table 5. Multivariate regression analysis of factors affecting attitude towards illicit drug users.

Variable	Coefficient	Confidence Interval	P-value
Age	-0.650	(-1.26, -0.04)	0.038
Gender, Female	3.203	(-0.02, 6.43)	0.052
Marital Status	2.26	(-0.74, 5.26)	0.139
Income	-0.059	(-2.94, 2.82)	0.968
Education	0.074	(-3.35, 3.49)	0.966
Specialty	-0.367	(-1.74, 1.01)	0.600
Father Education	0.174	(-3.18, 3.53)	0.919
Mother Education	0.405	(-3.11, 3.92)	0.821
Know illicit drug user	-1.596	(-4.93, 1.73)	0.346
Experience caring for illicit drug user	-5.292	(-9.49, -1.10)	0.014

*Bold means significant effect <.05.

Science and Technology (JUST), and data were collected from 251 students using the ATAMHS and DDS scales from October 2017 to March 2018. Undergraduate health major students at JUST hold some negative perceptions about illicit substance users. These results align well with the findings of Howard and Gamble (2011; n = 27), who found negative perceptions among health professionals, which may be due to uncertainty about role and lack of appropriate skills and training. Law et al. (2009) also elicited student anger towards those who use substances and describe that such attitudes may affect care behaviors. Students enrolling in health profession majors had varying attitudes regarding illicit substance users. Hamaideh and Mudallal (2009) found that Jordanian health profession students had significant positive attitudes toward mental health problems, such as illicit substance users in five attitudinal categories: authoritarianism; benevolence; mental hygiene ideology; and interpersonal etiology. The results from previous studies may relate to the culture issues regarding the picture of community toward illicit substance users.

Stigma towards substance users can affect care and is a major barrier for proper and timely care globally (Meadows, 2009). Stigma may cause a delay in seeking help due to shame and feelings of guilt (Pinto-Foltz and Logsdon, 2009), which may cause low self-esteem, prolonging the recovery time, and ongoing loneliness (McAllister, 2008). Stigma also has negative effects on families as well (Meadows, 2009). Jordanian society, like other societies, is hesitant to admit the problem of illicit substance use, which may intensify the feelings of discrimination and shame of having an illicit substance user in the family (Meadows, 2009). Health profession students with a negative perception about substance use will have to care for those with such problems (Webster, 2009). They must learn how to show empathy and use reflective practice and therapeutic communication (Lysaker et al., 2010). However, the student's own stress may influence the student's communication with an illicit substance user

(Hung et al., 2009). McAllister (2008) indicated that the media plays a big role in representing the illicit substance user in a negative light. Movies depict people living with substance use as dangerous, socially undesirable, aggressive, and irrational, and people need to avoid them (McGinty et al., 2015). However, McAllister (2008) indicated that this perception is more apparent due to an increased incidence of illicit substance use. The previous studies in this section confirmed that using illicit substances is taboo, and many cultures and countries blame illicit substance users.

In the current study, the results revealed that attitudes towards illicit substance users impacted their stigma toward illicit substance users. Knowledge about illicit drug use can affect attitudes towards illicit substance users. The health professional's attitudes and stigma toward substance users have been examined in several cultural and national settings. Higher benevolence scores, in general, may help one to express kindness toward the person suffering from illicit substance use.

Educating undergraduate students on the care of the illicit substance user can improve the quality of care provided, as well as alter the attitudes and biases that could potentially interfere with optimal patient care of this population (Barry et al., 2014).

See et al. (2011) found that health professionals with lower levels of discrimination against drug users have a higher acceptance. Interestingly, all the health professional students that participated in this study accepted the need to provide their services to illicit substance users (Abbasi-Ghahramanloo et al., 2015), which implies that they had a relatively positive attitude towards illicit substance users. Moreover, they thought that it was unethical to refuse services to illicit substance users.

Many health professional students in this study mentioned that they had not received any training or education regarding the physical, psychological, and social problems encountered by illicit substance users. O'Gara et al. (2005) and Earnshaw et al. (2013) reported similar findings

Table 6. Multivariate regression analysis for the factors affecting for devaluation behavior towards illicit drug users.

Variable	Coefficient	Confidence Interval	P-value
Age	0.122	(-0.15, 0.40)	0.382
Gender	0.506	(-0.94, 1.95)	0.490
Marital Status	-0.757	(-2.10, 0.58)	0.267
Income	-0.6	(-1.89, 0.69)	0.360
Education	1.021	(-0.51, 2.55)	0.189
Specialty	-0.301	(-0.92, 0.31)	0.336
Father Education	-0.138	(-1.64, 1.36)	0.856
Mother Education	-0.2	(-1.77, 1.37)	0.803
Know illicit drug user	2.303	(0.82, 3.79)	0.003
Experience caring for illicit drug user	0.833	(-1.04, 2.71)	0.383

*Bold means significant effect <.05.

that most health professionals had not received sufficient training about substance abuse, and the status has not changed yet. This suggests that providing training on this issue could lead to a more positive attitude toward illicit substance users being fostered among future healthcare providers.

As for discriminatory behaviors among health professional undergraduate students toward illicit substance users, this study found that students who knew a person using illicit substances or a friend who was doing so had more perceived discriminatory behaviors against a person using illicit substances than those who did not know a person or a friend using illicit substances. Moreover, students who had experienced caring for an illicit substance user had more perceived discriminatory behaviors against persons using illicit substances than the students who did have that type of experience. These findings are not consistent with the literature which shows professionals with lower levels for discrimination against illicit substance users have a higher positive score in DDS toward them (See et al., 2011). Health professionals may believe that helping illicit substance users is time-consuming and wastes healthcare resources (Lindberg et al., 2006; Raysidi et al., 2012). Therefore, appropriate training on illicit substances would be the best solution to avoid discrimination against illicit substance users in the healthcare delivery system. The demographic variables such low family income, low father education, and having more experience with illicit substances do not impact the attitude or stigma.

An unexpected finding of this study was that health professional undergraduate students who had had experience of illicit substance users had a greater attitude of stigmatization than their counterparts who did not have that experience. According to Knaak et al. (2017), such findings highlight the need for role clarification and skills training for future health professionals. Educating future healthcare providers on the care of illicit substance users may enhance the quality of care provided as well as decrease negative attitudes and discrimination that may interfere with the provision of the best level of care provided for illicit substance users.

4.1. Study limitations and strengths

This study was conducted among undergraduate students (health majors) at one public university in Jordan. To get a complete picture of students' attitudes toward illicit substance users, a wider study should be undertaken that include students at both public and private universities across the entire country. While the sample size in this study was above the size suggested by power analysis, future studies involving a larger sample may obtain results that are more generalizable to Jordan.

4.2. Implication for future research

This study highlights the importance of inspecting the content of the curricula delivered in health profession programs regarding the overall care of illicit substance users. Content could, for instance, be improved by providing instruction on how to make more accurate assessments of needs, and ideal strategies to provide care to those who use illicit substances. Additional educational preparation could have a better outcome in terms of inculcating a more positive perception about illicit substance users among health profession students. Therefore, future research may focus on strategies for improving attitudes of health profession students toward illicit substance users at the beginning of their undergraduate education and later before graduation to measure their change in attitude and discrimination.

5. Conclusion

Students who were younger and identified as female were generally more positive toward illicit substance users versus those students who were older and identified as male. Providing optimal education about illicit substance users may prepare the emerging professionals to provide quality care to those with drug use problems. Incorporating evidence-

based material into the curriculum regarding illicit substances and their effects may enhance the ability of students to make an accurate assessment of the care needed by users of illicit substances, as well as to identify the most appropriate method for implementing that care.

Declarations

Author contribution statement

Sawsan Abuhammad, Reem Hatamleh, Beshar Gharaibeh, Abedallah Kasem, Nasr Alrabadi: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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