

# Psychological health status and salivary IgA among pharmacy students in Iraq: validation of PSS-4 and WHO-5 well-being (Arabic version)

SHAYMAA ABDALWAHED ABDULAMEER, WATHEQ MOHAMMED AL-JEWARI & MOHANAD NAJI SAHIB\*

Faculty of Pharmacy, Al-Rafidain University College, Palestine Street, 10052, Baghdad, Iraq

## Abstract

**Background:** The psychological health status of pharmacy students will affect the whole academic and healthcare process.

**Objective:** The aims of this study were to validate perceived stress scale-4 (PSS-4, Arabic version) and World Health Organisation-5-well-being (WHO-5, Arabic version) scales and to assess salivary IgA among Iraqi pharmacy students in different stressful periods.

**Method:** A cohort pilot study with a convenient sample was carried out. The 'forward-backward-forward' translation method was used to translate the questionnaires from English to Arabic for further validation. Salivary IgA samples were taken on two different occasions.

**Results:** The results showed good validity and reliability for both PSS-4 and WHO-5. Less than half of the pharmacy students had a high level of stress and a low level of well-being at the second exam occasion. In addition, the results showed a significant higher value of salivary IgA measurements.

**Conclusion:** The psychological health status of pharmacy students needs to be improved and new strategies should be implemented to overcome this condition.

**Keywords:** Pharmacy, PSS-4, Stress, Students, Well-being, WHO-5

## Introduction

The goal of pharmacy education is to provide the community with knowledgeable and competent pharmacists for professional pharmaceutical care and promoting public health services. A systematic review by Dyrbye *et al.* concerning medical students showed that psychological distress will affect the whole academic and healthcare process (Dyrbye, 2006). This is well acknowledged by the Association of American Medical Colleges (AAMC) and Accreditation Council for Pharmacy Education (ACPE) who take into account "the health and well-being" of the students to improve medical and pharmacy education in the United States of America (USA) (Martin *et al.*, 2004; ACPE, 2006).

A person's life conditions can contribute to stress, but stress does not necessarily result in negative outcomes (Marshall *et al.*, 2008). Nevertheless university students and especially medical and pharmacy students exhibit an excessive amount of stress at different time periods from the 1st grade until graduation due to many sources like academic pressure, personal conditions, and economic

status (Heins, Fahey & Leiden, 1984; Beck *et al.*, 1997; Konduri *et al.*, 2006). It is well known that stress has a negative impact on students' learning ability and academic performance (Silver & Glick, 1990; Fish, 1996; Niemi & Vainiomäki, 1999; Ayana *et al.*, 2017). As a consequence, stress may result in a decline in students' mental health (Chew-Graham, Rogers & Yassin, 2003), and can contribute to academic dishonesty (Dans, 1996; Rennie & Rudland, 2003) and substance misuse (Newbury-Birch, Walshaw & Kamali, 2001).

The most widely used tool for measuring stress is the Perceived Stress Scale (PSS) (Cohen, Kamarck & Mermelstein, 1983). The PSS has been used to measure a variety of stressful events from physical and psychiatric diseases to stress management programs (Lane, Seskevich & Pieper, 2007; Leon *et al.*, 2007; Parks *et al.*, 2009; Waldman *et al.*, 2009; Malinauskas, Malinauskiene & Dumciene, 2010). The PSS is available in three versions (PSS-14, PSS-10 and PSS-4). All these tools are valid, reliable and have successfully assessed stress in many conditions. A researcher may choose any one of

\*Correspondence: Mohanad Naji Sahib, Faculty of Pharmacy, Al-Rafidain University College, Palestine Street, 10052, Baghdad, Iraq. Tel: 00964-07723607555. E-mail: mohanad\_pharm@yahoo.com

them depending on the practical needs of their work (Leung, Lam & Chan, 2010; Karam *et al.*, 2012; Lee, 2012; Vallejo *et al.*, 2018).

The World Health Organisation (WHO) has defined well-being as when “the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2004). The WHO-5-well-being scales (WHO-5) is the most widely used tool for assessing the positive aspects of psychological well-being and covers the three core features of depression: (lack of) positive mood, interests, and energy (Krieger *et al.*, 2014; Bonnín *et al.*, 2018). It is a good screening tool for individuals at risk of depression, general psychological distress, and well-being (Topp, 2015). The WHO-5 was used in a range of samples including patients and general population (Awata, 2007; de Souza, 2012; Topp *et al.*, 2015). In addition, some reports have assessed well-being among college students (Preoteasa & Preoteasa, 2015b; Downs *et al.*, 2017).

On the other hand, acute stress can reduce the functioning of the immune system and negative emotions will reduce the production of IgA immunoglobulin (Valdimarsdottir & Stone, 1997; Cohen, Miller & Rabin, 2001; Campisi *et al.*, 2012). In response to academic stress, the salivary IgA level changes in health science students are contradictory (*i.e.*, increase or decrease) (Deinzer *et al.*, 2000; Ng *et al.*, 2003; Otsuki *et al.*, 2004; Sarid *et al.*, 2004; Takatsuji *et al.*, 2008; Murphy *et al.*, 2010). Hence, the association between academic stress and salivary IgA needs further investigation.

In Iraq, pharmacy colleges and faculties offer a bachelor degree in Pharmaceutical Sciences consisting of five years of study, two semesters per year, and each semester is 15 weeks. During each semester there are mid-term and final examinations which to the authors’ knowledge are considered stressful. In addition, there is paucity in the literature regarding the stress and mental health among pharmacy students in Iraq and Middle East region. Hence, the aims of this study were to validate PSS-4 (Arabic version) and WHO-5 (Arabic version) scales and to assess salivary IgA among Iraqi pharmacy students in different stress related periods.

## Methods and Materials

### *Study design and population*

A cohort pilot study with a convenient sample was carried out during the first semester (October 2016 to February 2017) in the Faculty of Pharmacy, Al-Rafidain University College. All pharmacy students (approximately 550) were invited to participate in the study with the exception of first year students, with no sample size calculation because all students were invited. First year students were excluded from the study because their registrations take place in late November and they will take an intensive course which will be more stressful than usual. The inclusion criteria were: the student had

self-reported good oral health and hygiene; no chronic or any disease at the time of the study (like flu, common cold, and rhinitis); and were able to provide enough salivary sample volume for IgA analysis. In all, 100 students agreed to be involved in this study. However, only 46 students satisfied the inclusion criteria during the study. Structured interviews included the administration of socio-demographic data responses, PSS-4 (Arabic version) and WHO-5 (Arabic version) scales. Each participant was interviewed individually by the researchers after written informed consent. The study’s ethical approval was obtained from the Scientific Committee of Al-Rafidain University Collage, Baghdad, Iraq. The interviews were conducted on three occasions: first occasion was during lecture time, *i.e.*, no exam and after one month of the semester beginning; second occasion was on the last day of the final exam, before spring vacation which is 14 days long; and the third occasion was after spring vacation. Salivary samples were taken during the second and third occasions.

### *Questionnaires*

The original English PSS-14 scale is a 14 items Likert-type scales (0 = never to 4 = very often), and designed to assess psychological stress (Cohen, Kamarck & Mermelstein, 1983). A short version was used in this study (4-item PSS (PSS-4)) which was introduced for studies requiring a very short scale (Cohen & Williamson, 1988). The PSS-4 has two negatively stated and two positively stated items. The positively stated items are reverse coded before items are summed. The total possible score ranges from 0 to 16 with higher scores indicating more perceived stress. Beside PSS-4, the 5-items WHO-5 was used to assess subjective well-being (Sibai *et al.*, 2009). The scale has been translated into different languages (<http://www.who-5.org/>). Each item is scored from 5 (all of the time) to 0 (none of the time). The total possible score ranges from 0 to 25 with higher scores indicating maximal well-being.

### *Salivary IgA measurements*

Salivary IgA measurements of the students were conducted on two occasions (second and third occasions). On both occasions, students were asked not to have caffeine 12 hours before sample collection and not to take any food two hours prior to sample collection to prevent any interference with the IgA measurements (Roger & Najarian, 1998; Afrisham *et al.*, 2016). For salivary samples, the students were asked to collect their secreted saliva for five minutes in a glass tube by passive method (Susman *et al.*, 2010). Sampling method and the time of sample collection (8 am) were identical for both occasions. Salivary samples were analysed for IgA according to Demeditec Secretary IgA ELISA (DEXK276, Kiel, Germany) procedure. The ELISA method was conducted using BioTek Absorbance Microplate Readers (ELx800, Vermont, USA) and BioTek Microplate Strip Washer (ELx50, Vermont, USA).

## Validation

### Questionnaires translation

The questionnaires were translated from English into Arabic according to international guidelines and previous reports which included: forward translation, reconciliation, back translation, and debriefing (Beaton *et al.*, 2000; Wild *et al.*, 2005; Abdulameer *et al.*, 2014). The forward–backward–forward translations were undertaken by independent, expert translators in Iraq with the help of five expert clinical pharmacists and the researchers, for reconciliation and to resolve any inconsistencies which represent the qualitative face validity process (Devon *et al.*, 2007; Sahib, 2018a). Thereafter, 20 pharmacy students from Al-Rafidain University College were recruited for a pilot study to inform modifications to the questionnaires according to their feedback. Those 20 students were excluded from the final study analysis and outcome. Cut-off values of less than 12 and 8 were used to categorise the WHO-5 and PSS-4 into two levels: low and high levels (Saipanish, Lotrakul & Sumrithe, 2009; Shah *et al.*, 2010).

### Construct validity

Exploratory factor analysis (EFA) was carried out to examine the factor structures of PSS-4 and WHO-5 scales. Moreover, the EFA was repeated for each occasion to assess the stability of the factor structures for these questionnaires. The varimax rotations of principal axis factoring method were used for EFA. The accepted criteria for EFA were: significant level of Bartlett's test of sphericity  $<0.05$ , Kaiser–Meyer–Olkin (KMO) value  $>0.5$  and factor loading  $>0.40$ . The number of factors to be retained was dependent on theoretical meaning of the rotated factors and Kaiser's criterion (eigenvalue  $\geq 1.0$ ) (Fabrigar *et al.*, 1999; Abdulameer *et al.*, 2013a; Abdulameer *et al.*, 2013b; Sahib, 2018b).

### Reliability

To measure the consistency of the measured items, reliability with a minimum acceptable criterion  $>0.5$  was applied (Cronbach, 1951). The internal consistency was evaluated using Cronbach's *alpha* and corrected item–total correlation (correlation of  $<0.20$  was considered as poor). Pearson's correlation coefficient was used to evaluate test–retest reliability throughout the two occasions (first and second occasions).

### Statistical analysis

Predictive analytics software (PASW) version 19.0 was used to analyse data in this study. The significance level was set at *p*-value  $<0.05$ . Descriptive statistics, percentages, and frequencies were used as appropriate. The *chi*-square ( $\chi^2$ ) test was used for categorical variables, whereas for continuous data, repeated measure analysis (AVOVA or *t*-test) was used to evaluate the differences between the groups when required. The statistical analysis of the validation processes included

assessing construct validity and reliability (Cronbach's *alpha* and test–retest).

## Results

### Socio-demographic data

The mean age of the students was  $20.57 \pm 1.167$  years (range, 19–24 years). Nearly 57% of respondents were female ( $n=26$ , 56.5%). The largest distribution of pharmacy students was found in the fourth stage (32.6%) and the least in the fifth stage (13%). Only four (8.7%) students were working. For smoking status, only 6 (13%) students reported smoking and this was underestimated. Twenty-four students (52.2%) reported that academic, economic, social and family problems were affecting their behaviour and feelings during their study. Table I and II show the distribution of the salivary IgA measurements, the two levels of PSS-4 and WHO-5 and the demographic data.

### Validation

#### Face validity

Qualitative face validity was guaranteed, as a result of the extensive translation method and pilot testing (Sahib, 2018a).

#### Exploratory factor analysis

In this study, a principal axis factoring analysis method was conducted for both the PSS-4 and WHO-5 scales. The majority of correlation matrices results showed a correlation  $>0.3$ . The KMO values of PSS-4 and WHO-5 were range between 0.582 to 0.792 and 0.753 to 0.792, respectively, with highly significant Bartlett's test of sphericity values (Table III) which indicated that the data set were appropriate for EFA (Fabrigar *et al.*, 1999). In addition, the analysis revealed one factor for PSS-4 and WHO-5 scales with eigenvalues range between 1.648 to 3.380 which explained the percentage of variance that range from 41.198 to 67.879, as given in Table III. The entire results showed adequacy for factor analysis and one domain (subscales) variables for both PSS-4 and WHO-5 scales.

#### Reliability

The internal consistency results which measured by Cronbach's *alpha* ranged between 0.5 to 0.878 for both PSS-4 and WHO-5 scales, which were within the recommended acceptable result for reliability (Cronbach, 1951). The test–retest reliability for both PSS-4 and WHO-5 scales indicated a good reliability and stability of the instruments with Pearson's correlation coefficients ( $r=0.550$ ,  $p<0.001$ ) and ( $r=0.429$ ,  $p<0.01$ ), respectively. The corrected item–total correlation values for both PSS-4 and WHO-5 scales ranged from 0.144 to 0.557. All items appeared suitable for retention depending on the meaningfulness of the items (Streiner, Norman & Cairney, 2015).

**Table I: Demographic characteristics of pharmacy students with Perceived Stress Scale-4 (PSS-4) and salivary IgA**

Variables	First occasion			Second occasion			Third occasion		
	Total sample (N=46)	Low PSS level	High PSS Level	Total sample (N=46)	Low PSS level	High PSS Level	Total sample (N=46)	Low PSS level	High PSS Level
PSS	6.76±2.74	5.52±1.856	9.92±1.977	7.50±2.94	5.32±1.796	10.10±1.609	6.78±2.50	5.58±1.803	9.85±0.801
IgA <sup>a,b</sup>	-	-	-	195.39±132.80	255.55±113.45	151.07±131.02	122.87±124.47	119.92±114.00	128.04±144.84
<b>Gender (%)</b>									
Male	43.5	42.4	46.2	-	44	42.9	-	45.5	38.5
Female	56.5	57.6	53.8	-	56	57.1	-	54.5	61.5
<b>Student study levels (%)</b>									
2nd	23.9	18.2	38.5	-	12	38.1	-	15.2	46.2
3rd <sup>c</sup>	30.4	36.4	15.4	-	52	4.8	-	36.4	15.4
4th	32.6	30.3	38.5	-	20	47.6	-	33.3	30.8
5th	13	15.1	7.6	-	16	9.5	-	15.1	7.6

<sup>a,b</sup> Significant difference between total sample and levels in phase 2, respectively,  $p<0.05$ ; <sup>c</sup> significant association,  $p<0.01$ .

**Table II: Demographic characteristics of pharmacy students with World Health Organisation-5-Well-Being Index (WHO-5)**

Variables	First occasion			Second occasion			Third occasion		
	Total sample (N=46)	Low WHO level	High WHO Level	Total sample (N=46)	Low WHO level	High WHO Level	Total sample (N=46)	Low WHO level	High WHO Level
WHO <sup>a</sup>	12.46±5.75	6.46±3.337	16.40±3.455	10.78±6.00	7.55±2.972	17.57± 3.203	13.37±4.77	8.63±2.314	16.70±2.771
<b>Gender (%)</b>									
Male	43.5	34.6	55	-	45.5	33.3	-	42.1	44.4
Female	56.5	65.4	45	-	54.5	66.7	-	57.9	55.6
<b>Student study levels (%)</b>									
2nd	23.9	26.9	20	-	36.4	4.8	-	26.3	22.2
3rd <sup>b</sup>	30.4	26.9	35	-	13.6	47.6	-	31.6	29.6
4th	32.6	34.6	30	-	27.3	42.9	-	36.8	29.6
5th	13	11.6	15	-	22.7	4.7	-	5.3	18.6

<sup>a</sup> Significant difference between total sample in phase 2 and 3, respectively,  $p<0.05$ ; <sup>b</sup> significant association,  $p<0.01$

**Table III: Exploratory factor analysis (EFA) of Perceived Stress Scale-4 (PSS-4) and World Health Organisation-5-Well-Being Index (WHO-5), n=46**

Items	Rotated Factor Matrix					
	PSS-4			WHO-5		
	First occasion	Second occasion	Third occasion	First occasion	Second occasion	Third occasion
	Factor 1 (Communalities)	Factor 1 (Communalities)	Factor 1 (Communalities)	Factor 1 (Communalities)	Factor 1 (Communalities)	Factor 1 (Communalities)
Question 1	0.795 (0.633)	0.791 (0.625)	0.453 (0.205)	0.739 (0.546)	0.808 (0.653)	0.861 (0.741)
Question 2	0.362 (0.131)	0.684 (0.468)	0.741 (0.550)	0.893 (0.798)	0.794 (0.631)	0.831 (0.691)
Question 3	0.613 (0.376)	0.660 (0.435)	0.750 (0.563)	0.820 (0.672)	0.866 (0.750)	0.773 (0.597)
Question 4	0.713 (0.508)	0.786 (0.618)	0.709 (0.503)	0.815 (0.664)	0.851 (0.725)	0.592 (0.351)
Question 5	-	-	-	0.826 (0.683)	0.788 (0.621)	0.874 (0.764)
Eigenvalues	1.648	2.147	1.820	3.362	3.380	3.144
KMO	0.582	0.729	0.664	0.78	0.753	0.792
Bartlett's test of sphericity	$\chi^2 (6)=13.261$ ; $P=0.039$	$\chi^2 (6)=31.481$ ; $P=0.000$	$\chi^2 (6)=17.720$ ; $P=0.007$	$\chi^2 (10)=114.690$ ; $P=0.000$	$\chi^2 (10)=132.925$ ; $P=0.000$	$\chi^2 (10)=108.376$ ; $P=0.000$
% of variance	41.198	53.669	45.512	67.240	67.591	62.879
Cronbach's ( $\alpha$ )	0.493	0.709	0.590	0.876	0.878	0.845

Extraction Method: Principal Axis Factoring, Rotation Method: Varimax with Kaiser Normalisation, Items comprising each factor are in bold.

**PSS-4 and WHO-5 measurements**

Table I and II show the distribution of the two levels of PSS-4 and WHO-5 and the demographic data. The results showed that 28.3%, 45.7% and 28.3% of the students had high level of stress in the three different occasions, respectively. In addition, there were non-significant differences or associations between stress scores or levels in the three occasions ( $p>0.05$ ). Moreover, there were non-significant associations between the stress levels and gender in all occasions ( $p>0.05$ ). Only third year students showed significant low stress level in the second occasions ( $p<0.01$ ). Regarding the WHO-5, the results showed that 43.5%, 48.8% and 58.7% of the students had high level of well-being in the three different occasions, respectively. In addition, there were significant differences in WHO-5 scores between the second and the third occasions only ( $p<0.01$ ). Moreover, there were non-significant associations between the WHO-5 levels and gender in all occasions ( $p>0.05$ ). However, the WHO-5 scores in the second occasion in the female group was significantly lower than the first and third occasions ( $p<0.05$ ). Again, only third year students showed a significant high well-being level in the second occasion ( $p<0.01$ ). The results showed a high percentage of students with better well-being and depression in the third and second occasions, respectively (Table IV).

**Table IV: Summary of WHO-5-well-being scale among pharmacy students, n=46**

Well-being levels	First occasion (%)	Second occasion (%)	Third occasion (%)
Better well-being	47.8	41.3	58.7
Low mood	37.0	28.3	30.4
Depressed	15.2	30.4	10.9

**Table V: Correlation matrix of Perceived Stress Scale-4 (PSS-4), World Health Organisation-5-Well-Being Index (WHO-5) and IgA among pharmacy students, n=46**

	First occasion	Second occasion		Third occasion	
	WHO-5	WHO-5	IgA	WHO-5	IgA
PSS-4	- 0.541 (0.000)	-	-	-	-
	-	-0.228 (0.128)	-0.348 (0.047)	-	-
	-	-	-	-0.505 (0.000)	-0.013 (0.943)

Results between parentheses represent significance level

**Salivary IgA measurements and correlations**

The results showed significant higher value of salivary IgA measurements in the second occasion ( $p<0.05$ ) (Table I). Moreover, there were significant differences between the salivary IgA measurements between male and female groups in the second occasion only ( $p<0.01$ ). The correlation results revealed significant negative correlations between PSS-4 and WHO-5 scores in the first and third occasions only ( $p<0.001$ ). Moreover, there was a negative correlation between salivary IgA measurements and PSS-4 in the second occasion only (Table V).

**Discussion**

University students living under stressful conditions will experience a negative impact on their academic, emotional and health-related outcomes (Beck & Srivastava, 1991; Awadh *et al.*, 2013). Generally, the students in each semester experience high stress levels due to lack of time management skills, financial pressure and academic commitments (Campbell, Svenson & Jarvis, 1992; Misra *et al.*, 2000). Therefore, the assessment of stress level and well-being throughout the semester (*i.e.*, on different occasions) is a necessity to improve students' psychological health status and provide new insights into how to cope these stressful event.

This pilot study was the first study among pharmacy students in the Middle East region. The validation and cross cultural adaptation is an important step in evaluating any tool to be valid in practice. The results showed that the PSS-4 and WHO-5 scales can be implemented successfully in practice among Arabic language speakers. The face validity was comprehensively reviewed and revised by five experts in the field. In addition, the EFA showed a stable factor structure throughout the stress occasions during the semester. The overall Cronbach's alpha values for PSS-4 were highly variable during different occasions with the lowest value of 0.50 in the first occasion. This is due to the PSS-4 items assessing the general life rather than concentrating on specific events or experiences (Lee, 2012). Moreover, PSS-4 has two negative and two positive items, namely: perceived distress and coping ability, respectively. These items changed according to the degree to which the individual believes that his/her life has been unpredictable and uncontrollable (Lee, 2012). However, overall reliability was within acceptable criterion (Cronbach, 1951).

The results showed higher score of the PSS-4 in the second occasion, although, it was insignificant. But this result was supported by moderate negative correlation with the salivary IgA. It is well known that salivary IgA is related to stress especially after examination, and declines after two hours. The result was consistent with other studies (Sarid *et al.*, 2004; Takatsuji *et al.*, 2008; Matos-Gomes *et al.*, 2010). The result also showed that PSS-4 was negatively correlated with the WHO-5 in un-stressful occasions which indicate the usefulness of these

tools to evaluate the psychological health status of the students during the semester. The results were consistent with another study among medical students that showed a correlation between stress and depression (Dahlin, Joneborg & Runeson, 2005). However, this correlation disappeared during a stressful occasion (second occasion). This may be due to depression being the end point of stress and a high percentage of students were depressed in the second occasion due to final examination. Moreover, the results revealed that the students in the third occasion had better well-being levels (Table IV). This may be due to the fact that the students during semester and examination periods experienced the highest stress level. In contrast, the third occasion (after a 14 day holiday) is possibly associated with mental relaxation and improved well-being. Another study revealed similar findings (Preoteasa, Marina & Preoteasa, 2015a).

Moreover, WHO-5 scores were highly significant in females which was consistent with previous studies (Wood, Rhodes & Whelan, 1989; Dahlin, Joneborg & Runeson, 2005). On the other hand, other reports showed that females had lower levels of psychological well-being (Florescu *et al.*, 2010; Preoteasa & Preoteasa, 2015b; Jradi & Abouabbas, 2017). The reason behind these inconsistent findings may be related to gender and cultural differences in coping with stress (Hovanitz & Kozora *et al.*, 1989; Wood, Rhodes & Whelan, 1989; Jradi & Abouabbas, 2017). This is supported by a significant difference in salivary IgA between male and female in the second occasion. Finally, this study showed important results regarding the psychological health status of pharmacy students which need to be improved.

The reduced level of well-being and high level of stress during semester may interfere with the validity of students' evaluation and professional level (Preoteasa, Marina & Preoteasa, 2015a). Hence, coping plans for pharmacy students are warranted as these strategies can resist stress and improve personal well-being. The implementation of adequate coping strategies is recommended to help students combat examination distress by designing an intervention at individual or group levels. Moreover, coping strategies can be enhanced by the establishment of medical and psychological clinics in every university and college in Iraq. Other studies have suggested that psychological skills can be incorporated into the curriculum to strength resilience (Chow *et al.*, 2018). Thus, review of the pharmacy curriculum and standardisation with new approaches that take into account the students' psychological health status is an urgent need for Iraqi pharmacy students.

### Study Limitation

A small sample size made the results of this study inconclusive and cannot be generalised. Therefore, further investigation must be carried out. However, this pilot study revealed low psychological health status

among pharmacy students. In addition, the validation and reliability of PSS-4 and WHO-5 scales were warranted as it is a vital step before conducting further studies. Moreover, the study results will be a cornerstone to Ministry of Higher Education and Scientific Research of Iraq for further evaluation of the scientific programme and curriculum of pharmacy colleges.

### Conclusion

This study showed good validity and reliability of PSS-4 and WHO-5 Arabic versions among pharmacy students in Iraq. Moreover, the psychological health status of the pharmacy students needs to be improved and new strategies must be implemented to overcome this condition.

### Ethical approval

This research has been reviewed and approved by the Scientific Committee of Al-Rafidain University Collage, Baghdad, Iraq.

### Conflict of Interest

There are no conflicts of interest or funds to report.

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