Arabic version of pharmacy survey on patient safety culture: Hospital pharmacy settings

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Abstract

Objective: The objective was to assess the validity and reliability of a translated Arabic language version of the pharmacy survey on patient safety culture released by the United States Agency for Healthcare Research and Quality in 2012 and to utilize this to assess staff attitudes and perceptions of the patient safety culture in hospital pharmacies of Kuwait.
Methods: This study used a cross-sectional timeframe. Data were gained from three of the largest public hospital pharmacies and three of the largest private hospital pharmacies in Kuwait. The primary and secondary outcome measures were descriptive statistics, internal consistency, construct validity, model fit, and calculation of the positive response rate for all composites and items.
Results: The results demonstrated that 9 of the 11 composites had a Cronbach's alpha (α) of >0.7, and all composites had factor loadings above 0.6. The standardized root mean residual score appropriately fitted the data with a value of 0.072. The intercorrelations among the patient safety composites ranged from 0.29 to 0.83. The proportion of pharmacy staff who categorized the grade of patient safety as "Good," Very good," or "Excellent" was 93%.
Conclusion: The Arabic version of the pharmacy survey on patient safety culture questionnaire indicated suitable levels of reliability and validity. Also, the results demonstrated that the pharmacy staff surveyed in Kuwait have a positive perception of patient safety culture in their organizations.

Keywords

Validation of survey, patient safety culture, hospital pharmacy

Introduction

The need for a positive safety culture in healthcare is essential. It not only advances the prevention and reduction of possible medical errors and threats to patient safety but also enhances the overall quality of healthcare services provided, especially with respect to medication safety. While the evolution and surge in hospital pharmacies have bolstered treatment possibilities, the risk of harm to patients has also increased as errors in the provision of medication by pharmacists create a threat to patient safety. Medication errors are a major part of medical errors, representing around 25% of threats to the safety of patients.[1] Bond et al.[2] maintained that, at minimum, 90,895 patients are harmed yearly by medication errors in US hospitals. An environment built on a culture of safety is a prerequisite, as well as a top priority, for most healthcare organizations.[3] Sivanandy et al.[4] argued that if hospital pharmacies need to

enhance the safety of patients, awareness of the opinions and perceptions of their staff is essential. Pharmacists perform a notable role in patient safety since patient safety is explicitly associated with errors in administering medication. The precision with which medication is dispensed is a crucial part of ensuring the safety and quality of medication usage. The hospital pharmacy setting is different from other settings in that it is more complicated and more specialized. Schnipper et al.[5] state that hospital pharmacists deal with critical

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and complicated cases that need specific skills and sufficient experience. Hence, a lack of experience and a lack of skills are the most common threats to patient safety in a hospital pharmacy setting. Lalor et al.[6] reported that hospital pharmacies are usually central to the arrangement, coordination, and enforcement of medication safety of patients. The two most recent reports from the Institute of Medicine (IOM) recognized that pharmacists are a significant resource in safe medication use and provide critical services that help in promoting patient safety.[7] Hospital pharmacists have the experience to address drug-related problems during and after hospitalization. They can reveal and resolve medication contradictions.[5] Al Hamarneh et al.[8] maintained that hospital pharmacy organizations around the world are now directing pharmacists to expand their focus to include the enhancement of a culture of safety. Understanding hospital pharmacists' viewpoints of the culture of patient safety inside their organization is significant. This would assist in identifying areas of strength and those requiring progress, which could help support decision-making activities to enhance patient safety.

Improving the culture of patient safety is increasingly perceived as an imperative approach in enhancing the safety of patients in the Arab world.[9] One study addressed the culture of patient safety in a primary care setting in Kuwait,[10] while another study examined this issue in the context of Kuwaiti secondary care settings.[11] However, to the best of our knowledge, the culture of patient safety in a Kuwaiti hospital pharmacy setting has not been examined.

Indeed, although several popular instruments have addressed the culture of patient safety in hospital and primary care settings,[12,13] few have focused on the culture of patient safety in pharmacy settings. The hospital survey of patient safety culture (HSPSC), which was developed by the Agency for Healthcare Research and Quality (AHRQ) in 2004 with the objective of assessing the culture of patient safety in hospitals, has been evaluated in various studies and has been translated into numerous languages across the globe. Certainly, it is possible to access versions of the HSPSC in Portuguese, validated by Eiras et al.;[14] in Turkish, validated by Bodur and Filiz;[15] in Slovenian, validated by Robida;[16] in Arabic, validated by Najjar et al.;[17] in Chinese, validated by Nie et al.;[18] and so forth. In contrast, the pharmacy survey on patient safety culture (PSOPSC), which was also developed by the AHRQ in 2012 to assess opinions of pharmacy staff regarding the patient safety culture in their pharmacies, was translated into conspicuously fewer languages, such as Chinese and Urdu. In particular, the Arabic translation of the PSOPSC has not been made available yet.[19] The aim of this study was to assess the validity and reliability of the Arabic version of the PSOPSC and to utilize this to assess perceptions of Kuwaiti hospital pharmacy staff about the culture of patient safety.

Methods

Measurement tool

The AHRQ developed the original PSOPSC in 2012, which was based on a pilot study that had intended to evaluate 11

pharmacy composites and 36 items of patient safety culture.[20] The psychometric properties of this survey were acceptable, as evidenced by internal consistency and construct validity.[21] The PSOPSC was specifically designed for pharmacy staff and addresses their views regarding the patient safety culture in their organizations. The PSOPSC is composed of 36 items distributed across 11 composites to assess the patient safety culture. The 36 items are mainly categorized into the following three sections: (A) working in this pharmacy; (B) communication and work pace; and (C) patient safety and response to mistakes. The PSOPSC also includes three questions that assess the incidence of the documentation of mistakes, and one question to rate overall patient safety. In addition, three questions concerning background data are collected, including work experience, work hours, and the role of participants.[20]

The PSOPSC was translated from English to Arabic. The process of translation was achieved according to the AHRQ instructions explained below, while noting that a successful translation should communicate the same content as the original version, employ easy and familiar language to respondents considering their culture, and use correct grammar.[22]

1. The inquiry of availability of an Arabic version of the PSOPSC was made by sending an email to SafetyCultureSurveys@westat.com (AHRQ). We did not find a translated Arabic version; therefore, consent was gained from the AHRQ to translate the questionnaire into Arabic based on the organization's process.
2. A professional translator, who was not one of the authors, was chosen to provide a draft translation into Arabic based on the instructions of the AHRQ.
3. The draft translation was revised by a bilingual reviewer who is a professional in the field of patient safety, and not one of the authors, to evaluate the accuracy of the translation and its appropriateness in terms of familiar language and cultural distinctions for the targeted sample.
4. The Arabic version was translated back into English by a bilingual translator (not one of the authors), facilitating comparison between both versions of the questionnaires for accuracy.
5. We checked the translation by conducting a pilot study among 15 pharmacists in one of the selected hospital pharmacies (which was excluded from further analysis) to decide whether the items were obvious and understandable. Minor modifications were made to the items before being incorporated into the final version of the questionnaire, as will be explained below.
6. This study was conducted to evaluate the consistency, reliability, and construct validity of the Arabic version and its correspondence with the English version. The Arabic version is available upon request.

In this study, the survey was modified by adding two words: "dispensing medicine" to be sold and dispensed in Question 3 in Section C to suit private and public hospital pharmacies. The response options were modified by a seven-point agreement scale ("strongly disagree" to "strongly agree") or frequency scale ("never" to "always") rather than a six-point scale. The option "Does not apply or don't know" was deleted. Using a seven-point Likert-type scale makes the measure of a participant's valid valuation more precise, and such scales are more easily distributed electronically, thus optimizing the reliability and resulting in stronger correlations with *t* test results.[23–25]

Sample size

The fulfillment of internal and external validity in a research study is largely dependent on the right sampling. Particularly, obtaining external validity or generalizability in a research study is generally dependent on the use of a probability sample from some well-defined population and the size of this sample, reflecting the population.[26] To obtain an appropriate sample for this research in terms of size and diversity, haphazard sampling was used to select six hospitals in Kuwait: three from the largest public hospitals (having 650–900 beds per hospital and staff ranging from 110 to 130 persons in each hospital pharmacy) and three from the largest private hospitals (with approximately 150–300 beds per hospital and staff ranging from 25 to 35 persons in each hospital). Our sample included pharmacists (pharmacy managers), pharmacy technicians, pharmacy clerks, and pharmacy students.

Data collection

A cross-sectional study was adopted. The self-administered questionnaires were distributed to the selected hospital pharmacies with the help of a team of volunteer pharmacists who worked with the corresponding author. To increase the response rate, all respondents will be entered into a competition for an iPad mini as a reward for responding to the questionnaire. The questionnaire was carried out over a period of 2 months from October to November 2017. The survey requirements were explained to each participant, and written informed consent was attained from each. A cover letter was enclosed with each questionnaire to explain the study purpose and how to complete and return the questionnaire. A tracking paper was used to identify the sequent numbers of each selected hospital pharmacy and to track the number of questionnaires handed out and returned. The tracking sheets did not contain any personal identifying information.

Analysis of data

Excel 2013 was used to analyze the demographic characteristics and positive response rate. The confirmatory factor analysis (CFA) was achieved using SPSS version 22 and analysis of the model fit was accomplished using Smart PLS 3 software.

We used descriptive statistics and demographic aspects to assess the variance of the respondents and missing data. Missing data in the collected questionnaires were very low (0.1%). As a result, the mean replacement process was used.[27] Items with negative words were scored inversely.

CFA can be used to ensure how well the measured variables explain the number of constructs.[28] The model must be verified in different samples. CFA was used to test the model of the Arabic version survey versus the model of the original version survey. Factor loadings that are 0.7 or higher are deemed recommendable;[27] however, some researchers claim that a result of 0.4 or above is considered acceptable.[29] We also examined the standardized root mean residual (SRMR), which measures the square discrepancy between the observed correlations and the model-implied correlations. A value of zero was deemed a perfect fit, but values less than 0.085 are also deemed a good fit.[27,30]

Cronbach's α is the most common measure of reliability or internal consistency that requires that the indicators assigned to a latent variable correlate positively and strongly with each other.[31] We used Cronbach's α to assess the internal consistency of the 11 subscales of the PSOPSC to evaluate the quality of each construct. A Cronbach's α on subscales of a scale measures the internal consistency of the specific part of the overall construct that is significant to confirm the reliability of the overall scale and its components. A Cronbach's α with a value of ⩾0.7 for the newly developed scales is recommended.[18] A 0.7 level of reliability is deemed sufficient for a questionnaire,[32] but some researchers perceive 0.6 and above as being sufficient.[33]

Validity indicates how well the test measures what it is supposed to measure. Construct validity is generally verified by comparing the test with other tests that measure the same qualities to see how highly correlated the two measures are. The intercorrelations among composites allow us to analyze construct validity. Thus, we calculated the intercorrelations among 11 composites of the PSOPSC. The correlations among the composites must be less than 0.85 to avoid issues of multicollinearity.[34,35] The intercorrelations between all the composites and composite of "Patient safety grade" were examined to find if the composites were related to the self-reported outcome.

Each professional group differs in how to perceive the different dimensions of a patient safety culture. Since hospital pharmacists are crucially responsible for preventing medication errors and improving patient safety culture, calculating the positive response rate of participants helps quantify the perspectives of pharmacy staff regarding patient safety culture and helps identify areas that need to be improved.[36] The positive response rate was calculated based on the formula of the User's Guide of the PSOPSC.[21] However, as mentioned above, the response rate was modified into a seven-point scale, so the three highest scoring (5, 6, and 7) answers (slightly agree, agree, strongly agree, or frequently, very frequently, always) were assumed as positive response answers, while the four lowest scoring (1, 2, 3,

and 4) answers (strongly disagree, disagree, slightly disagree, neutral or never, very infrequently, infrequently, sometimes) were considered as not positive answers. The positive response rate per item was calculated by dividing the positive response answers by the total answers. The positive response answer per composite was computed by the average positive response answer of items.

Results

Demographic characteristics

Of 460 distributed questionnaires, 272 (59.1% response rate) were completed and returned. Demographic characteristics are presented in Table 1. The desired sample size is 130 for identifying effects with a statistical power of least 0.8 at an α level of 0.05. Therefore, the effects of this research model can be identified with a sample size of 272.[37]

Of our total sample, 189 respondents (69.5%) were from public hospital pharmacies and 83 (30.5%) respondents were from private hospital pharmacies, as shown in Figure 1.

Regarding the working positions of participants, it was observed that the majority of the respondents were pharmacists (79%) wherein 146 (54% of 79%) belonged to public hospitals, and the remaining 68 (25% of 79%) were associated with private hospitals. This was followed by 47 pharmacy technicians (17%), who had been distributed in the ratio of 3:1 for public and private hospitals, respectively. Next were three pharmacy clerks (1%), all of whom belonged to private hospital pharmacies, and eight pharmacy students (3%), all of whom belonged to public hospital pharmacies as presented Figure 2.

Only 3% of the respondents have experience of less than 6 months, and all of them belong to the public hospital pharmacies; 6% have an experience of 6–12 months, and only 1% of respondents of the 6% belonged to the private hospital pharmacies; 16% fall into the experience group of 1–3 years, followed by 27% respondents (majority) falling into the experience group of 3–6 years; 26% have 6–12 years of experience; and the remaining 23% reported having an experience of 12 years or more. The respondents from public hospital pharmacies tended to have greater experience in terms of years than their private hospital pharmacy counterparts, as presented below in Figure 3.

The mean, standard deviation, skewness, and kurtosis of each item of the Arabic version are presented in Table 2. The mean response values for the individual items are typically greater than four, indicating that the respondents rated the patient safety culture favorably.[38] The highest mean score was for the item of "Staff in this pharmacy clearly understand their roles and responsibilities," whereas the lowest was for the item of "We have enough staff to handle the workload." Most of the indicators exhibited negative skewness. Overall, the distribution was moderately to highly skewed since most of the values were either less than −0.5 or more than 0.5. For kurtosis, the data were more or less normally distributed since it ranged from −1 to 1.

The factor loading of all items was greater than 0.6, except for one, as presented in Table 3. The lowest loading of 0.56 was for the item of "Interruptions/distractions in this pharmacy make it difficult for staff to work accurately," whereas the highest factor loading of 0.89 can be observed for the item of "When patient safety issues occur in this pharmacy, the staff discusses them." The SRMR score was 0.072, demonstrating good fit to the model.

As presented below in Table 4, the results of the internal consistency analysis measured using Cronbach's α demonstrated that all composites were greater than 0.7, with the exception of two composites, "Overall perception of patient safety" with a value of 0.65 and "Staffing, working pressure, and pace" with a value of 0.52. The composite "Staffing, training, and skills" achieved the highest Cronbach's α of 0.85.

The results of the positive response rate of the 11 composites ranged from 36% to 87%, as shown in Table 4 and Figure 4. The lowest score per composite was 36% for "Staffing, work pressure, and pace," while the highest score was 87% for "Teamwork." The overall average score of all composites was 74%. The positive response rate per item ranged from 27% to 93%. The highest score per item was 93% for "Staff treat each other with respect," whereas the lowest score per item was 27% for "Interruptions/distractions in this pharmacy make it difficult for staff to work accurately."

The composite scores and intercorrelations of 11 composites were analyzed to evaluate the construct validity. As shown in Table 5, no composites displayed a correlation above 0.85. The poorest intercorrelation was 0.29, which was between "Staffing, working pressure, and pace" and "Communication about prescriptions across shifts," while the highest intercorrelation was 0.83, which was between "Teamwork" and "Staffing, training, and skills." All composites were statistically significant ($p < 0.01$). The variable of "Patient safety grade" was positively correlated with the 11 composites. The average composite correlation was 0.51 (ranging from 0.34 to 0.65).

Discussion

To the best of our knowledge, this represents the first study to use the PSOPSC to explore patient safety culture in a hospital pharmacy setting in the Arabic language in Kuwait. It is the first study to examine staff views concerning patient safety culture in hospital pharmacies of Kuwait.

Our results suggest that the questionnaire has a suitable degree of reliability since 9 of the 11 composites demonstrated a Cronbach's α of >0.7. The two composites with a Cronbach's α of less than 0.7 were "Overall prescription of patient safety" (α = 0.65) and "Staffing, working pressure, and pace" (α = 0.52). Hence, the findings of this study are largely

Table 1. Demographic characteristics of the respondents.

Characteristic	Total (%)	Public hospital pharmacies (%)	Private hospital pharmacies (%)
Number	272	189	83
Job title			
Pharmacist	214 (79)	146 (54)	68 (25)
Pharmacy technician	47 (17)	36 (13)	12 (4)
Pharmacy clerk	3 (1)	0 (0)	3 (1)
Pharmacy student	8 (3)	7 (3)	0 (0)
Experience			
Less than 6 months	7 (3)	7 (3)	0 (0)
6 months to less than 1 year	16 (6)	13 (5)	3 (1)
1 year to less than 3 years	44 (16)	32 (12)	12 (4)
3 years to less than 6 years	73 (27)	38 (14)	35 (13)
6 years to less than 12 years	70 (26)	45 (17)	25 (9)
12 years or more	62 (23)	54 (20)	8 (3)
Working hours (per week)			
1–16	3 (1)	3 (1)	0 (0)
17–31	19 (7)	19 (7)	0 (0)
32–40	106 (39)	99 (36)	7 (3)
>40	144 (53)	68 (25)	76 (28)
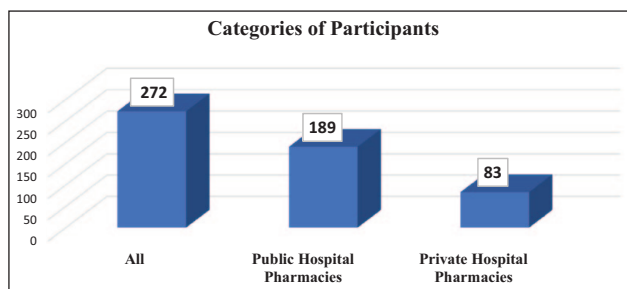
Figure 1. Categories of participants.

Figure 2. Staff position.

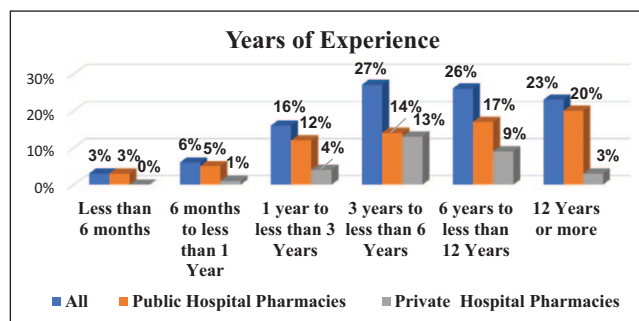**Figure 3.** Years of experience.
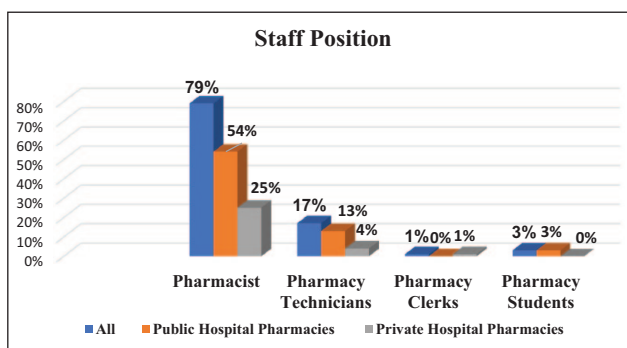
consistent with those of the original survey that was developed in 2012 in the United States, with the difference being all composites reported a Cronbach's α above 0.7, with the exception of "Staffing, working pressure, and pace," with α=0.68.

In addition, the results indicated that the construct validity of the translated survey was adequate. The intercorrelations among the 11 composites showed moderate to slightly significant correlations, suggesting that no two composites measure the same construct; indeed, no composites demonstrated an intercorrelation above 0.85. There was an absence of multicollinearity. Therefore, eliminating or unifying these dimensions is not appropriate. The model of this study was verified using the SRMR, which was a good fit. Taking into account the factor loadings, all loadings were observed to be greater than 0.6 in this analysis, except for one item. Thus, it may be noted that all items had a strong or fairly strong association with the factor. Certainly, the lowest factor loading was 0.56, reflecting a moderately strong association of the variable with the factor. In contrast, the lowest factor loading of the US survey was 0.46.[21]

This study has identified essential differences in the score of positive responses within the 11 composites. Our positive response rate by composites varied from 36% to 87%. The lowest score was for "Work pressure and pace," indicating that the respondents perceived staffing levels as inadequate. These results are consistent with studies from Malaysia,[4] China,[1] and the United States,[21] where the

Table 2. Mean, standard deviation, skewness, and kurtosis of all items of the pharmacy survey on patient safety culture (PSOPSC).

Composites and items of PSOPSC	Mean	SD	Kurtosis	Skewness
Physical space and environment				
This pharmacy is well organized	5.688	1.051	3.048	−1.354
This pharmacy is free of clutter	5.180	1.320	0.504	−0.875
The physical layout of this pharmacy supports good workflow	4.768	1.463	0.018	−0.683
Teamwork				
Staff treat each other with respect	5.908	0.954	2. 339	−1.250
Staff in this pharmacy clearly understand their roles and responsibilities	5.750	1.129	1.169	−0.992
Staff work together as an effective team	5.478	1.200	0.441	−0.679
Staff training and skills				
Technicians in this pharmacy receive the training they need to do their jobs	5.513	1.152	1.218	−1.036
Staff in this pharmacy have the skills they need to do their jobs well	5.535	1.132	1.413	−0.977
Staff who are new to this pharmacy receive adequate orientation	5.415	1.166	1.698	−1.038
Staff get enough training from this pharmacy	5.529	1.160	0.108	−0.577
Communication openness				
Staff ideas and suggestions are valued in this pharmacy	4.978	1.263	−0.060	−0.421
Staff feel comfortable asking questions when they are unsure about something	5.404	1.031	−0.490	−0.300
It is easy for staff to speak up to their supervisor/manager about patient safety concerns in this pharmacy	5.316	1.123	0.639	−0.553
Patient counseling				
We encourage patients to talk to pharmacists about their medications	5.265	1.285	0.842	−0.766
Our pharmacists spend enough time talking to patients about how to use their medications	5.154	1.277	1.449	−0.931
Our pharmacists tell patients important information about their new prescriptions	5.467	1.257	2.287	−1.204
Staffing, work pressure, and pace				
Staff take adequate breaks during their shifts	4.471	1.266	0.102	−0.152
We feel rushed when processing prescriptions (r)	4.181	1.353	0.084	0.207
We have enough staff to handle the workload	3.963	1.445	−0.237	−0.296
*Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately (r)	4.518	1.339	−0.622	0.034
Communication about prescriptions across shifts				
We have clear expectations about exchanging important prescription information across shifts	5.114	1.177	0.251	−0.456
We have standard procedures for communicating prescription information across shifts	5.268	1.159	0.697	−0.637
The status of problematic prescriptions is well communicated across shifts	5.362	1.128	0.237	−0.654
Communication about mistakes				
Staff in this pharmacy discuss mistakes	5.165	1.280	0.584	−0.683
When patient safety issues occur in this pharmacy, staff discuss them	5.294	1.195	0.127	−0.532
In this pharmacy, we talk about ways to prevent mistakes from happening again	5.410	1.199	0.170	−0.612
Response to mistakes				
Staff are treated fairly when they make mistakes	5.018	1.290	0.645	−0.922
This pharmacy helps staff learn from their mistakes rather than punishing them (r)	4.989	1.238	0.345	−0.552
We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy	5.419	1.085	1.472	−0.893
Staff feel like their mistakes are held against them (r)	4.518	1.339	−0.622	0.034
Organizational learning improvement				
When a mistake happens, we try to figure out what problems in the work process led to the mistake	5.449	1.042	1.832	−0.941
When the same mistake keeps happening, we change the way we do things	5.235	1.110	1.411	−0.833
Mistakes have led to positive changes in this pharmacy	5.346	1.003	0.747	−0.516
Overall perceptions of patient safety				
This pharmacy places more emphasis on describing or sales than on patient safety	5.690	1.245	0.149	−0.861
This pharmacy is good at preventing mistakes	5.438	1.079	0.495	−0.605
The way we do things in this pharmacy reflects a strong focus on patient safety	4.294	1.145	1.685	−0.861

*r: reverse-coded items.

Table 3. Factor loading in each item.

Items of the PSOPSC	Factor loading in United States	Factor loading in Kuwait
Physical space and environment (PSE)		
A1. PSE1	0.71	0.80
A5. PSE2	0.87	0.87
A7. PSE3	0.59	0.75
Teamwork (TMW)		
A2. TMW1	0.81	0.83
A4. TMW2	0.72	0.80
A9. TMW3	0.89	0.85
Staffing, training, and skills (STS)		
A3. STS1	0.84	0.78
A6. STS2	0.69	0.85
A8. STS3	0.80	0.84
A10. STS4	0.94	0.88
Communication openness (CMO)		
B1. CMO1	0.75	0.81
B5. CMO2	0.68	0.79
B10. CMO3	0.80	0.84
Patient counseling (PTC)		
B2. PTC1	0.52	0.81
B7. PTC2	0.88	0.84
B11. PTC3	0.72	0.85
Staffing, working pressure, and pace (SPP)		
B3. SPP1	0.46	0.72
B9. SPP2 (r)	0.76	0.61
B12. SPP3	0.62	0.67
B16. SPP4 (r)	0.51	0.56
Communication about prescriptions across shifts (CPS)		
B4. CPS1	0.87	0.79
B6. CPS2	0.85	0.85
B14. CPS3	0.72	0.86
Communication about mistakes (CAM)		
B8. CAM1	0.81	0.87
B13. CAM2	0.84	0.89
B15. CAM3	0.76	0.85
Response to mistakes (RTM)		
C1. RTM1	0.75	0.78
C4. RTM2	0.92	0.76
C7. RTM3	0.68	0.78
C8. RTM4 (r)	0.59	0.68
Organizational learning improvement (OLI)		
C2. OLI1	0.77	0.83
C5.OLI2	0.74	0.76
C10. OLI3	0.60	0.80
Overall prescription of patient safety (OPP)		
C3. OPP1 (r)	0.68	0.68
C6. OPP2	0.72	0.88
C9. OPP3	0.85	0.74

r: reverse-coded items; PSOPSC: pharmacy survey on patient safety culture.

composite "Staffing, work pressure, and pace" received the lowest scores of 41%, 50%, and 41%, respectively. Also, the highest response score for the composite "Teamwork" was

similar to that in the research works undertaken in Malaysia,[4] China,[1] and the United States,[21] with response scores of 87%, 84%, and 81%, respectively. The results of this study conform with those mentioned in the literature in that among healthcare staff, teamwork is a crucial component of a patient safety culture and a fundamental component for reducing medical errors.[39] Also, our results are consistent with a study carried out by Singer et al.[12] which revealed that there is a relationship between teamwork and enhancing safety culture. Teamwork is, therefore, important for patient care and problem-solving activities to maintain a safe environment. Bower et al.[40] argued that greater team functioning correlates with positive patient outcomes.

The positive response rate for individual items ranged from 27% for "Interruptions/distractions in this pharmacy make it difficult for staff to work accurately" to 93% for "Staff treat each other with respect." While the US version of the PSOPSC demonstrated that the average positive response score of the composites varied from 41% to 90%, the Chinese version of the PSOPSC was reportedly even lower. The overall average positive response score in our study was 74% versus 78% in the US version and 71% in the Chinese version. Moreover, the proportion of pharmacy workers who scored the grade of patient safety as "Good," "Very good," or "Excellent" was 93% in this research, which is very close to the US version score of 95%. This confirms an adequate level of care and awareness shown by the staff in Arabic pharmacy settings concerning patient safety. Therefore, the overall positive response rate of 74% accomplished in this study is well within the satisfactory limits. Nordén-Hägg et al.[41] maintained that if respondents score ⩾80% of positive responses to a particular item or composite, there is a strong positive consensus in this setting. A score of less than 60% is deemed weak and needs to be improved. In turn, the negative formulated question should be 20% or 40%. Moreover, Jia et al.[1] argued that ⩾60% provides a basis for which the safety culture could be deemed acceptable.

The current study will be helpful for Arabic pharmacy staff in providing a safer environment for patients in Arabic pharmacies by identifying the areas that need to be improved and the areas that are already effective. Also, it will raise awareness of the significance of a patient safety culture in hospital pharmacy settings in this geographical context. Moreover, this study could be useful for research scholars since it contributes an Arabic version of the PSOPSC to the field in a context in which approximately 407 million people speak this language.[42]

Our study has several limitations. First, the response rate (59%) was substantially lower than that observed in three similar studies in the United States,[21] China,[1] and Malaysia,[4] which reported response rates of 75%, 84%, and 93%, respectively. Second, despite its low cost and shorter time, the self-administered questionnaire may not accurately reflect respondents' views. Third, the sample size calculation/power analysis was not done in this study. Finally, the survey is an Arabic version of the PSOPSC and, therefore,

Table 4. Cronbach's α and positive response rate.

No.	Composites and items of the PSOPSC	Cronbach's α (United States)	Cronbach's α (Kuwait)	Positive response rate (United States, %)	Positive response rate (Kuwait, %)
1	Physical space and environment (PSE)	0.76	0.73	72	77
	A1. PSE1			84	92
	A5. PSE2			67	73
	A7. PSE3			65	65
2	Teamwork (TMW)	0.85	0.77	81	87
	A2. TMW1			79	93
	A4. TMW2			81	85
	A9. TMW3			82	83
3	Staffing, training, and skills (STS)	0.89	0.85	79	84
	A3. STS1			81	83
	A6. STS2			86	86
	A8. STS3			72	83
	A10. STS4			77	82
4	Communication openness (CMO)	0.79	0.74	87	76
	B1. CMO1			81	66
	B5. CMO2			91	80
	B10. CMO3			88	80
5	Patient counseling (PTC)	0.74	0.78	90	77
	B2. PTC1			92	73
	B7. PTC2			86	74
	B11. PTC3			93	85
6	Staffing, working pressure, and pace (SPP)	0.68	0.52	41	36
	B3. SPP1			56	50
	B9. SPP2 (r)			14	31
	B12. SPP3			56	38
	B16. SPP4 (r)			40	27
7	Communication about prescriptions across shifts (CPS)	0.85	0.78	81	76
	B4. CPS1			84	72
	B6. CPS2			78	77
	B14. CPS3			81	79
8	Communication about mistakes (CAM)	0.84	0.83	79	75
	B8. CAM1			74	71
	B13. CAM2			84	76
	B15. CAM3			81	79
9	Response to mistakes (RTM)	0.83	0.74	79	67
	C1. RTM1			80	44
	C4. RTM2			84	72
	C7. RTM3			84	69
	C8. RTM4 (r)			69	85
10	Organizational learning improvement (OLI)	0.76	0.71	83	82
	C2. OLI1			90	87
	C5. OLI2			82	80
	C10. OLI3			79	81
11	Overall prescription of patient safety (OPP)	0.79	0.65	84	81
	C3. OPP1 (r)			80	79
	C6. OPP2			85	81
	C9. OPP3			86	82

r: reverse-coded items; PSOPSC: pharmacy survey on patient safety culture.

cannot be generalized to countries with other languages. Further research is required to evaluate the translated version's applicability in Arabic pharmacy settings. Moreover, researchers can benefit from this study by further examining pharmacists' views of Arab regions regarding patient safety culture. Also, future research could seek to use another
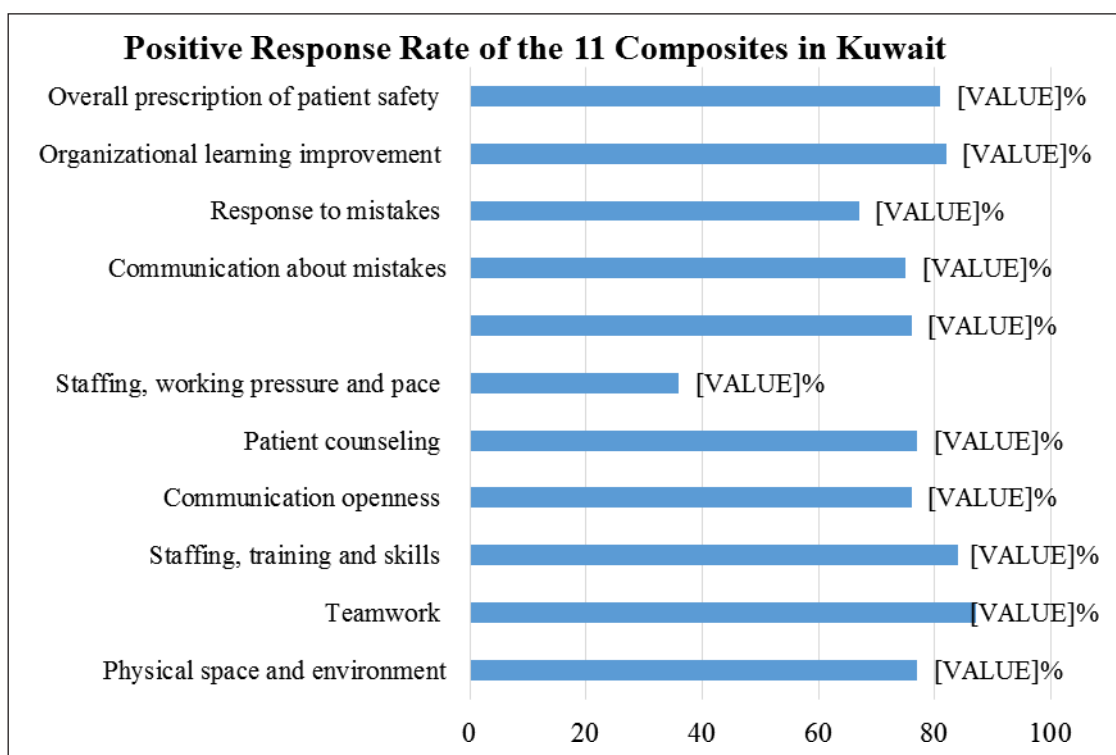
Figure 4. Positive response rate of the 11 composites.

Table 5. Intercorrelations among the 11 composites.

Composites of the PSOPSC	1	2	3	4	5	6	7	8	9	10	11	12
1. Physical space and environment	1	0.75**	0.73**	0.51**	0.46**	0.35**	0.51**	0.51**	0.44**	0.42**	0.53**	0.48**
2. Teamwork		1	0.83**	0.62**	0.52**	0.40**	0.65**	0.63**	57**	0.542**	0.575**	0.55**
3. Staffing, training, and skills			1	0.63**	0.54**	0.39**	0.63**	0.59**	0.54**	0.49**	0.52**	0.50**
4. Communication openness				1	0.51**	0.57**	0.73**	0.69**	0.69**	0.67**	0.69**	0.52**
5. Patient counseling					1	0.29**	0.50**	0.58**	0.40**	0.40**	0.40**	0.42**
6. Staffing, working pressure, and pace						1	0.29**	0.50**	58**	0.40**	0.40**	0.34**
7. Communication about prescriptions across shifts							1	0.44**	0.45**	0.49**	0.457**	0.65**
8. Communication about mistakes								1	0.77**	0.64**	0.63**	0.59**
9. Response to mistakes									1	0.77**	0.73**	0.53**
10. Organizational learning improvement										1	0.74**	0.52**
11. Overall perception of patient safety											1	0.58**
12. Patient safety grade												1

**PSOPSC: pharmacy survey on patient safety culture.

instrument or questionnaire such as a "safety attitudes questionnaire" to make a comparison between the results of both questionnaires.

Conclusion

In this work, we successfully translated and validated an Arabic version of the PSOPSC questionnaire. The results of the analysis confirm that the Arabic version of the PSOPSC had an adequate level of construct and indicator reliability. The SRMR analysis confirmed a good fit in the data set, and the factor loadings also exhibited a strong association between

composites and the factor. In addition, the results demonstrated that the construct validity of the translated survey was adequate. Hence, the translated Arabic version of the PSOPSC employed in this study is valid, reliable, and acceptable. Also, our results indicated that the pharmacy staff who were examined by the PSOPSC in Kuwait have a positive perception of patient safety culture in their organizations.

Declaration of conflicting interests

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