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Psychometric properties of the theory-based clinical behavioral intention scale among Turkish community pharmacists

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ABSTRACT: The aim of this study was to assess psychometric properties of a theory-based scale, which can be used to identify and evaluate clinical behavioral intentions of Turkish community pharmacists. For the Turkish version of the theory-based scale; translation, cultural adaptation, and a pilot study were carried out, respectively. Intraclass correlation coefficient (ICC) was calculated in 31 pharmacists for the two-week test-retest reliability. Online survey was conducted among community pharmacists in seven regions of Turkey between May and August 2021 by using convenience sampling. Principal component analysis was performed with Varimax rotation. Cronbach's alpha coefficient was calculated for each component and the total scale. Among one hundred twenty-seven pharmacists, the median age was 44.0 (ranged between 23 and 72 years). In the two-week test-retest reliability analysis, reliability in the total scores of the scale between the baseline and after 15 days was excellent (ICC= 0.938; p<0.001). Three components were identified in the principal component analysis, with 72.7% of the total variance explained. Cronbach's alpha values ranged from 0.765 to 0.909. The Turkish version of this theory-based scale can be used to identify and evaluate clinical behavior intentions of Turkish community pharmacists. Further studies can be conducted to evaluate the validity of scale among diverse healthcare providers to assess their intention to various behaviors.

KEYWORDS: Pharmacists; intention; education; pharmacy; continuing.

1. INTRODUCTION

Kirkpatrick's Evaluation Model presents four levels for evaluating continuing professional development programs: (1) identifying participants' reaction to the program (including their satisfaction, and opinions), (2) assessing their knowledge, skills, and attitudes, (3) determining their intention to change behavior, and (4) assessing the extent to which they perform the new skills on their own practices after attending the program [1]. In Turkey, continuing professional development programs have been carried out by the Turkish Pharmacists Association to develop patient-oriented pharmacy services for patients with chronic diseases and for older adults [2-3]. However, there is no reliable and valid Turkish scale that evaluates the effectiveness of these programs on intention to change behavior.

Legare at al. [8] generated a theory-based clinical behavioral intention scale (to evaluate Kirkpatrick's level 2 learning outcome) by using the Theory of Planned Behavior (TPB) [4] and Triandis' theory [5]. This scale had previously been used to assess the impact of digital education intervention on the intention of pharmacy staffs to provide medication review services [6]. It was also used in a cross-sectional study to determine the intentions of US community pharmacists to counsel patients on preexposure prophylaxis therapy for HIV [7]. The aim of this study was to assess psychometric properties of a theory-based scale that could be used to identify Turkish pharmacists' intention to new pharmacy services and evaluate clinical behavioral intentions of pharmacists after attending continuing professional development programs [8].

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2. RESULTS

From all regions of Turkey, one hundred twenty-nine participants clicked on the survey link. Only two community pharmacists refused to participate in the study. The response rate was 6.0%. Median age of the pharmacists was 44 years (ranged between 23 and 72 years). Among all, 69.3% were female. Half of the participants (49.6%) had more than 20 years of professional experience. The characteristics of the participants were shown in Table 1.

Table 1. Demographic characteristics of the participants (n=127).

Characteristic	n (%)
Age, Median (Range)	44.0 (23-72)
Sex	
Female	88 (69.3)
Male	39 (30.7)
Duration of professional experience (years)	
≤10	29 (22.8)
11-20	35 (27.6)
>20	63 (49.6)

IQR: interquartile range

We sent the questionnaire to 34 participants but received only 31 (91.2%) responses. So, the test-retest reliability was assessed in 31 participants (the response rate was 91.2%). Reliability in the total scores of the scale between the baseline and after 15 days was excellent (ICC= 0.938; p<0.001).

The Cronbach's alpha for total scale was 0.882. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.840 and Bartlett's Test of Sphericity was 936.541 (p<0.001). According to the scree plot graphic (Figure 1), three components were determined with 72.7% of the total variance explained. These components were beliefs about capabilities (3 items), social influences (3 items), and outcome expectations and intentions (6 items) (including beliefs about consequences, moral norms, and intention domains defined in the original scale). The Cronbach's alpha for these three factors ranged from 0.765 to 0.909. The findings of the principal component analysis are presented in Table 2. No significant differences in score of groups according to their duration of professional years and sex were determined (p>0.05; data not shown).

Table 2. Factorial analysis of the Turkish version of Theory-based Clinical Behavioural Intention Scale.

	Factor-1 Beliefs about capabilities	**Factor-2 Social Influences**	**Factor-3 Outcome Expectations and intentions**
1 I have the ability to [*behaviour*]* (1- strongly disagree/ 7- strongly agree)	0.906		
2 I am confident that I could [*behaviour*]* (1-strongly disagree/ 7-strongly agree)	0.891		
3 For me, [*behaviour*]* would be (1- extremely difficult/ 7-extremely easy)	0.689		
6 Most persons who are important for me in the profession would [*behaviour*]* (1- strongly disagree/ 7- strongly agree)		0.851	
5 Now think about a co-worker who you respect as a professional. In your opinion, does he/she [*behaviour*]* (1-never/ 7-always)		0.784	
4 To the best of my knowledge, the proportion of colleagues who will [*behaviour*]* would be: (1- 0%–7- 100%)		0.784	
9[*behaviour*]* is the ethical thing to do (1- strongly disagree/ 7-strongly agree).			0.844
10 It would be acceptable to [*behaviour*]* (1-strongly disagree/ 7-strongly agree)			0.826
11 I intend to [*behaviour*]* (1- strongly			0.795

disagree/ 7- strongly agree)			
7 Overall, I think that [*behaviour*]* is, for me: (1- useless/ 7- useful)			0.773
8 Overall, I think that is [*behaviour*]*: (1- harmful/ 7- beneficial)			0.736
12 I plan to [*behaviour*]* (1- strongly disagree/ 7- strongly agree)			0.733
Cronbach's alpha	0.855	0.765	0.909
Median [IQR]	5.0 [4.3-6.0]	4.7 [4.0-5.7]	6.3 [5.5-6.7]

IQR: interquartile range *providing pharmaceutical care to older patients.

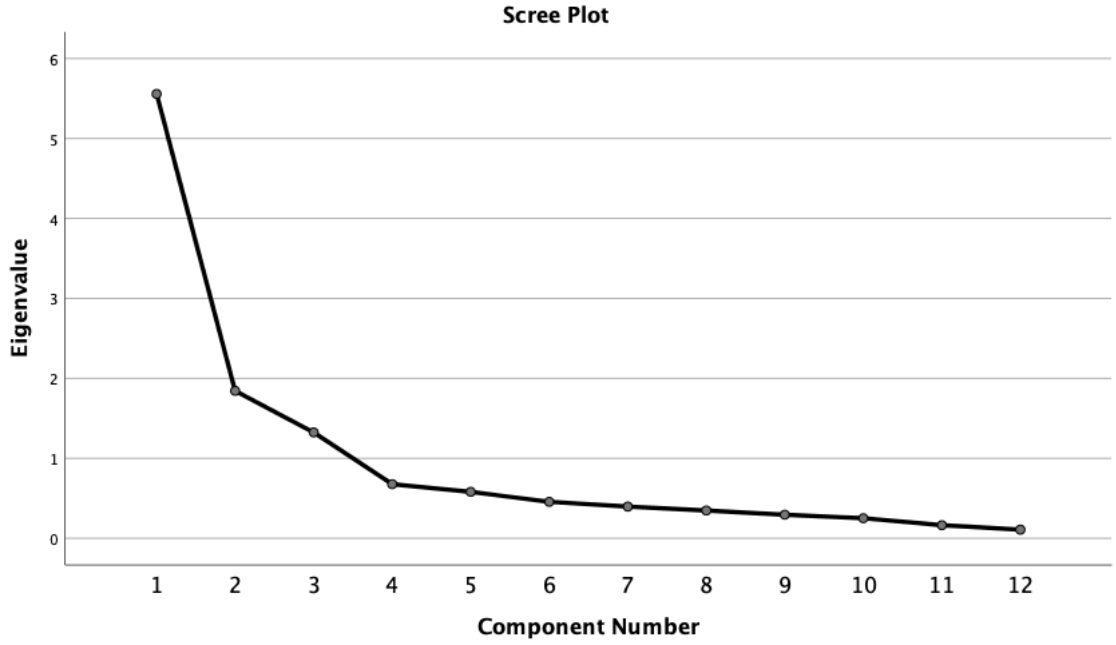

Figure 1. Scree Plot of the principal component analysis.

3. DISCUSSION

This study demonstrates the psychometric properties of a theory-based clinical behavioral intentions among community pharmacists.

In the present study, principal component analysis identified three components with acceptable Cronbach's alpha values (0.76-0.91). Internal consistency values were in line with the English version of the scale, where Cronbach's alpha values ranged from 0.79 to 0.89 [8]. The Cronbach's alpha values of the Argentinean version of the scale were 0.82 for total score and ranged from 0.63 to 0.79 for each component [13]. In a study by Unni et al. [7], the total Cronbach's alpha value was 0.85. The Cronbach's alpha of the Turkish version of the scale was in accordance with the original English version of the scale.

The original scale consisted of five components [8]. However, only four domains (social influence, moral norms, beliefs about capabilities, and intention to counsel) were identified in a study conducted in the United States assessing pharmacists' intention to provide HIV preexposure prophylaxis (PrEP) therapy [7]. We identified three components in the line with the Argentinean version of the scale [13]. In the Argentinean version of the scale, beliefs about consequences and moral norms were included in the same component as the Turkish version of the scale. This component was presented as outcome expectations and intentions in the Turkish version of the scale. According to the findings of the Argentinian version of the scale, the researchers attributed this discrepancy to the integrated nature of the theoretical framework used in developing this scale [13].

The sample size was adequate to determine psychometric properties of a scale. However, the study had some limitations. The pharmacists who had interest in providing patient-oriented services are more likely to have participated in the survey. This might have led to selection bias. Although a theory-based virtual training module to provide pharmaceutical care to older patients is available for all pharmacists in Turkey, we did not evaluate participants' knowledge regarding this pharmaceutical care program. Also, we

did not ask when they had participated in the program (to prevent recall bias). Further validation of the scale can be carried out after pharmacists' participation in these programs. The generalizability of the results was another limitation of this study. In this study, the validity of the scale was evaluated only through the pharmacists' intention to provide pharmaceutical care to older patients. In further studies, the validity of the scale should be evaluated among diverse healthcare providers to assess their intentions for various behaviors.

4. CONCLUSION

The theory-based scale is a reliable and valid tool and can be used to evaluate the clinical behavior intentions of Turkish community pharmacists who attend continuing professional development programs. Further studies can be conducted to evaluate the validity of scale among diverse healthcare providers to assess their intentions to various behaviors.

5. MATERIALS AND METHODS

This is a validation study that was conducted among community pharmacists from seven regions of Turkey. The sample size was calculated based on the number of items in the scale. The original scale had 12 items, so ten times of the total number of the items yielded a sample size of 120 [9]. Convenience sampling method was used for recruiting the participants. An online survey was generated on JotForm© and the link was sent to Turkish community pharmacists between May and August 2021. The email containing information and online link of the survey was sent to the community pharmacists (n=2109), who participated in continuing professional development programs and/or virtual education programs led by Turkish Pharmacists' Association. "*Healthy Aging with Pharmacists*" is a theory-based virtual training module developed in 2019 by the Turkish Pharmacists Association for continuing professional training. This program has been available for Turkish pharmacists since 2020 [2-3]. The link was also shared at professional groups on a WhatsApp Messenger. Informed consent forms were collected electronically. Ethical committee approval was received from Marmara University Health Science Institute (Date: December 14th, 2020; Number: 103).

Demographic data including age, sex, and duration of professional experience were collected.

The scale developed by Legare et. al [8] had five components: (beliefs about capabilities [3 items], social influences [3 items], beliefs about consequences [2 items], moral norms [2 items], and intentions [2 items]). A seven-point Likert scale (1-7) was used for rating the items. The total score was calculated through dividing the sum of scores of each item by the number of items in the component. Higher scores represented a greater intention to behavior change of the health professionals regarding targeted behavior.

A permission was received from Prof. France Légaré. Translation (including forward and backward translation) and cultural adaptation of the scale were carried out in accordance with the previous guideline [10]. An expert panel consisting of clinical pharmacists reconciliated the Turkish version of the scale at the end of forward and backward translation steps.

After the translation and cultural adaptation of the scale, a pilot study was conducted among 20 pharmacists (not included in the dataset of the principal component analysis) to test the understandability of the scale. The overall completion time for the scale was less than 5 minutes. For test-retest reliability analysis, the questionnaire was sent to 34 participants and 31 of them responded (not included in the dataset of principal component analysis) [11].

5.1. Statistical analysis

Descriptive variables were presented as median (interquartile range [IQR]) for ordinal variables and scale variables, and numbers and percentages for nominal variables. Scale and ordinal variables were presented with medians (interquartile range [IQR]), nominal variables with numbers and percentages. Intraclass correlation coefficient (ICC) was used for the test and retest analysis. ICC findings were defined as follows; excellent reliability if ICC >0.9, good if ICC ranged from 0.75 to 0.9, as moderate if ICC ranged from 0.5 to 0.75, and poor if ICC was < 0.5 [11]. Principal component analysis was done with Varimax rotation with calculation of The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The total variance explained, and a scree plot was used in determining the number of components in the scale. Cronbach's alpha coefficient was calculated for each component and the total scale. The Cronbach's alpha was considered acceptable if it was equal to or greater than 0.70 [12]. According to

findings of Kolmogorov Smirnov analysis, Kruskal Wallis test was used for analysis of three groups based on their duration of professional experience and Mann Whitney U test used to compare scores of two groups (female vs male). A p value of less than 0.05 was considered as statistically significant.

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