



## Research article

## Psychometric properties of the Persian language person-centered climate questionnaire – Patient version (PCQ-P)



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## ABSTRACT

**Background:** Person-centered care is a valuable approach to improve the quality of care of the elderly and is a starting point for maintaining the dignity of people needing care.

**Objectives:** This study aimed at translation, cultural adaptation, and validation of the Persian version of the Person-centered Climate Questionnaire–Patient questionnaire in elderly patients admitted to the Eastern Guilan hospitals from 2017-2018.

**Design:** This research was a cross-sectional study. The Persian version of Person-centered Climate Questionnaire –Patient version was completed by 200 older adults admitted to different wards of the hospitals. They were selected through convenient sampling. Data were collected in 5 hospitals affiliated to Guilan University of Medical Sciences, East of Guilan located in the north of Iran, from November 2017 to February 2018.

**Methods:** This study was carried out in two phases. In the first phase, the original questionnaire with 17 items was translated from English into Persian using Forward-Backward translation method. In the second phase, the psychometric properties of the questionnaire were evaluated using face, content, and construct validity, as well as reliability (internal consistency and stability). Data were analyzed via SPSS software v.16.

**Results:** The results of exploratory factor analysis (EFA) led to retaining 17 items with three factors of “Safety”, “Hospitality”, and “Everydayness” which explained 47.69% of the total variance. Cronbach's alpha coefficient was calculated for each factor (0.85, 0.70, and 0.64, respectively) as well as the whole instrument (0.85), to ensure internal consistency. Stability was confirmed by calculating the intra-class correlation coefficient as 0.99.

**Conclusions:** The current study found support for assessing the person-centered climate from the perspective of the elderly patients by using the Persian version of the Person-centered Climate Questionnaire–Patient that has an appropriate cultural adaptation, validity, and reliability.

## What does this paper contribute to the wider global clinical community?

- The person-centered climate questionnaire (PCQ-P) including 17 items with three factors of “Safety”, “Hospitality”, and “Everydayness” has sound validity and reliability for elderly patients in hospital care settings in Iran.
- PCQ-P is a useful scale to describe elderly patients' perceptions of the extent to which the climate (physical and psychosocial) of hospital environments is person centered.
- This questionnaire enables health care providers to assessment, planning, intervention and evaluation the person-centered care process.

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## 1. Introduction

Increasing access to healthcare services, reduction of infectious diseases and the related mortality as well as the implementation of population control programs have increased the life expectancy and proportion of the elderly population (United Nation, 2007). Nowadays, modern societies around the world are experiencing a rapid and ever-increasing aging process (Martínez et al., 2016). As stated by the United Nation in its 2017 report, the population aging rate in Europe and Northern America is increasing; in these areas, one out of every five people be over 60 years of age. An increase in the elderly population is also observed in other areas of the world. It is estimated that by 2050, the population proportion of the elderly will be as high as 35% in Europe, 28% in Northern America, 25% in Latin America, 24% in Asia, 23% in Oceania, and 9% in Africa (United Nation, 2017). According to the Iranian census of 2016, the proportion of the elderly population over 65 years of age increased from 5.7 percent in the year 2011 to 6.1 percent in 2016. This increase in the population of the middle-aged (30–64 years) is also evident, as their proportion to the total population amounts to 44.8%, and in total, more than half of the current population (51%) is composed of middle-aged and elderly people (Iran Statistical Centre, 2016). According to previous researches, an average of 13.2% of the population in Guilan province is over 60 years, which is the oldest province in the country, and the above figure reaches 16–17% in some cities east of Guilan (Islamic republic news agency 2019). One of the most important problems of the elderly people in Iran is the need for healthcare services (Statistical Research and Training Center, 2015). In developed countries, there is a significant expansion of professional healthcare services for older people. It has encouraged public and private organizations to control the quality of care and promote its provision to this group. The Person-Centered Care (PCC) approach has been developed in the past decades (Martínez et al., 2016). The American psychologist, Carl Rogers presented the concept of person-centered therapy in the early 1940s, which led to the design of more advanced models and their application in various fields of practice (Martínez et al., 2016). It was believed that each person (a) had significant capacities, (b) could receive power from available resources, and (c) could find a way to solve problems (Rogers, 1995). WHO introduced “PCC” as a key element of quality care for patients with chronic diseases, considering the main components of PCC as the patient and the professional staff (Ekman et al., 2012). It is considered a valuable approach to improving the quality of care for the elderly as well as a starting point for respecting the dignity of those in need of care, giving them a central position in the care process, looking at them as a unique and a whole person, and ensuring their active participation in taking care of and having control over their daily lives (Martínez et al., 2016). Several studies have showed that the positive effects of person-centered approach in various environments among elderly, family and staff including decreasing patient situational anxiety (Mullaney et al., 2016), reduced discomfort, aggression and use of neuroleptic drugs (Sloane et al., 2004; Fossey et al., 2006), and enhanced well-being and positive patient-reported experiences (Slater et al., 2014; Bridges et al., 2010). They improved the ability to perform activities of daily living and quality of life (Sjögren et al., 2013) and experience fewer falls (Chenoweth et al., 2009). There was also promoted engagement of residents during care routines (Sidani et al., 2012). In addition, the relationship between PCC and staff, including decreasing perceived stress and burnout and higher job satisfaction (Edvardsson et al., 2011; Ross et al., 2015). Further research is recommended to facilitate a clearer understanding of the meaning and application of PCC in everyday practice (Ross et al., 2015). To date, various questionnaires have been designed and developed to study dimensions of PCC in healthcare environments. In Iran, the designed tools with similar concepts (Alavizade et al., 2016, Vosough et al., 2016) have some limitations and/or need further investigations. Thus, there is no tool to measure the extent of PCC from the perspective of Iranian seniors in hospital care settings. In particular, the PCQ-P was developed by a group of Swedish researchers

based on qualitative studies, exploring how supportive environments can contribute to maintaining the personhood of the individuals providing a person-centered climate (Edvardsson et al., 2008; Bergland et al., 2015). The theoretical framework describes person-centered environments which has three dimensions; a climate of safety, a climate of everydayness, and a climate of hospitality (Edvardsson et al., 2008). person-centered care questionnaire was translated into English and its validity and reliability were reported satisfactory in Australian, Norwegian, and the American patients and older adults (Edvardsson et al., 2009; Bergland et al., 2015; Yoon et al., 2015). Therefore, this study aimed at translation, cultural adaptation, and validation of the Persian version of the PCQ-P questionnaire in older patients 60 years and over admitted to hospitals in the eastern Guilan, Iran in 2017–2018.

## 2. Methods

In the first stage, the original version of the questionnaire with 17 items was translated using Forward-Backward translation method. In the second stage, a cross-sectional survey design was conducted to test the psychometric properties of the questionnaire. This stage consists of face validity (qualitative and quantitative), content validity (qualitative and quantitative), construct validity (exploratory factor analysis), internal consistency, and stability (test-retest).

**Design:** This research is a cross-sectional study.

### 2.1. Measures

For collecting data, we used a demographic information questionnaire and the original version of the PCQ-P (Edvardsson et al., 2008). The PCQ-P was developed by a group of Swedish researchers. It measures the extent to which the climate of health care settings is perceived as being person-centered. PCQ-P includes 17 items with a six-point Likert-type scale (1 = no, I disagree completely, to 6 = yes, I agree completely) administered in a hospital patient population; factor analysis resulted in three subscales labelled ‘safety’, ‘everydayness’ and ‘hospitality’. The total score ranged between 17 (a climate that is minimally person-centered) to 102 (a climate that is maximally person-centered). The content and construct validity were estimated as satisfactory by Delphi assessment, and factor and item analysis. Cronbach's alpha was satisfactory for the total scale (0.93), and for the three subscales (safety 0.94, everydayness 0.82 and hospitality 0.64) (Edvardsson et al., 2008). The original Swedish version has been translated into English and has shown satisfactory reliability and validity in an Australian hospital patient population (Edvardsson et al., 2009).

### 2.2. Translation

After obtaining permissions from the copy-right holder of the PCQ, the original version of PCQ-P was translated from English into Persian, using forward-backward translation method. In this method, the original version was first translated into Persian by two fluent English translators simultaneously and independently. Then, the translations were merged and the Persian version of the questionnaire was again translated into English by two other bilingual translators independently. Finally, the translations were compared by two of the research team members and the final Persian version was developed.

### 2.3. Data collection and participants

The study population consisted of all older patients aged 60 years and over admitted to different wards (Medical, Surgical, Ear-Nose-Throat (ENT), Orthopedic, critical care units) of hospitals affiliated with Guilan University of Medical Sciences, east of Guilan located in the North of Iran (Roudsar, Langaroud, Lahijan, Astaneh). Sample size of at least 200 people be defensible for factor analysis (Kline, 2011). In this study 200 elderly patients aged 60 years and over participated in determining the

construct validity of the questionnaire (Exploratory factor analysis). All patients were selected through a convenient sampling method from November 2017 to February 2018. The inclusion criteria were: being Iranian and able to understand Persian, being literate, being at the age of 60 or above, not having known psychological illness or cognitive impairment (based on the information recorded in patients' medical files and self-reports), not having used psychiatric medications one year prior to enrolment and willingness to participate in the study.

#### 2.4. Psychometric testing (validity and reliability)

In the second stage of this study, face validity was examined using qualitative and quantitative methods. For the qualitative face validity, 10 elderly patients hospitalized in the medical/surgical wards of the selected university hospitals, were interviewed using individual face-to-face and purposeful methods. They were asked about item difficulty, relevancy, and ambiguity. Ultimately, their feedback and corrective comments led to the improvement of the items. Subsequently, in order to determine the quantitative face validity, we used the opinions of 10 elderly patients who were separated from the previous 10 elderly, selected based on the purpose (the mean age of participants for face validity was 69.67 (SD = 4.50)). Items with an item impact score of more than 1.5 were retained for further analysis (Juniper et al., 1997; Ebadi et al., 2017).

For qualitative content validity, 12 faculty members with expertise in nursing education, geriatric nursing and health Services Management, were selected purposively and were asked to assess the items based on the following criteria: grammar, wording, item allocation, and scaling (Mohammadbeigi et al., 2015). For quantitative content validity, the content validity ratio (CVR) and the content validity index (CVI) were used. According to the Lawshe table, for calculating the minimum value of the CVR, the items with a CVR of 0.56 (based on the scoring of 12 faculty members) with a statistical significance level of  $p < 0.05$  were selected (Lawshe, 1975). For calculating the CVI based on the Waltz and Bausell's method, 12 faculty members were asked to examine the degree of relevance, clarity, and simplicity of each item based on a 4-point Likert scale (LoBiondo-Wood and Hober, 2006). Therefore, items with a score above 0.79 were considered appropriate (Polit et al., 2007). For the content validity of the whole instrument, the scale-level content validity index/ averaging calculation method (S-CVI/ Ave) was employed. Polit and Beck (2012) have recommended a score of 0.9 and higher as the standard value for the inclusion of items (Polit and Beck, 2012). For construct validity, the exploratory factor analysis (EFA) method was adopted. The overall purpose of the EFA in this study was to ensure the stability of the factor structure. Removing, modifying, or adapting items can be predicted based on EFA (Germain, 2006).

#### 2.5. Statistical analysis

First, general characteristics of the participants were analyzed using descriptive statistics including mean, standard deviation, frequency and percentage. Second, the construct validity was measured using EFA based on SPSS v.16. To ensure the validity of the data, the researchers investigated apparent match between responses and scale items before being entered them into SPSS software. Then, to detect outliers, standardized residuals of the variables were calculated using SPSS ver. 16 and items containing variables with values  $\geq +3$  or  $\leq -3$  were considered as outliers. At this stage, no questionnaires were excluded. Missing data were checked prior to entering data into SPSS software. More than 10% of data missed in the questionnaire meant that the questionnaire had to be excluded and no questionnaires were excluded. Also, the normality of the data was determined by examining kurtosis and skewness statistics before EFA. After that, the Kaiser-Meyer-Olkin (KMO) index and Bartlett's test of sphericity evaluated data adequacy for factor analysis. In the present study, in addition to the above-mentioned criteria, there should be a strong correlation between the variables, so that each variable has a

strong correlation with a minimum of one. For performing EFA, the least inter-item correlation should be  $\pm 0.3$ . The correlation should not be less than  $\pm 0.3$  (Yong and Pearce, 2013). Using the Anti-Image Matrices table and considering that the anti-image correlation matrix diagonals were more than 0.5, the ability of factors to function and the suitability of the data for factor analysis were examined. In this study, the Maximum Likelihood method was adopted to extract factors. To explore the number of factors, Eigenvalues (greater than one), scree plots, and the average extracted communalities calculation were consulted based on the Kaiser's criterion to assess the Eigenvalue cut-off point (Yong and Pearce, 2013). Also, Equamax rotation was employed to simplify the factor structures and interpret them. The cut-off point was considered to be at least 0.1 to investigate variables loaded by each factor. As a rule of thumb, determining the cut-off point depends on the number of samples, and a higher number of samples implies that a lower factor load becomes significant. However, selection of the cut-off point may depend on how to control complex variables in the observed factor structure. When a variable has no significant factor load on each of the extracted factors, the analysis can be carried out with the elimination of that variable. Also, if the variable cannot be eliminated, a lower cut-off point can be used (Yong and Pearce, 2013). In the final phase of the study, internal consistency and stability were used to assess reliability. As for internal consistency, the Cronbach's alpha coefficient was calculated for each factor as well as for the whole scale. The normal range of values is between 0.00 and 1.00, and higher values reflect higher internal consistency (Polit and Beck, 2012). Test-retest method was utilized to ensure the scale's stability. Accordingly, 26 elderly patients with a mean age of (69.81  $\pm$  4.90), hospitalized in the medical/surgical wards of the selected hospitals were selected using simple random sampling. Then they were asked to complete the questionnaire twice within a two-week interval. Through calculating the intra-class correlation (ICC), the stability was assessed. An ICC index higher than 0.8 was considered as the sign of stability (de Boer et al., 2004). All statistical analyses were performed using SPSS, version 16.

#### 2.6. Ethical considerations

After obtaining the approval of the Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran under the number IR.GUMS.REC.96022302, sampling was started. Before signing the informed consent form, participants were ensured that the collected data would be used only for the study purposes and that their personal information would be kept confidential during and after the study.

### 3. Results

In the present study, a sample of 200 elderly patients were included for exploratory factor analysis. The general characteristics of the participants were the following. The mean age of patients was 68.5  $\pm$  6.84 years. Out of 200 elderly patients 54% were women, 54% educated (elementary school education), 74% married, 58% living in city, and 62% having a history of hospitalization. Participants were hospitalized in internal medicine (33%), emergency (18.5%), orthopedics (15.5%), critical care units (15%), surgery (14.5%), and ENT (3.5%) wards. A total of 62.5% of participants knew that they had a caregiver. The mean length of stay in the hospital was 1.14  $\pm$  0.43 and 63% of participants were hospitalized in 2–4 bed rooms.

The findings of the quantitative face validity of the "person-centered climate questionnaire-patient version" indicated that the item impact scores ranged from 2.66 to 4.90. The CVR and CVI ranged from 0.83 to 1. The exception was item 11 (a place that has something nice to look at (e.g. views, artwork, etc.)), which did not obtain the minimum numerical value of 0.56 in the CVR, based on the Lawshe's table, but it was retained due to the emphatic recommendation of the original developer of the PCQ-P. Also, the S-CVI/ AVE of scale was calculated at 0.96.

To examine the suitability of data for performing factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were used

**Table 1.** KMO value and Bartlett test of sphericity.

KMO statistics	0.889
Chi-square approximation	1515.077
Significance level	0.0001
Degree of freedom	136

(Table 1). According to the coefficient of KMO = 0.89 and the significance of Bartlett's test of Sphericity, the data was considered appropriate for factor analysis. To decide on the extraction of factors, the Maximum Likelihood method was adopted. Also, to determine the number of factors, Eigenvalues (Table 2) and scree plot were used (Figure 1).

The results showed that three factors with Eigenvalues of more than one (6.56, 1.95, and 1.15) in total, accounted for 47.69% of the

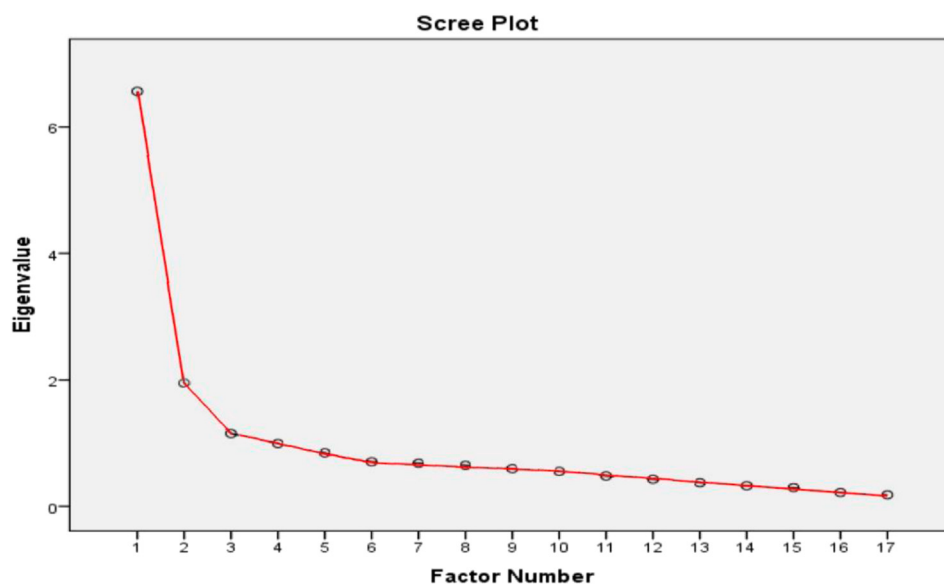
variance. Also, the percentage of the explained variance was 35.22 for the first factor, 8.10% for the second factor, and 4.37% for the third factor. The Equamax rotation produced three factors and 17 items. Each item shared by multiple factors was included in one of the three factors by the research group, due to their higher factor load, conceptual fit, the nature of the item, and citing to the original PCQ-P; therefore, items 1–4,9,10,12, and 13 which accounted for 21.64% of variances were included in the first factor of “safety”, items 5–8, and 11 accounting for 17.53% of variances were loaded on the second factor of “hospitality”, and items 14–17 accounting for 8.52% of variances were placed in the third factor of “everydayness”. The distribution of 17 items in each of the three factors is shown in Table 3.

The correlation coefficient of each of the three factors with the overall score of the questionnaire was calculated. This coefficient was 0.91 for the first factor, 0.76 for the second factor and 0.64 for the third factor,

**Table 2.** Initial Eigenvalues, total variance explained, and cumulative percentage of the three primary factors extracted from the PCQ-P.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.56	38.59	38.59	5.98	35.22	35.22	3.67	21.64	21.64
2	1.95	11.47	50.06	1.37	8.10	43.32	2.98	17.53	39.17
3	1.15	6.77	56.84	0.74	4.37	47.69	1.45	8.52	47.69
4	0.99	5.84	62.68						
5	0.84	4.98	67.67						
6	0.70	4.14	71.81						
7	0.68	4.01	75.83						
8	0.65	3.82	79.65						
9	0.59	3.50	83.16						
10	0.55	3.25	86.42						
11	0.48	2.83	89.25						
12	0.42	2.52	91.77						
13	0.37	2.20	93.97						
14	0.32	1.91	95.89						
15	0.29	1.74	97.64						
16	0.21	1.28	98.92						
17	0.18	1.07	100.00						

Extraction Method: Maximum Likelihood.



**Figure 1.** Scree plot chart and extracted factors based on Eigenvalues.

**Table 3.** The rotated matrix of PCQ-P based on Method Maximum Likelihood and Equamax rotation.

Items	Factor 1 Safety	Factor 2 Hospitality	Factor 3 Everydayness
1-A place where staff are knowledgeable.	0.50		
2-A place where I receive the best possible care.	0.64		
3-A place where I feel safe.	0.53		
4-A place where I feel welcome.	0.63		
9-A place that is neat and clean.	0.63		
10-A place where staff seems to have time for patients.	0.51		
12-A place that feels homely.	0.73		
13-A place where it is possible to get unpleasant thoughts out of your head.	0.64		
5-A place where it is easy to talk to staff.		0.77	
6-A place where staff take notice of what I say.		0.86	
7-A place where staff come quickly when I need them.		0.70	
8-A place where staff talk to me so that I can understand.		0.45	
11-A place that has something nice to look at (e.g. views, artwork, etc.).		-0.13	
14-A place where people talk about everyday life and not just illness.			0.55
15-A place where staff make extra efforts for my comfort.			0.50
16-A place where I can make choices (e.g. what to wear, eat etc.).			0.54
17-A place where I can get that 'little bit extra'.			0.55

Extraction Method: Maximum Likelihood.

respectively. The mean scores of each factor and the total questionnaire were calculated. Total mean score was 79/28 (SD = 10/38; N = 200). In this study, the participants gave the highest score to the first factor (safety) at 38/23 (SD = 6/02; N = 200).

In the last phase, internal consistency and stability were employed to assess the reliability of the questionnaire. The internal consistency was tested before factor analysis with 200 participants and the Cronbach's alpha coefficient was calculated as 0.85. Also, after conducting factor analysis, internal consistency was assessed again with the same samples and the Cronbach's alpha coefficient was calculated as 0.85 for the whole questionnaire and for each of the three factors as 0.85 (safety), 0.70 (hospitality) and 0.64 (everydayness), respectively. It should be noted that the Cronbach's alpha value had no effect on the Cronbach's alpha value of the total scale upon the removal of an item, so no item was removed.

For stability, the questionnaire was filled out twice with a 14-day interval by 26 older people with a mean age of (69.8 ± 4.9) in medical-surgical wards of the intended hospitals who were selected using the simple random sampling method. After collecting data, the intra-class correlation coefficient (ICC) was calculated for each factor and the total instrument. The results of the ICC test indicated that there was a significant agreement between the first and second test scores (p < 0.001), indicating the high stability of the questionnaire (Table 4).

#### 4. Discussion

The present study was conducted with the aim of translating the PCQ-P, assessing its psychometric properties, and adapting it to the socio-cultural norms of the country from the viewpoints of the elderly patients at the hospitals in eastern Guilan, Iran.

The results of the study showed that the Persian version of the PCQ-P has a good validity (face, content, and construct) as well as good reliability (internal consistency and stability) to assess the person-centered climate. The present work is the first study on translation, cultural adaptation, and validation of the PCQ-P in Iran. The content validity of the 17-item questionnaire is in line with those of the study by Bergland et al. (2015), Edvardsson et al. (2009) and Yoon et al. (2015). EFA was employed to explore the factor structure and construct validity of the Persian version of the PCQ-P. The results of EFA using Maximum Likelihood and Equamax rotation showed that the Persian version of the PCQ-P has three factors ('safety climate', 'hospitality climate', and 'everydayness climate'). In this regard, the results are in line with those of Edvardsson et al. (2008) carried out in a hospital care setting in Sweden. However, the results were not in agreement with those of Edvardsson et al. (2009) conducted on 108 Australian elderly inpatients to assess the psychometric properties of the English version of the PCQ-P. This might be due to the differences between the sample sizes, demographic characteristics of the participants, sampling methods, research settings, socio-cultural characteristics of the participants, and prevailing person-centered climate of the two studies. The mean score of the questionnaire items of the present study indicated that the participants regarded the care they received and its climate as a person-centered one, except for the cases of items 14(A place where people talk about everyday life and not just illness.) with a mean score and SD of (2.88 ± 1.70) and item 16 (A place where I can make choices (e.g. what to wear, eat etc.)) with a mean score and SD of (3.3 ± 1.64) which require further study. The results could be interpreted in terms of the familiarity of the staff in the hospitals under study with the Charter of Patients' Rights and their attempts to provide person-centered care. However, the climate and some organizational rules and principles of these hospitals are not person-centered. It is also worth noting that we focus on the health conditions of the patients in this study and the way the nurses

**Table 4.** Stability: intra-class correlation coefficient (ICC) of the PCQ-P.

Item	Mean ± SD test	Mean ± SD retest	Pearson correlation coefficient	Intra-class Correlation Coefficient (ICC)
Total	80.46 ± 5.62	80.19 ± 5.69	0.97*	0.98** (0.97–0.99)
Safety	39.58 ± 2.56	39.23 ± 2.60	0.96*	0.98** (0.96–0.99)
Hospitality	27.92 ± 1.92	27.81 ± 1.86	0.95*	0.97** (0.94–0.99)
Everydayness	12.96 ± 2.84	13.15 ± 2.99	0.93*	0.96** (0.92–0.98)

\*Correlation is significant at a level of \*0.01(two-tailed); \*\*significant at 0.001 AM (Average Measures).

communicated with them and met their disease-related needs, due to their length of stay in the hospitals ( $1/14 \pm 0/43$ ). Also, the mean total score of the 17-item scale was  $79/28 \pm 10/38$  which is another evidence for the person-centered climate of the hospitals under study. In our study, the mean score of the factor of 'safety climate' was  $38/23 \pm 6.02$ , the mean score of the factor of 'hospitality climate' was  $25/96 \pm 3/16$ , and the mean score of the factor of 'everydayness climate' was  $15/09 \pm 3/91$ . A number of studies carried out in Iran have reported patients as giving the highest score to the ability to provide a safe care setting by health care providers (Khaki et al., 2016; Zarei et al., 2012). Results of the study by Bergland et al. (2015) are in agreement with those of the present study. In their study, the highest scores were given to the item 'I feel safe' in the factor 'safety climate'. It should be mentioned that the patient's safety is a major component of quality health care and is of priority to every health care system aiming for quality improvement (Tourani et al., 2016; Mascherek and Schwappach, 2017). In the present study, item 9 (a place that is neat and clean) obtained the lowest score in the factor of safety climate which is indicative of the low quality of this variable in the hospitals. The results in accordance with the results of the study by Dadipoor et al. (2017) conducted in the university hospitals of Bandar-Abbas, Iran. Yesilda et al. (2010), and Douglass et al. (2005) also carried out studies on the quality of the health care from the viewpoint of the patients. They found that the factor of 'tangible dimensions' including a neat appearance of the staff, a neat and clean hospital environment, modern medical equipment, a congruent physical layout and proper signage, and a window to see outside to give them better feelings are of prime importance. As a result, it is necessary for the health and medical care centers to adjust their physical environments to the required to provide appropriate facilities of health care (Seidi et al., 2009). In this study, the 'hospitality climate' ranked second from the perspective of the participants. As for this factor, item 8 (a place where staff talk to me so that I can understand) was given the highest score. In the studies by Alavizade et al. (2016), and Molazem et al. (2010), 'being connected' to health outcomes; timely recognition of needs and problems, and coping with patients' fears and concerns are regarded as critical. However, in some cases, issues such as shortage of time, nursing shortage, devaluation of the nursing profession, and lack of motivation prevent effective nursing practices (Molazem et al., 2010). Concerning the factor of 'everydayness climate,' the participants gave the highest score to item 15 (A place where staff make extra efforts for my comfort). Accordingly, Hartwell et al. demonstrated that participants prefer a home-like atmosphere which not only improves the sense of belonging and solidarity but also positively affects rehabilitation (Hartwell et al., 2013). Edvardsson et al. (2010), investigated the person-centered care from the viewpoint of patients with dementia and reported that dimensions of a normal life from the perspective of the care receivers had five content categories including knowing the person; welcoming family, providing meaningful activities, being in a personalized environment, and experiencing flexibility and continuity. Parvin quotes Lorin as stating that "Since patients' satisfaction is affected by the hospital type, the ward type, the place of hospitalization, attitude, culture, social background and personality, what matters is the evaluation of the care provided by patients" (Parvin et al., 2007). In the present work, the reliability measures showed that the PCQ-P has a good reliability (internal consistency and stability) which is congruent with the studies by Edvardsson et al. (2008), Edvardsson et al. (2009), Yoon et al. (2015), and Bergland et al. (2015).

## 5. Conclusion

The aim of this study was to investigate the psychometric properties of a useful tool for evaluating the Person-centered care climate from the perspective of elderly patients. The results showed that this questionnaire has acceptable psychometric characteristics for measuring the Person-centered care climate in the hospital environment. In addition, it can be used by health care providers in the health care system of Iran. This questionnaire, which matched the Iranian culture, is convenient and understandable for the elderly to answer.

## 6. Limitations of the study

The first limitation of the present study was convenience sampling from among the elderly patients at the university hospitals in eastern Guilan, Iran. Thus, caution is advised in generalizing the results to other age group or settings. Another limitation lies in the construct validity assessment. Since item 11 could not be loaded on any of the factors using Maximum Likelihood method and Equamax rotation, it was considered a complicated and was re-assessed using a minimum cut-off point of 0.10 for rotation purposes. However, this made the results of the present study similar to those of other countries and contexts. Also, it is recommended that in future studies construct validity be employed using confirmatory factor analysis (CFA) to examine the factor structure of the Persian version of the PCQ-P. Moreover, the use of this questionnaire is advised in other elderly health care settings in Iran. The third limitation is that for evaluating the reliability of the PCQ-P, Cronbach's alpha coefficient of the third factor (everydayness) was calculated at 0.64 which was less than the cut-off point of 0.70. However, the corrected item-total correlation with the entire scale ranged from 0.40 to 0.45, indicating that the scale is homogenous without having redundant items and consequently, no related items were removed (Nunnally and Bernstein, 1994). Meanwhile, having in mind the good reliability of the whole questionnaire (0.85), this value is representative of good stability and the scale is regarded as homogeneous and without redundant items. Nevertheless, further studies are recommended to assess the psychometric properties and internal consistency of the questionnaire in other settings and on other samples.

## Declarations

### Author contribution statement

Faeze Kobrai-Abkenar: Conceptualization, Data collection, Writing, Reviewing and Editing.

Parand Pourghane: Conceptualization, Project administration, Supervision, Writing the first draft.

Fatemeh Jafarzadeh-Kenarsari: Conceptualization, Methodology, Formal analysis, Validation, Writing- Reviewing and Editing.

Zahra Atrkar Roushan: Methodology, Formal analysis.

David Edvardsson: Conceptualization, Writing, Reviewing and Editing.

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### Competing interest statement

The authors declare no conflict of interest.

### Additional information

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