

Original Research Article

# Psychometric evaluation of the Arabic version of the patient-centered communication instrument for adult cancer patients

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## Abstract

**Background:** This study aimed to examine the validity and reliability of the Arabic version of the patient-centered communication instrument.

**Methods:** A self-administered instrument was used over 4 months by 318 participants living with cancer in Saudi Arabia. The instrument contained 36 items assessing patient-centered communication (PCC-36) experiences. The PCC-36 instrument was translated into Arabic following the World Health Organization guidelines for translating instruments before undergoing psychometric evaluation. This involved confirmatory factor analysis for each of the PCC-36 functions and testing the reliability and internal consistency of the PCC-36 measures.

**Results:** The Arabic-translated PCC-36 version demonstrated a good correlation between items, with confirmatory factor analysis showing a good fit of the data (comparative fit index = 0.922, Tucker–Lewis index = 0.910, root mean square error approximation = 0.059,  $\chi^2 = 1214.4$ ,  $df = 579$ ,  $P < 0.001$ ). Internal consistency of the total six PCC-36 functions was confirmed by a Cronbach's alpha of 0.97.

**Conclusions:** The study proved that the PCC-36 Arabic version is a valid and reliable instrument for the measurement of patient communication experiences in cancer care in Saudi Arabia, with similar properties to the original, and that this instrument may be used in 22 different Arab countries to measure and improve cancer patients' communication experiences.

**Key words:** cancer, patient-centered communication, patient-centered care, psychometrics, questionnaire translation

## Introduction

Nurse–patient communication is a critical component of high-quality patient-centered care in health-care facilities. Cancer patients present with high levels of distress following diagnosis, leading to affective disorders [1]. During this difficult time, nursing communication plays a critical role in addressing patients' cognitive and affective needs. Moreover, the nurse–patient relationship relies on effective communication as nurses can demonstrate affection in their relationships with cancer patients through acts of empathy, touch, comfort and

supportive behavior, which are necessary when providing psychosocial care to cancer patients [2]. Effective nurse–patient communication can improve cancer patients' quality of life and enhance their psychosocial outcomes.

Many nurses in the majority of Arab countries are expatriates who do not demonstrate a full understanding of the native language and culture of Arabs. As a result, it is difficult for expatriate nurses to communicate effectively with native patients undergoing cancer treatment, even if they have affective disorders [3–5]. The lack of

effective communication in these countries leads to reduced quality of health because cancer patients may not benefit from culturally sensitive care [1].

This issue is not unique to Arab countries; nurse–patient communication in oncology units is a global problem characterized by multiple challenges. Communication between nurses and patients in cancer care facilities is prone to dialectic tensions due to the diversity of nurses and the patient population. To compound matters, due to global changes in people’s lifestyles, the number of cancer patients is increasing rapidly [6]. Some researchers in the USA have responded to this issue by developing a high-quality instrument to assess patient communication experiences and the quality of communication patients receive from health-care providers [7].

Notably, the PCC-36 instrument is an effective measuring tool that was developed for use in cancer care [7]. The PCC-36 instrument addresses the six main factors affecting the patient communication experience, namely, (i) the exchange of information, (ii) fostering a healing relationship, (iii) decision-making, (iv) responding to emotions, (v) enabling self-management and (vi) managing uncertainty. Logically, exchanging information regarding the disease helps build a relationship between the patient and their health-care providers, which in turn helps with emotional engagement and decision-making. Together, this assists in managing patient uncertainty [8].

Despite its importance, this instrument has not been translated into any languages other than English and Spanish, and the psychometric properties of only the English version have been tested. The PCC-36 English version has been found to be a valid and reliable instrument for use in the colorectal cancer population [9]. While the PCC-36 is a valid instrument for use in cancer care, no studies have attempted to translate this instrument into the Arabic language for use in Arab countries. Given that the number of cancer patients in Arab countries is increasing, this places a high burden on their governments [5, 10, 11]. Such an instrument would therefore be of value in helping to improve patient care.

## Methods

### Objective

The objective of this study was to examine the validity and reliability of the Arabic version of the PCC-36 instrument, which is used to measure patients’ communication experiences in cancer care.

### Study settings

This cross-sectional observational study was conducted at two referral health-care facilities in Riyadh, Saudi Arabia: the King Faisal Specialist Hospital and King Fahad Medical City. Both facilities provide specialized services for cancer patients.

### Participants

Men and women between the ages of 18 and 90 years who received cancer care in either referral facility from August to December 2019 were eligible to participate in the study. Patients with advanced cancer undergoing palliative care were excluded. An advertising flyer with information about the study, including the inclusion criteria, was used to recruit eligible participants. The patients were recruited from the cancer inpatient and outpatient clinics. Once they had provided their consent, the eligible participants were provided with a written copy of the instrument to complete and return at their leisure. Participants who had difficulty reading and communicating

were encouraged to seek assistance from their family to complete the instrument. No identifying data were collected from the participants.

### Measures

Questions regarding sociodemographic data and the items from the PCC-36 instrument were included in the survey. The sociodemographic variables included age, gender, marital status, education, nationality, language, religion, employment status, location, family income, health literacy and communication problems.

The PCC-36 instrument was developed by National Cancer Institute to measure how well health-care providers were communicating with their patients who were undergoing treatment for cancer [9, 12]. We modified this instrument to measure patients’ experiences communicating with nurses instead of all health-care providers. The instrument was modified by removing the words ‘doctors and other health professionals’ from the questions and replacing them with ‘nurses.’

The PCC-36 instrument comprises 36 items, which are subdivided into six core domains [7, 12, 13]. These domains align with the conceptual and theoretical frameworks of communication among patients and nurses [12, 14]. The six domains and the number of items are exchanging information (six items), fostering a healing relationship (seven items), making decisions (five items), responding to emotions (six items), enabling patient self-management (six items) and managing uncertainty (six items). The patients in our study were asked to respond to these 36 items using a Likert scale to indicate the perceived frequency (‘never’ to ‘always’), amount (‘not at all’ to ‘always’) and quality (‘poorly’ to ‘outstanding’) of nursing care they had received. In addition, the patients were provided with a ‘does not apply’ option for certain items, which were then not scored. High scores reflected positive patient perceptions of nurses’ communication.

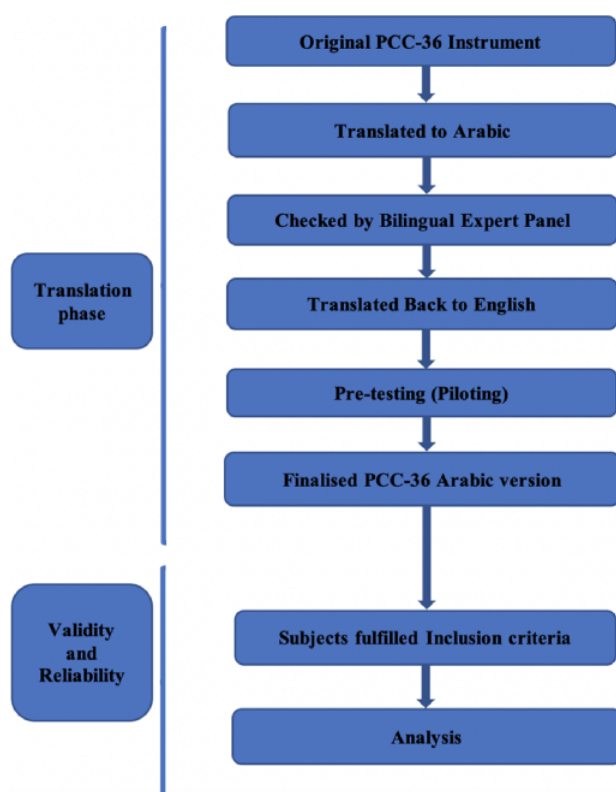
### Translating the PCC-36 instrument

We received permission from the original instrument developer before translating the PCC-36 instrument into the Arabic language. The PCC-36 instrument was translated using the World Health Organization (WHO) guidelines of instrument translation [15]. First, it was translated by an independent bilingual translator into the Arabic language. We ensured that simple terminology was used to aid the patients’ understanding. The translated PCC-36 was then checked by a bilingual expert panel with expertise in nursing and research. The instrument was then translated back to English by a second translator who was not familiar with the tool. Any miscommunications in meaning were identified and corrected before piloting.

A sample of 10 people who met the study’s inclusion criteria were invited to participate in the instrument pilot (Figure 1). To ensure the pilot sample was representative of the population, we invited participants of different genders, age groups and socioeconomic backgrounds. During this stage, the participants were questioned about the word selection, meaning, format and length of the items. The participants’ written answers to the PCC-36 were compared to their verbal responses for consistency [15]. Based on the participants’ recommendations, a number of items were reworded.

### Data analysis

Descriptive statistics, including means and standard deviations, were used to summarize the continuous data, while frequencies and percentages were used to describe the categorical data. To examine



**Figure 1** Translation process.

Saudi cancer patients' scores using the translated PCC-36 and to confirm the construct validity of the tool, we conducted a confirmatory factor analysis using SPSS Amos (version 26). According to Bryant and Yarnold [16], confirmatory factor analysis is regularly used to test how well the measured variables represent the construct they purport to measure and to confirm or reject the measurement theory. Maximum likelihood estimation was employed as the data were normally distributed. We considered using maximum likelihood estimation for the following values as a good model fit: relative chi-square ( $\chi^2/df$ ) at  $\leq 3$ , root mean square error approximation (RMSEA) at  $\leq 0.08$ , the comparative fit index (CFI) at  $\geq 0.90$  and the Tucker–Lewis index at  $\geq 0.90$ .

## Results

### Participants

We recruited a total of 318 participants over 4 months who were seeking cancer treatment. The sociodemographic information of participants is illustrated in Table 1 as frequency and percentage. Participants' ages ranged from 18 to 82 years. Of the 318 participants, females represented 54.4% of the total. Married participants represented 51.3%, divorced 5.3%, single 38.4% and widowed 5%. More than half of the participants had a tertiary education (52.2%), whereas 6.3% had no schooling. More than half of the participants (69.5%) reported difficulty understanding health-care instructions. The majority of the participants (97.5%) were Saudi, Muslims (99.4%) and spoke the Arabic language (99.7%). Most

**Table 1** Frequency and percentage for participant characteristics

		Frequency	Percentage
Gender	Male	145	45.6%
	Female	173	54.4%
Marital status	Married	163	51.3%
	Divorced	17	5.3%
	Single	122	38.4%
	Widow	16	5.0%
Highest level of education	No schooling	20	6.3%
	Primary education	34	10.7%
	Secondary education	98	30.8%
	Tertiary education	166	52.2%
Nationality	Saudi	310	97.5%
	Non-Saudi	8	2.5%
Language	Arabic	317	99.7%
	English	90	28.3%
	French	2	0.6%
	Italian	1	0.3%
	Korean	1	0.3%
	Spanish	1	0.3%
	Turkish	1	0.3%
Religion	Muslim	318	99.4%
	Other	0	0.0%
Employment status	Employed	103	32.4%
	Unemployed	133	41.8%
	Student	43	13.5%
	Business	3	0.9%
	Retired	34	10.7%
Location	Rural	43	13.5%
	Urban	275	86.5%
Combined family monthly income	SAR 0–15 000	170	53.5%
	SAR 15 001–30 000	31	9.7%
	SAR 30 001–45 000	4	1.3%
	SAR 45 001–60 000	6	1.9%
	SAR 60 001–82 500	1	0.3%
	SAR 82 501 and above	5	1.6%
Health literacy	All of the time	25	7.9%
	Most of the time	32	10.1%
	Some of the time	77	24.4%
	A little of the time	87	27.4%
	None of the time	95	29.9%
Communication issues	Yes	56	17.6%
	No	262	82.4%
Identified communication issues	Hearing	12	3.8%
	Seeing	16	5.0%
	Aphasia	20	6.3%
	Language	9	2.8%
	Embarrassment	1	0.3%

*N* = 318 (percentages may not be 100% due to missing data).

participants (41.8%) were currently unemployed and living in an urban area (86.5%). In addition, 17.6% of participants had communication issues including 3.8% with hearing problems, 5% visual problems, 6.3% aphasia and 3.1% other problems (Table 1).

**Construct validity**

A confirmatory factor analysis was used to evaluate the construct validity of the translated PCC-36. The model, as shown in the standardized estimates in Figure 2, provided a good fit for the data:

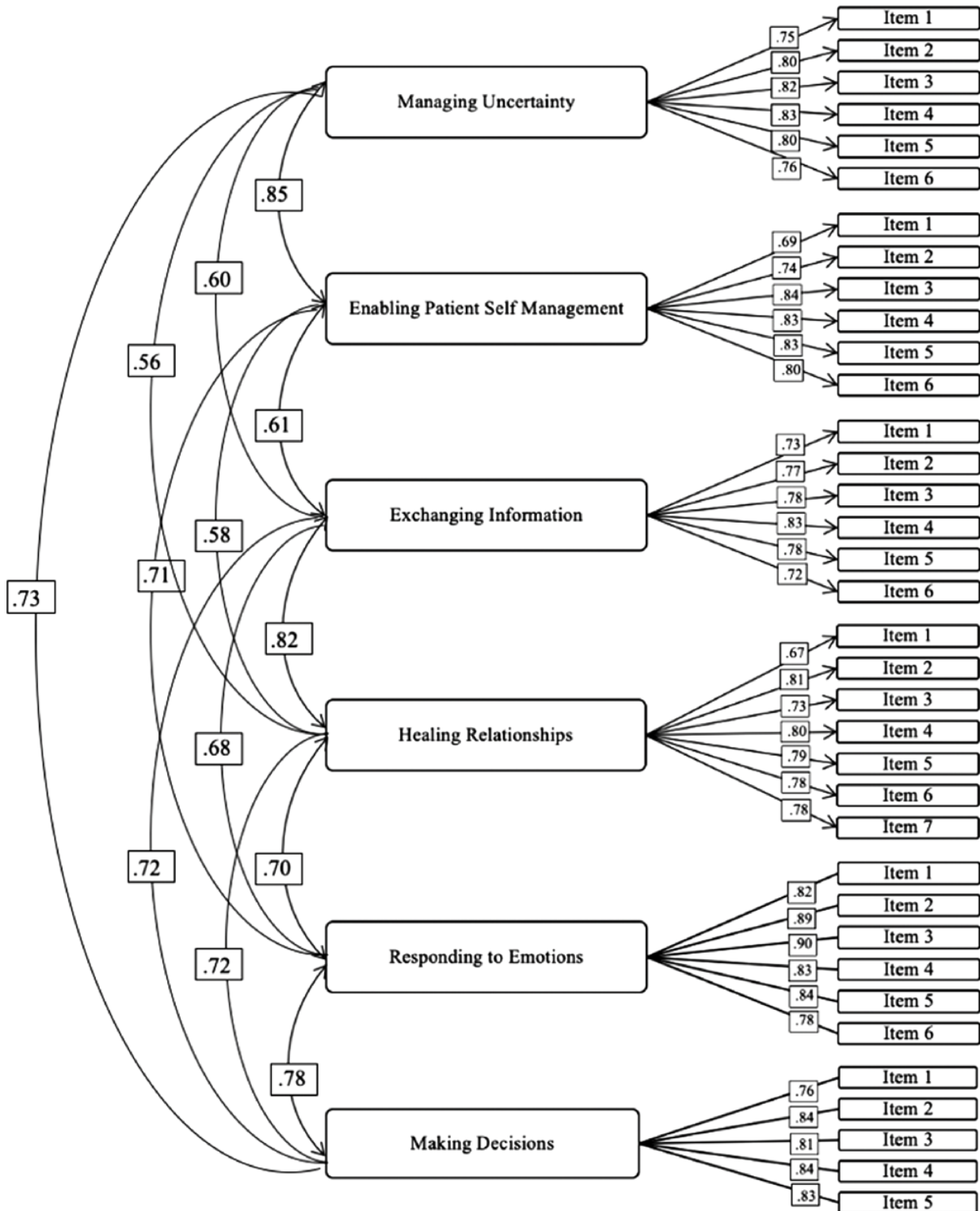


Figure 2 Confirmatory factor analysis: standardized estimates.

**Table 2** Confirmatory factor analysis: standardized estimates, mean (standard deviation) and item total correlation

Item wording by PCC-36 functions	Mean (SD)	Item total correlation	$\beta$
<b>1. Exchanging information</b>			
1.1 How often do the nurses caring for you talk with you about your concerns and questions?	3.68 (1.16)	0.683	0.73
1.2 How often do the nurses caring for you give you helpful information, even when you don't ask for it?	3.43 (1.09)	0.735	0.77
1.3 How often do the nurses caring for you make sure you have the information you need?	3.40 (1.15)	0.732	0.78
1.4 How often do the nurses caring for you help you understand the information you need to know?	3.71 (1.07)	0.773	0.83
1.5 How often do the nurses caring for you make sure your questions are answered?	3.82 (1.09)	0.740	0.78
1.6 How much do the nurses caring for you make you feel comfortable asking questions?	3.60 (1.09)	0.662	0.72
<b>2. Relationship with the nurse</b>			
2.1 How much can you depend on the nurses caring for you to give you the care you need?	3.52 (1.16)	0.642	0.67
2.2 How often do the nurses caring for you show they care about you?	3.86 (1.10)	0.781	0.81
2.3 How often do the nurses caring for you remember details about you between visits?	3.45 (1.15)	0.678	0.73
2.4 How often do the nurses caring for you have open and honest communication with you?	3.77 (1.15)	0.746	0.80
2.5 How often do the nurses caring for you listen carefully to what you have to say?	3.89 (1.05)	0.749	0.79
2.6 How much do the nurses caring for you seem well informed about your type of cancer?	3.75 (1.10)	0.752	0.78
2.7 Different nurses are often involved in a patient's care. How well do the nurses caring for you explain what they each do?	3.82 (0.96)	0.731	0.78
<b>3. Making decisions</b>			
3.1 How often do the nurses caring for you involve you in making decisions about your care?	3.71 (1.24)	0.703	0.76
3.2 How well do the nurses caring for you explain the different choices you have?	3.87 (1.04)	0.794	0.84
3.3 How well do the nurses caring for you explain what they recommend?	4.01 (0.97)	0.788	0.81
3.4 How much do the nurses caring for you show interest in what you say about the decisions?	3.86 (1.14)	0.796	0.84
3.5 How much do the nurses caring for you give you information and resources to help you make decisions?	3.64 (1.17)	0.757	0.83
<b>4. Attention to emotions</b>			
4.1 How often do the nurses caring for you give the attention you need to your feelings and emotions?	3.96 (1.15)	0.813	0.82
4.2 How much do your nurses pay attention to how you are doing emotionally?	3.79 (1.15)	0.860	0.89
4.3 How much do the nurses caring for you show concern for your feelings, not just your illness?	3.62 (1.16)	0.875	0.90
4.4 How much do the nurses caring for you show concern for how your family is doing emotionally?	3.46 (1.29)	0.802	0.83
4.5 How much do the nurses caring for you make you feel comfortable to talk about your fears, stress and other feelings?	3.49 (1.24)	0.818	0.84
4.6 How well do the nurses caring for you talk with you about how to cope with any fears, stress and other feelings?	3.32 (0.97)	0.753	0.78
<b>5. Enabling patient self-management</b>			
5.1 How well do the nurses caring for you help you understand ways you can take care of your health?	3.66 (1.03)	0.638	0.69
5.2 How much do the nurses caring for you talk with you about how cancer is affecting your everyday life?	3.24 (1.15)	0.721	0.74
5.3 How much do the nurses caring for you talk with you ways you can manage any side effects or symptoms?	3.47 (1.14)	0.796	0.84
5.4 How much do the nurses caring for you talk with you how your family can help care for you?	3.36 (1.20)	0.788	0.83
5.5 How much do the nurses caring for you talk with you any concerns you have about taking care of yourself?	3.32 (1.27)	0.773	0.83
5.6 How often do the nurses caring for you make sure you understand the steps in your care?	3.44 (1.04)	0.765	0.80
<b>6. Dealing with uncertainty</b>			
6.1 How well do the nurses caring for you help you deal with the uncertainties about your cancer?	3.61 (1.10)	0.713	0.75
6.2 How much do the nurses caring for you help you understand if you are getting better or worse?	3.58 (1.24)	0.804	0.80
6.3 How much do the nurses caring for you help you understand the goal of your care?	3.46 (1.16)	0.786	0.82
6.4 How much do the nurses caring for you help you understand what is likely to happen with your cancer?	3.33 (1.26)	0.837	0.83
6.5 How much do the nurses caring for you help you understand how your symptoms may change?	3.33 (1.23)	0.828	0.80
6.6 Patients often get information from different places. How well do the nurses caring for you help you understand what information is most important?	3.41 (1.11)	0.769	0.76



CFI = 0.922, Tucker–Lewis index = 0.910, RMSEA = 0.059, relative chi-square (CMIN/DF (minimum discrepancy per degree of freedom)) = 2.097,  $\chi^2 = 1214.4$  and  $df = 579$  ( $P < 0.001$ ). The data of each of the six domains were generated according to the scoring manual, which included averaging the patients' scores for each domain. The patients' mean scores, standard deviations and the item total correlations of the PCC-36 Arabic version are shown in Table 2. Overall, there was good correlation between the items of the PCC-36 Arabic version. All the items loaded significantly on their expected factors.

### Reliability analysis

After the patients had provided their responses to the PCC-36 Arabic version, Cronbach's alpha was used to test the reliability and internal consistency of the tool [17]. As shown in Table 3, all the six domains demonstrated good-to-excellent reliability, as did the overall scale. The internal consistency of the total six PCC-36 domains was confirmed by a Cronbach's alpha of 0.973, while the alpha coefficient for exchanging information, fostering a healing relationship, making decisions, responding to emotions, enabling patient self-management and managing uncertainty were 0.89, 0.90, 0.90, 0.93, 0.90 and 0.92, respectively.

## Discussion

### Statement of principal findings

The PCC-36 instrument is a validated tool for measuring patient communication experiences in cancer care [9], and it has been used widely [7, 12, 18]. However, the validity testing was limited to the English language and the colorectal cancer population [7]. The present study validated the PCC-36 instrument across all types of cancer in a non-English-speaking population.

The PCC-36 instrument was translated into Arabic using WHO guidelines for culturally adapting and translating original tools [15].

**Table 3** Reliability analyses for patient-centered communication domains (Arabic version)

Domains	Number of items	Original version Cronbach's alpha	Translated version Cronbach's alpha
Exchanging information	6	0.94	0.89
Fostering healthy relationships	7	0.92	0.90
Making decisions	5	0.90	0.90
Responding to emotions	6	0.96	0.93
Enabling patient self-management	6	0.94	0.90
Managing uncertainty	6	0.94	0.92
Total	36	0.94	0.97

In accordance with the guidelines, backward and forward translation was performed to ensure that semantic equivalences were met. When translating an existing tool, this approach is the preferred method for attaining a culturally equivalent instrument [19].

This study used a robust sample of 318 participants seeking cancer care in Saudi Arabia and rigorous psychometric methods to evaluate the construct validity using confirmatory factor analysis. According to Cronbach and Meehl [20], construct validity is one of the main types of validity evidence that can be used to determine how well a test measures what it is supposed to measure. The construct validity of the PCC-36 Arabic version showed a good fit for the six domains of the PCC-36. All the items loaded significantly on their expected factors.

Similarly, we tested the internal consistency and reliability of the Arabic-translated version of the PCC-36 instrument using Cronbach's alpha. According to Brown [21], Cronbach's alpha is the most widely used tool to measure reliability and internal consistency. The internal consistency of all the six PCC-36 domains was confirmed by a Cronbach's alpha of 0.97.

The PCC-36 instrument has previously been assessed for internal consistency in different health-care settings. In particular, the instrument has been used in the USA for colorectal cancer patients [9]. The English version of the tool showed an overall internal consistency value of 0.94, while the subscale of the factors showed an alpha value that ranged from 0.90 to 0.96. This, therefore, suggests that the Arabic version of the PCC-36 is internally consistent based on the acceptable range of the reliability score, which was higher than 0.70 [22].

### Strengths and limitations

One of the limitations of this study was that most of the participants were from Saudi Arabia, which means that further evaluation of the Arabic-translated tool is needed in other Arab countries. In addition, convenience sampling was used to recruit the participants, which may limit the generalizability of the findings.

### Implications for policy, practice and research

Cancer patients need effective communication from health-care providers to enable them to participate in decisions regarding their health and to ensure that their emotional needs are supported [12]. The PCC-36 instrument was developed to identify the essential communication needs of cancer patients [7]. There is limited research on the communication needs of cancer patients in Arab countries, including Saudi Arabia. Given that most of the nursing workforce in Saudi Arabia comprises expatriates who have language and cultural differences [23], more research is needed. In addition, the prevalence of cancer in Saudi Arabia is increasing and expected to double in the next two decades [5]. Identifying the communication needs of cancer patients in Saudi Arabia is an important step in improving the quality of care. This can help in supporting the 2030 Saudi Vision, which aims to improve the overall quality of care in all health-care facilities in Saudi Arabia [24].

The Arabic-translated tool demonstrated robust psychometric properties. Consequently, it can potentially be used in 22 different Arab countries. It can also be used to improve the quality of care provided to cancer patients in these countries. However, it is recommended that further studies be conducted to ascertain its validity and reliability.

## Conclusions

The PCC-36 is an instrument that was initially developed in the USA by National Cancer Institute. In this study, the instrument was first translated into Arabic following the WHO guidelines, and then, a psychometric evaluation was conducted. To our knowledge, this is the first study that has attempted to evaluate the validity and reliability of the PCC-36 instrument among patients with all types of cancer in a context other than the USA. The Arabic version of PCC-36 instrument demonstrated robust psychometric properties. This study showed that, in a cancer population in Saudi Arabia, the scale provided a reliable and valid measurement of cancer patients' communication experiences. Additional studies are necessary to ascertain its validity and reliability in other Arab countries and populations, as well as other languages.

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## Data availability

The data underlying this article are available in the article.

## Ethical approval

This research has been approved by the University of Newcastle Human Research Ethics Committee (Approval No. H-2019-0154) and the Saudi Arabian Ministry of Health Scientific and Ethical Review Committee (King Faisal Specialist Hospital No. 2191218 and King Fahad Medical City No. H-01-R-012).

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