Translation and Validation of the Arabic Version of the Cancer Needs Questionnaire-Short Form

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ABSTRACT

Objective: Care needs among Arabic cancer patients have not been assessed previously due to the lack of translated instrument that can determine the care needs among the cancer patients in Arab countries. The aim of this study was to translate and validate an Arabic version of the Cancer Needs Questionnaire-Short Form (CNQ-SF). **Methods:** A cross-cultural adaptation and psychometric testing was used. Brislin's model of translation was used to translate the CNQ-SF from English to Arabic. A cross-cultural adaptation and psychometric testing was used. A sample of 113 participants with different types of cancer completed the study surveys including the CNQ-SF (Arabic version) and Functional Assessment of Cancer Therapy-General (FACT-G). Descriptive, bivariate statistics and exploratory factor analysis (EFA) were performed. **Results:** Content validity was evaluated by a panel of experts and 20 participants and showed that translated scale was clear, understandable, and logical in order. Reliability analysis of CNQ-SF domains ranged from 0.85 to 0.93 and 0.94 for the total Arabic version of CNQ-SF. Convergent analysis showed a significant relationship between CNQ-SF (Arabic version) and FACT-G. Results of EFA indicated that the CNQ-SF scale has 32-items. It consists of five domains, the results indicated that Kaiser–Meyer–Olkin was 0.851, and Bartlett's Test of Sphericity was significant (significant ($P < 0.001$). **Conclusions:** The current study indicates that the Arabic version of CNQ-SF is valid, reliable, and applicable. It can be used by researchers, clinical practitioners, and health educators in Arab countries.

Key words: Arab, Cancer Needs Questionnaire-Short Form, exploratory factor analysis, psychometric testing, quality of life

Introduction

Cancer as a chronic illness is the second leading cause of death worldwide, more than 14 million new patients diagnosed with cancer and more than 30 million patients living with cancer.[1] Throughout the diagnosis, treatment, and follow-up phases, patients with cancer experienced a wide range of disease- and treatment-related complications, side effects, and symptoms stressors, which can decrease their quality of life (QOL) and affect response to the treatment and prognosis.[2,3] In addition to symptom management, prolonging life and anti-cancer administration, improvement patients' QOL is an essential goal for the health professionals to maintain patient-centered cancer care.[1] Importantly, in order to provide optimal patient-centered care, full assessment and understanding

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of patient care needs are required and essential. Unmet care needs are predictors of poor QOL among patients with cancer, and several studies confirmed that unmet care needs decreased patients' QOL and decreased the response to the treatment at the end.[4,5] Therefore, health professionals should assess and determine the care needs for cancer patients and develop interventional programs to meet their needs and maintain their QOL.

Needs assessment (such as physical, psychosocial, information, and spiritual needs) continues process[6] that can be performed at the diagnosis, treatment, and survival phases.[1,7] Using a valid and reliable tool for care needs assessment can provide an insight into understanding of unmet care needs and prioritizing professionals' caring behaviors and determine required resources.[8]

A previous literature review identified 15 different valid and reliable tools that have been developed between 1984 and 2004 to determine the care needs among cancer patients.[7] In the last 10 years, new valid, reliable, and applicable tools have been developed to identify the unmet care needs among patients with cancers. These tools have been used widely. However, these tools are available in different languages including English, Germany, Italian, Greek, Dutch, Korean, Danish, Polish, Chinese, Flemish, Turkish, Mandarin and Cantonese, Spanish, Japanese, and French.[7] Importantly, none of these tools are available in Arabic language and can be used by Arabic native speakers. Therefore, care needs among Arabic cancer patients have not been assessed previously due to the lack of translated instrument that can determine the care needs among the cancer patients in Arab countries.

The Short-Form Cancer Needs Questionnaire (CNQ-SF) is a valid, reliable, and commonly used instrument that has been developed to identify the care needs among patients with cancer. It provides an insight into understanding of patients' care needs as it has five domains including psychological, health information, physical and daily living, patient care and support, and interpersonal communication. The scale is available in English and Chinese languages, it was used among patients with different types of cancer, it is easy to implement and reliable with Cronbach's alpha ranged from 0.94 to 0.77.[9] Thus, the aim of this study was to translate and validate an Arabic version of the CNQ-SF. This study will add the previous literature and provide the opportunity to determine unmet care needs cross-culturally among different Arabic populations with cancer.

Methods

Design

A cross-cultural adaptation and psychometric testing design with a convenience sampling technique was used in the current study. Institutional Review Board approval was obtained (Approval No. NUR 18/11-2019-2020).

Sampling and participants

A sample of 113 patients with different types of cancers participated and completed the study survey with a response rate of 85%. Patients who met the inclusion criteria including Jordanian; over 18 years of age; male and female; diagnosed with cancer; aware of cancer diagnosis; treated for cancer (surgery, chemotherapy, radiotherapy, or combination); and mentally alert, oriented, and free of a diagnosed psychiatric disorders were invited to participate. The sample size estimation was based on the recommendation that 3–6 participants per variable will be sufficient to run a factor analysis test.[10] After permission and ethical approval were granted, the researcher explained the purpose of study, methods, and inclusion criteria for the oncology nurses in order to identify the eligible participants and obtain their initial permission to participants. Then, the researcher approached the participants and handled the study survey to them and collected back after they finished. The participants were asked to return the surveys once they complete it to the contact person at each unit, the contact person was mainly the head nurse or in charge nurse at each unit. Code was used, and participants' information was not disclosed. The participants were assured that they have the full right to refuse or terminate participation at any time. Data were collected with a month period during December 2018. The average time for completing the study questionnaire ranged between 15 and 20 min as reported by the participants.

Measure

Demographical and clinical characteristics

In the present study, information related to patients and clinical characteristics were collected. Patients' age, gender, education, marital status, annual income, number of family, religion, tumor type, stage, metastasis, and chronic illness were collected.

Short-Form Cancer Needs Questionnaire

The Arabic version of CNQ-SF was used in the current study. It is a self-administered questionnaire used to evaluate patients with cancer needs cross-several domains. It reflects the essential needs for cancer patients such as psychosocial needs and physical and daily needs. Ability to provide patients with these needs could improve the prognosis and response to the treatment. Therefore, nursing administrators and clinical practitioners' roles to identify and prioritize these needs.

The scale has five domains of need with 32 items: psychological domain (11 items), health information needs (7 items), physical and daily needs (6 items), patient care and support needs (5 items), and interpersonal/

communication needs (3 items).[9] The scale was originally developed by Lattimore-Foot.[11] The scale has a 5-point Likert scale (1 = no needs and 5 = high need for help). The score ranged between 32 and 160, with a higher score indicating a high need for help. The English version of the scale was valid and reliable with Cronbach's alpha for the psychological, health information, physical and daily, patient care and support, and interpersonal/communication domains, which were 0.94, 0.94, 0.83, 0.90, and 0.77, respectively.[9]

Functional Assessment of Cancer Therapy-General

The Arabic version Functional Assessment of Cancer Therapy-General (FACT-G) was used to measure QOL among Jordanian cancer patients following cancer treatment modalities. This instrument was originally developed by Cella *et al.* to measure four cornerstone dimensions of QOL: physical well-being (PWB), social well-being (SOWB), emotional well-being (EWB), and functional well-being (FWB).[12] The Arabic version of the FACT-G is a 27-item, self-administered, Likert-type generic format. Each item is rated on a 5-point scale (0–4, where 0 = not at all, 1 = a little a bit, 2 = somewhat, 3 = quite a bit, and 4 = very much). An additional item related to sexual activity was used to measure sexual satisfaction, with a score ranging between 0 and 4, with a higher score indicating a higher sexual satisfaction. The total scores of the Arabic version of the FACT-G range from 0 to 108, with higher rating scores reflecting higher QOL.[13]

Translation process

CNQ-SF was translated to Arabic language in the current study. Brislin's (1986) model of translation was used. Five steps were performed to tranlsate the CNQ-SF from the rogional language (English) to the target lngauge (Arabic), first step was performed forward translation (From English to Arabic language) by three Arabic native speakers holding PhD in nursing (two living in Jordan and one in the United Kingdom). After that, the reconciliation of forward translations was conducted by one native Arabic language speaker who was not being part in the forward translation.

Then, back translation of the reconciled version from Arabic to the English language was performed by a native English speaker, who was fluent in Arabic, not involved in the previous steps. Then, a comparison of the translated version with the original English language version was performed.[9] Finally, a pilot study was conducted to measure the validity and reliability of the translated instruments, so as to assess the time needed to complete the translated instruments, compare with the original language, and to check the clarity and consistency of the language.

Pilot study

Twenty participants completed CNQ-SF. A convenience sampling technique was used. Patients who met the inclusion criteria including 18 years of age; male and female; diagnosed with cancer; aware of cancer diagnosis; treated for cancer (surgery, chemotherapy, radiotherapy, or combination); and mentally alert, oriented, and free of a diagnosed psychiatric disorders were invited to participate. Participants completed the scale within 16–20 min. The scale was reliable, with an Cronbach's alpha of 0.83. No changes were made to the translated instrument. Table 1 details the reliability of the Arabic version of CNQ-SF.

Statistical analysis

Descriptive statistics were used to describe demographic characteristics. Content and face validity tests were conducted, and Cronbach's alpha test of internal consistency was used for the measurement of reliability. Exploratory factor analysis (EFA) with varimax rotation was also conducted.

Results

Patients' demographic characteristic

A sample of 113 participants completed the study survey. Around half of the participants were female (58, 51.4%), married (72, 63.7%), 31 (27.4%) of the participants were diagnosed with breast cancer, and majority of the participants had no regional metastasis (87, 77.0%). Table 2 details these characteristics.

Table 1: Reliability of the translated Cancer Needs Questionnaire Short-Form ($n=113$)				
Subscale	Number of items	Cronbach's alpha (Arabic version) Pilot sample $n=20$	Cronbach's alpha (Arabic version) Whole sample $n=113$	Cronbach's alpha (original version)
Psychological	11	0.82	0.91	0.94
Health information	7	0.80	0.90	0.94
Physical and daily	6	0.81	0.87	0.83
Patient care and support	5	0.78	0.85	0.90
Interpersonal/communication domains	3	0.81	0.93	0.77
Total scale	32	0.83	0.94	

Table 2: Patients' demographic and disease-related characteristics (n=113)	
Variable	n (%)
Age, mean (SD)	43.2 (11.83)
Annual income (USD $), mean (SD)	7602.1 (1300.1)
Number of family member, mean (SD)	5.15 (2.31)
Gender, n (%)	
Male	55 (48.6)
Female	58 (51.4)
Educational level, n (%)	
Illiterate	10 (8.8)
Primary and secondary schools	42 (37.1)
Diploma	24 (21.2)
Bachelor	33 (29.3)
Postgraduate	4 (3.6)
Marital status, n (%)	
Single	26 (23.0)
Married	72 (63.7)
Widow	9 (8.0)
Divorced	6 (5.3)
Religion, n (%)	
Muslim	102 (90.3)
Christian	11 (9.7)
Primary tumor stage, n (%)	
Stage 1	28 (24.8)
Stage 2	22 (19.5)
Stage 3	19 (16.8)
Stage 4	5 (4.4)
Regional metastasis, n (%)	
No	87 (77.0)
Yes	19 (16.8)
Chronic illness, n (%)	
Yes	37 (32.7)
No	76 (67.3)
Type of chronic illness, n (%)	
HTN	35 (30.9)
Diabetic mellitus	45 (39.9)
Cardiovascular disease	30 (26.5)
Asthma	3 (2.7)
Primary tumor site, n (%)	
Brain	11 (9.7)
Lung	8 (7.1)
Gastric	9 (8.0)
Pancreases	6 (5.3)
Colorectal	19 (16.8)
Breast	31 (27.4)
Prostate	6 (5.3)
Hematological	21 (18.6)
Renal	2 (1.8)

HTN: Hypertension, SD: Standard deviation

Validity analysis

The content validity of the CNQ-SF Arabic version was assessed, evaluated, and achieved. The content of the translated scale was evaluated and approved by a Panel of experts (three PhD holders in nursing). Moreover, a pilot study was conducted; a sample of 20 participants completed the questionnaire. Item organization, format, orders, and instruction were understandable and in logical format. The participants stated that the translated scale was clear, in logical and easy order, and understandable.

Convergent validity

Bivariate correlation using Pearson (r) was performed to explore the relationship between total cancer needs, caner needs domains, total QOL, and QOL domains. A significant negative relationship between total care needs and total QOL. Clearly, unmet care needs decrease patients' QOL. Table 3 details these relationships.

Relationships between subscales of Arabic versions of the Cancer Needs Questionnaire-Short-Form Scale

In the present study, bivariate correlation using Pearson coefficients (r) was performed to explore the relationships between CNQ-SF (Arabic version) domains. The results showed a strong relationship between psychological needs and communications needs (0.80), with patient care and support (0.77), with physical activity (0.71), and less with information needs (0.56). Table 4 details these relationships.

Exploratory factor analysis

EFA with varimax rotation was performed with the 32 items in the original CNQ-SF scale. In the present study, variables have loading 0.40 and more were considered strongly loaded on a particular factor and considered clean when the absolute difference between the loadings is more than 0.20.[14] Therefore, no variables were deleted from the original scale in the present study. Moreover, the results indicated that Kaiser–Meyer–Olkin was 0.851 and Bartlett's Test of Sphericity was significant ($P < 0.001$). Table 5 details the loading of 32 items.

Discussion

The number of patients diagnosed with cancer is increasing worldwide. It is the second leading cause of death and affecting the patients' QOL. Cancer patients are experiencing a wide range of complications, treatment-related side effects, and numbers of emotional, psychosocial, and physical disturbances.[15] Identifying their care needs is crucial and essential in developing individualized treatment plan to decrease the impact of the disease, encourage patients to cope, and increase their QOL. The need for more cross-cultural research to identify the care needs is recommended. This study could help in this issue, more specifically, among Arabic-speaking patients such as Jordanian patients with cancer. The CNQ-SF is available in both English and Chinese languages, and it is mostly used in Western countries to determine the care needs by different groups of patients such as females and different

Table 3: Relationship between total Cancer Needs Questionnaire, Short-Form Cancer Needs Questionnaire Short-Form domains, total Functional Assessment of Cancer Therapy-General, and Functional Assessment of Cancer Therapy-General domains (n=113)

CNQ-SF/Domains	Total QOL	PWB	SOWB	SWB	EWB	FWB
Total CNQ	−0.75**	−0.57**	−0.72**	−0.76**	−0.73**	−0.74**
Psychological	−0.64**	−0.61**	−0.61**	−0.68**	−0.71**	−0.74**
Health information	−0.71**	−0.78**	−0.73**	−0.74**	−0.63**	−0.61**
Physical daily	−0.58**	−0.61**	−0.61**	−0.59**	−0.56**	−0.68**
Patient care and support	−0.63**	−0.60**	−0.64**	−0.65**	−0.69**	−0.73**
Interpersonal/communication	−0.71**	−0.69**	−0.61**	−0.64**	−0.81**	−0.67**

**Correlation is significant at the 0.05 level. CNQ: Cancer Needs Questionnaire, QOL: Quality of life, PWB: Physical well-being, SOWB: Social well-being, EWB: Emotional well-being, FWB: Functional well-being

Table 4: Pearson correlation coefficients for the Cancer Needs Questionnaire Short-Form (Arabic version) domains (n=113)

CNQ-SF (Arabic version) domains	1	2	3	4	5
Psychological	1	0.56**	0.71**	0.77**	0.80**
Information		1	0.69**	0.72**	0.67**
Physical daily			1	0.73**	0.77**
Patient care and support				1	0.79**
Interpersonal/communication					1

1: Psychological, 2: Health information, 3: Physical and daily living, 4: Patient care and support, 5: Interpersonal communication, CNQ-SF: Cancer Needs Questionnaire Short-Form. **Correlation is significant at the 0.05 level

cancer types and among adult and young patients.[16-20] In the Arabic region, there is limited information about Arabic-speaking cancer patients' care needs, this might be related to the fact that there is no study conducted to determine cancer patients' needs in the Arabic countries, this might be related lack of instruments in Arabic language that can be used. This study was conducted to translate and validate CNQ-SF using EFA.

The CNQ-SF consists of five domains: psychological, health information, physical and daily living, patient care and support, and interpersonal communication. The present findings indicated that the translated scale and subscales were reliable with Cronbach's alpha (0.91, 0.90, 0.87, 0.85, and 0.93, respectively) and 0.94 for the total CNQ-SF. These results are harmonizing with and supporting the reliability results of the original scale.[9] Their results showed that the reliability of the CNQ-SF subscales was psychological 0.94, health information 0.94, physical and daily living 0.83, patient care and support 0.90, and interpersonal communication 0.77.[9] The reliability results from the current study similar to the reliability results of the Chinese version of CNQ-SF. The reliability of total Chinse version of CNQ-SF was 0.97, psychological 0.85, health information 0.97, physical and daily living 0.92, patient care and support 0.93, and interpersonal communication 0.94.[21]

The CNQ-SF consists of five domains that reflect the care needs among patients with cancer. As presented in Table 4, significant relationships were founded between CNQ-SF domains. The Pearson correlation ranged between 0.56 and 0.80. The present findings support the dimensional structure of the scale. Similar findings were reported by Chen *et al.* when translated and validated the Chinese version of CNQ-SF.[21]

Care needs are correlated with QOL among patients diagnosed with cancer;[15,22] therefore, the relationship between care needs as measured by total CNQ-SF and QOL as measured by total FACT-G was evaluated to check the convergent validity. The convergent validity evidence was provided for the total CNQ-SF score. A strong relationship was founded between total CNQ-SF and FACT-G ($r = -0.75$). Moreover, total CNQ-SF was significantly correlated with FACT-G domains including PWB ($r = -0.57$), SOWB ($r = -0.72$), sexual well-being ($r = -0.76$), EWB ($r = -0.73$), and FWB ($r = -0.74$). These results are supporting the previous studies that showed a relationship between care needs and QOL domains among patients with cancer.[23-26]

The results of EFA support the 32 items of the Arabic version of CNQ-SF subscales as they are presented in the original scales (English version). The EFA results indicated that all the items on the psychological domain (11 items), health information (7 items), physical and daily living (6 items), patient care and support (5 items), and interpersonal communication (3 items) had a factor loading of more than 0.40. This supports the English and Chinese versions of CNQ-SF.[9,21]

Limitations

Although the present study adds to previous literature and will add to our understanding of cancer patients' care needs Arabic-speaking countries, there are some limitations. Participation was limited to the patients in the treatment phase; therefore, including survivors is recommended in future research. In addition, the participants in the current study was adult patients with cancer, therefore, the results was limited to this age group of the patients, more research focus on other age group patients is recommended in the future. In spite of adequate sample size in the current study, the use of the translated scale with larger sample size is recommended.

Table 5: Exploratory factor analysis of the Arabic version Cancer Needs Questionnaire Short-Form (Arabic version) items scale (*n*=113)

Item	Principal components with varimax rotation				
	1	2	3	4	5
Dealing with lack of energy and tiredness			0.56		
Coping with disturbed sleep			0.61		
Coping with keeping up with work around the home			0.68		
Coping with frustration at not being able to do the things you used to			0.58		
Coping with fears about losing your independence			0.71		
Coping with feeling bored and/or useless			0.66		
Dealing with anxiety or stress	0.55				
Dealing with feeling down or depressed	0.61				
Dealing with fears about the cancer spreading or returning	0.71				
Coping with fears about the pain and suffering you might experience	0.59				
Coping with anxiety about having treatment or surgery	0.63				
Coping with fears about further physical disability or deterioration	0.66				
Accepting the changes in your appearance and self-image	0.69				
Coping with worry that the cancer is beyond your control	0.56				
Coping with an uncertain future	0.48				
Working through your feelings about death and dying	0.53				
Learning to feel in control of your situation	0.62				
Coping with awkwardness in talking with others about the cancer					0.64
Coping with changes in other people's attitudes and behavior toward you					0.66
To be allowed to have family or friends with you in hospital					0.71
To have your rights for privacy more fully protected when you are at the clinic or hospital				0.71	
To be reassured by medical staff that your physical and emotional responses are normal				0.66	
For nurses to attend promptly to your physical needs in hospital				0.49	
For nurses to acknowledge, and show sensitivity to your feelings and emotional needs				0.61	
For your cancer specialist to acknowledge and show sensitivity to your feelings and emotional needs				0.67	
To be given a full explanation for every test and treatment procedure you go through		0.66			
To be fully informed about all of the benefits and side effects of treatment or surgery before you agree to have it		0.70			
To be fully informed about the odds of treatment success		0.65			
To be fully informed about your test results as soon as possible		0.61			
To be fully informed about the possible effects of the cancer on the length of your life		0.58			
To be fully informed about cancer remission		0.56			
To be fully informed about things you can do to help yourself get well		0.61			

Factor loadings <0.4 not shown. KMO was 0.851. Bartlett's Test of Sphericity was significant (*P*<0.001). 1: Psychological, 2: Health information, 3: Physical and daily living, 4: Patient care and support, 5: Interpersonal communication, KMO: Kaiser-Meyer-Olkin

Conclusions

The results of the current study showed that Arabic version of CNQ-SF demonstrated good reliability, content validity, convergent validity, and EFA supports the structure of scale. The translated scale can be used by health researchers, clinical practitioners, and health educators in Arab countries. It will provide us with a full picture about cancer patients' care needs from Arabic culture and perceptions.

Conflicts of interest

There are no conflicts of interest.

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