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Validity and reliability of Turkish version of family satisfaction in the intensive care unit

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To evaluate the quality of care that is provided in intensive care units, needs and satisfaction of the patient relatives must also be considered. The aim of the study is to test the Turkish version of the Family Satisfaction in the Intensive Care Unit (FS-ICU-24) Survey, which was developed by Heyland *et al*. This study was planned and applied as a methodological study. Survey was conducted in the intensive care units of a military education and research hospital and a medical faculty hospital, department of anaesthesia and reanimation in the capital city Ankara of Turkey. Sample of the survey was composed of 120 participants. Cronbach's alpha value for the FS-ICU-24 general internal consistency in this study was calculated as 0.95 for total scale. In this study, the Turkish version of the FS-ICU-24 was found to be reliable and valid with Turkish population.

Key words: family satisfaction, intensive care, patients relative.

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INTRODUCTION

Evaluation of quality of care that is provided in intensive care units (ICUs) is done in different areas. According to the US Institute of Medicine, main elements of healthcare quality are security, timeliness, usefulness, efficiency, equality and being patient oriented.[1,2] In addition,

parameters like communication with patients and their relatives, process of conveying information and decision making, and supporting dying patients and their relatives are also affecting the quality of care that is provided for intensive care patients[1,3] because the problems with patients' communication are continued with patient's relatives, and as a result, patient-oriented approach also includes family-oriented approach.[1]

Lately, patient- and family-oriented results are accepted as the most important indicators of care provided.[4] Mostly, intensive care patients are not able to be included into decisions about their treatment, and family views on evaluation of satisfaction about care provided in ICU become important.[2,5,6] Having a life-threatening illness that requires comprehensive patient care by intensive care patients would affect experiences and satisfaction of patients and their relatives in ICU.[2,7] When a patient is considered with his/her environment, patient relatives must also be investigated in recovery process.

ICU has differences than other clinics because of reasons like patients having life-threatening illnesses, patient care is extensive and requiring multi-discipline team work, and having an environment that is filled with technological tools.[2,8] These properties that effect patient care in ICU would result an unsatisfaction in general. To evaluate the quality of care that is provided in ICUs, needs and satisfaction of the patient relatives must also be considered.

There are several scales that are developed to determine the needs of patient relatives within the ICU.[9,10] After performing validity and reliability studies, these scales are offered to service of the Turkish nation.[11] Nevertheless, there is already no scale to evaluate the satisfaction of patient relatives in Turkey.

Lately, there are questionnaires to determine the satisfaction level within North America.[4,12] One of the most widely used is Family Satisfaction in the Intensive Care Unit (FS-ICU-24) Survey. FS-ICU-24 was developed for the first time by Heyland *et al.* and then validated.[4] The questionnaire was used to measure the satisfaction of patient relatives in different studies and translated to different languages.[13] The questionnaire was adapted to German by Stricker *et al.* The questionnaire, which had initially 34 articles and two subscales, was redefined by Wall *et al.* in 2007 and shortened into 24 articles and two subscales. The translation of the FS-ICU-24 is essential for use in different cultures. A valid and reliable cross-cultural adaptation of Turkish version of the FS-ICU-24

could be useful in assessing Turkish family satisfaction in the ICU.

The aim of this study is to test the Turkish version of the FS-ICU-24 Survey, which was developed by Heyland *et al.* and restructured and validated in 2007.

METHODS
Design and setting

This study was planned and applied as a methodological study. Survey was conducted in the ICUs of a military education and research hospital and a medical faculty hospital the department of anaesthesia and reanimation in the capital city Ankara of Turkey between May and December 2008. Participating ICUs varied in size from 11 to 15 beds.

Participants

The universe of the survey was composed of all relatives of patients who were hospitalized in the ICUs of departments of anaesthesia and reanimation in both of the universities. Close relatives of the patients (spouse, parent, offspring, sibling, uncle, cousin) were included in the study. In application of a scale to another culture, it is required to reach 5–10 times of article number.[13] The scale, which was to be tested for validity and reliability, contained 24 items for the solicitation of participants along with 5-step Likert scales for each of the items. The required sample size was calculated as at least 120 patients (24 items × 5 Likert preference; equals to 120). Sample of the survey was composed of 120 volunteer relatives of patients who were hospitalized in the ICUs of departments of anaesthesia and reanimation in both of the universities.

The criteria to be included in the study were: (i) being relatives of patients who were hospitalized at least ≥ 48 h in ICUs; (ii) age ≥ 18; (iii) ability to read and write Turkish; (iv) willingness to participate; (v) and mentally able to communicate.

Measures

To collect data in the survey, FS-ICU-24 Survey and data collection form that was prepared for introductory properties of participants and patients was used.

Data collection form

The data of the study were obtained through the use of survey questionnaire. It is prepared by researchers and

contains 12 multiple-choice questions about introductory properties of participants and patients.

FS-ICU-24 survey

FS-ICU-24 Survey, which was developed, and validity and reliability studies were done by Heyland and Tranmer (2001); redefined, shortened validity and reliability studies were done by Wall et al. in 2007. The survey consisted of 24 items and two categories: (i) satisfaction with care (14 items) and (ii) satisfaction with decision making (10 items). Participants mark on a 5-point Likert-type scale for each article. For every expression that is included in the questionnaire, participants mark the most appropriate answer on a scale between 1 and 5 (1 = excellent, 5 = poor). Item values were transformed to reach a scale of 0–100.[2] Higher values indicated increased satisfaction.

Procedures

At the beginning of the study, Daren K. Heyland, one of the developers of the survey, was interviewed via the Internet, and his permission and approval was obtained for the use of the scale in this study. First, two experts translated the original scale into Turkish, and these translations were retranslated into English by two other experts in the English language, in order to identify the compatibility of FS-ICU-24 for Turkey.[14] The survey, which was translated from Turkish to English, was compared with the original survey by an English language expert and by researchers, and it was determined that there is no difference in meanings of two surveys' text. In order to validate the content of the Turkish translation of the scale and to determine the cultural appropriateness of the tool, two anaesthesiologist and two intensive care nurses were involved in the evaluation process and endorsed it accordingly.

Data collection

Study was conducted after obtaining written ethical approval from ethical committee of military education and research hospital and application permission from heads of departments of anaesthesia and reanimation of both university hospitals. After explaining the aim of the study and required information about the application to participating relatives of patients, the application was conducted to the volunteer participants as a questionnaire. After receiving written consent from volunteer participants, data were collected using a questionnaire, which

lasted between 10 and 15 min. The pilot study of the scale was implemented on five patients' family members and two intensive care nurses to obtain feedback about the comprehensibility of questions/items found on data collection forms and on the survey. The data from the pilot study were not used with the data for analysis.

Statistical analysis

The SPSS 15.0 (Statistical Package of Social Sciences Inc., Chicago, IL, USA) package programme was used to evaluate data after transmission of data to computer environment and make necessary error controls. Descriptive statistics was shown in numbers and percentages (%) for the variables obtained by counting and in mean ± standard deviation (SD) for variables obtained by measurement. The construct validity of the scale was examined using factor analysis. Exploratory factor analysis using principal component extraction with a varimax rotation was completed. Reliability was assessed by using item–total subscale correlations and Cronbach's alpha coefficients.

RESULTS
Characteristics

The sociodemographic characteristics of participants are shown at Table 1. The average participant age was 41.98 ± 11.01. Half of the patient's relatives were ≥ 41 years old (n = 62, 51.7%), 37.5 % (n = 45) and had high school and over educational level and most were male (n = 69, 57.5 %). It is seen that almost one-third of the participants are parents.

Construct validity

Table 2 shows the results of the factor analysis. None of the items of the scales were omitted because the factor loading of the items was above 0.50. Three factors were extracted with an eigenvalue > 1 with an explained 70.32% of variance. Factor analysis reveals that 13 items (first to ninth, 11th, 13th to 15th items) were loaded into Factor 1 that determines the satisfaction of relatives about care. Whereas five items (20th to 24th items) that determine the satisfaction about decision making regarding patient care are loaded into Factor 2, six items (10th, 12th, 16th to 19th items) that evaluate information are loaded into Factor 3.

Reliability

Cronbach's alpha value for the FS-ICU-24 general internal consistency in our research was calculated as 0.95 for total

Table 1 Demographic characteristics of the study participants (*n* = 120)

Variable	*n*	Frequency (%)
Age (years)		
18–40	58	48.3
41–71	62	51.7
$\overline{X} \pm SD$	41.98	11.01
Educational status		
Primary school (1–8 years)	43	35.8
High school (9–12 years)	32	26.7
University (>12 years)	45	37.5
Gender		
Male	69	57.5
Female	51	42.5
Relationship with patient		
Spouse	15	12.5
Offspring	26	21.7
Parent	40	33.3
Sibling	20	16.7
Uncle/cousin	19	15.8

SD, standard deviation.

Table 2 Rotated factor analysis of the FS-ICU-24 scale

Factor 1 Care		Factor 2 Decision making		Factor 3 Information	
1	0.82	20	0.88	10	0.67
2	0.77	21	0.83	12	0.77
3	0.56	22	0.89	16	0.53
4	0.73	23	0.50	17	0.64
5	0.75	24	0.52	18	0.77
6	0.69			19	0.81
7	0.71				
8	0.79				
9	0.79				
11	0.66				
13	0.75				
14	0.72				
15	0.70				
Eigenvalue					
13.20		2.50		1.17	
Variance explained					
55.01		10.45		4.86	

FS-ICU-24, Family Satisfaction in the Intensive Care Unit.

scale. A Cronbach's alpha coefficient for care subscale was 0.96; for decision making subscale, it was 0.77; for information subscale, it was 0.92. Cronbach's alpha was high for satisfaction with care. The total FS-ICU-24 Survey mean score was 77.02 ± 16.63. The care subscale mean score was 77.62 ± 18.32, decision making subscale mean score was 78.50 ± 19.84, and information subscale mean score was 74.47 ± 20.05 (Table 3).

Item mean, SD and item–total correlations of each item are presented in Table 4. All items meet the criteria for inclusion. In this study, it was found that patient's relatives were most satisfied with care that is given by doctors (84.16 ± 19.15) and nurses (82.08 ± 21.29). Less satisfactory areas for relatives of patients were frequency of information that was given by nurses about state of patient (67.50 ± 28.91) and conditions of waiting rooms within ICUs (71.04 ± 25.92) (Table 4).

DISCUSSION

The satisfaction of patient's relatives is one of the most important indicators of quality of care. In this study, researchers adapted last version of FS-ICU-24 Survey to Turkish nation by translating the survey into Turkish to measure satisfaction of relatives of patients who were hospitalized in ICUs.[2] Scale was tested by construct validity and internal consistent reliability.

According to the analysis of this study, three factors were identified for the FS-ICU-24.

It is seen that excluding care and decision making articles related to information are loaded into Factor 3. Heyland *et al.* (2001) who developed the scale for the first time determined two factors in their study. Also in the study that used the first version of the scale, which was adapted to German, two factors were obtained.[8] Wall *et al.* (2007) determined two factors in their study about revision of the scale, but they identified that four items that were about evaluation of information were loaded into two factors equally. For this reason, researchers decided to keep the survey in original form and grouped the items related to information under decision making subscale.[2]

In the current study, it was seen that six items, which were about information inquiry, were loaded into Factor 3, and it was evaluated that grouping of these articles under information subscale would be appropriate. It was stated that the satisfaction level of patient's relatives was increased when they are informed about their patients in a complete, right and understandable manner in addition to

Table 3 Reliability coefficients for subscales

Subscales	Number of scale items	Mean ± SD	Item total subscale correlation n (120)	Cronbach's alpha
Care	13	77.62 ± 18.32	0.69–0.85	0.96
DM	5	78.50 ± 19.84	0.42–0.73	0.77
Information	6	74.47 ± 20.05	0.70–0.87	0.92
Total	24	77.02 ± 16.63	0.33–0.83	0.95

DM, decision-making; SD, standard deviation.

Table 4 Item analysis and internal consistency of the FS-ICU-24 scale

Item	Mean	SD	Item total correlation
1. The courtesy, respect and compassion your family member (the patient) was given.	80.83	19.64	0.74
2. How well the ICU staff assessed and treated your family member's pain?	77.50	21.10	0.80
3. How well the ICU staff assessed and treated your family member's breathlessness?	78.75	20.14	0.73
4. How well the ICU staff assessed and treated your family member's agitation?	77.29	21.98	0.81
5. How well the ICU staff showed an interest in your need?	77.50	22.07	0.76
6. How well the ICU staff provided emotional support?	71.25	26.45	0.77
7. The teamwork of all the ICU staff who took care of your family member.	78.75	22.83	0.82
8. The courtesy, respect and compassion you were given.	79.58	22.21	0.81
9. How well the nurses cared for your family member?	82.08	21.29	0.73
10. How often nurses communicated to you about your family member's condition?	67.50	28.91	0.67
11. How well doctors cared for your family member?	84.16	19.15	0.73
12. How often doctors communicated to you about your family member's condition?	76.66	22.62	0.71
13. Atmosphere of the ICU.	77.29	21.98	0.72
14. Atmosphere of the ICU waiting room.	71.04	25.92	0.63
15. Willingness of ICU staff to answer your questions.	73.12	23.63	0.83
16. How well the ICU staff provided you with explanations that you understood?	73.95	23.90	0.80
17. The honesty of information provided to you about your family member's condition.	77.29	21.25	0.81
18. How well ICU staff informed you what was happening to your family member and the reason things were being done?	75.20	23.03	0.69
19. The consistency of information provided to you about your family member's condition.	76.25	21.94	0.78
20. Did you feel included in the decision-making process?	79.37	19.62	0.45
21. Did you feel supported during the decision-making process?	76.04	29.06	0.33
22. Did you feel you had control over the care of your family member?	77.50	20.85	0.44
23. When making decisions, did you have adequate time to have your concerns addressed and questions answered?	77.50	41.93	0.36
24. How satisfied were you with the level or amount of health care your family member received in the ICU?	82.08	18.09	0.67

FS-ICU-24, Family Satisfaction in the Intensive Care Unit; ICU, intensive care unit; SD, standard deviation.

obtaining timely and good care for their patients.[6,15] Knowing that being able to acquire information about patients in any time of the day and whenever asked is an effective way for the relatives of the patients to feel safe and good themselves.[16] In the studies, it is a priority for the relatives of the patients who have a patient in the ICU to have information about their patients.[17,18] Informing the relatives of the patients about condition of their patients and answering their questions in a correct and sincere way by health staff would cause them to feel that they are included in the care process and help them to contribute to the care.[16]

In the Turkish culture, relations between family, relatives and neighbours are close and warm.[19] In Turkish society, individuals follow patient's health conditions and their requirements because of social expectations and to feel good in morale. Within this structure, the most important expectation of a relative of a patient is to have a regular and correct information about his/her patient. At the same time, informing patients and relatives of the patients about medical condition of the patient is a fundamental patient right.[20]

The Cronbach's alpha value for the FS-ICU-24 general internal consistency in our research was calculated to be 0.95 for total scale and determined as relatively high. For the subscales, Cronbach's alpha value varied from 0.77 to 0.96. Wall *et al.* stated that the Cronbach's alpha coefficients were 0.92 and 0.88 for the satisfaction with care and the satisfaction with decision making subscales, respectively.

According to the results of this study, satisfaction of the relatives of the patients regarding patient care services of doctors and nurses is high. On the other hand, satisfaction regarding information given by nurses about patients is lower. The areas that satisfy or dissatisfy the relatives of patients are similar to other studies.[5,8] In the studies, it was argued that information requirement of patient's relatives is on the first steps. In increasing a patient's relatives' satisfaction, it was stated that the nursing care and giving information are effective.[6,8,21–23]

High quality and open communication between health staff and patient's relatives would add value in taking right decisions for patients. In this study, the reason of low frequency of informing by nurses is that patient's relatives are only informed by a responsible doctor of the department. In the hospitals where the study was conducted, the explanations about the conditions of the patients are done by doctors. Information is given face to face or by phone.

Because of the problems in reaching to the doctors, satisfaction of the relatives of the patients regarding receiving information about their patients is not a desired level. Institutions are required to initiate measures to regulate systematic and regular information flow by considering information needs of the relatives of the patients.

Limitations of the study

There are some limitations that apply to this study specifically. In general, changes in the expectations for results of patient would affect satisfaction. For example, a relative of a patient who visits for the first time would be satisfied because his/her patient is alive. However, the same relative might be unsatisfied in his/her visit 1 week later with an expectation of positive developments in the health of his/her patient if he/she sees no positive development.[8] In this case, the answers of the patient's relatives might be irrelevant and would affect the validity of the study. Half of the patient's relatives who volunteered to join to the study were living out of the city. Therefore, retest could not be done within a required time for retesting because there were no chances to reach patient's relatives for a second time.

In this study, as a difference to other studies, it was revealed that the six items about information were loaded into information subscale. This might be because of cultural differences of the Turkish nation. It was evaluated that it would be appropriate to study this situation by using a design that compares inter-cultural differences.

CONCLUSION

In this study, the Turkish version of the FS-ICU-24 was found to be reliable and valid with Turkish population. The instruments measure three main conceptual domains: satisfactions with care, satisfaction with decision making and satisfaction with information. It could be a valuable instrument for health professionals to assess family satisfaction in the ICU in the Turkey.

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