Validity and Reliability of a Thai Version of Family Satisfaction with Care in the Intensive Care Unit Survey

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ABSTRACT

Purpose: To examine reliability and validity of a Thai version of the Family Satisfaction with Intensive Care Unit (FS-ICU 24) questionnaire and use this survey in intensive care units (ICUs) in Thailand.

Materials and methods: The standard English FS-ICU questionnaire was translated into the Thai language using translation and culture adaptation guidelines. After reliability and validity testing, we consecutively surveyed the satisfaction of family members of ICU patients over 1 year. Adult family members of patients admitted to medical or surgical ICUs for 48 hours or more who had visited the patients at least once during the ICU stay were included.

Results: In all, 315 (95%) of 332 surveys were returned from family members. Cronbach's α of the Thai FS-ICU 24 questionnaire was 0.95. Factor analysis demonstrated good construct validity. The mean (±SD) of total satisfaction score, overall ICU care subscale, and decision-making subscale were 81.5 ± 14.3, 81.0 ± 15.6, and 82.0 ± 14.0. Items with the lowest scores were the waiting room atmosphere and the frequency of doctors communicating with family members about the patient's condition. The mean total satisfaction score tended to be higher in family members of survivors than in family members of nonsurvivors (81.9 ± 13.8 vs 77.7 ± 16.2, *p* value = 0.059). The overall satisfaction scores between medial ICU and surgical ICU were not significantly different.

Conclusion: The Thai version of FS-ICU questionnaire was found to have acceptable reliability and validity in a Thai population and can be used to drive improvements in ICU care.

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INTRODUCTION

Patient and family satisfaction are recognized as essential domains of intensive care unit (ICU) quality of care.[1,2] The ICU is a complex system that depends on a multidisciplinary team and a technologically driven environment. Family members are the cornerstone in the evaluation of satisfaction in ICU care and decision-making because most ICU patients are not able to communicate and provide their opinion.[3–5]

Multiple tools have been developed to measure patient and family satisfaction in ICUs.[6] Several studies from multiple countries have demonstrated that family satisfaction ratings can be used to identify areas for quality improvement.[7,8] The most widely used questionnaire to measure family satisfaction in ICU in North America is "Family Satisfaction with ICU Care: FS-ICU," first developed and validated by Heyland et al., which consists of 34 items.[9] It was subsequently refined in 2007 by Wall et al. into 24 items with two domains (FS-ICU 24): satisfaction with care and satisfaction with decision-making.[10] Both versions of this questionnaire score highly in validity and reliability and are provided in multiple languages.[11,12]

To our knowledge, there is neither a valid tool nor a well-designed study about family satisfaction in ICUs in Thailand. Therefore, the aims of this study were: (1) to translate the FS-ICU 24 into Thai and determine the reliability and validity of this translated version in the Thai context and (2) to survey family satisfaction in adult medical and surgical ICUs using the "Thai Family Satisfaction with Care in the Intensive Care Unit Survey" (Thai FS-ICU 24) survey to identify opportunities for improvement.

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MATERIALS AND METHODS

Translation and Validation Process

First, permission to translate this survey from Daren K. Heyland, one of the FS-ICU developers, was requested via e-mail. After obtaining approval, the translation process was done as suggested in the guideline of translation and cultural adaptation as follows:[13] Two

independent forward translations of the English FS-ICU 24 survey to the Thai language were done by one medical professional and one non-medical person. Any discrepancies were discussed and resolved by an expert committee, and then the best version was created. Two independent bilingual persons who are native English speakers performed the back-translation process and reached a consensus on this version. The expert committee, which included physicians, nurses, and language professionals, reviewed all of the translations, compared the back-translated version with the original one, identified any inconsistencies, and resolved all discrepancies. At this point, the preliminary Thai version was created. The original and preliminary Thai FS-ICU 24 surveys were tested in 10 family members who understand both English and Thai languages in order to assess comprehension, consistency, and potential embarrassment. Some words that were difficult to understand and a word with multiple meanings that may lead to misunderstanding were brought into discussion and eventually replaced with the right word or phrase, without changing the meaning of the original version. The response options of items 21 to 23 were rephrased to make each choice explicit. The expert committee made some final corrections, and the final Thai FS-ICU 24 survey was piloted. Minor changes were made after this pilot study. The Thai FS-ICU 24 survey was also transformed into an online questionnaire using Google drive. The link to this version was sent to family members who preferred to answer online.

Study Design and Population

This is the prospective observational study. The target study population was the next of kin of ICU patients who were admitted to the medical intensive care unit (MICU) or surgical intensive care unit (SICU) at Chiang Mai University Hospital from August 1, 2016, to July 31, 2017. Eligible patients were admitted to the ICU for at least 48 hours. Inclusion criteria for the respondents were age ≥18 years, had visited the patient at least once during their ICU stay, and were able to read and understand the Thai language.

Data Collection

This study was conducted after obtaining approval from the ethics committee of Chiang Mai University Hospital (MED-2559-03746). The research assistant and ICU nurses, who worked in each ICU, identified eligible patients. If their next-of-kin was willing to participate in the study, a written, informed consent was obtained. For the survivor patients, surveys were given to the next-of-kin at the time of discharge from the ICU. The completed surveys were picked up and returned to the researcher over the next few days. For nonsurvivors, the surveys were sent to the next-of-kin with letters signed by the principal investigator. The letter expressed sympathy and a request for participation as well as study details. The mail also included an addressed and stamped return envelope. In case some participants preferred e-mail, the research assistant sent the cover letter and the link to the online survey approximately 3 to 4 weeks after ICU discharge.

Statistical Analysis and Sample Size

Patients and next-of-kin characteristics were expressed as mean and standard deviation, and rate and proportion, as appropriate. Participants were stratified based on the site of ICU admission (medical ICU or surgical ICU). Univariate analysis to compare patients' demographic data was done using Chi-square or Fisher exact test for categorical variables and t test for continuous variables. The percentage response of each item and item scores were also

described by scoring each item based on the following scale: excellent or completely satisfied = 100, very good or very satisfied = 75, good or mostly satisfied = 50, poor or slightly dissatisfied = 25, and very poor or very dissatisfied = 0. The reliability and validity of the surveys were evaluated. Internal consistency (reliability) of each domain was measured using Cronbach's α coefficient; values >0.7 were considered acceptable for aggregate data. Factor analysis using principal axis factor technique with varimax rotation and Kaiser normalization was used to explore the construct validity. The statistical software used in this study was SPSS, version 17.0 (SPSS Inc, Chicago, IL, USA). A p value of less than 0.05 was determined as statistically significant. The required sample size was calculated as at least 120 patients (24 items × 5 Likert preference; equals to 120) for validation. However, 200 surveys were needed based on a projected response rate of 60%.

RESULTS

A total of 332 surveys were given to family members of 283 ICU survivors and 49 ICU nonsurvivors. The response rate was 95% (315 respondents: 99% from family members of survivors and 64% from family members of nonsurvivors). Patients from the MICU had significantly higher severity of illness and mortality than those from the SICU (Table 1). Most patients admitted to MICU had sepsis and respiratory failure, whereas SICU patients were mainly receiving postoperative care (Tables 1 and 2).

Validity and Reliability

The internal consistency of the Thai FS-ICU 24 tested by Cronbach's alpha coefficient was high, so this demonstrated strong reliability of the Thai survey (Supplement Appendix Table 1).

The result of factor analysis is shown in the Supplement Appendix Table 2. Question 24 should be omitted because of the factor loading of less than 0.3, so this question should be interpreted separately. Questions 1 to 10 and 12 were loaded into factor 1, which determines satisfaction of overall ICU care, whereas questions 11 and 13 to 20 were loaded into factor 2, which defines satisfaction in decision-making specifically in the part of received information. Three questions (21–23) were loaded into the third factor, which represents the decision-making process (Supplement Appendix Table 2).

Family Satisfaction Survey Results

Our mean Thai FS-ICU 24 total score, FS-ICU care domain mean score, and FS-ICU decision-making domain mean score were 81.5 ± 14.3, 81.0 ± 15.6, and 82.0 ± 14.0, respectively. The most highly rated items in the overall care domain were ICU atmosphere and physician caring, with a mean score of 86.8 ± 16.9 and 86.5 ± 18, respectively. The lowest rated item in this domain was the waiting room atmosphere with a mean score of 63.7 ± 23.9. For the FS-ICU decision-making domain, respondents were most satisfied with the feeling of inclusion in the decision-making process, but they were least satisfied with the frequency of doctor–family communication (Supplement Appendix Table 1).

Nonsurvivor patients had higher SOFA and APACHE II score than survivor group; however, characteristics of family members were not different between two groups (Supplement Appendix Tables 3 and 4). The mean total score tended to be higher in family members of survivors than in family members of nonsurvivors (81.9 ± 13.8 vs 77.7 ± 16.2, p value = 0.059). The item with the lowest satisfaction score for both the survivor and the nonsurvivor

Table 1: Demographic characteristics of eligible patients admitted to ICUs

Patients	MICU (n = 136)	SICU (n = 196)	Overall (n = 332)	p value
Female, n (%)	63 (46.3)	74 (37.8)	137 (41.3)	0.141
ICU mortality, n (%)	30 (22.1)	19 (9.7)	49 (14.8)	0.003
Age in years, mean ± SD	62.2 ± 18.3	61.6 ± 16.9	62.7 ± 17.5	0.181
ICU-LOS, median days (IQR)	5 (3, 8)	4 (3, 7)	4 (3, 7)	0.003
Hospital-LOS, median days (IQR)	15 (8, 32)	18 (11, 30)	17 (10, 32)	0.033
Admitted from, n (%)				<0.001
ED	58 (57.4)	45 (23.0)	103 (31.0)	
Other wards	78 (77.0)	151 (77.0)	229 (69.0)	
ICU admission diagnosis, n (%)				<0.001
Sepsis	56 (41.2)	20 (10.2)	76 (22.9)	
Respiratory	56 (41.2)	9 (4.6)	65 (19.6)	
Cardiovascular	10 (7.4)	6 (3.1)	16 (4.8)	
Gastrointestinal/biliary	2 (1.5)	11 (5.6)	13 (3.9)	
Postoperative care	1 (0.7)	101 (51.5)	102 (30.7)	
Organ transplantation	0	41 (20.9)	41 (12.3)	
Trauma	0	3 (1.5)	3 (0.9)	
Other	11 (8.1)	5 (2.6)	16 (4.8)	
Median SOFA (IQR)	7 (4, 11)	6 (4, 8)	6 (4, 9)	0.013
Median APACHE II, (IQR)	18 (12, 26)	15 (12, 20)	16 (12, 22)	0.029

ICU-LOS, intensive care unit length of stay; Hospital-LOS, hospital length of stay; ED, emergency department; SOFA, sequential organ failure assessment; APACHE II: acute physiology and chronic health evaluation II; SD, standard deviation; IQR, interquartile range

Table 2: Demographic characteristics of respondents (315 family members)

Characteristics	n	Response
Age in years, mean (SD)	312	47.7 (24.4)
Gender, n (%)	313	
Male		88 (27.9)
Female		225 (71.4)
Relationship to patient, n (%)	313	
Wife		59 (18.8)
Husband		18 (5.8)
Partner		1 (0.3)
Mother		17 (5.4)
Father		8 (2.6)
Sister		14 (4.5)
Brother		9 (2.9)
Daughter		119 (38.0)
Son		47 (15.0)
Other		24 (7.7)
Lives with patient, n (%)	315	
No		99 (31.4)
Yes		216 (68.6)
On average, how often do you see the patient, n (%)	99	
Less than once a year		2 (2.0)
Yearly		11 (11.1)
Monthly		30 (30.3)
Weekly		16 (16.2)
More than weekly		40 (40.4)
Prior experience as a family member of ICU patient, n (%)	314	
No		244 (77.5)
Yes		70 (22.2)
Location of home, n (%)	313	
In the city where the hospital is		93 (29.5)
Out of town		219 (69.5)

group was the atmosphere of ICU waiting room. Family members of nonsurvivors were also less satisfied with courtesy, respect, and compassion toward patients, management of dyspnea and agitation, and skill and competency of doctors. The total score of the care domain was significantly greater in the survivor group than in the nonsurvivor group (81.9 ± 14.9 vs 75.7 ± 18.3, p value = 0.023). Regarding satisfaction with decision-making, families of nonsurvivors were less satisfied with the honesty of information about patient's conditions. However, they were more satisfied with feeling control over the care of patients (Table 3).

Table 4 displays family satisfaction between MICU and SICU. The overall satisfaction scores between the two groups were not different, with 79.9 ± 14.9 vs 82.5 ± 13.4, p value = 0.108. However, families of patients admitted to the MICU were less satisfied with courtesy, respect, and compassion they were given, the atmosphere of the ICU and waiting room, the level of care patients received, and understanding of explanation.

Discussion

During the past several decades, the doctor–patient–family relationship in Thailand has changed from being doctor-oriented to being more communicative and interactive. The ICU team is also more aware of family satisfaction as a critical measure of quality. For example, we generally have a family meeting at least once during the ICU stay of each patient.

In this study, the FS-ICU 24 survey, a well-known, reliable, and valid for family satisfaction evaluation in North America and many countries, was selected for translation into the Thai language. We experienced a small difficulty in translation and cultural adaptation for some items, especially the items that involve the decision-making process (item 21–23), because it is challenging to make a difference in each scale using readily understandable words and maintain the meaning of the original question. Redundant words were used in order to maintain the original meaning, so some responders had trouble understanding and needed clarification by the nurses and the research assistant. However, most respondents understood the survey well and were able to answer the whole survey themselves.

The Thai FS-ICU survey was also tested and found to have good reliability and validity. Question no. 24 that refers to the adequacy of decision-making time failed to load into one of the three factors.

Table 3: Thai FS-ICU 24 score of survived compare to non-survived patients: mean and standard deviation (SD)

Question	Survived	n	Non-survived	n	p value
Satisfaction with care					
1. Courtesy, respect, and compassion toward patient	85.8 ± 16.5	276	78.5 ± 23.3	36	0.018
2. Management of pain	81.4 ± 20.4	266	75.7 ± 21.7	34	0.132
3. Management of breathlessness	83.0 ± 18.4	256	73.6 ± 25.0	35	0.007
4. Management of agitation	79.4 ± 20.9	248	70.7 ± 24.6	35	0.025
5. How well staff showed interested in family needs	83.8 ± 19.3	274	77.1 ± 22.6	36	0.057
6. How well the ICU staff provided emotional support to family	80.7 ± 20.3	273	74.3 ± 25.7	36	0.088
7. The teamwork of all the ICU staff who took care of patient	84.2 ± 18.8	276	79.3 ± 20.5	35	0.155
8. The courtesy, respect and compassion family were given	86.2 ± 18.1	276	80.6 ± 24.7	36	0.092
9. How well the nurses cared for patient	85.3 ± 19.1	275	80.7 ± 21.9	35	0.193
10. How often nurses communicated to family about patient's condition	80.0 ± 20.2	273	77.8 ± 22.2	36	0.534
11. How well doctors cared for patient (skill and competency)	87.4 ± 17.0	275	79.9 ± 23.8	36	0.017
12. Atmosphere of the ICU	87.3 ± 16.3	275	83.3 ± 20.7	36	0.189
13. Atmosphere of the ICU waiting room	64.6 ± 23.3	256	58.3 ± 27.4	36	0.144
14. Satisfaction with the level or amount of care that patient received	76.8 ± 20.9	276	70.8 ± 20.3	36	0.107
Total FS-ICU 24 with care	81.9 ± 14.9	279	75.7 ± 18.3	36	0.023
Satisfaction with decision-making: information needs					
15. How often doctors communicated to family about patient's condition	75.0 ± 21.1	265	75.0 ± 23.1	36	1.000
16. Willingness of ICU staff to answer family questions	80.1 ± 20.4	271	75.0 ± 25.4	36	0.175
17. How well ICU staff provided family with explanations that they understood	79.3 ± 20.5	269	75.0 ± 24.6	36	0.253
18. The honesty of information provided to family about patient's condition	81.4 ± 19.1	268	72.9 ± 22.6	36	0.014
19. How well ICU staff informed family what was happening to patient and why things were being done	81.2 ± 19.3	269	75.7 ± 23.1	35	0.122
20. The consistency of information provided to family about patient's condition	80.3 ± 20.0	269	74.3 ± 23.5	36	0.099
Satisfaction with decision-making: decision-making process					
21. Feeling inclusion in the decision-making process	87.2 ± 17.0	269	90.3 ± 21.8	36	0.321
22. Feeling support during the decision-making process	82.3 ± 17.8	270	87.9 ± 12.7	35	0.075
23. Feeling of control over the care of patient	85.7 ± 19.9	268	93.1 ± 15.4	36	0.035
24. Have adequate time to have family concerns addressed and questions answered	87.1 ± 33.6	271	86.1 ± 35.1	36	0.871
Total FS-ICU 24 with decision-making	81.9 ± 14.4	279	80.5 ± 15.4	36	0.599
Total FS-ICU 24 score	81.9 ± 13.8	279	77.7 ± 16.2	36	0.095

This could be explained by the fact that question no.24 has only two response options instead of five options like the other questions. Consequently, in the updated version of FSICU 24, the developer has changed the number of response options from two to five. However, the mean satisfaction score of this question was high, which refers to family members having adequate time to address their concerns and solve questions.

Patients who were admitted to the medical ICU (MICU) had higher severity of illness than those admitted to the surgical ICU (SICU); therefore, there was a higher mortality rate in the MICU. Most of the MICU patients were admitted because of had sepsis and respiratory failure, whereas most of the SICU patients were admitted for postoperative and transplantation monitoring. Most patients who undergo surgeries and transplantation are well prepared and in good condition; thus, a low mortality rate is anticipated.

According to our results, the satisfaction of the family members with overall care was high, similar to previous studies in other countries.[14–16] The ICU environment was also rated highly. On the contrary, the atmosphere of the waiting room was rated lower. The specific causes of dissatisfaction, such as insufficient facilities, not enough seats, limited space and restrooms, and lack of privacy, were not addressed in the survey. One interesting study in the Netherlands showed an increase in patient and family satisfaction after improvement in the ICU environment by noise reduction, use of single rooms with daylight, view outside, and amended family facilities.[17] The limitation of the family waiting area in our hospital is a challenging problem due to structural restriction. However, improvements in the waiting area are not impossible and will be discussed with the hospital administrator.

In the FS-ICU decision-making domain, we found that patients' relatives were less satisfied with the frequency of information about the patient's condition provided by the doctor. This finding may reflect inadequate communication skills, ineffective time management, lacking time due to workload of ICU staff, and visiting time restrictions. The results of our study also demonstrate the family satisfaction of patients who admitted to SICU was higher in every item, particularly in the part of courtesy, respect, and compassion, and understanding of explanation. This finding may

Table 4: Thai FS-ICU 24 score of medical ICU (MICU) compared with surgical ICU (SICU): mean and standard deviation (SD)

Question	MICU	n	SICU	n	p value
Satisfaction with care					
1. Courtesy, respect, and compassion toward patient	83.7 ± 18.2	126	85.8 ± 17.0	186	0.318
2. Management of pain	78.4 ± 22.5	119	82.3 ± 19.1	181	0.104
3. Management of breathlessness	80.8 ± 19.6	120	82.6 ± 19.4	171	0.447
4. Management of agitation	77.6 ± 21.9	117	78.9 ± 21.3	166	0.604
5. How well staff showed interested in family needs	81.2 ± 20.3	124	84.1 ± 19.4	186	0.208
6. How well the ICU staff provided emotional support to family	78.0 ± 21.8	124	81.2 ± 20.6	185	0.192
7. The teamwork of all the ICU staff who took care of patient	81.9 ± 19.1	126	84.7 ± 19.0	185	0.206
8. The courtesy, respect and compassion family were given	82.5 ± 20.3	126	87.6 ± 17.9	186	0.020
9. How well the nurses cared for patient	83.4 ± 20.9	127	85.7 ± 18.4	183	0.331
10. How often nurses communicated to family about patient's condition	78.8 ± 23.1	125	80.4 ± 18.4	184	0.491
11. How well doctors cared for patient (skill and competency)	85.2 ± 19.3	126	87.6 ± 17.1	185	0.240
12. Atmosphere of the ICU	83.2 ± 17.6	125	89.2 ± 16.0	186	0.002
13. Atmosphere of the ICU waiting room	57.0 ± 23.2	117	68.3 ± 23.4	175	<0.001
14. Satisfaction with the level or amount of care that patient received	73.2 ± 21.4	127	78.1 ± 20.4	185	0.043
Total FS-ICU 24 with care	79.0 ± 16.6	127	82.6 ± 14.4	187	0.042
Satisfaction with decision-making: information needs					
15. How often doctors communicated to family about patient's condition	73.0 ± 23.2	123	76.4 ± 19.8	178	0.169
16. Willingness of ICU staff to answer family questions	77.4 ± 21.6	125	80.9 ± 20.6	182	0.152
17. How well ICU staff provided family with explanations that they understood	75.8 ± 22.3	124	80.8 ± 19.9	181	0.041
18. The honesty of information provided to family about patient's condition	79.0 ± 19.1	125	81.4 ± 19.5	179	0.291
19. How well ICU staff informed family what was happening to patient and why things were being done	78.8 ± 19.9	124	81.8 ± 19.7	180	0.199
20. The consistency of information provided to family about patient's condition	77.8 ± 20.6	125	80.8 ± 20.3	180	0.204
Satisfaction with decision-making: decision-making process					
21. Feeling inclusion in the decision-making process	87.8 ± 17.6	123	87.4 ± 17.6	182	0.830
22. Feeling support during the decision-making process	84.1 ± 15.4	124	82.2 ± 18.5	181	0.350
23. Feeling of control over the care of patient	89.1 ± 16.3	124	84.9 ± 21.4	180	0.063
24. Have adequate time to have family concerns addressed and questions answered	87.2 ± 33.5	125	86.8 ± 33.9	182	0.922
Total FS-ICU 24 with decision-making	81.0 ± 14.6	128	82.2 ± 14.4	186	0.473
Total FS-ICU 24 score	79.9 ± 14.9	128	82.5 ± 13.4	187	0.108

be explained by the more complex diseases (sepsis and respiratory failure) of MICU patients and lower comprehension of information received. This result strongly suggested that we have to put more effort into improving our communication skills.

Communication is considered a vital part of good relationships and has been emphasized in many studies.[18,19] Well-designed, high-quality communication is required to optimize family satisfaction.[20] More frequent and extended periods of communication between ICU staff and family members help to reduce anxiety.[21] Aside from the total time of these family meetings, the proportion of time that the doctor listens is also essential.[22] Communication that allows family members to speak is associated with higher family satisfaction and less conflict with healthcare providers. The content of communication also affects family satisfaction. One study was performed in dying ICU patients' relatives using a bereavement support brochure and a communication strategy of the mnemonic VALUE. VALUE stands for value and appreciate what the family members said, acknowledge the family members' emotions, listen to ask questions that would allow the caregiver to understand who

the patient was as a person, and elicit questions from the family members. The result showed that it helped reduce the Impact of Event Scale (IES) and post-traumatic stress disorder.[23] However, strategies to improve doctor–family communication in Thailand require further analysis.

We also compared the satisfaction rating between family members of patients who survived from the ICU and the nonsurvivor groups. Less satisfaction with many aspects of ICU care and decision-making in the nonsurvivor group were observed, particularly in the ICU care domain. Our results are different from previous studies in North America. Heyland et al. reported no differences in family satisfaction between family members of survivors or nonsurvivors.[11] Wall et al. found that high family satisfaction is associated with spiritual care in the ICU, primarily if spiritual care interventions are performed within 24 hours before death.[24] One reason for less family satisfaction in our study could be the ICU staff underrecognized the needs of dying patients. Because of high workloads in the ICU, physicians tend to give more attention to surviving patients than to dying ones. Thus, this result indicates

that we need more comprehensive end-of-life care and spiritual care to the families of dying patients.

In Thai culture, many patients prefer to die at home, and families prefer taking care of them at home rather than in the hospital at the end of life. In our study, approximately half of moribund patients were referred home after discussion with their family members about withholding some treatments and how to provide comfort care at the end of life. Most of them died peacefully at home in a short period. We counted these patients in the nonsurvivor group.

Although this is the pioneer research on this field in Thai ICU, however, there were some inevitable limitations. First, as a referral center, our MICU and SICU are usually overcrowded and have fewer staff members at night. Some patients had to be transferred out from ICU in the nighttime, so they were not recruited into the study. Second, we found that there was some difficulty in understanding some questions by the respondents, as mentioned above. Finally, this study was conducted in a single, academic-based hospital; therefore, generalizability might be limited.

Conclusion

The Thai version of the FS-ICU-24 is reliable and valid in a Thai population. The tool is valuable for assessing family satisfaction in the ICU in Thailand and can facilitate ICU quality improvement. From our 1-year survey, there is room for improvement in both domains, and the root causes need to be explored.

Acknowledgments

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APPENDIX FS-ICU 24 THAI

Supplement Appendix Table 1: Thai FS-ICU 24: Proportion of respondents who scored each category, mean and standard deviation (SD), and Cronbach's α

Item	n	Excellent (%)	Very good (%)	Good (%)	Fair (%)	Poor (%)	Mean	SD	Cronbach's α (n = 235)
Satisfaction with care									
1. Courtesy, respect, and compassion toward patient	312	51	38.8	9.6	0.3	0.3	84.9	17.5	0.95
2. Management of pain	300	45	35.3	18	1	0.7	80.7	20.6	0.95
3. Management of breathlessness	291	45.7	37.8	15.1	1	0.3	81.8	19.5	0.95
4. Management of agitation	283	40.6	35.5	21.6	1.8	0.7	78.4	21.5	0.95
5. How well staff showed interested in family needs	310	50.6	31.9	16.5	0.6	0.3	83.0	19.8	0.95
6. How well the ICU staff provided emotional support to family	309	44.3	33.3	20.7	1	0.6	79.9	21.1	0.95
7. The teamwork of all the ICU staff who took care of patient	311	50.5	34.7	13.8	0.6	0.3	83.6	19.1	0.95
8. The courtesy, respect and compassion family were given	312	56.7	30.4	11.9	0.3	0.6	85.6	19.0	0.95
9. How well the nurses cared for patient	310	55.5	29.7	13.5	1	0.3	84.8	19.5	0.95
10. How often nurses communicated to family about patient's condition	309	42.1	37.2	18.8	1.6	0.3	79.8	20.4	0.95
11. How well doctors cared for patient (skill and competency)	311	58.5	30.2	10.6	0.3	0.3	86.6	18.0	0.95
12. Atmosphere of the ICU	311	57.2	33.1	9.3	0.3	0	86.8	16.9	0.95
13. Atmosphere of the ICU waiting room	292	19.2	29.5	40.1	9.9	1.4	63.8	23.9	0.95
14. Satisfaction with the level or amount of care that patient received	312	33	41	23.1	1.9	0.6	76.1	20.9	0.95
Satisfaction with decision-making: information needs									
15. How often doctors communicated to family about patient's condition	301	30.6	44.2	20.3	4.7	0.3	75.0	21.3	0.95
16. Willingness of ICU staff to answer family questions	307	42.3	36.2	19.2	1.6	0.7	79.5	21	0.95
17. How well ICU staff provided family with explanations that they understood	305	40	38.4	19	2	0.7	78.8	21	0.95
18. The honesty of information provided to family about patient's condition	304	42.4	38.2	18.4	0.7	0.3	80.4	19.7	0.95
19. How well ICU staff informed family what was happening to patient and why things were being done	304	42.8	38.8	16.8	1.3	0.3	80.6	19.8	0.95
20. The consistency of information provided to family about patient's condition	305	41.6	37.4	19	1.6	0.3	79.6	20.5	0.95
Satisfaction with decision-making: decision-making process									
21. Feeling inclusion in the decision-making process	305	60	31.8	7.2	0.3	0.7	87.5	17.6	0.95
22. Feeling support during the decision-making process	305	44.6	43	12.1	0.3	0	83.0	17.3	0.95
23. Feeling of control over the care of patient	304	60.2	29.3	8.2	1.3	1	86.6	19.6	0.95
24. Have adequate time to have family concerns addressed and questions answered	307	87	–	–	–	13	87.0	33.7	0.96

Supplement Appendix Table 2: Factor analysis of FS-ICU Thai version

	Factor 1		Factor 2		Factor 3
Question number	*Factor loading*	*Question number*	*Factor loading*	*Question number*	*Factor loading*
Question 1	0.679	Question 11	0.570	Question 21	0.839
Question 2	0.799	Question 13	0.562	Question 22	0.756
Question 3	0.812	Question 14	0.494	Question 23	0.750
Question 4	0.810	Question 15	0.776	Question 24	0.209
Question 5	0.709	Question 16	0.797		
Question 6	0.719	Question 17	0.785		
Question 7	0.717	Question 18	0.758		
Question 8	0.699	Question 19	0.761		
Question 9	0.657	Question 20	0.724		
Question 10	0.594				
Question 12	0.494				
Rotation sums of squared loadings					
Eigen values	6.93	6.08		2.46	
% of variance	28.89	25.34		10.27	
Cumulative %	28.89	54.23		64.50	

Supplement Appendix Table 3: Patient characteristics: survivors vs nonsurvivors

Patients	Survivors (n = 283)	Nonsurvivors (n = 49)	Overall (n = 332)	p value
Female, *n* (%)	111 (39.2)	26 (53.0)	137 (41.3)	0.084
ICU site				0.003
MICU, *n* (%)	106 (37.4)	30 (61.2)	136 (41.1)	
SICU, *n* (%)	177 (62.5)	19 (38.8)	196 (59.0)	
Age in years, mean ± SD)	61.9 ± 17.9	67.3 ± 14.6	62.7 ± 17.5	0.045
ICU-LOS, median days (IQR)	4 (3, 7)	7 (4, 12)	4 (3, 7)	0.020
Hospital-LOS, median day (IQR)	18 (10, 33)	12 (6, 20)	17 (10, 32)	0.020
Admitted from, *n* (%)				1.000
ED	88 (31.1)	15 (30.6)	103 (31.0)	
Other wards	195 (68.9)	34 (69.4)	229 (69.0)	
ICU admission diagnosis, *n* (%)				<0.001
Sepsis	51 (18.0)	25 (51.0)	76 (22.9)	
Respiratory	56 (19.8)	9 (18.4)	65 (19.6)	
Cardiovascular	15 (5.3)	1 (2.0)	16 (4.8)	
Gastrointestinal/biliary	11 (3.9)	2 (4.1)	13 (3.9)	
Postoperative care	92 (32.5)	10 (20.4)	102 (30.7)	
Organ transplantation	40 (14.1)	1 (2.0)	41 (12.3)	
Trauma	3 (1.1)	0	3 (0.9)	
Other	15 (5.3)	1 (2.0)	16 (4.8)	
Median SOFA (IQR)	5 (3, 8)	11 (8, 14)	6 (4, 9)	<0.001
Median APACHE II, (IQR)	15 (11, 20)	26 (19, 31)	16 (12, 22)	<0.001

Supplement Appendix Table 4: Responders characteristics: survivors vs nonsurvivors

Characteristics	n	Survivors	n	Nonsurvivors	n	All
Age in years, mean (SD)		48.0 ± 25.3		44.7 ± 15.1	312	47.7 (24.4)
Gender, n (%)	277		36		313	
Male		79 (28.3)		9 (25.0)		88 (27.9)
Female		198 (71.0)		27 (75.0)		225 (71.4)
Relationship to patient, n (%)	277		36		313	
Wife		55 (19.7)		4 (11.1)		59 (18.8)
Husband		16 (5.7)		2 (5.6)		18 (5.8)
Partner		1 (0.4)		0		1 (0.3)
Mother		16 (5.7)		1 (2.8)		17 (5.4)
Father		8 (2.9)		0		8 (2.6)
Sister		14 (5.0)		0		14 (4.5)
Brother		7 (2.5)		2 (5.6)		9 (2.9)
Daughter		96 (34.4)		20 (55.6)		119 (38.0)
Son		41 (14.7)		6 (16.7)		47 (15.0)
Other		23 (8.2)		1 (2.8)		24 (7.7)
Lives with patient, n (%)	279		36		315	
No		90 (32.3)		9 (25.0)		99 (31.4)
Yes		189 (67.7)		27 (75.0)		216 (68.6)
On average, how often do you see the patient, n (%)	90		9		99	
Less than once a year		1 (1.1)		1 (11.1)		2 (2.0)
Yearly		11 (12.2)		0		11 (11.1)
Monthly		28 (31.1)		2 (22.2)		30 (30.3)
Weekly		16 (17.8)		0		16 (16.2)
More than weekly		34 (37.8)		6 (66.7)		40 (40.4)
Prior experience as a family member of ICU patient, n (%)	278		36		314	
No		216 (77.4)		28 (77.8)		244 (77.5)
Yes		62 (22.2)		8 (22.2)		70 (22.2)
Location of home, n (%)	277		36		313	
In the city where the hospital is		85 (30.5)		8 (22.2)		93 (29.5)
Out of town		191 (68.5)		28 (77.8)		219 (69.5)

No significant difference between survivors and nonsurvivors