

An Exploratory Factor Analysis Of The Translated Malay Language Version Questionnaire On Satisfaction Of Decision Making Among Relatives Of Patients In Intensive Care Unit (Fsicu-M)

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Abstract

Objective: The aim of this study is to develop and validation Malay language of family member's satisfaction with decision making (15 items) during their stay at the intensive care units. **Design:** A cross sectional study was conducted among 196 respondents. The self-administered FS-ICU comprises of four domains with a total of 15 items. **Materials and Methods:** Descriptive analysis, Cronbach's alpha and Exploratory Factor Analysis (EFA) were performed on the Malay language version of the FS-ICU. **Results:** The final model EFA on the Malay version of FS-ICU indicated Bartlett's Test of Sphericity was significant (Chi Square= 1510.391, p value <0.05) and the Kaiser-Meyer-Olkin (KMO) was 0.835. **Conclusion:** The EFA procedure has grouped 15 items into four domains, the EFA results show all items are useful where no item needs to be deleted since 15 items achieve the minimum requirement for factor loading of 0.6. The Cronbach's alpha analysis of each domain in the FSICU exceeded the threshold value of 0.6. The study concluded that the instruments measuring the construct in this study has achieved the internal validity.

Keywords exploratory, translated, language, intensive care, satisfaction, relatives, decision making

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Introduction

Admission to the Intensive Care Unit (ICU) is often life threatening and potentially causing severe anxiety to the family members. The unexpected admission of their loved ones into the ICU without any warning will definitely causes high level of stress and anxiety among family members which consequently will impair their decision-making ability¹. Many ICU patients cannot make decisions and judgments of their own treatment; therefore, family members are often required to make major decisions under stressful conditions. The atmosphere in the ICU creates an intense emotional situation for patients and their family members². The admission of their sick relatives into the ICU cause the family members to experience a wide range of emotions such as anger, despair, guilt, and fear of loss for the family members.³. Therefore, many studies have addressed these issues by suggesting hospital management to increase the length of ICU visiting hours,⁴ changes in physical environment, increase family support^{5,6}, the use of information brochures, as well as encouraged family involvement in the ward rounds⁷. This is because the family members require accurate and comprehensive information which leaves room for hope to reduce their stress level⁸. Until now there is no validation model of the FS-ICU-24 being used to determine the patient's family member's satisfaction with care in Malaysia. However, to the best of authors knowledge, the satisfaction of family members was not carefully addressed. As shown above, most studies examined focuses on family needs and needs to be met in the ICU⁹⁻¹⁰. There is also little research about family satisfaction in ICU in Asian. Realizing the gap in the extant literature, more research is needed for evaluated care and decision making for family satisfaction level in the ICU. To our knowledge, no research has been given great attention by the researchers in the past and this motivated the present study by using FS-ICU questionnaire to improve in our quality care and ICU facilities toward family member and patient. Therefore, the reliability and validity of the FS-ICU in the Malay culture have not been established within a culture to perform a multicultural comparison. Thus, the aim of this study is to determine the psychometric properties of the Malay language version of FS-ICU on satisfaction decision making among family members in a public hospital in Malaysia.

MATERIAL AND METHODS

Study design and data collection.

A quantitative, cross-sectional validation study (preliminary) in phase 1 was conducted from November 1, 2017 among 196 respondents with 34 items questionnaire and 33 items questionnaire 10 October 2018 to March 2020 among 208

respondents in the phase 2 in our study. Finally, the FS-ICU-Malay language questionnaire with 33 items were used. In section, a satisfaction of care is 18 items and satisfaction for decision-making and decision-making process is 15 items.

Sampling

This study was a cross-sectional survey performed between close family members in the ICU. To be eligible for this study the respondent should have the following characteristics such as closed family members of patients such as spouse, son or daughter, siblings or parents who stayed together with the patient and who accompanied the patient in the ICU for at least 48 hours of admission. Most patients who were admitted to the participating ICUs had disease such as pulmonary or cardiac problems and post-surgical problems. All family members who fulfilled the inclusion criteria were included in the study. The inclusion criteria were Malaysian nationality, aged 18 years and above, able to read in the Malay language and were willing to give informed consent and participate in the study. The questionnaires were provided and completed immediately or at the next ICU visiting hours. Ethical Approval was obtained from the Ethic Committee of University Sultan Zainal Abidin (UniSZA). Permission was also obtained from the Director of Hospital Sultanah Nur Zahirah (HSNZ), National Medical Research Registered (NMMR-17-2388-37702) and Clinical Research Center (CRC). The respondents received adequate information on the study and all participation was voluntarily. The approval letter and patient's information sheet will be given to the nurse managing the adult ICU who met with the participation. The inclusion criteria and consent was distributed with the questionnaire personally by the researcher to the respondent. The questionnaire is self-administered and the respondent was given to complete the questionnaire.

Translation process

The forward and backward translation was carried out by a group of experts consisting of researchers, two linguists, two anesthetists, three head of nursing from the intensive care unit and a one nursing lecturer. The process of translation has been carefully planned with strong emphasis ensuring the preservations of the meaning of each word and followed by the content validity and face validity processes.

Research tools

In this research, the close-ended questionnaire was used as the research instrument. The permission to use the instrument and adopt the questionnaire items was given by the original author Daren K. Heyland, Director of the Clinical Evaluation Research Unit, Kingdom General Hospital on 25 March 2017 (dkh2@queensu.ca via queensuca.on.microsoft.com). The questionnaire comprises demographic questions of the participants. The FS-ICU questionnaire is a patient's family satisfaction questionnaire originally developed in 2003 by a group of health care professionals in Canada: The Canadian Researcher at the End-of-Life Network (CARENET) with 34 items. However, in July 2006, the questionnaire was refined and shortened with 24 items. The newer version has two sections: Part one, which focuses on the satisfaction with overall care with 18 items and part two, which assesses satisfaction with decision-making with 15 items.¹¹ Satisfaction with care provides data on how families experience general aspects of care. Family satisfaction with care subscale includes questions on the care of the patient and family members as well as the nurse's communication skills. The family satisfaction with decision-making subscale includes questions addressing communication with doctors about the condition of the patient, sufficient time for decision-making and quality of information and involvement in the decision-making process. Data were collected using the Malay language translation of the modified FS-ICU satisfaction with decision making (15 items). This construct was measured using the interval scale ranging from 1 (strongly dissatisfied) to 10 (strongly satisfied) with the given item statement.

However, to improve the quality of care in ICU, the researcher decided to measure family satisfaction with care and decision-making in the Malay language of the tools developed with 34 items in Malaysian culture and sociodemographic. Some questions were added in the translation stage because of the 10 extra questions from the original version. To do this, the author expending a likert scale of 1 to 10. In this condition, measuring satisfaction the patient family has been improved in the recent decade with the patient- family-centred care and these tools have not been prepared in Malaysia. Therefore, this study was conducted to localise investigating tools of family members who were hospitalised in ICU.

Statistical analysis

Data were processed analysed using SPSS 23.0 and Exploratory Factor Analysis (EFA) using the extraction method of Principal Component Analysis (PCA) with Varimax (Variation Maximization). Rotation was performed on these 15 items measuring the ICU-decision making construct.

RESULTS

The Exploratory Factor Analysis (EFA) for Satisfaction with Decision Making

The instruments measuring Satisfaction with Decision-making (SDM) construct consisting of 15 items in a questionnaire after pretest and validation process. Table 2 indicates that the descriptive statistics for every item measuring respondents Satisfaction with Decision-making (SDM). This construct was measured using the interval scale from 1 (*strongly disagree*) to 10 (*strongly agree*) with the given item statement^{12,13}. The item statement, the mean score and standard deviation of the score for every item are presented in Table 1. The EFA using the extraction method of PCA with Varimax Rotation was performed on these 15 items measuring Satisfaction with Decision-making (SDM) construct. Table 2 indicates that the Bartlett's Test of Sphericity is significant ($p < 0.05$).

The Dimensions or Domains and Total Variance Explained

The result in Table 3 shows that there are four components or domains that emerged from the EFA procedure based on the computed eigenvalue greater than 1.0. The eigenvalues ranged between 1.416 and 5.464; the variance explained for domain 1, 2, 3, and 4 was 36.426%, 13.9. 55%, 11.557 and 9.438%, respectively. The total variance explained for measuring this construct was 71.376%. The total variance explained is acceptable because it exceeds the minimum of 60%¹²⁻¹⁵. Table 4 presents the four domains emerged and their respective items resulted from the EFA procedure. The factor loading for every item should be greater than 0.6 to be retained for a field study^{15,16}.

Discussion

This study was successfully translated and specifically conducted to assess the reliability and factor analysis for the Malay language version of FSICU-M questionnaire among family members. A forward and backward translation process was initially performed by linguist to maintain the quality of the items followed by extensive revision and improvement of the content by a team of experts to fulfill the content validation of the instrument. Face to face validation was performed to assess the

clarity of the questionnaire to improve the understanding of respondents. Generally, the respondents understood the whole questionnaire. However, from the result of the exploratory factor analysis and reliability analyses indicated that all 15 items the study conclude that the instruments measuring the construct in this study namely, satisfaction with decision-making has achieved the internal validity. The item statement for satisfaction with decision making, the mean score and standard deviation of the score for every item is presented in Table 1.

In other words, the EFA procedure has grouped 15 items into four domains. Each domain has its own set of measuring items. The rotated component matrix will determine exactly which items belong to which components or domains¹⁴. Furthermore, the measure of sampling adequacy by KMO is excellent because it exceeded the required value of 0.6¹⁷¹³¹⁶. These results indicate that the data were adequate to proceed further with the data reduction procedure in EFA¹²⁻¹⁵. In the Figure 1 indicates four domains that emerged from the EFA procedure for SDM construct. In conclusion, The EFA results show that all items are useful where no item needs to be deleted because all 15 items achieved the minimum requirement for factor loading of 0.6¹²⁻¹⁵. Thus, the above instruments can be used for this study.

Conclusion

The present FS-ICU-M satisfaction with decision making had gone through the process of forward and backward translation, content validation, face to face validation and modified in the Malay language. The FSICU-M in the Malay language version was found to be valid and reliable to assess family satisfaction with decision making on satisfactory exploratory factor analysis results and internal consistency. Thus, the study can use the above instruments for the field study.

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