

CHAPTER 3

RESEARCH METHODOLOGY

Research Design

This descriptive comparative study examined the differences of perception between patients' family members and nurses regarding the importance of needs of families who had members admitted to critical care units.

Population and Setting

The target population in this study was families of critically ill patients who were admitted to the Intensive Critical Care Unit (ICU) and Coronary Care Unit (CCU), and nurses who took care of the critical patients in the five hospitals. There were Rumah Sakit Umum Pusat (RSUP) Dr. Kariadi, Rumah Sakit Umum (RSU) Prof. Dr. Margono Soekarjo, Rumah Sakit Umum Tugurejo, Rumah Sakit Umum (RSU.) Kota, and Rumah Sakit Umum (RSU.) Purwodadi, Central Java, Indonesia.

The five hospitals were purposively selected based on the following conditions:

1. They were the two biggest government hospitals, and three districts hospitals in Central Java.
2. They provided the number of patients and nurses that satisfied the minimum sample size needed for this study.

The first hospital was RSUP. Dr. Kariadi Semarang and the second hospital was RSU. Prof. Dr. Margono. These hospitals have established major ICU and CCU

services, act as referral centers, and also served as teaching hospitals for medical and nursing students. In these hospitals, ICU and CCU have 18 and 10 beds, respectively. In RSUP. Dr. Kariadi Semarang, there were approximately 40 patients a month admitted to ICU and CCU, and 38 nurses worked in these units (Medical Record Division of RSUP. Dr. Kariadi Semarang, 2003). Similarly, there are approximately 50 patients a month admitted to ICU and CCU at RSU. Dr. Margono every month, and 26 nurses work in these units (Medical Record Division of RSU. Prof. Dr. Margono, 2004). The third hospital was RSU. Tugurejo. The fourth hospital was RSU. Kota and the fifth was RSU. Purwodadi. They were government hospitals, and also served as teaching hospitals for medical and nursing students. Each hospital has 10 beds of ICU or CCU. There are around 35 patients admitted to ICU and CCU every month. Approximately 16 nurses work in ICU and CCU in RSU. Tugurejo, (Medical Record Division of RSU. Tugurejo, 2004), 11 nurses work in these units in RSU. Kota (Medical Record Division of RSU. Kota, 2003) and 10 nurses work in these units in RSU. Purwodadi (Medical Record Division of RSU. Purwodadi, 2003).

The facilities provided by the three hospitals were similar since three hospitals were under the provincial government of Central Java. There were waiting areas for the patients' families to wait outside provided by the hospitals. The waiting areas were equipped with chairs to sit on while waiting, and toilets. In addition, the visiting policies in these ICU and CCU permitted families to visit their relatives in the morning and evening visiting hours from 10.00 to 12.00, and from 17.00 to 19.00, respectively. There was no telephone provided between the waiting room and the nurses' station, and also no religious services were available.

Sample

1. Sample size

Power analysis was used to estimate the number of families and nurses to be recruited in this study. Power analysis is useful to ascertain the significance of the study findings in testing the difference between two group means. There are three components to estimate required sample size, namely alpha (" α ", level of significance), 1-beta (" $1-\beta$ ", the power of the test), and gamma (" γ ", population effect or effect size) (Polit & Hungler, 1999).

The sample size was estimated at the .05 level of significance (the risk of a type I error), the power of .80 (20% risk of committing a type II error), and with an estimated effect size of .40, which is in between a small effect size (.20) and a medium effect size (.50). Values in the range of .20 to .40 are commonly used (Polit, & Hungler, 1999). The effect size of .40 was chosen because there were no known studies about needs of families who had members admitted to critical care units in Indonesia, and also there were limited numbers of nurses in critical care units. The estimated sample size to examine the difference between two means in this study for each group, which was based on the table to approximate sample sizes necessary to achieve selected levels of power as a function of estimated effect size for test of difference of two means, was 98 patients' family members and 98 critical care nurses (Polit, & Hungler, 1999). Based on the finding of this study, the researcher calculated the effect size and revealed the effect size of .82. According to Cohen (1988), the effect size of .82 is considered large effect size and with the sample size of 98, the post-hoc power analysis revealed a power of .99.

2. Sample design

Subjects in this study were recruited using convenience sampling from the five hospitals. Only one member from each family was included in this study, to ensure independence of the sample. However, a number of inclusion criteria were used to control the homogeneity of families and nurses recruited for the study. The criteria of inclusion were as follows:

2.1 For family member of critically ill patient, the inclusion criteria were:

2.1.1 Javanese family member.

2.1.2 Adult aged at least 18 years.

2.1.3 A family member of blood, marital relatives or adoption, or affinity as a significant other. When more than one family member is available, the family is identified itself as having the most intimate relationship and taking the most active role in caring for the patient.

2.1.4 Having relatives admitted to ICU and CCU for acute injury or illness during 24 – 72 hours of hospitalization.

2.1.5 Be willing and able to participate, and communicate with the researcher.

2.2 Nurses' inclusion criteria were:

2.2.1 Be willing to participate in the study.

2.2.2 Having at least 3 months of experience in caring for critical patients, and working in ICU or CCU.

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Instrument

1. Modified Critical Care Family Needs Inventory (MCCFNI)

The original Critical Care Family Needs Inventory (CCFNI) was revised by Leske (1991). The instrument has been used widely with diverse groups, but most of them took place in Western Countries and a few in Asia. As a result, some of the original items might not be appropriate for subjects in this study because of different culture, religion and demographic factors. In this study, the CCFNI was modified based on literature review and focus group discussion related to families' Muslim needs and Javanese culture to make it more fit with Javanese families' culture and religion. The focus group discussion was done on 10 June 2004, on 5 family members and 5 nurses in critical care units of RSU. Prof. Dr. Margono Soekarjo in Purwokerto, Central Java, Indonesia. Detail of focus group discussion result was reported (Appendix F). Then, the instrument was called Modified Critical Care Family Need Inventory (MCCFNI). The modified steps of the instrument were as follows:

1.1 The MCCFNI was modified, added, or deleted based on the revised CCFNI (Leske, 1991), and literature review. The original CCFNI has 45 items. In this study, the MCCFNI has been set up to be suitable for family of critically ill patients in Indonesia. The MCCFNI kept 43 items of CCFNI, and 10 items were added to the instrument related to families' Muslim needs and Javanese culture. The additional items consisted of 3 items on needs for support, 2 items on needs for comfort, 1 item on needs for information, 2 items on needs for proximity, and 2 items on needs for assurance. The total number of items of MCCFNI was 53. This was the English Version I.

1.2 The instrument was translated from English Version I to Indonesian Version I by a bilingual English-Indonesian expert.

1.3 Indonesian-Version I was used to conduct focus group discussion on 5 Indonesian families of critically ill patients and 5 nurses in critical care units (they were included in this study). Both families and nurses were asked to explore family needs related to families' Muslim needs and Javanese culture, and to discuss each item of the instrument (Indonesian-Version I) based on their experiences during waiting or caring for patients in ICU or CCU. Furthermore, families and nurses were asked to modify, reword, add to, or delete each item based on its relevance to family needs. From the focus groups, one new item was added in assurance needs. The items of the questionnaires consisted of 43 original items, 10 additional items, and 1 new item. Finally, the total number of items of the MCCFNI was 54. This was named the Indonesian Version II.

1.4 The instrument was translated from Indonesian Version II into the English Version II by a bilingual English-Indonesian expert

1.5 Three experts examined the content validity of MCCFNI (English-Version II). The first expert on critical care was from the Faculty of Nursing, Prince of Songkla University, Thailand; the second was from the critical care unit of Songklanagarind Hospital, Thailand; the third was from the Faculty of Nursing, Health Polytechnics, Semarang, Indonesia.

1.6 The instrument was revised based on the experts' recommendation. Two items were deleted. There were one item of the original CCFNI (no. 51 of MCCFNI) and one of the additional items (no. 45 of MCCFNI) because of their having the same

meaning as the other items. The MCCFNI consisted of 42 original items of CCFNI, and 10 additional items based on literature review and focus group discussion. The final MCCFNI consisted of 52 items. This instrument was named English-Version III.

1.7 English-Version III instrument was translated from English into Indonesian language (Indonesian-Version III) by an Indonesian-English expert.

1.8 Indonesian-Version III instrument was used to collect data from the subjects.

There were two different forms in the MCCFNI, and each consisted of two parts. Form 1 was a questionnaire for family members and form 2 was a questionnaire for nurses. Part 1 of each form was used to assess demographic data, while part 2 of the two forms was an identical questionnaire used to assess family members' perceptions (Appendix C) and nurses' perceptions (Appendix D) of MCCFNI and two open-ended questions were added in each form to identify any unlisted needs.

1.1 Form 1: Questionnaire for family members of critically ill patients

1.1.1 Part 1: Assessment of family members' demographic data

This part consisted of 8 items to assess the family members' demographic data. They identified the family members' gender, age, religion, educational level, occupation, family income per-month, payment of the illness, and previous experience of having a relative admitted to ICU or CCU.

There were questions to identify patients' demographic data. They consisted of data related to the critically ill patient's: age and gender, medical diagnosis, and duration of admission.

1.1.2 Part 2: Assessment of family members' perceptions of MCCFNI

This part was designed to assess family members' perceptions of family needs with critically ill patients in ICU or CCU during 24 – 72 hours of patients' hospitalization. It consisted of 52 items and divided into five domains which can be presented as follows:

- 1.1.2.1 The needs for support numbered 1 to 17
- 1.1.2.2 The needs for comfort numbered 18 to 25
- 1.1.2.3 The needs for information numbered 26 to 34
- 1.1.2.4 The needs for proximity numbered 35 to 44
- 1.1.2.5 The needs for assurance numbered 45 to 52

The need statements were rated on a 4-point Likert-type scale:

- (1) not important
- (2) slightly important
- (3) important
- (4) very important

The mean score of each item was categorized into four levels, which were 1 = not important, 1.1 – 2.0 = slightly important, 2.1 – 3.0 = important, and 3.1 – 4 = very important. The score for each item was analyzed using three categories, 1 – 2.0 = low perception of family needs, 2.1 – 3.0 = moderate perception of family needs, and 3.1 – 4.0 = high perception of family needs. In addition, mean scores for each subscale were calculated (sum of subscale score divided by number of item in each scale). They were categorized into three levels, 1 – 2 = low perception of family needs, 2.1 –

3.0 = moderate perception of family needs, and 3.1 -4.0 = high perception of family needs.

The total MCCFNI score had a range from 52 to 208 with the highest score of 208 indicating that family members and nurses perceived family needs as highly important, and lowest score of 52 indicating that family members and nurses did not perceive family needs as important. The subtotal scores and total score of family needs' perceptions were described using three levels, low, moderate, and high, obtained by dividing the score by 3. Therefore, the scoring levels are categorized into: (1) low perception of family needs ranging from 52 – 104, (2) moderate perception of family needs ranging from 104.1 – 156, and (3) high perception of family needs ranging from 156.1 – 208

In addition, two open-ended questions were added to identify any unlisted needs not covered in the MCCFNI. Those were (1) any other needs or suggestions related to family needs, and (2) the reason for it.

1.2 Part II The questionnaires for nurses in critical care unit

1.2.1 Assessment of nurses' demographic data

This part contained 5 items to assess the nurses' demographic data. There were the nurses' age, gender, religion, years working in critical care, and highest educational level attained.

1.2.2 Assessment of nurses' perceptions of MCCFNI

This part was designed to assess nurses' perceptions of family needs during 24 - 72 hours of the patients' hospitalization. This questionnaire was identical with one that was used to assess family members' perceptions of family needs. The

interpretation of nurses' responses to each item was identical to that of family members' responses, as described above.

2. Validity and Reliability

The original instrument of Critical Care Family Need Inventory (CCFNI) had been assessed for validity and reliability (Leske, 1991; Dijtsebier, et al., 2000), but to be used in a different culture and setting of population still needed reassessment for validity and reliability.

2.1 The validity of instrument

The content validity of MCCFNI was analyzed by three nursing experts. The first expert of critical care was from the Faculty of Nursing, Prince of Songkla University, Thailand; the second was from the critical care unit Songklanagarin Hospital, Thailand; the third was from the Faculty of Nursing, Health Polytechnics, Semarang, Indonesia. The experts were asked to evaluate content validity of the MCCFNI. They evaluated each item of all subscales of the MCCFNI for relevance, for use of appropriate terms of the construct, and whether the items adequately measured all dimensions of the construct (Polit & Hungler, 1999). Then, the researcher modified the contents based on the experts' recommendations. To make the subjects' understanding of the instrument easier, the Indonesian expert recommended to change "Imam" (name for a prayer leader in Islam) to "Ustadz" (name for a religious leader in Islam), without changing the meaning of the modified item of the MCCFNI.

2.2 The reliability of instrument

A pilot study was conducted to test the reliability of the instrument. Reliability of MCCFNI of the Indonesian version was tested among 20 families and 20 nurses in ICU and CCU in Semarang, who was similar to the sample, using the statistical test of the Cronbach's alpha. The alpha coefficients of the total scale of MCCFNI for family members and nurses were .89 and .93, respectively. The alpha coefficients of the MCCFNI subscales for family members were .72, .63, .75, .76, and .63, and for nurses .86, .70, .67, .86, and .57 for support, comfort, information, proximity, and assurance needs, respectively. Thus the translated instrument demonstrated good internal consistency, and was considered as being of high reliability because of .70 is considered an acceptable coefficient value for a newly developed instrument (Burn & Grove, 2001).

Protection of Human Subjects

1. Permission from the Institutional Review Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand, was obtained.
2. Permission for data collection in this study was obtained from the Directors of RSUP Dr. Kariadi, RSU Prof. Dr. Margono, RSU. Tugurejo, RSU. Kota, and RSU. Purwodadi in Central Java, Indonesia.
3. Subjects who were willing to participate in this study gave oral or written consent to the researcher or research assistants. They were informed that they had freedom to withdraw at any time with no consequences to their family.

4. Subjects were assured that the data would be kept confidential. The researcher protected subject's privacy through anonymity. The researcher used a coding system to identify the subjects. All documents were destroyed at the end of the study. Anonymity and confidentiality of the subjects were protected at all items.

Ethical preparation for subjects

In the case that family members felt sad during the interview or wanted to cry the researcher stopped asking the questions. The researcher or research assistants as nurses gave counseling to them, if it was needed. The researcher or research assistants continued the interview if the family members were ready and willing to proceed. Also, if family members wanted to withdraw, the researcher or research assistants allowed it.

Data Collection Procedures

Data were collected using the method of interviewed for the family members and self-report for ICU and CCU nurses. The procedures for data collection were as follows:

Preparation phase

1. The researcher contacted Dean of the Faculty of Nursing, Prince of Songkla University in Thailand regarding a letter for collecting data at RSUP Dr. Kariadi, RSU. Prof. Dr. Margono, RSU. Tugurejo, RSU. Kota, and RSU. Purwodadi in Central Java, Indonesia.

2. The researcher asked for permission from Directors of RSUP Dr. Kariadi, RSU Prof. Dr. Margono, RSU Tugurejo, RSU Kota, and RSU Purwodadi in Central Java, Indonesia.

3. The researcher informed to the head nurses of intensive care and coronary care units about the research objectives, outcomes, and asked for cooperation.

4. The researcher recruited 2 research assistants based on the following criteria:

4.1 Earned at least a bachelor degree

4.2 Had experience in caring for patients in a critical care unit for at least six months

The researcher briefed the two research assistants about the objectives and outcomes of the study, how to use the questionnaires, and how to do guided interview for the open-ended questions for family members. Detailed steps of the interview were demonstrated to the research assistants and the demonstration reciprocated taken until the researcher was satisfied with the interviewing technique of the research assistants. After finishing the data collection, the completed forms were taken by the researcher. Then, the researcher checked every item of data collected by the research assistants and any doubts were clarified from the family members or from the medical records.

5. The researcher and research assistants reviewed the medical records of the patients. The researcher and research assistants asked the family to identify the primary caregiver who had the most intimate relationship and look the most active role in caring for the patient.

6. The researcher and research assistants asked for a name list of nurses of the each target units in five hospitals who met the inclusion criteria.

Implementation phase:

Two of the hospitals, namely RSU. Prof. Dr. Margono and RSU. Purwodadi, which could not be accessed by the researcher as they required 5 and 2 hours travel, respectively, which the other three hospitals were located in Semarang. The two distance hospitals were done by the two research assistants. The researcher collected data on the three hospitals in Semarang, i.e. RSUP Dr. Kariadi, RSU. Tugurejo, and RSU. Kota in Semarang. The researcher scheduled every two days to collect the data from each of the three hospitals or, if there were new patients admitted to ICU or CCU, the head of nurses in these three hospitals would telephone the researcher to come. The steps of the implementation phase in data collections were as follows:

1. The researcher and research assistants explained to the subjects who were eligible regarding objectives, subject's rights, and outcomes of this study.
2. The researcher and research assistants asked subjects to participate in this study. Subjects who were willing to participate gave oral consent or wrote informed consent (Appendix B) to the researcher or research assistants.
3. The researcher and research assistants read the need statements in the questionnaire to the family members and they were asked to respond to each need statement by rating its importance to them on a scale of 1 (not important) to 4 (very important). They then were asked to respond to the two open-ended questions. The time needed to complete the questionnaire was about thirty to forty minutes. The timing of data collection was during 24 – 72 hours ICU or CCU period after patient

hospitalization. The family members' interviews were conducted in the ICU and CCU waiting rooms. Ninety-eight family members were willing to participate, and they could fully complete the interview. Then, the researcher and research assistants checked and completed all questionnaires after the family members finished answering the questionnaires.

4. The ICU and CCU nurses were asked to fill the questionnaires by themselves during their assigned shift. It was conducted either during the morning or evening shift. The researcher and research assistants checked and completed all questionnaires after the nurses finished answering the questionnaires.

Data Analysis

1. Descriptive statistics

Descriptive statistics were used for presentation of demographic and other characteristics, including families' and nurses' perceptions of MCCFNI. They were described in frequencies, percentages, means, and standard deviations.

2. Inferential statistics

Inferential statistics were used to determine the differences of demographic and family needs' perceptions between patients' family members and nurses. The statistical analyses in this study used the independent t-test. Independent t-test was used for testing differences of in mean perception scores between families and nurses. An additional analysis using Analysis of Variance (ANOVA) was carried out to examine whether demographic data (duration of admission, age, educational level, occupation, family income, payment of the illness, previous hospital experience, and

length of working experience) could contribute to the family members' and nurses' perceptions. In addition, content analysis was used to analyze the open-ended data obtained from the interview process.