

## CHAPTER 5

### Conclusion, Implications, Limitations, and Recommendations

This chapter consists of four sections. Firstly, conclusions are drawn based on the study findings. Secondly, the implications of the study findings regarding nursing practice and nursing administration are described. Thirdly, the limitations of study are indicated, and lastly, recommendations for further study are identified.

#### 5.1 Conclusion

The purposes of this study were to develop the Nursing Performance in Patient Safety Scale for Nurses in Thailand and to evaluate its psychometric properties. The process of instrument development was comprised of six steps based on the steps of DeVellis (2003) consisting of; 1) identification of construct, 2) generating an item pool, 3) determining the format for measurement, 4) reviewing for content validity by experts, 5) determining of reliability, clarity and readability, and 6) field testing for evaluating the item by determination of reliability, item analysis and construct validity.

Three sample groups were included. The first group of five experts reviewed the development item pool for content validity. The second group included 30 nurses for the reliability, clarity and readability of the NPPSS through pre-testing. The third group consisted of 759 nurses who participated in the examination of the construct validity through field-testing.

In the first step, identifying the construct for the Nursing Performance in Patient Safety Scale emerged from the integration of the patient safety came from an analysis of the concept, the nurse role for patient safety and performance concept came from the comprehensive literature reviewed . There are two dimensions and six sub-dimension of nursing performance in patient safety consisting of; 1) nursing task performance in patient safety; including protection, prevention, mitigation, and

promotion, 2) nursing contextual performance in patient safety their include interpersonal facilitation for patient safety and dedication to patient safety.

The second step, generating an item pool for the first draft of the NPPSS were identified from the operation definition of two dimensions and six sub-dimension of nursing performance in patient safety. The first draft of the NPPSS consisted of 141 items with six subscales.

The third step, the format of the NPPSS, a Likert scale format was used with possible responses. The response alternatives range from no practice to highly practice (0 = no practiced, 1 = slightly practiced, 2 = somewhat practiced, 3 = moderately practiced, 4 = most practiced, and 5= highly practiced)

The fourth step, the item pool of the first draft of the NPPSS with 141 items was sent to a panel of five experts to determine the content validity in two rounds. The first round, they suggested changing the response alternatives as a frequency of practiced (0 = never done, 1 = scarcely done, 2 = rarely done, 3 = sometimes done, 4 = often done, and 5= always done). Most of items needed revision for clarity, integrating similar items, and revising the wording of items. The I-CVI of 141 items ranged from 0.2 to 1.00 and I- CVI was .88. The S-CVI/UA was .58, which was less than the criteria (1.00). Inter-rater agreement was 0.79, which was less than the criteria (0.90). Thus, 62 items, which were not relevant to concept, ambiguous, and impractical were deleted from the scale and 79 items were retained. The second draft of the NPPSS was constructed. The second round, the I-CVI of 79 items ranged from 0.8 to 1.00 and I- CVI was .98. The S-CVI/UA was .92, which was less than the criteria (1.00). Thus, six items, which were ambiguous and impractical, were deleted from the scale and 73 items were retained. The I-CVI of 73 items was 1.00 and the S-CVI/UA also resulted in 1.00, which met the criteria whereby I-CVIs should be 1.00 with five experts. Inter-rater agreement was 0.97, which was accepted value (Burns & Grove, 2009). The third draft of the NPPSS was constructed.

The fifth step, determining reliability, clarity and readability by 30 nurses. The finding revealed that all of items were clear (100%) and practical (100%), most of the items understandable (96.7% ), and 100% of nurse agreed that the length of the questionnaire was appropriate. The length of time for filling out the scale ranged from 13 to 80 minutes with mean time of 43.53 minutes. Pre- testing for trying out the

scale's overall internal consistency reliability was .95. The internal consistency reliability for the six subscales ranged from .76 to .97.

The sixth step, field testing for item analysis and construct validity. Eight hundred and seventy six nurses were recruited from regional hospitals and general hospitals from each of the four regions of Thailand. The questionnaires were distributed to a sample 876, and 831 were returned (94.86%). Among 831 returned questionnaires, 72 were incomplete (13.67%). Therefore, 759 (86.33%) were suitable for analysis. Among the 73 items of the third draft of the NPPSS, item means ranged from 4.00 to 4.50 with standard deviation ranging from 0.51 to 0.71. A mean close to the centre of the range of possible scores is desirable. The response options for the each item of the NPPSS ranged from 0-6, so an item mean between 3-5 was desirable. For item variance, an item with a high value for item variances is desirable. For the NPPSS, the results show that the mean of item variances was .23, with the range from .26 to 0.50 which was less than the criteria. Therefore, statement of item indicated in good practices that are less extreme. All the items of 73 items were acceptable and were retained.

The correlation between the score of individual items of the third draft of the NPPSS and 10- SDS found no significance. Therefore, the nurses provided truthful data for nursing performance in patient safety. This means that the nurses provided accurate information for nursing performance in patient safety.

The Cronbach's alpha of total NPPSS with 73 items was .98, and for each of the six subscales ranged from .86 to .94. Among six subscales, the highest Cronbach's alpha value of .94 was the protection subscale. The lowest highest Cronbach's alpha value of .80 was the dedication to patient safety subscale. The Cronbach's coefficient alpha was used as a measure of the internal consistency of the total scale. The alpha value for newly developed instruments should be at least .70 (Nunnally & Bernstein, 1994). Therefore, all items were retained.

The results of item to item correlation indicated that there are some items with low correlation and some items with high correlation. The results of item to subscale correlation indicated that most items correlated over .70 are redundant. Some items met the criteria of item to subscale correlation. However, an item with a high correlation is more desirable than an item with a low value (DeVellis, 2003).

Therefore, only one item which had correlated less than 0.3 was deleted (DP6). Most items of this subscale were retained.

The Cronbach's alpha coefficient of all items was .97. The alpha coefficient if an item was deleted for all items ranged from 0.9724 to 0.9742. The results revealed that when 3 items were dropped from the scale, Cronbach's alpha was increased. Therefore, three items in the third draft of the NPPSS were dropped from the scale. Thus, 70 items were retained for further factor analysis. The fourth draft of the NPPSS was constructed.

Subscale-subscale correlation and subscale-total correlation. The correlation between subscales of the NPPSS ranged from 0.54 to 0.78. The subscale-total correlation as the correlation between each subscale to the overall scale of the NPPSS ranged from 0.86 to 0.95. The results indicate that the values of subscale-subscale correlation and the values of subscale-total correlation were high to very high. Thus, all items were considered to be related to the concept within the subscale and accepted for retention in the NPPSS

The principal component analysis with oblique rotation by direct oblimin was selected because it yielded the best possibility to interpret the factor solution. The criteria for retention of an item included in the components with eigenvalues greater than 1, item loading above .30 on each factor, no or few cross-loading items, determining the number of common factors with scree test, and any factors with fewer than three items (DeVellis, 2003; Hair et al, 2006; Polit & Beck, 2004).

The final draft of the NPPSS was summarized based on the result of third-order factor analysis. The result of exploratory factor analysis indicated 64 items consisting of nine components were extracted with eigenvalues more than one, range from 1.12 to 25.33, and accounting for 63.54% of the total of variance. Percent of variance ranged from 1.74% to 39.58%. However, the scree plot indicated that five factors may be appropriate. In viewing the variance for the five factors, its low value (2.46%). Moreover, communalities of most of the variables were more than .60. Sixty four items retrieved with factor loading ranging from .34 to .90. After factor solution, the overall Cronbach's alpha was .91.

The Nursing Performance in Patient Safety Scale for nurses in Thailand was a self-report instrument using six point Likert scale. This consisted of 64 items. The NPPSS shows an adequate reliability and validity for measuring. The NPPSS will provide information which shows frequency of patient safety performance of individual nurses.

## **5.2 Implications of the findings**

The results of development the Nursing Performance in Patient Safety Scale are important for nursing practice and nursing administration.

The NPPSS was developed for evaluating the level of actual practice for individual nurses for patient safety. Nurses should partake in the scale as a part of a self-assessment in order to improve performance. Human resource managers can use the information obtained from the NPPSS design intervention to ensure nurses strictly adhere to the patient safety guideline and build up a safety culture in the nursing organization. Moreover, nurses can utilize it for self monitoring when providing nursing care to patients and prevent the possible risk. The NPPSS should be presented to nurse administrators and other policy makers for use.

## **5.3 Limitations**

The sub-scale total correlation of the NPPSS ranged from 0.86 to 0.95, which indicated redundancy. Thus items within the subscale may not be distinct and hence they should be further examined. Secondly, the assessing validity was tested using only one group type and thus a test using contrast group validity is recommended in order to arrive at more accurate validity of the NPPSS. Third, this study was also limited in the term of the testing for criterion-related validity because an existing scale was not available to be compared. Thus, this should be further examined.

#### 5.4 Recommendations for further study

The NPPSS provided a strong validity and reliability. This scale needs more testing and should be developed for further study as follows:

- 1) Use other methods for establishing further validity testing of the scale, especially, confirmatory factor analysis in order to test the hypothesis or confirm its framework. As a result, it will be a new quality assessment scale.
- 2) The test of contrasted group validity is recommended in order to estimate a more accurate discrimination function of the NPPSS.
- 3) Use the NPPSS in conjunction with indicators of quality of nursing care for incidents and complications in order to reflect the degree of performance and rate of incident. Therefore, they will reflect an accurate result of patient safety problem.
- 4) The NPPSS was long (64 items) and took the nurses approximately 13-80 minutes to complete. Thus, future researchers should consider whether creation of a shortened version.
- 5) The NPPSS needs more development and research about setting cut-off scores for measures used in research and clinical setting.