CHAPTER 3

Methodology

This chapter describes the methodology of present study which including a description of the research design, setting, population and sample, research instruments, protection of human right procedures, data collection procedure and data analysis procedure.

Research Design

Descriptive correlational design was used to examine the level of nurses⁻ innovative behavior, and to examine the relationships between innovative behavior and factors including job title, educational attainment, knowledge sharing and job autonomy of nurses in the autonomous prefecture people's hospitals, Yunnan province, the P. R. China.

Population and Sample

Population

The target population was 2,357 staff nurses working in the three tertiary hospitals in Yunnan Province, the P. R. China. Dali Bai Autonomous Prefecture People's Hospital (DBAPPH) contained 783 staff nurses, Chuxiong Yi Autonomous Prefecture People's Hospital (CYAPPH) contained 951 staff nurses, and Dehong Dai and Jingpo Autonomous Prefecture People's Hospital (DDJAPPH) contained 623 staff nurses.

Sample

The sample size of the study was calculated by using Taro Yamane's formula (Yamane, 1978).

n= $\frac{N}{1+N(e)^2}$ When n = sample size N = population e = sample error (0.05)

Sample size $n = 2357 \div (1+2357 \times 0.05^2) = 342$

The estimated sample size was 342 nurses. Considering the possible loss of subjects, 20 percent of sample size was added (Naing, Winn, & Rusli, 2006), it represented 68 nurses. Thus, the total number of sample was 410 nurses.

Inclusion criteria: 1) Nurses who had worked at least one year in the selected hospitals. 2) Nurses who directly provided nursing care to patients in Medical, Surgical, Pediatric, Out-patient, Obstetrics-Gynecology departments, Intensive Care Unit, Operating or Emergency Rooms. 3) Nurses who were willing to participate in the study.

Exclusion criteria: Nurses who were nurse managers, assistant chief senior nurses or chief senior nurses and who were on vocation, continuing education were excluded in this study.

Sampling methods: 1) A proportional stratified random sampling method was used to determine the number of nurses from the three tertiary hospitals and nurses from each department of these hospitals. The sample size was 136 nurses from Dali Bai Autonomous Prefecture People's Hospital (DBAPPH), 166 nurses from Chuxiong Yi Autonomous Prefecture People's Hospital (CYAPPH), and 108 nurses from Dehong Dai and Jingpo Autonomous Prefecture People's Hospital (DDJAPPH). 2) Simple random sampling method was used to select nurses who were working in each department. The number of subjects in each department and each hospital was presented in Table 3-1.

Table 3-1

The Number of Subjects in each Department and each Hospital

Hospital	DBAPPH		СҮАРРН		DDJAPPH		Total
Department	Population	Sample	Population	Sample	Population	Sample	sample
Medical	272	47	364	63	236	41	152

Surgical	228	40	263	41	139	25	105
Out-patient	57	10	19	4	23	4	19
OR	45	8	60	11	36	6	25
ER	42	7	77	13	36	6	26
ICU	34	6	50	9	25	4	19
Pediatric	59	10	65	11	76	13	34
OB-GYN	46	8	80	14	52	9	30
Total number	783	136	951	166	623	108	410



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Research Instruments

The research instruments of this study was a questionnaire that consisted of four parts including the demographic data form, Chinese Knowledge Sharing Behavior Scale, Work Autonomy Scale and Nurse Innovative Behavior Scale.

Part I: Demographic Data Form

The demographic data form was developed by researcher. The form consisted of gender, age, marital status, educational attainment, job title, department, years of working, and employment status. The demographic information addressed personal characteristics which contained choice questions and filled-in the blank question items.

Part II: Nurse Innovative Behavior Scale (NIBS)

The Nurse Innovative Behavior Scale was developed by Bao et al. (2012). It contained a total of 10 items with three stages including idea generation (item 1, 2, 3), support obtaining (item 4, 5, 6) and idea realization (item 7, 8, 9, 10). Each item was measured on a 5-point Likert scale (1= never, 5 = always). Possible total scores range from 10 to 50 with the higher scores meant the more innovative behavior. The criteria of score interpretation was approved by Bao et al. (2012), mean score of nurse innovative behavior was interpreted as following:

1.00 - 2.09 indicate a low level
2.10 - 4.09 indicate a moderate level
4.10 - 5.00 indicated a high level

Part III: Chinese Knowledge Sharing Behavior Scale (Chinese KSBS)

The Chinese version KSB scale was developed by Chen and Wu (2015) and was used in this study. There were 19 items on the 5-point Likert scale (1= never, 5 = always). It contained 4 dimensions, namely written contribution (item 1, 2, 3, 4), organizational

communication (item 5, 6, 7, 8, 9), personal interaction (item 10, 11, 12, 13, 14) and communities of practice (item 15, 16, 17, 18, 19). Possible total scores range from 19 to 95 and the higher score indicated the more knowledge sharing behavior. The level of knowledge sharing was divided into four levels by using class interval method (Stevens, 1946) as following:

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- 1.00 1.99 indicate a low level
- 2.00 2.99 indicate a quite low level
- 3.00 3.99 indicate a quite high level
- 4.00 5.00 indicate a high level

Part IV: Work Autonomy Scale (WAS)

Work Autonomy Scale was developed by Breaugh (1985) in order to measure three facets of job autonomy, including method autonomy, scheduling autonomy and criteria autonomy. It consists of nine items (3 items for each facet), and was answered on a 7-point response scale (1 = strongly disagree, to 7 = strongly agree). The total score ranges from 9 to 63. High score indicated a high degree of autonomy at work. The level of knowledge sharing was divided into four levels by using class interval method (Stevens, 1946) as following:

1.00 - 2.49 indicate a low level
2.50 - 3.99 indicate a quite low level
4.00 - 5.49 indicate a quite high level
5.50 - 7.00 indicate a high level

The scale was translated into Chinese by the researcher using translation and backtranslation methods (Waltz, Strickland, & Lenz, 2010) without any modification. There were three steps as followings, 1. The original WAS (English version) was translated into Chinese by the researcher.

2. The Chinese versions of WAS was translated backward to English by a bilingual nursing expert who are blinded to the original English version.

3. The back-translated English version of WAS was confirmed for the equivalent of this translated version with the original version by an English expert.

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Validity of Instrument

Nurse Innovative Behavior Scale (Bao et al., 2012), Chinese Knowledge Sharing Behavior Scale (Chen & Wu, 2015) and Work Autonomy Scale (Breaugh, 1985) were used in present study without any modification. Therefore, the researcher did not test validity in present study.

Reliability of Instrument

Before collecting data, the internal consistency reliability of instruments was tested by distributing questionnaires to 20 nurses who worked at Dali Bai Autonomous Prefecture Hospital of Yunnan Province but they were not sample in present investigation. Cronbach's alpha coefficient of the overall NIBS was .89, for each stage ranged from .59 to .94. Cronbach's alpha coefficient of the overall Chinese KSB was .95, for each dimension ranged from .76 to .89. And Cronbach's alpha coefficient of the overall WAS was .92, for each dimension ranged from .78 to .89 (Appendix D).

Protection of Human Rights

Prior to data collection, the research proposal was submitted to Ethics Committee of Faculty of Nursing, Chiang Mai University, Thailand and selected hospitals in order to obtain approval of the study before data collection. Researcher met directors of nursing department in each hospital. All participants were notified about the study objectives and methods in information sheet. The researcher translated and back translated information sheet and consent form into Chinese. Participants were informed that this study was voluntary, they had the rights to refuse, stop or withdraw the study at any time without being punished or losing any benefits. During research data collection procedure, answer questionnaires might disturb subjects¹ time, thus, the questionnaires were left to subjects for 2 weeks. Moreover, the research consent forms were given to the subjects to assure protection of human rights of the participants. A statement was included in an information sheet to guarantee confidentiality and anonymity of individual responses of individual response. Furthermore, information provided by subjects was only applied for this study. Data provided by participants was remained confidential and anonymous all the time. Only code number was used for questionnaire follow-up. The results of the study was presented as a group without disclosing subjects¹ identifies. All data was kept in researcher's computer secretly. The original questionnaires was kept by the researcher for 3 years. Finally, the consent form was written in assessable Chinese language in order to make sure participants easily understand it. Nurses who voluntarily agreed to take part in this study were asked to sign the consent form.

The information sheet and consent form were translated by using translation and back-translation methods (Waltz et al., 2010) without any modification. There were three steps as followings,

1. The original information sheet and consent form (English version) were translated into Chinese by the researcher.

2. The Chinese versions of information sheet and consent form were translated backward to English by a bilingual nursing expert who was blinded to the original English version.

3. The back-translated English version of information sheet and consent form were confirmed for the equivalent of this translated version with the original version by an English expert.

Procedure for Data Collection

The data was collected by the researcher and two coordinators with following these steps:

1. The researcher submitted the research proposal to the Ethics Committee of Faculty of Nursing, Chiang Mai University to review.

2. After receiving the approval letter from IRB, the researcher asked for information letters of data collection from Dean of Faculty of Nursing, CMU, Thailand.

3. After receiving the approval letters from the Dean of Faculty of Nursing, the researcher met and submitted the research proposal, an information letter of data collection and a copy of data collection questionnaire in Chinese to the each director of nursing department of the three target hospitals respectively for approval to collect data.

4. The researcher introduced the purpose and method of this study to the directors of nursing departments of the three hospitals for obtaining collection permissions.

5. After obtaining permissions from directors of nursing department in these three hospitals, the researcher asked for two coordinators who were nurses at Chuxiong Yi Autonomous Prefecture People's Hospital and Dehong Dai and Jingpo Autonomous Prefecture People's Hospital. Before the coordinators started to distribute questionnaires, the researcher gave them relevant information included research objectives, questionnaires introduction, participant's right, data collection method and process. The researcher was responsible to collect data from Dali Bai Autonomous Prefecture People's Hospital.

6. The researcher and coordinators asked for the name lists of nurses from the director of each nursing department. The researcher randomly selected the samples from the name lists by using random number table, then the researcher and coordinators distributed an information sheet, an informed consent form, a questionnaire and an

envelope for collection to each subject. Subjects were allowed to complete the questionnaires within two weeks. After subjects finished the questionnaire, they put the questionnaire into envelop and sealed it. The informed consent form was folded in half and bounded by stapler. Envelops and informed consent forms was collected separately in a locked box which was provided in front of nursing department office in each hospital. The information sheet was kept by subjects.

7. After two weeks, the researcher returned to the hospital for collecting the questionnaires, the coordinators collected questionnaires from the boxes and sent all questionnaires and informed consent forms to the researcher.

8. Total of 406 questionnaires were returned after three weeks. The researcher checked the completeness of questionnaires and 21 incomplete questionnaires were excluded. The completed questionnaire were 385 with the valid return rate was 93.9%.



Procedure for Data Analysis

Data was analyzed by using Statistics SPSS version 13.0, correlational and multiple regression analysis. The significant level was used at 0.05.

1. The demographic data was analyzed by descriptive statistics, included frequency, percentage, mean and standard deviation.

2. The level of innovative behavior was analyzed by using the mean and standard deviation.

3. Data on knowledge sharing, job autonomy and innovative behavior were tested for normal distribution using Kolmogorov-Smirrnov (KS) test which result reported data was normal distribution. Therefore, Pearson product correlation was used to test the relationships among innovative behavior, job title, educational attainment, knowledge sharing and job autonomy. The significant level was used at 0.05. Correlation coefficient (r) value between .10 and .29, was considered as a weak relationship, .30 to .50 was considered as a moderate relationship and value > .50 was considered as a strong relationship (Burns & Grove, 2012). Enter multiple regression analysis was used to explore factors of predicting innovative behavior. Assumptions of multiple regression were checked before performing the multiple regressions analysis. The results showed data were normal distribution, linearity, non-multicollinearity and homoscedasticity which met the assumption of multiple regression analysis.

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