CHAPTER 3

METHODOLOGY

An exploratory descriptive design was used to answer the research questions. Research was conducted using a two-phase approach. The methodology section covers population and sample, research instrument, psychometric test on the instrument, data collection procedures, protection of human subjects and procedures for data analysis. Each of the phases is described below.

Phase One

In first phase, a structured interview and case notes were conducted with a sample of post-operative cesarean patients in a private hospital in eastern Thailand. The aims of this phase was to describe cesarean women's perceived information and factors associated with decision making regarding cesarean section.

Population and Sample

The 80 post-cesarean sample for this study was drawn from a population of women who had cesarean section without medical indications and who were admitted to the post-cesarean unit of the hospital between November 1998 and January 1999.

Purposive sampling was used for recruiting the sample. The criteria for the recruitment of the sample were: (1) lack of medical indication of cesarean section, (2) without elderly-primigravidarum (age 35 years or over), (3) no known history of

systematic disease or concomitant to this pregnancy, and (4) willingness to participate.

Research Instrument

In this phase, a structured interview was used to collect the data. The interview was developed on the basis of a review of the literature and clinical experience.

Data Collection

Data was collected on personal factors and treatment received after cesarean section. The survey instrument (Thai original and English translation) is included in Appendix A.

Steps followed in the Data Collection Procedure included the following:

1. The investigator gained permission to collect data by submitting the survey instrument to the director of the private hospital where the survey was conducted and the head nurses of the post-cesarean unit of that hospital.

2. The investigator identified the sample using the inclusion criteria from the postnatal record sheet.

3. The investigator introduced herself to the participant (see Appendix B Protocol Contact), informed the subject about the purpose of study, the nature, rationale, and requirement of the study, and asked if the subject were willing to participate asked for permission to review their chart reviews. Their signature was then obtained on the consent form.

4. The interview was conducted within 48 hours after post-cesarean while the client was alert and conscious.

5. Note taking was done during the interview.

6. Subjects were thanked, but not remunerated, for their participation in the study.

Data Analysis

The data from the first phase was analyzed using content analysis and descriptive statistics. Frequency and percentage of each category of response for each item were computed.

Results

Cesarean mothers were asked to provide demographic data and to review a list of key factors which might have affected their decision to have a cesarean birth and to check all that applied to them. The results are shown in Table 1.

Table 1

Reasons for Selection of Cesarean Section without Medical Indications (n=80)

Characteristics	Frequency	Percentage
Fear of labor pain	31	38.75
Fear of labor pain and safety for both baby and mother	6	7.50
Fear of labor pain and convenience for scheduling time of delivery	8	10.00
Fear of labor and dystocia	7	8.75
Fear of labor and avoidance of exhaustion	3	3.75
Fear of labor and avoidance of stretching of vaginal tissues	7	8.75
Avoidance of stretching of vaginal tissues	6	7.50
Safety for baby	2	2.50
Safety for both baby and mother	6	7.50
Good luck for baby	4	5.00

The summary of the first phase study demonstrated that post-cesarean mothers had made their own decision regarding childbirth method. These findings must be interpreted in light of fact that the majority of cesarean mothers were age 26-34 years, had a higher educational level, were employed, had monthly income more than 20,000 Baht, and were part of a nuclear family (Table F1). In addition, post-cesarean mothers generally believed that cesarean section was very safe and convenient in terms of scheduling time of delivery (auspicious days), and good for their health during the intra-partum and postpartum period. On the other hand, they believed that vaginal delivery was painful, would damage their sexual organs and they were uneasy about having and unknown time of delivery. The findings of this study contributed to the development of the Perceptions of Cesarean Section (POCS) questionnaire employed in phase two. Details of the Phase Two procedure is provided below.

Phase Two

The second phase study was conducted in prenatal clinics in two hospitals in Bangkok, Thailand, one private and one government. Two types of hospital prenatal clinics were selected in order to include women of different socio-economic backgrounds.

Participating hospitals were identified by convenience and remained anonymous. The pregnant women were approached while attending prenatal clinics and were asked at that time to participate in the study. A private location at the hospital was used to collect data while the pregnant women were waiting to see their doctors.

Population and Sample

The target population for the study was prenatal women receiving care at the two selected hospitals. The appropriate sample size was assigned on the basis of a 95 percent confidence level. A sample size was drawn from two hospitals based on a binomial probability distribution using a formula recommended by Lwang, Tye, and Ayeni (1999) (Appendix C). The average rate of cesarean section among pregnant Thai women giving birth in various Thai hospitals ranged from 22 to 48 percent (Charachabul, Heravuta, & Udomsubpayakul, 2000). Based on the formula, for a rate of 22 percent, the sample size (N) should be 263.68, and for a rate of 48 percent, N should be 383.55 (Appendix C).

To insure a minimum confidence level of 95 percent, a sample size of 384 would be required. To insure meeting that number of cases, i.e., to accommodate the

potential loss of respondents who refused to complete the questionnaire or who skipped a large number of questions, the sample size employed in this study was increased by 15 percent (60 cases) for a total of 434 cases (Appendix C).

The following criteria was used to select the pregnant women to participate as study subjects:

1. In the third trimester or more than 32 weeks of gestational age before delivery.
2. No history of complications during pregnancy
3. Free of psychological or mental problems
4. Had already made a decision about mode of delivery preferred
5. Able to read and write in the Thai language
6. Without medical indication for cesarean section
7. Without age at elderly-primigravidarum (age 35 years or over)

Research Instrument

The second phase of this study employed a questionnaire as the method of collecting data. The questionnaire was developed on the basis of a review of the literature and the results of first phase structured interviews.

Three instruments were used in the second phase of this investigation to describe the subjects, their personal factors, decision making style, and their perceptions of cesarean section. (Appendix D) The instruments used for data collection were the following:

1. Personal Data Sheet (PDS) developed by the investigator including decision regarding method of delivery.

2. Perceptions of Cesarean Section instrument (POCS) development by investigator.

3. Decision Making Style questionnaire (DMS) as developed by Scott and Bruce (1995).

The Personal Data Sheet developed for this project to describe the sample includes an 18 item instrument to elicited data to describe subject variable including age, educational level, occupation, family income, parity, health insurance, home location, etc.

Perceptions of Cesarean Section (POCS) questionnaires were measured using a 49 item questionnaire using the same type of 5-choice Likert type scales (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree). For negative questions, the values of ratings were inverted for data analysis. POCS questionnaires were divided into four modes: susceptibility of cesarean section (16 items), seriousness of cesarean section (8 items), benefits of cesarean section (15 items), and barriers to cesarean section (10 items). After evaluating the construct validity (the detail would be explained below), the remaining items (46 items) were susceptibility of cesarean section (12 items), seriousness of cesarean section (12 items), benefits of cesarean section (11 items), and barriers to cesarean section (11 items). Results of this instrument were used to condense perception results into one of two categories: high or low (norm referenced). That is, scores higher than the mean for that perceptions were defined as a positive perception and scores lower than the mean for that perceptions were defined as a negative perception. The mean scores of

susceptibility, seriousness, benefits barriers and overall perceptions were 39.27, 34.86, 37.82, 29.46, and 141.50, respectively.

The Decision Making Style instrument (DMS) used in this project had respondents select from a 5-choice Likert type scales (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree). For negative questions, the values of ratings were inverted for data analysis. This scale was used for each of five styles (rational DMS, intuitive DMS, dependent DMS, avoidant DMS, and spontaneous DMS). For negative questions, the each decision making style consisted of five items for a total of 25 questions. The original English language DMS was translated into Thai then back translated into English following the technique by Chapman & Carther (1979) and Jones & Kay (1992) as follows:

1. The instrument was translated into the Thai language by the investigator. Items were translated with consideration given to familiarity and colloquialisms in the Thai language.

2.The Thai language instrument was reviewed for meaning and back translated by another translator, who was not in the health profession (Appendix E).

3.Items with apparent discrepancies between the two language versions were modified and the back translation cycle repeated until the investigator and back translator were satisfied that the translation would convey the correct meaning to Thai subjects.

Results of this instrument were used to condense decision making results into one of two categories: high or low (norm referenced). That is, scores higher than the mean for that style were defined as a high level of decision making and scores lower

than the mean for that style were defined as low level decision making. The mean scores of rational DMS, intuitive DMS, dependent DMS, avoidant DMS and spontaneous DMS were 21.27, 15.05, 17.07, 13.32, and 12.74, respectively.

Psychometric Test on the Instruments

According to decision making style, and perceptions of cesarean section measures, essentially three steps were needed:

1. Developing items (Item pool), the investigator follow a variety of paths e.g., tap the clinical experience, the relevant literature, and/or use more inductive methods, such as interviewing respondents about the concept and how it affects their lives.

2. Item construction and response categories e.g., the number of items that should be constructed for any scale.

3. Scaling, e.g., summated, as well as scales that are modifications of these basic forms (Brink & Wood, 1998).

Methodological criteria: many analyses have been insistent that strict procedures be adopted in construction, use of decision making style and perceptions of cesarean section measures, and that such measures meet exacting methodological standards. Those psychometric properties are validity, reliability and Item Analysis (Friedenberg, 1995). Validity is a multi-faceted concept. Then, several types of validity are described as follows: face validity, content validity, criterion-related validity, and construct validity. In this study, reliability, Item Analysis, and construct validity were used to evaluate the two measurements. Addition to, content validity was only used to evaluate the perceptions of cesarean section measurement.

Validity and Reliability

Content validity of the perceptions of cesarean section instrument was approved by six experts: one obstetric nurse specialist, two obstetric nurse instructors, one obstetrician, one behavioral scientist, and one behavioral nurse. These experts evaluated the appropriateness of the questions and the inclusiveness of the response alternatives. Each item of the questionnaire was rated separately for its relevance in representing the topics of interest using item rating scales (Appendix E). Inter-rater agreement on the items used in the questionnaire was calculated by adding the number of agreements between each pair of the reviewer all items rated 1 or 2 by both raters, plus all items rated 3 or 4 by both raters, and dividing by the total number of items (Davis, 1992). A score was calculated for each pair of reviewers and the average score was analyzed. A score for inter-rater agreement greater than 0.70 was considered acceptable. In this study, the overall inter-rater agreement was 0.98 and inter-rater agreement for all individual items employed in the survey was greater than 0.70 (Appendix E). Items with an inter-rater agreement below 0.70 were eliminated from the survey instrument. In addition, a Content Validity Index (CVI) (Davis, 1992) was employed to evaluate the degree of agreement between sets of two expert reviewers on the content validity of all items. The scores were calculated for each pair of reviewers and the average score was analyzed. The overall CVI was 0.93 (Appendix E).

After revising the questionnaires based on the external evaluation described above, the two instruments (POCS and DMS) were tested with 20 subjects having generally the same characteristics as the overall population of pregnant women

patients. The questionnaires were calculated for reliability utilizing Cronbach's Alpha Coefficient (Brink & Wood, 1998).

The psychometric analysis of the instrument was conducted using the larger sample of women to make use of the increased statistical significance possible with a larger sample.

The calculated reliability for the questionnaires is as follows (Table 2 and Table 3):

Perceptions of Cesarean Section questionnaire overall = 0.83

Susceptibility part = 0.88

Seriousness part = 0.81

Benefits part = 0.69

Barriers part = 0.55

Decision Making Style questionnaire overall = 0.86

Rational DMS part = 0.65

Intuitive DMS part = 0.71

Dependent DMS part = 0.56

Avoidant DMS part = 0.81

Spontaneous DMS part = 0.86

As a double check, after completion of the research, reliability testing was repeated with the 434 subjects included in this study. The results were:

Perceptions of Cesarean Section questionnaire = 0.94

Susceptibility part = 0.83

Seriousness part = 0.78

Benefits part = 0.83

Barriers part = 0.64

Decision Making Style questionnaire = 0.90

Rational DMS part = 0.65

Intuitive DMS part = 0.74

Dependent DMS part = 0.73

Avoidant DMS part = 0.74

Spontaneous DMS part = 0.80

Item Analysis of Perceptions of Cesarean Section

The remaining 46 items measuring POCS were retained for the item analysis. Cronbach's Alpha was 0.89. Corrected items-total correlation was calculated. In this step, three items that depressed the reliability as measured by Alpha coefficient were deleted. The inter-item correlation matrix was examined to identify items that were possibly redundant. Inter-item correlation ranged from 0.01 to 0.71, indicating no redundancy among these items. Results are shown in Table 2.

Table 2

Descriptive Statistics and Reliability of Perceptions of Cesarean Section (N = 434)

Variable	No. of items	Possible Range	Actual Range	Mean	SD	Alpha
Perceptions of cesarean section (POCS)	**46**	**46-230**	**58-209**	**141.50**	**16.24**	**.94**
Susceptibility POCS	12	12-60	16-59	39.27	5.83	.83
Seriousness POCS	12	12-60	14-58	34.86	6.58	.78
Benefits POCS	11	11-55	14-54	37.82	5.74	.83
Barriers POCS	11	11-55	11-55	29.46	6.23	.64

Item Analysis of Decision Making Style Instrument

The results of item analysis indicated that no item depressed the reliability as measured by the Alpha coefficient. Cronbach's Alpha of the total score was 0.90. Inter-item correlation ranged from -0.01 to 0.60 indicating that redundancy among these items was not a problem in this study. Results are shown in Table 3.

Table 3

Descriptive Statistics and Reliability of Decision Making Style

Variable	No. of items	Possible Range	Actual Range	Mean	SD	Alpha
Decision making (DMS)	**25**	**25-125**	**41-116**	**79.46**	**11.29**	**.90**
Rational DMS	5	5-25	7-25	21.27	2.42	.65
Intuitive DMS	5	5-25	5-25	15.05	3.82	.74
Dependent DMS	5	5-25	5-25	17.07	3.76	.73
Avoidant DMS	5	5-25	5-25	13.32	3.99	.74
Spontaneous DMS	5	5-25	5-25	12.74	4.11	.80

Factor Analysis

Construct validity of two instruments were evaluated using Principle Component Factor Analysis: (1) perceptions of cesarean section, and (2) decision making style. A maximum likelihood extraction was used with the direct oblimin rotation. An oblique rotation was selected for several reasons. According to Kim and Mueller (1978), an oblique rotation is more general than an orthogonal rotation in that it does not arbitrarily impose the restriction that factors be uncorrelated. After oblique rotations are calculated and if the resulting factors are orthogonal, one can be sure that orthogonality is not an artifact of the method of rotation. Correlations among the factors are assumed to be explained by higher-order factorial causation.

Factor Analysis of Perceptions of Cesarean Section

Based on the Factor Analysis calculations, the remaining forty-six items were retained which together explained a total of 37.5% of the variance. The four meaningful factors were: 1) susceptibility (composed of 12 items), 2) seriousness (12 items), 3) benefit (11 items), and 4) barriers (11 items). Construct validity of the instrument was analyzed as shown in Tables 4 and 5.

Table 4

Principle Component Analysis of Perceptions of Cesarean Section

Factor	Communality (h^2)	Eigen value	% of Variance	% of cumulative variance
1	.38357	7.51161	15.3	15.3
2	.39397	4.72871	9.7	25.0
3	.34362	4.08275	8.3	33.3
4	.48930	2.07474	4.2	37.5

Table 5

Loading Factor and Communality of Perceptions of Cesarean Section

Factor	Loading Factor	Communality	Factor	Loading Factor	Communality
Factor 1			**Factor 2**		
POCS 4	.67	.49	POCS 16	.70	.50
POCS 5	.64	.46	POCS 23	.66	.52
POCS 7	.63	.53	POCS 24	.65	.45
POCS 3	.58	.34	POCS 11	.64	.42
POCS 2	.58	.40	POCS 15	.63	.41
POCS 6	.55	.38	POCS 22	.62	.40
POCS 9	.50	.38	POCS 13	.62	.44
POCS 8	.50	.43	POCS 21	.58	.40
POCS 18	.48	.34	POCS 12	.54	.33
POCS 19	.47	.33	POCS 10	.48	.31
POCS 1	.46	.38	POCS 14	.45	.36
POCS 20	.45	.35	POCS 17	.45	.35
Factor 3			**Factor 4**		
POCS 31	.69	.47	POCS 35	.70	.51
POCS 33	.65	.52	POCS 41	.68	.52
POCS 30	.61	.39	POCS 40	.65	.44
POCS 34	.60	.42	POCS 38	.64	.43
POCS 25	.59	.35	POCS 36	.64	.44
POCS 28	.58	.37	POCS 39	.64	.43
POCS 26	.56	.33	POCS 37	.55	.42
POCS 29	.49	.37	POCS 32	.52	.38
POCS 43	.45	.28	POCS 27	.48	.45
POCS 48	.44	.20	POCS 45	.40	.26
POCS 49	.40	.17	POCS 44	.39	.24
Factor 5					
POCS 47	*	.14			
POCS 46		.11			
POCS 42		.03			

*Note: No loading factor data as Factor 5 was dropped.

Factor Analysis of Decision Making Style (DMS)

In the case of DMS, five factors were extracted and rotated. Items that loaded above 0.4 and had clear theoretical relevance were included in the final factors. In final solution, the Factor Analysis yielded the same twenty-five items and explained a total of 51.5% of variance. The five meaningful factors were: 1) rational DMS, 2) intuitive DMS, 3) dependent DMS, 4) avoidant DMS, and 5) spontaneous DMS.

In addition, construct validity of the instrument was analyzed. Each item was found to have a factor loading greater than 0.3, and Eigen value greater than 1.3 as shown in Table 6 and Table 7.

Table 6

Principle Component Analysis of Decision Making Style

Factor	Communality (h^2)	Eigen value	% of Variance	% of cumulative variance
1	.27135	5.51847	22.1	22.1
2	.44128	2.63634	10.5	32.6
3	.53850	1.83822	7.4	40.0
4	.57550	1.48899	6.0	45.9
5	.39800	1.39233	5.6	51.5

Table 7

Loading Factor and Communality of Decision Making Style

Factor	Loading Factor	Communality	Factor	Loading Factor	Communality
Factor 1			**Factor 2**		
DMS 4	.72	.57	DMS 10	-.72	.57
DMS 3	.72	.54	DMS 9	-.69	.53
DMS 2	.65	.44	DMS 6	-.68	.51
DMS 5	.59	.40	DMS 8	-.67	.48
DMS 1	.46	.27	DMS 7	-.64	.49
Factor 3			**Factor 4**		
DMS 15	-.75	.57	DMS 18	.73	.55
DMS 14	-.71	.54	DMS 17	.71	.54
DMS 13	-.70	.51	DMS 19	.69	.54
DMS 12	-.64	.44	DMS 16	.63	.44
DMS 11	-.63	.48	DMS 20	.61	.40
Factor 5					
DMS 24	.86	.75			
DMS 23	.85	.74			
DMS 21	.79	.69			
DMS 22	.76	.59			
DMS 25	.40	.27			

Data Collection Procedures

Data collection were collected in the following sequence:

1. Asking for permission to collect data by submitting the document from the Graduated Studies, Chiang Mai University to the directors of government hospitals, private hospitals, and head nurses of the prenatal clinics of each hospital.

2. Identifying the sample according to the inclusion, and excluding criteria from the prenatal record sheet.

3. Introducing the investigator to the participant (Appendix B Protocol contact).

4. Investigator informing the subjects about the purpose of study, the nature, rationale, and requirements of the study.

5. Investigator questioning the subjects regarding willingness to participate and obtaining their signature on the consent form, and asking for permission for chart review.

6. Filling out questionnaires during 30 to 45 minutes in the morning during a clinic visit while the subjects were waiting for booking or receiving drugs.

8. Thanking subjects for their participation in the study.

Protection of Human Subjects

Prior to implementation of the large-scale study, protection of the rights of human subjects was assured through review by the Human Research Institution of the hospital. In addition, permission to reach subjects in the hospital was obtained from the director of hospital. An information consent letter (Appendix B) was attached to the research instruments and read to each subject prior to the interview.

For research with human subjects, ethical considerations regarding protecting subjects from potential costs of research and respecting subjects' rights to self-determination and privacy were considered (Polit & Hungler, 1994). The subjects were able to refuse participation and could withdraw from the study at any time prior to completion of the interview, and participation or nonparticipation did not affect their care. Participation involved about 15 to 30 minutes of the subject's time to answer the questionnaires. Each subject was asked to fill out three questionnaires during a prenatal clinic visiting during her last trimester of pregnancy. Permission to review the subject's chart was also requested. Confidentiality of all information was maintained. No identifying markers were placed on the instruments. All data was analyzed and reported as group data. There was no cost to the subject for participation.

Procedures for Data Analysis

To answer the research questions and to test the hypotheses, data was analyzed using the SPSS Version 10.0 computer software package (Norusis, 1990). Descriptive and inferential statistics were used. The level of significance for this study was established at .05.

Data Analysis using SPSS for Windows

1. Following data entry screening for accuracy, descriptive statistics including frequency, percentage, mean, and standard deviation were used to describe the personal data.

2. Exploratory Factor Analysis was performed to explore construct validity of each instrument.

3. Scores on perceptions of cesarean section and decision making style were analyzed using means and stand deviation. Chi-square was developed to examine the univariate relationships between variable categories and modes of delivery.

4. Multiple logistic regression analysis was employed to examine the prediction of decision making regarding cesarean section in pregnant women based on the three factors.