# CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Questions

1. What are the perceptions of faculty members, in training residents and program graduates towards the Family Medicine Residency Training Program?

2. What are the suggestion of the faculty members, in training residents and program graduates to improve the Family Medicine Residency Training Program?

3.2 Objectives

1. To study perception of the faculty members, in training residents and program graduates toward the program.

2. To study what the faculty members, in training residents and program graduates suggest to improve the program.

3.3 Conceptual Framework
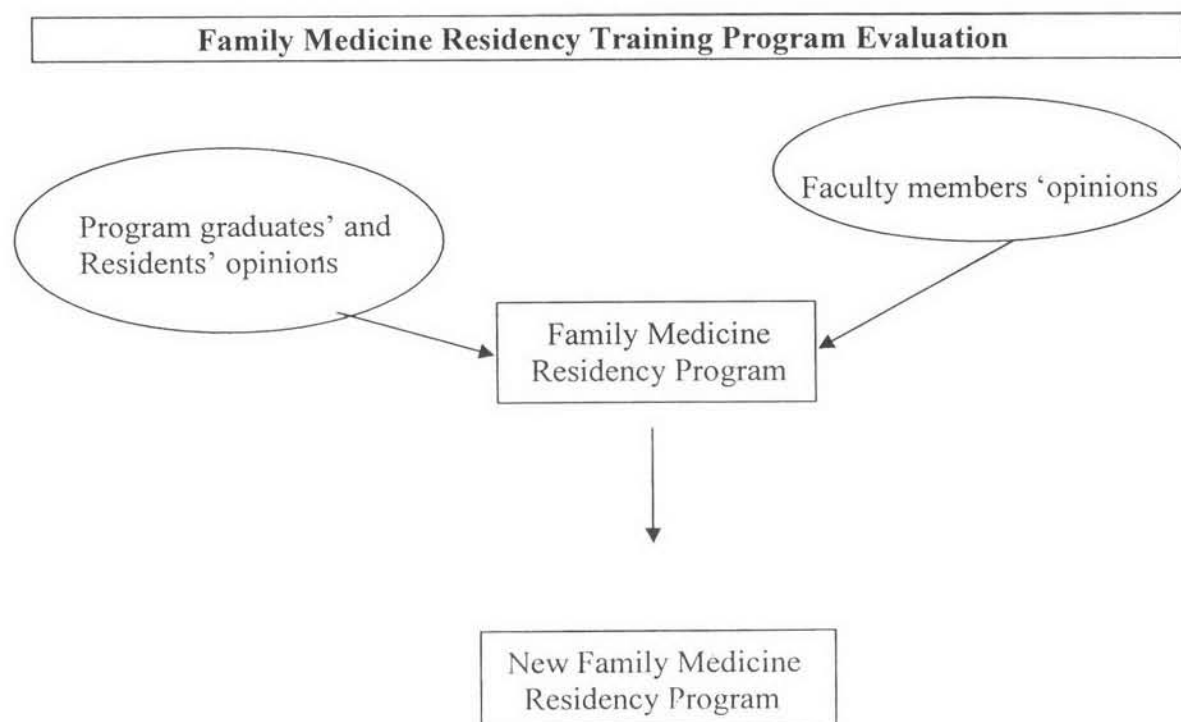
3.4 Operational Definition

- *Family Medicine Residency Training Program:* Academic discipline associated with the specialty of family practice.

- *Evaluation:* Is the weighing of assessment information against some standard, such as the health education foundational objectives, in order to make a judgment or decision. This may then lead to other decisions and action by the teacher, student, or parent [11].

3.5 Research Design

The research design was a cross-sectional descriptive study.

3.5.1 *Population and Sample*

Target Population: finite population

- Fifty-two faculty members who teach the family medicine residents in Phramongkutklao Hospital in the year 2006.

Table 3.1: Number of faculty members who teach the family medicine residents in each department

Department of	Number of faculty members
Medicine	10
General Surgery	5
Obstetrics and gynecology	3
Pediatrics	5
Out Patient	12
Emergency	2
Psychiatrics	2
EYE	2
ENT	2
Rehabilitation	4
Orthopedic	3
Radiology	2

- Eight residents who are trained in family medicine field at Phramongkutklao Hospital in the year 2006.

- Eighteen program graduates who graduated from Phramongkutklao Hospital from the year 2003 to 2006.

Eligibility Criteria

Inclusion criteria:

1. Faculty members who are responsible for family medicine teaching-learning process in Phramongkutklao Hospital in the year 2006

2. Residents who are trained in family medicine field in Phramongkutklao Hospital in the year 2006.

3. Program graduates who graduated from Phramongkutklao Hospital from the year 2003 to 2006.

Exclusion criteria:

1. Faculty members who are absent from teaching-learning process while the process of data collection is performed.

2. Residents who are from other family medicine institute who are currently trained at Phramongkutklao Hospital as elective group in the year 2006.

3. Program graduates who are from other family medicine institute who were currently trained at Phramongkutklao Hospital as elective group from the year 2003 to 2006.

3.5.2 Tool and Application

Questionnaires are used as an instrument for data collection

3.5.2.1 Constructing the Questionnaire

In this study, the framework for constructing the format of questionnaires was based upon a review of the family medicine literatures and *post internal survey meeting [21]*, which was conducted with seven faculty members and residents by the researcher

To determine the categories to use in close – ended questions, pilot test the questions by asking it in open form of a small number of respondents. Their answers are used to develop the categories for closed - ended items.

The questionnaires are consisted of 3 sections

- *Section 1:* General section for identification of respondents. It is consisted of four items asking about sex, working status, experience in working as family physician and academic background.

- *Section 2:* The second section is the close-ended questions which are designed to assess the opinions of the faculty members and residents about the training program.

Details of the domains [22] from the post internal survey meeting which construct the questionnaires as shown in the table 3.2

Table 3.2: The domains, items and number of items

Domains	Items	Number of items
1. Mission and objectives	1	1
2. Training content	2,3,20,22	4
3. Assessment methods	4-8	5
4. Trainees	9-12	4
5. Appointment policy of Faculty members and residents	14-17	4
6. Training setting and educational resources	13,18,19,21,25-27	7
7. Evaluation of training process	23,4,28	3
8. Continuous renewal	29,30	2

Each item in section 2, a response will be requested on a Likert 5-point scale.

    1 = Strongly disagree

    2 = Disagree

    3 = Undecided

    4 = Agree

    5 = Strongly agree

- *Section 3:* open – ended part

3.5.2.2   The Plan for Experts Review

Ten experts in the area of family medicine education were requested to evaluate the initial items. They were the faculty members that were actively involve in the area of family medicine. The names of the ten experts were listed in the Appendix A. The questionnaire was delivered by hand to each expert. Enclosed in the envelope were: 1) cover letter explaining the objectives of construction and usage of questionnaire and the evaluation work requested 2) the full research proposal and 3) the first draft questionnaire. The items were evaluated in terms of content validity, internal consistency, language, wording and lay out of the questionnaire. The experts were also asked to rate a score for each item as described below.

Statistics for Questionnaire Development

The questionnaire developed for this study had undergone two statistical tests for determining its validity and reliability. The measurements were performed in the pre-testing step. The areas tested included content validity and internal consistency.

Test for Content Validity

The Item Correlation method was chosen to test the content validity of the questionnaire. It was chosen because the questionnaire constructed was sent to the experts to check the content validity.

The meanings of score given by the experts were as follow

+ 1 = relatively valid item

0 = not sure

- 1 = relatively irrelevant

The obtained scores from each item were calculated to demonstrate the validity to each item. The formula of the Item Correlation used was as followed:

$$IC = \frac{\sum R}{N}$$

Where   R = total score of that item

N = number of experts

The acceptable value was IC that was equal or higher than 0.5[23, 24]. The results of this validity testing are shown in Table 3.3

Table   3.3: Results of content validity testing of the questionnaire

Item number	1	2	3	4	5	6	7	8	9	10	IC
1	1	1	1	1	1	1	1	1	1	1	1.00
2	1	-1	0	1	-1	0	0	1	0	1	0.20
3	0	-1	0	0	0	1	0	1	0	0	0.10
4	1	1	0	1	1	1	1	1	1	1	0.90
5	1	0	1	0	1	1	1	1	1	1	0.80
6	1	1	1	1	1	1	1	1	1	1	1.00
7	0	0	1	1	0	1	1	1	1	1	0.70
8	1	1	1	1	1	1	1	1	1	1	1.00
9	1	1	1	1	1	1	1	1	1	1	1.00

Table 3.3: Results of content validity testing of the questionnaire

Item number	1	2	3	4	5	6	7	8	9	10	IC
10	1	1	1	1	1	1	1	1	1	1	1.00
11	1	1	1	1	1	1	1	1	1	1	1.00
12	1	1	1	1	1	1	1	1	1	1	1.00
13	1	0	1	1	1	1	1	1	1	1	0.90
14	1	0	1	1	1	0	1	0	1	1	0.70
15	1	1	1	0	1	0	1	0	1	1	0.70
16	1	1	1	0	1	1	0	1	1	1	0.80
17	1	1	1	1	1	0	1	0	1	1	0.80
18	1	1	1	1	1	1	1	1	1	1	1.00
19	1	1	1	1	1	1	1	1	1	1	1.00
20	1	1	1	1	1	1	1	1	1	1	1.00
21	1	1	1	1	1	i	1	0	1	1	0.90
22	0	1	0	1	0	1	1	0	1	1	0.60
23	1	1	0	1	1	0	1	1	1	1	0.70
24	1	1	1	1	1	1	1	1	1	1	1.00
25	1	1	1	1	1	1	1	1	1	1	1.00
26	1	1	1	1	1	1	1	1	1	1	1.00
27	1	1	1	1	1	1	1	1	1	1	1.00
28	1	0	0	1	1	1	1	1	1	1	0.80
29	1	1	1	1	1	1	1	1	1	1	1.00
30	0	1	0	1	0	1	1	0	1	1	0.60

The result from item correlation showed 15 items that reached perfect agreement, 13 items passed acceptable level, whereas 2 items did not reach satisfactory results. The item that yielded most conflict result was item 3 (IC = 0.10) which 2 experts agreed, 1 experts disagreed and the rest were not sure. The sentence in the statement "Skill and attitude of doctor-patient relationship should be taught" yield the fact not the opinions of the respondents. After discussion about the problem, wording was improved. (Appendix B)

Another item that received the second lowest score was item 2 (IC = 0.20) which 4 experts agreed, 2 experts disagreed and the rest were not sure. The sentence in the statement "Primary care should be taught" yield the fact not the opinions of the respondents after discussion about the problem, wording was improved. (Appendix B) Apart from the statistical results, written comments were given for many items. Some comments were given to improve the clarity, or to make the sentences more easily

understood or to correct the translation of some words and some comments suggesting translating technical terms into Thai language and putting the original English technical terms in the bracket after the Thai version. All of these were taken into consideration and were discussed with experts. Improvement that had been done is shown in Appendix B.

Test for Internal Consistency Reliability

The internal consistency method using Cronbach's coefficient Alpha was chosen to test the reliability of this questionnaire. The technique requires only a single administration whereas Test-retest and Alternative-form methods require two testing situations.

The formula of the alpha coefficient is as followed:

$$\propto = \frac{n}{n-1} \left\{ \frac{1 - \sum Si^2}{S_t^2} \right\}$$

Where n = No. items

$$Si^2 = \frac{\sum (x - \overline{x})^2}{n-1} = \text{item Variance}$$

$$S_t^2 = \frac{n\sum xt^2 - (\sum \overline{x} t)^2}{n(n-1)} = \text{total Variance}$$

The acceptable value is: $\propto$ that is equal to or higher than 0.8[23, 24]

The data collected from pretest population as described previously were analyzed by using computer software program SPSS for Windows version 11.5 to calculate the Cronbach's coefficient alpha. The calculation revealed the alpha coefficient to be 0.8011. The details of this reliability testing are shown in table 3.4. The reliability test yielded satisfactory results. Overall reliability as tested by Cronbach's Coefficient Alpha was higher than acceptable level.

Table 3.4 Results of reliability testing of the Questionnaire

Reliability
****** Method 1 (space saver) will be used for this analysis ******

R E L I A B I L I T Y   A N A L Y S I S - S C A L E   (A L P H A)
Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
OBJECT	93.2000	245.7333	.7892	.7751
SKILL	93.4000	248.0444	.6370	.7799
PRIMARY	93.3000	270.4556	.2129	.7996
FACTUAL	94.2000	274.8444	.1211	.8035
FREQUENC	93.3000	296.0111	-.3182	.8184
MCQ	93.3000	263.1222	.2813	.7974
INTERVIE	93.5000	252.7222	.4993	.7861
CRITERIO	93.6000	270.7111	.2084	.7998
PROFESS	93.7000	265.5667	.3518	.7939
RURAL	93.2000	261.9556	.4139	.7912
GP	93.2000	242.6222	.8641	.7717
RES.NUMB	93.4000	275.8222	.0876	.8057
ADVISOR	93.5000	268.5000	.2470	.7982
RES.WORK	93.3000	283.1222	-.0390	.8085
FACUL	93.4000	283.1556	-.0416	.8092
CRITERIA	93.2000	269.5111	.2900	.7963
ACADEMIC	93.5000	263.3889	.4022	.7919
CASE	93.2000	267.7333	.2859	.7965
ELECTIVE	93.2000	257.5111	.5923	.7852
TEAMWORK	93.3000	293.5667	-.2469	.8182
IT	93.0000	260.8889	.4112	.7911
RESEARCH	93.3000	266.9000	.3074	.7956
MED.ED	93.3000	272.9000	.2326	.7983
RES.FEED	93.8000	272.1778	.1955	.8000
LIBRARY	93.4000	253.8222	.5177	.7857
COMPUTER	93.3000	271.1222	.2326	.7985
FUNDS	93.4000	262.4889	.3867	.7922
EVALUATI	93.3000	249.3444	.7581	.7778
DEVELOPM	93.4000	267.3778	.2484	.7984
STAKEHOL	93.3000	261.1222	.4683	.7894

Reliability Coefficients

N of Cases =   10.0   N of Items = 30

Alpha =   .8011

Based on these validity and reliability analyses. The questionnaire seemed to be acceptable to be used as a measuring tool of the faculty members', program graduates' and residents' opinions towards the Family Medicine Residency Training Program at Phramongkutklao Hospital.

After test of the content validity, the questionnaires were corrected. The changes after this procedure were listed in Appendix B.

3.5.2.3 *Piloting the Questionnaire*

The questionnaires were piloted on five faculty members and five program graduates at the Outpatient Department, Phramangkutklao Hospital. The criteria for selection were convenient to direct contact and had quite similar characteristics to the population. The names of the pre-tested group were listed in the Appendix B.

An envelope, which enclosed a cover letter explaining the objectives of the research and the work requested, the improved questionnaire, was deliver by hand to each subject.

The subjects were asked to complete the questionnaire and gave suggestions to correct the questionnaire.

The data obtained from the development sample were analyzed. The questionnaire was corrected. Changes that were occurred were listed in the Appendix B. After completing the process of correction, it was used as the questionnaire to assess the opinions of the faculty members, program graduates and residents.

3.6 Data Collection

3.6.1 *Questionnaire for the Evaluators*

The steps of sending and collecting the *questionnaires* to the evaluators are as followed:

1. A list of the names of the evaluators will be requested from the personnel unit of the family medicine department.

2. Codes will be given to the evaluators who fit in the inclusion criteria of the study for identifying each respondent and printed on each questionnaire.

3. A questionnaire together with a cover letter will be enclosed. A return envelope printed the researcher's name and address will be provided.

4. The researcher will directly contact the evaluators to explain the objective of the study and request them to answer the questionnaires. The questionnaires will be given by hand to the evaluators who are in Phramongkutklao Hospital. For the rests, the questionnaires will be sent by mail.

3.6.2 Follow-Up Procedures

3.6.2.1 The Faculty Members and Residents

The questionnaire was sent on December 25, 2006 and the respondents were asked to respond and returned the completed questionnaire to the researcher's postbox at the Out Patient Department in the Phramongkutklao Hospital as soon as possible. After the New Year holidays if there was no response, the researcher contacted the nonrespondents by directly phoned them.

3.6.2.2 The Program Graduates

After the New Year holidays if there was no response, the researcher contacted by sending a follow – up letter, along with another copy of the questionnaire and another self – addressed envelope.

3.7 Data Processing

The result was collected and prepared for analysis by checking all the data, pre – coding the questionnaires and processing by computer.

3.7.1 Checking the Data

The objectives of this procedure were to examine the completeness and the accuracy of the data. After receiving the questionnaire all data were checked for blank or not-answered questions and the consistency between the answer and the questions.

3.7.2 Precoding the Questionnaires

All questionnaires were coded prior to the data entering process. The codes were run in series of the items and were separated into 3 groups according to the status respondents whether they were faculty members or program graduates and residents.

3.7.3 Computer Processing

The computer program used for entering the data and analyzing data was SPSS for windows V.11.5.

3.8 Data Analyses

Statistics for Data Analyses of the Obtained Data

The obtained data were analyzed using descriptive statistics. Baseline data will be summarized as number, percentage and then tabulated[23, 24].

The close ended opinions of the faculty members, program graduates and residents were measured in ordinal type of data, they were summarized as frequency and percentage.

The frequency of the opinions of the faculty members, program graduates and residents of each item were tabulated to show the specific values. These would be shown in chapter IV

Table 3.5: Summary of statistical methods to be used in this study in table 3.5

Indication	Statistical Methods
Statistical methods for questionnaire development	
- Test for content validity	Item correlation
- Test for internal consistency	Cronbach's coefficient alpha
Statistical methods for data analyses	
- Baseline data	Descriptive statistics (Frequency/Percentage)
- Data summary of outcomes variables	Descriptive statistics (Frequency/Percentage)