Chapter 3

Research design

This study used action-based methods (evaluation and action research) (Grbich, 1999) to contribute to the assessment of healthy eating policy for preschool children.

3.1 Research design

This study was a quasi-experimental research, two group pre-test/post-test design as illustrated below

Intervention schools

O1 _____ X1 _____ O2

Control schools

O1 _____ O2

O1 : Pre-test data

O2 : Post test data

X1 : The designed healthy eating policy, which was developed by applying health promotion concepts, especially building healthy eating policy strategies.

3.1.1 Population and samples

This study was divided into three phases. The first phase was to assess the existing healthy eating policy for preschool children. The second phase was to collect dietary baseline data of preschool children in implemented and control schools. The third phase was to implement healthy eating policy for preschool children in selected schools.

Population: the studied population was public primary schools, teachers, school board members, parents and preschool children in schools in Amphur Muang, Phrae Province.

Sample: The samples in the three phases were as follows:

Phase I *The assessment of the existing implemented healthy eating policies for preschool children*

The study was conducted in 47 public primary schools in Amphur Muang, Phrae Province, Thailand, which met these inclusion criteria:

- There were preschool children aged 4-5 years old attending those schools. Schools were located in a village or a town and not located in a closed area (had easy to access to other community).
- Lifestyle of the school community had the same characteristics as the other schools.
- School's staffs were willing and able to participate completely throughout the action research.

<u>Phase II</u> *The assessment of the dietary intake of preschool children in selected schools (Baseline data from intervention and control schools)*

After ranking schools according to the scores of the existing healthy eating policy and classifying them into tertiles (see Appendix B), only the sixteen 'fair' groups were included in the research. In the fair group, 373 of preschool children aged 4-5 years old were considered. Two hundred and twelve preschool children were needed to represent the population of these schools in order to meet the requirements for detecting a difference of 0.05 in the mean number of fruits consumed at break-time, with an alpha of 0.05 and 95 % power. A total of 234 preschool children were invited to participate in the study. Then, the baseline assessment of diets of those children was done. Thereafter the 16 schools were designed to 8 intervention and 8 control schools. Of the 234 preschool children, 141 children were in the intervention group and 93 children were in the control group.

<u>Phase III</u> *Developing healthy eating policies for preschool children*

The sample of 8 intervention schools in this phase were purposively selected and based on inclusion criteria for each stage:

Policy selection

There were two steps in policy selection, focus group discussion among representatives of parents and using a Delphi method among educational professionals. Focus Group Discussion I consisted of the representatives of parents from each school, selected by teachers based on their level of participation in school activities. Then, those parents received the invitation letter from the researcher to join the Focus Group Discussion.

The educational professionals were the educational personnel who supervised the preschool level and were responsible for school meal projects in Phrae Province, and some headmasters from Amphur Muang, Phrae Province, who were active and had been headmaster for at least six years. The reason for this criterion was that the dissemination of the health-promoting school concept occurred six years ago.

Policy advocacy

The sample was all of the teaching staffs in the intervention schools, all of the parents of preschool children, teachers and school board members.

Policy adoption and policy implementation

The sample was the representatives of parents who were selected from the discussion in step of policy advocacy (previous discussion), school board members, teachers, local health promotion officers, dentists and dental nurse. The health professionals were the ones who responsible in those schools.

Policy evaluation

In the session of policy evaluation in both intervention and control schools, the sample for assessing food policy for preschool children was all of selected schools.

The sample for food intake was all preschool children in both intervention and control schools.

3.1.2 Instruments

3.1.2.1 Instrument for collecting data

3.1.2.1.1 Interview questionnaire to assess healthy eating policies for preschool children.

A questionnaire was developed by using the health-promoting school concept and information from the literature and information elicited from previous studies and

guidelines (World Health Organization, 1997; Department of Health, 1998; Department of Health, 2002; World Health Organization, 2002; Technical Assistance & Training Center, Undated). The questionnaire included topics grouped in five dimensions relating to healthy eating activities: (a) policy and environment, (b) curriculum and instruction, (c) staff, family and community involvement (d) programme coordination and (e) evaluation. Each topic of this questionnaire was categorised and scored as: (a) '3' (fully in place); (b) '2' (partially in place); (c) '1' (currently under development); and (d) '0' (not in place) (see Appendix A).

Validity of the questionnaire

The first draft of the questionnaire was constructed on the basis of review of the health-promoting school concept, especially the dietary aspect and a framework of the study design. Then two professors from the dental school and one educational supervisor reviewed its content validity. The questionnaire was piloted in eight schools in Nong-Muang-Khai district in Phrae Province, which had the same characteristics as the sample schools. The respondents in the pilot schools were encouraged to discuss with the researcher issues related to the features of the questionnaire; understanding, complexity, etc. All comments and suggestions were taken into account in the development of the revised version of the questionnaire. The revised questionnaire was used in this study (Appendix A). For reliability of observers in using the revised questionnaire, kappa statistic of the inter-observer was 0.70 and kappa of the intra-observers were 0.62, 0.68 (The researcher and research assistant, respectively).

The data for the questionnaire was collected through interview and observation.

3.1.2.1.2 Dietary record

The measurement of dietary intake at selected schools was based upon a 3-day-record by seventeen observers. All food and beverage consumed by preschool children were recorded during school time, (Appendix C, D). However, the main focus was on food and beverage consumed at break time. The purpose of the food record was to assess usual patterns of potentially cariostatic or cariogenic foods and/or meals consumed by students. This result was used as baseline data and compared with the data collected after the healthy eating policy implementation.

A 3-day record of preschool children in all 16 schools was filled out by 17 observers. Each observer took the record of approximately five children. All observers were specifically trained for the study to ensure that quality was maintained throughout the dietary records procedures. The researcher provided assistance, orientation and training for record keeping to the observers. The researcher reviewed all procedures with the observers and assisted them in filling out a record before they began the actual food recording to ensure that the food record was accurate.

The frequency and names of food, snack and beverage intake were enumerated.

3.1.2.1.3 Guideline for collecting qualitative data of this research

The study needed to be carried out with target schools to answer five preliminary questions:

1. What were the existing implemented healthy eating policies for preschool children in public schools in Phrae province, Thailand?

2. How can a healthy eating policy be developed for preschool children?

3. What were the effects of a healthy eating policy on the dietary intake of preschool children in schools?

4. How did different dimensions of policy implementation influence the implemented healthy eating policy for preschool children?

5. What were the barriers and facilitating factors in implementing the healthy eating policy?

The study focused on the public primary schools in Phrae province, Thailand. This study started by assessing the existing healthy eating policy for preschool children and the dietary intake of preschool children. Then, it developed a healthy eating policy in intervention schools and also observed the policy-making process and the barriers and facilitating factors in implementing the policy. Finally, the policy-making process was analysed and a suggested model for implementing a healthy eating policy for preschool children was formulated.

Quality of data

The observer's power of inference was both a strength and a weakness in the policy-making procedure. The strength was that the observer can relate the observer's behaviour to the construct of the study. The weakness was incorrect inference from the observations. This weakness might be the result of limited experience in the field or limited participation in community. Therefore, teamwork among researcher and the assistant with the same dialogue helped to resolve this problem.

3.1.2.2 Instruments for implementation

The instruments in the action phase were the framework and the activities planned for each session. This study focused on measuring the adoption of formal policies and the steps that should occur to increase the chances of getting a new policy adopted and implemented.

3.1.3 Research procedure

<u>Phase I</u> ***The assessment of the existing implemented healthy eating policies for preschool children***

<u>Data and information required for characterising schools' level of implementation of healthy eating activities for preschool children</u>

The questionnaire (Appendix A) was used in the interview process by the researcher. Those included in the interview were the head-teachers of preschool classes and headmasters in the selected schools. The information provided by the questionnaire was used later to classify the schools' level of existing healthy eating policy implementation for preschool children. In addition, general information regarding healthy eating policy implementation (e.g. guidelines, physical environment, curriculum and school's community involvement) was collected by the researcher during the interview period at each school. All of this information was used to assure the reliability of the questionnaire answered by the head of the preschool class teacher.

The data from the questionnaire was divided into three groups according to the schools' scores on the assessment of existing implemented healthy eating policies; a 'good' group, an 'average' group and a 'fair' group as described in Appendix B. Only the 'fair' group was appropriate to include in the research process because the schools in this group needed to improve the implemented healthy eating policy more than

other groups. In addition, these schools can enable the analysis of the barriers and facilitating factors in implementing the healthy eating policy. If the researcher selected the other groups, the barrier factors might not be found. Schools in the fair group where teachers, parents and school board members were willing and able to complete an action research project were included in policy implementation.

Before policy implementation, the fair group schools were randomly selected to be intervention and control schools.

Phase II ***The assessment of the dietary intake of the preschool children (Baseline data from intervention and control schools)***

All food and beverage consumed by preschool children in both intervention and control schools were recorded by using a 3-day record during school time. The trained observers were recorders. This session took about five weeks.

Phase III ***Developing healthy eating policies for preschool children***

In this phase the researcher followed the procedure below:

The control schools

The researcher provided the results from Phase I (the assessment of healthy eating policies for preschool children) and Phase II (the assessment of the dietary intake of

the preschool children) to headmasters and preschool classroom teachers in the control schools. The researcher did nothing after providing the data. The researcher allowed the schools to decide on further action by themselves without any interfering action.

The intervention schools

The researcher developed the healthy eating policy based on the guideline of steps in policy development (Munday *et al.*, 1999; The Calgary Health Region, Undated). The intervention group was exposed to the following action methods.

Policy selection

The policy selection focused on two groups, parent group and educational professional group. In order to develop policy from the local level, the process started at the parent group.

1. Assessing the concept of a healthy eating policy among representatives of parents of preschool children using focus group discussions. (Focus Group Discussion I, Appendix E). The issues of the discussion covered:

- Healthy eating policy for preschool children
- Responsibility of parents in healthy eating policy for preschool children

Then, the researcher gained group consensus about healthy eating policy for preschool children. Next, the researcher gave the results from the group discussion to the head

supervisor of Phrae Educational Service Area Office 1. The purpose of this stage was to illustrate the parent's concept of healthy eating to the educational supervisors.

2. Assessing the concept of healthy eating policy among experts by using a Delphi technique. The panel members were:

- Five supervisors of education (who were responsible for school meal projects and preschool level)
- Five headmasters of schools

The procedure was described below:

Round 1

To allow panel members freedom in their responses, Round 1 started with an open-ended set of questions (Appendix F). The questions covered the same topics as used for the policy selection among representative of parents. The purpose of using the Delphi technique was to maintain anonymity and gain consensus. Round 1 was used to generate ideas and the panel members were asked for their responses to or comments about issues of concept on healthy eating policy for preschool children.

Round 2

The results of the healthy eating policy from the first round were collated and fed back to all members one week later (Appendix G). The panel members were required

to express their level of agreement with each statement using a Likert scale. Group members can also respond in written form to any of the statements.

Round 3

In order to meet final consensus, those statements which did not achieve consensus in round two were given back to all members of the group together with the opinion of other group members (Appendix H). All feedback was anonymous.

Consensus was defined as (Randic *et al.*, 2002):

a) all members of the group agreeing with the statement
b) all but one member of the group agreeing with the statement
c) up to two disagreements to a statement as long as the disagreement was not lower than four for any statement (for a positive statement)

The consensus from this stage was used in the policy advocacy process.

Policy advocacy

1. After analysis of the results from the Delphi technique, the parents, teachers and school board members were invited to discuss the results from Focus Group Discussion I and consensus among experts. In addition, they discussed the following issues:

- Parental influence on food choice

- Nutrition knowledge
- Nutrition education

The researcher used focus group discussions in this session to elicit the opinions of parents, school board members and teachers regarding healthy eating. A discussion schedule (Focus Group Discussion II, Appendix I) was developed using a modification of that produced by (Hart *et al.*, 2003). Focus group discussions took place at school during week-end time and each lasted 45 to 60 minutes. All groups were facilitated by a moderator and an assistant moderator (the research team). The focus group was audiotaped and transcripted verbatim by the researcher.

2. The researcher used the core questions to divide the transcripts of the discussions by topic. Within each topic, the transcripts were analysed for emerging themes. Each quote was then assigned to the appropriate response category or, where no appropriate category exists, formed the basis of a new category or subcategory (Hart *et al.*, 2003).

3. The results of the discussion were communicated to parents, school board members and teachers by using a newsletter. The newsletter had three parts. The first part presented the reasons for this study. The second part was an overview of activities (Focus Group Discussions) and the results of the discussions. The last part was left as free space for comments from parents. Then, the parents sent only the third part back. The teachers and researchers drew conclusions from those comments. These conclusions from the parent's comments were used in the policy adoption process.

Policy adoption

1. One month after the conclusions were determined, feedback from parents regarding the healthy eating policy for preschool children was evaluated by using focus group discussion with the representatives from parents, school board members and teachers. These representatives were the key individuals from last discussion. This session (Focus Group Discussion III, Appendix J) covered:

- Feedback from parents
- Status of existing healthy eating policies
- Guidelines for solving problems

Partnership among researchers, practitioners and school community is necessary to develop a policy to promote healthier eating (Freeman *et al.*, 2001); therefore, health promotion officers, dentists, and dental nurses were also invited to join the Focus Group Discussion III.

During this session, each school was encouraged to form a working group to establish a healthy eating policy for preschool children. This working group consisted of various interest groups (health promotion officers, dentists, dental nurses, school board members, and school staffs). A first draft of a healthy eating policy for preschool children was developed and then copies of the draft policy were distributed to those parents, teachers, and school board members, as widely as possible through a school newsletter.

Policy implementation

During this process (four months after the beginning of policy implementation), Focus Group Discussion IV (Appendix K) was arranged to discuss:

- Barriers and facilitating factors to implement the developed healthy eating policy
- Future plan of each school regarding their healthy eating activities in school

The purpose of this discussion was to encourage working groups to implement and to evaluate procedures.

At this stage how different dimensions of policy implementation influenced the implemented healthy eating policy was analysis. Observation and archival records such as documents containing a description of policies, meeting minutes and written statements of support would be a potential source of information for analysis.

Policy evaluation

Intervention and control schools

Six months after the beginning of policy implementation, the evaluation of the policy was completed by:

1. Assessing food policy for preschool children by using the assessment of food policy in schools (Appendix A) as the method of phase I. The purpose of this stage was to assess change of healthy eating policy for preschool children in the intervention and control schools.

2. Assessing all of the food and beverages consumed by preschool children during school time by using a 3-day-record (Appendix D). The results from this stage were used to assess the effects of a developed healthy eating policy on the dietary intake in schools.

A model to implement a healthy eating policy in school

After the policy evaluation, a model to implement a healthy eating policy was developed from all of the observed information.

3.1.4 Statistical analysis

- The assessment of the healthy eating policy in the study was presented in terms of mean and standard deviation.
- A 3-day record at the baseline was compared to the record after the implementation.

3.1.5 Ethical consideration

Prior to any implementation, to protect the participant's rights, explanatory letters were sent to all participants in the study: educational supervisors, headmasters, local health officers, parents and school board members. The letter included the following information:

- The aim of the study
- A description of possible outcomes including;
    - Benefit or lack thereof
    - An offer to answer questions at any time (the phone number of the researcher and supervisor were included in the letter)
    - A promise of anonymity
    - Clarification that the participant was free to leave the study at any time and was not obliged to answer any questions with which they felt were uncomfortable

In the control schools, in order to improve preschool children's lives, the results of the assessment of food policy in the school and baseline data of dietary intake were provided to headmasters and preschool class teachers. These schools were allowed to decide for themselves on further action after receiving the data related to healthy eating issues.