CHAPTER III
METERIALS AND METHODS

This chapter presents the research materials and methods which are organized into the following topics: First, the research design, research settings, and population and sample are described. Second, the research instruments and process of data collection are identified. Finally, data analysis is presented.

3.1 Research Design

A cross-sectional descriptive, mixed method design was applied to this study. Both quantitative and qualitative methods were combined. A quantitative session was used to explore the prevalence of sexual experience, use and intention to use HCT services and examining predictive factors on use and intention to use HCT services. A qualitative session was conducted following the survey in order to explore the characteristics of YFHCT services sensitive to the culture and needs of Thai youth.

3.2 Research Setting and Sampling Procedures

The eligible settings for this study comprised six secondary schools and three vocational schools in Bangkok which were selected through three-stage random sampling. The units of each stage of the random sampling were districts, schools and classrooms, respectively. The details on setting the selection and sampling procedures were as follows:

3.2.2. School Selection

At the second stage, school selection, the researcher randomly selected two secondary schools (one large school and one small school) and one vocational school

from those three selected districts. Nine schools, therefore, were selected for this study (6 secondary schools and 3 vocational schools).

3.2.3 Classroom Selection

At the final stage, classroom selection, two to four classrooms (depending on the number of students in each class) from each grade at the 10^{th} – 12^{th} grade levels in the secondary schools, 1^{st}- 3^{rd} years of the vocational schools and the 1^{st} – 2^{nd} years of the higher vocational schools were randomly selected for a total of 92 classrooms, including 54 secondary classrooms, 25 vocational classrooms and 13 higher vocational classrooms. The sampling procedures are presented in Figure 3.1

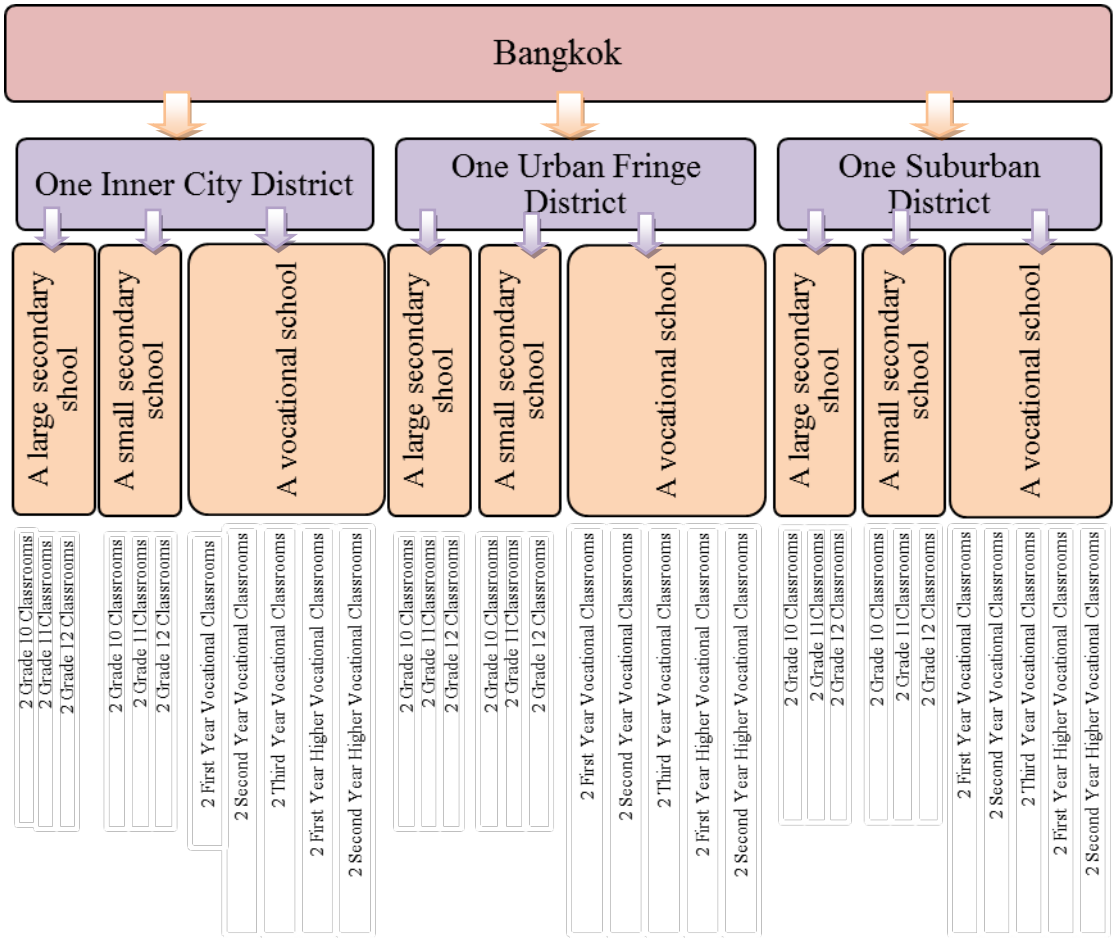

Figure 3.1 Sampling Procedures

3.3 Research Participants

3.3.1 Population

Thai youth aged between 15-24 years studying in secondary schools, vocational schools and higher vocational schools.

3.3.2 Sample

Both male and female Thai youth aged between 15-24 years who studied in Grades 10 -12 at secondary schools, 1st- 3rd years at vocational schools and 1st – 2nd years at higher vocational schools in Bangkok.

3.3.3 Inclusion criteria

1) Ability to communicate in Thai and use a computer program to complete the questionnaire.

2) Willingness to participate in this study.

3.3.4 Exclusion criteria

1) Age more than 25 years

2) Incomplete the questionnaire responses

3.3.5Sample Size

The sample size was calculated based on the proportion of students who had been tested for HIV. The formula for calculating the sample size was as follows:

$$n = \frac{[(z^2 \times p \times q)]}{\left[ME^2 + \frac{z^2 \times p \times q}{N}\right]} \times deff$$

If; N =240,000 (Total number of population = Grades 10-12 in secondary school students, 1st-3rd year vocational and 1st-2nd year higher vocational students in Bangkok).

z = 1.96 (the 100(1 - α/2) percentile of the standard normal distribution)

p = .06 (the proportion of students who obtained HIV testing)

q = *1-p*= .94

ME = .01 (The margin of error was the maximum expected difference between the true population parameter and a sample estimate of that parameter. For this survey research, the margin of error was plus or minus 1%, or 0.01).

deff = 1.07 (The design effect was developed for using other sampling designs instead of simple random sampling and is the ratio of the actual variance under the routinely used sampling method to the variance under the sample random sampling).

$$deff = \frac{\text{Variance of cluster}}{\text{variance of simple random sampling}}$$

$$deff = \frac{0.066}{0.0617} = 1.07$$

The sample size was calculated as follows:

$$n = \frac{[(1.96^2 \times .06 \times .94)]}{\left[.01^2 + \frac{1.96^2 \times .06 \times .94}{240000}\right]} \times 1.07$$

n = 2297.59

Additionally, approximately 15% of the total number of samples was needed as over-estimation to account for incomplete questionnaires. Therefore, approximately 2,645 students were estimated for the sample size of this study by using the proportions of high school, vocational school and higher vocational school students. All students in the 92 selected classrooms were invited to participate in this study.

In determining the sample size for each classroom, the researcher calculated by using the proportion of the number of students at each classroom level. Therefore, 2-5 classrooms were required for each class level. The details of the setting and sampling procedures are presented in Table 3.1.

Table 3.1 - Research Setting and Sample Size

Setting			Sample size (n. in each area/district)			
Type	**Level**	**Class**	**Inner City**	**Urban Fringe**	**Suburb**	**Total**
Secondary School	Large	Gr. 10	100	100	100	**300**
		Gr. 11	100	100	100	**300**
		Gr. 12	100	100	100	**300**
	Small	Gr. 10	90	90	90	**270**
		Gr. 11	90	90	90	**270**
		Gr. 12	90	90	90	**270**
Vocational School	Vocational	1st	75	75	75	**225**
		2nd	75	75	75	**225**
		3rd	75	75	75	**225**
	Higher Vocational	1st	45	45	45	**135**
		2nd	45	45	45	**135**
Total			**885**	**885**	**885**	**2655**

For the qualitative session, the researcher approached some participants from survey interviews by mobile phone. To access these participants, the researcher provided the participants with a mobile number and an e-mail address they were able to contact if they were willing to participate in interviews and wanted to express opinions about the YFHCT service arrangements. There were 378 participants who gave their e-mail address and 145 participants who gave their mobile numbers. Researcher had waited for their contact for a month but no one called or e-mail to researcher. Then, the researcher e-mailed and called them to confirm their voluntary participation in interviewing and set an appointment to interview at their convenience time. Finally, twenty participants volunteered to be interviewed.

3.4 Research Instruments

To conduct the research among youth, especially on sensitive issues, the instrument for collecting data was an important issue. According to research evidence among Vietnamese youth, the computer assisted interviews showed certain significant advantages with regard to respondent attitudes and perceptions of sensitive topics, particularly on sexual issues as opposed to paper-pencil questionnaires and face-to-

face interviews. The youth reported that a computer-assisted questionnaire seemed to offer more confidentiality and anonymity in responding to all questions (Le, Blum, Magnani, Hewett, & Do, 2006).

In this study, therefore, computer-assisted questionnaires were used to collect data. The researcher created the questionnaire with a free computer program by Google drive. The researcher received all data in the Excel program through an online computer assisted questionnaire program.

The questionnaires consisted of the following six parts:

3.4.1 Demographic Characteristics

The demographic characteristics questionnaire was developed by the researcher to collect personal data on the youth and consisted of **1) Personal Data,** e.g. age, gender, sexual orientation, living status and income; **2) HIV Testing History** in which the participants were asked about previous testing for HIV and if they had ever been tested for HIV. Those who had been tested were asked how many times in their lives they had been tested, whether or not they had returned for their results and what their reasons were for testing**. 3) Youth Perceptions of Risk for HIV Infection** in which the participants were asked, “Do you think you are at risk for becoming infected with HIV?” The options for answers were: ‘no risk’, ‘low risk’, ‘moderate risk’, ‘high risk’ and ‘already infected’. Those who answered ‘yes’ or ‘no’ were asked the reasons for their answers; **4) Willingness to Pay** in which the participants were asked, “If you want to test your HIV status, you willing to pay for HCT?” The options for answers were ‘willing’ or ‘not willing’. Those who answered ‘willing’ were asked the maximum amount they were willing to give up while those who answered “not willing” were asked for their reasons;**5) HIV Risk Behaviors Questionnaire** in which the respondents were asked two questions, particularly among those who had had sex within the past year. “How many sexual partners do you have within a year?” and “Do you always use a condom during sex?” and **6) Awareness and Knowledge of HCT Services,** in which three questions were asked, including, “Have you ever heard about HIV counseling and testing services?” “Where and from whom did you hear about HIV counseling and testing services?” and “Do you know where these services are available for youth?”

3.4.2 HIV Knowledge Questionnaire

The true or false questionnaire on knowledge of HIV was composed of 9 questions. The first 5 questions were UNGASS indicators which are essential pre-requisites but often an insufficient condition for adoption of behaviors that reduce the risk of HIV transmission. The last 4 questions in relation to the Thai context were added to the annual behavioral surveillance survey of Grade 11 and 2ndyear vocational students in Bangkok by the ASEAN Institute for Health Development, Mahidol University. The available responses to each item were 'true', 'false' and 'don't know'. Kuder-Richardson 20(KR-20) was calculated for reliability before using this questionnaire with 46 youths. It was .742. And the KR-20 when using this questionnaire with all participants was .704 with scores of .742 and .744 among sexually experienced youth (n= 783) and those who had never used HCT services (n=640), respectively.

Each item correctly answered received 1 point, while incorrect and "don't know" received 0 points. Then the participants were categorized into the following three groups; 1) unable to answer all 5 UNGASS questions correctly;2) able to answer all 5 UNGASS questions correctly, but unable to answer all 9 questions correctly and 3) able to answer all 9 questions correctly.

3.4.3 HIV Antibody Testing Attitude Scale (HTAS)

The twenty-two items on the HTAS were developed to gain greater understanding of people's attitudes about HIV testing. The HTAS initially contained 32 items with 5-level Likert scales. In the first testing for psychometric properties, reliability and validity with data from heterosexual college students was used. Hence, the 22-items met the criteria with the following four factors: peer, family, public and confidentiality concerns about HIV antibody testing. The factor loading of all items for the four factors ranged from 0.47-0.82. High internal consistency (Cronbach's alpha) = 0.88 was found. (Boshamer, 1999) The second testing for the psychometric properties of the 22-itemHTAS was conducted in 760 first-year African university students. Five factors, i.e. trust and support, general concerns, fear, confidentiality concerns and friend concerns about HIV antibody testing, were found with factor

loading between 0.41-0.78 and Cronbach's alpha for the overall scale was 0.84 (Peltzer,2002).

This questionnaire was translated into Thai by the researcher then back translated into English by a bilingual person who works at an international organization (International Labour Organization (ILO), AIDS Healthcare Foundation, World Vision Thailand Foundation, United Nations Population Fund (UNFPA), Population Services International (PSI Thailand)). Finally, the original questionnaire and back translated questionnaire were compared by a native English speaker. The final version was pretested and it was suggested that the instrument translation should include back translation and mono lingual testing (Maneesriwongul & Dixon, 2004). The researcher used this questionnaire for checking discrepancies on each item for the original and back translated versions then tested for consistency by internal reliability (Cronbach's Alpha). The Cronbach's alpha was .781 when tried out with 46 youths. In this study, Cronbach's alpha was .814 among all participants, .785 among sexually youth and .775 among sexually experienced youths who had never used HCT services.

The possible score for each item was 1-5 points and the total possible score was22-110. Higher scores meant positive attitudes toward HIV testing.

3.4.4 YFHCT Service Expectation Questionnaire

The YFHCT service expectation questionnaire was developed by the researcher based on the literature review, the WHO guidelines for youth-friendly health services and HIV counseling and testing services. Based on Quality Assessment of Health Services for Adolescent/Young Clients (WHO, 2004), this questionnaire was composed of the following five dimensions: **1) Equitable**: All adolescents, not just certain groups, were able to obtain the health services they needed; **2) Accessible**: Adolescents were able to obtain the services provided; **3) Acceptable**: Health services were provided in ways that meet the expectations of adolescent clients; **4) Appropriate**: The health services for adolescents needed were provided; and **5) Effective**: The right health services were provided in the right way and made a positive contribution to the health of adolescents.

Based on the literature and three youths interviewed, the 3_6 items specific to HCT services for youth were developed. In addition, open-ended questions were

added to the last section of this questionnaire. The participants were asked about the expected characteristics of YFHCT. Additional questions determined youths' needs concerned with service arrangements, especially for them and how providers organize the service sensitively to their needs.

After developing these items, the researcher verified the psychometrics test for both validity and reliability. After reviewed by five experts, the content validity index (CVI) was calculated. The CVI for the items were between 0.8-1.0 and the mean item CVI was 0.97. The instruments were then tested for reliability; an internal consistency (Cronbach's Alpha) was calculated after trying the questionnaire out with 46youthss in which a value of .977 was obtained. In this study, Cronbach's alpha was .983 among all participants, .987 among sexually active youth and .986 among sexually experienced youth and those who had never used HCT services.

The possible score for each item was 1-4 points and the total possible score was 36-144 points. Higher score meant higher expectations on YFHCT services.

3.4.5 HIV/AIDS Stigma Scale

The HIV/AIDS stigma scale was developed in 2004 because the stigma of HIV/AIDS was and is a major barrier to HIV prevention, VCT and care in many international settings. This scale was sought to draw on literature to develop a scale with strong psychometric properties that could easily be used in developing countries. From 82 compiled questions and a testing of a 50-item scale which yielded3 dimensions with 22 items in pilot testing in rural northern Thailand (n=200) and urban and peri-urban Zimbabwe (n=221), the Cronbach's alpha of 3 factors(Shame, blame and social isolation; discrimination; equity) were .86, .82 and.71, respectively ,and the divergent validity and factor loading of all items in each factor was .419-.716, .604-.712, and .416-.730, respectively (Genberg, 2008).

Before using this questionnaire, the Cronbach's alpha was tested with 46 youth in which a value of .794 was obtained. In this study, Cronbach's alpha was .843 among all participants, .833 among sexually active youth and .828 among sexually experienced youth who had never used HCT services.

The possible score for each item was1-4 points and the total possible score was23-92 points. Higher scores meant higher HIV stigma perceived.

3.4.6 Intention to Use HCT Services

The participants were asked, “Would you intend to use HCT services?” The three options for answers were:1) intention to use without conditions; 2) intention to use with conditions and 3) unintentional. Those who answered they were intention with conditions were asked, “What conditions?” Moreover, all participants were asked the reasons for their intention or no

3.5 Data Collection

In data collection, the researcher began to collect both quantitative and qualitative data after receiving permission from the Mahidol University Institutional Review Board, Nursing (IRB-NS). The process of data collection was as follows:

1. The researcher asked for permission to collect data in the secondary schools and vocational schools randomly selected through the schools’ directors.

2. The researcher coordinated with the directors or representative persons of each school to collect data among students at the schools’ computer labs.

3. The researcher gave the student participants any information they required about the objectives of the study, the method for answering the questions and the confidentiality of the data. The researcher’s name, mobile phone number and e-mail address were given to all participants.

4. When the participants understood, all possible participants clicked on “Willing to participate in this research,” which should be done before the first item of the questionnaire was opened. Next, the respondents completed the questionnaire via the internet, spending approximately 45 minutes to answer all questions. After the respondents finished answering, all participants were given a token gift to show the researcher’s appreciation.

5. Open-ended questions were used to collect qualitative data. Telephone/mobile interviews were conducted when participants were willing to provide more information. Any calls to the researcher, mobile numbers or e-mail addresses sent to the researcher were answered by the researcher. Thus, appointments could be made for the interviews.

6. At the interviews, the researcher requested permission to record the conversation and asked the participants to follow the interview guide. Each interview took approximately45-60 minutes.

3.6 Protection of Participants and Ethical Considerations

As HIV/AIDS infection is a sensitive issue and the youth make up a vulnerable group, the researcher had to be careful during data collection. Consideration of ethical issues in this study was meticulous in order to protect human rights. Although this research was conducted in youth aged 15-24 years, a waiver of written consent was appropriate as well as no requirement for parental consent in participants aged less than 18 years. Anonymity was the most significant issue due to the youth respondents' rights to protect themselves, particularly regarding issues about sexual activity. Therefore, alternative consent was sought via the first page of the web-based questionnaire and verbal consent (Mahidol University Institutional Review Board, 2011, V2).

The ethical issues of this study were as follows:

3.6.1 Ethics Committee Consideration and Permission: Before conducting the research, the researcher submitted a formal letter requesting permission to collect data from the Faculty of Graduate Studies, Mahidol University, to the selected schools.

3.6.2 Online Informed Consent: The researcher informed potential participants about the research objectives, methods, advantages and disadvantages of participation in this study. The participants who agreed to participate in the study were asked to give consent via the computer program. In consenting to participate in the quantitative part of this research, all possible participants clicked on **"Willing to participate in this research,"** which should have been done before the first item of questionnaire was opened. In the qualitative part, telephone interviews were conducted. The participants were asked to grant verbal consent.

3.6.3 Respect for Participants' Anonymity: In this study, the researcher did no task the participants' names because a computer program-assisted questionnaire and telephone interviews were used to maintain confidentiality for participants. None of the data obtained from the participants identified their names.

3.7 Data Analysis

3.7.1 Predictive Analytics Soft Ware Statistics (PASW) was used to analyze the quantitative data. All data was analyzed by frequency, percentage, average and standard deviation. Multiple binary and multinomial logistic regression analysis was used for predicting use and intention to use HCT services among Thai youth.

All independent variables from the hypothesis model were analyses by using a bivariate model to select proper variables for multiple logistic analysis. The multivariate of multiple binary and multinomial logistic regressions was analyzed for the predictors of use and intention to use HCT services among Thai youth, respectively. Finally, the interaction between categories of independent variables and the additive model of continuous independent variables were examined to confirm the multivariate model.

3.7.2 A content analysis was used to analyze the qualitative data. An inductive approach was used and each interview had a transcript. The researcher listened to and read the data from each interview several times in order to accurately interpret the data. Next, the researcher categorized the data into meaning units; sentences or paragraphs related to the same central meaning. The meaning units were condensed to ensure the essential content was clear. The condensed meaning units were abstracted and labeled with codes. From these codes, subcategories and preliminary categories were generated. The meaning units, codes, subcategories and preliminary categories were sorted by using the framework of a study (Graneheim & Lundman, 2004) developed on the basis of the interview guide and the research objectives. Finally, the interpretation of the underlying meaning or latent content of the codes, subcategories and preliminary categories led to the formulation of categories within each content area.