CHAPTER III

RESEARCH METHODOLOGY

1. Research Design

This research is a case-control study conducted to elucidate the risk factors associated with the birth asphyxia in newborn infants at Maharaj Nakhon Si Thammarat hospital in Nakhon Si Thammarat province.

2. Research Methodology

Target Population are the expectant mothers who gave birth at Maharaj Nakorn Si Thammarat hospital

Study Population are the expectant mothers who gave live births at Maharaj Nakorn Si Thammarat hospital during 1st October 2002 to 30th June 2003.

Sample are the group of the expectant mothers who gave live births at Maharaj Nakorn Si Thammarat hospital during 1st October 2002 to 30th June 2003

Study group are the group of 250 expectant mothers who gave live births resulting in asphyxiated newborns during 1st October 2002 to 30th June 2003.

Control group are the group of 500 expectant mothers who gave live birth resulting in non-asphyxiated newborns during 1st October 2002 to 30th June 2003. Two cases of control group will be compared to one case of study group by selecting the sample case which is prior and after to a sample case in the study group. In case, the sample case in control group is not within this criterion, the next expectant mother will be selected.

3. Sample Size

The sample size is calculated basing on the following formula (Nuchprayoon T. and Chamnitcharanich T. 1999: 1)

$$\mathbf{N} = \mathbf{2\,p\,q\,(Z_\alpha + Z_\beta)^2 / (p_1 + p_0)^2}$$

where $\mathbf{p_0}$ = Proportion of the least risk factors in the control group(≅0.15)

$\mathbf{R}$ = Relative risk of least risk factor (≅ 2)

α = Statistical Significance = .05

$\mathbf{1 - \beta}$ = Study Power = .90

Z_α and Z_β = 1.64 and 1.28 (one tailed)

$\mathbf{p_1} = P_0\,R / 1 + P_0\,(R - 1)$

$= .15 \times 1 / 1 + 1.5\,(2 - 1)$

$= .26$

$p = 1/2\,(p_1 + p_0)$

$= 1/2\,(.26 + .15)$

$= .21$

$q = 1 - .21 = .79$

$n = (2 \times .21 \times .79)\,(1.64 + 1.28)^2 / (.26 + .15)^2$

$= 234$

Therefore, the sample size is 250 cases.

4. Sampling Techniques

This case-control study was conducted with the following inclusion and exclusion criteria.

Inclusion Criteria

1. The expectant mothers who gave single live births
2. The expectant mothers with 28 weeks gestation or more

Exclusion Criteria

1. The expectant mothers who gave stillbirths
2. Multiple pregnancy
3. The expectant mothers who give live births resulting in newborn with severe abnormality/ disabilit, for instance, Anencephaly

5. Data Collecting Instrument

Data has been collected through the survey and interview, which designed to cover all contents and achieve the objective of this research study. Additionally, the delivery records of expectant mothers resulting in the live births have been also included to this study. The content will be categorized into 6 important parts as follows:

Part1 Expectant mothers' personal factors data include education level, occupation and income.

Part 2 Maternal factor data consists of mothers' age, number of parity and disease or complications in pregnancy.

Part 3 Fetal factor data include gestational age, aspect of amniotic fluid, fetal presentation and birth weight.

Part 4 Intrapartum factor data include the first stage of delivery, second stage of delivery and route of delivery.

Part 5 Maternity care service recieved factor data include antenatal visit, Narcotic induction, Oxytocin induction and time of birth.

Part 6 Antenatal care service provided factor data include antenatal care service, maternal care training for pregnant women and family or their spouses, delivery service, neonatal care and referral system.

6. Content Validity

The content validity of the survey and interview, which were designed by the researcher, has been verified by five experts in this field. The constructive comment and feedback has been suggested to this study.

7. Data Collection

1. Preparation for research document and equipment, which are the survey and interview form.
2. Requestition for the permission from the Director of Maharaj Nakhorn Sri Thammarat hospital to explain the research objective and seek for cooperation in conducting the research.
3. Create codebook to transform all data and input data by using SPSS program.

8. Data Analysis

All data collected from sample population has been analyzed by statistical method (SPSS) and translate the result of survey and interview into the following format:

1. Maternal personal Data factor includes education level, occupation and income will be enumerated in frequency and percentage
2. Maternal factor data include: maternal age, number of parity, disease and complications of pregnancy will be enumerated by frequency and percentage.
3. Fetal factor data includes gestational age, aspects of amniotic fluid, fetal presentation and birth weight will be displayed in form of frequency and percentage.
4. Intrapartum factor data includes the first stage of delivery, second stage of delivery and route of delivery will be shown in frequency and percentage.
5. Maternity care service received factor data includes antennal appointment, assessment of risk factor in mother and fetal, narcotic and Oxytocin induction during perinatial period and time of birth will be displayed in frequency and percentage.
6. Antenatal care service provided factor include antenatal care, maternity care training for pregnant women and family or spouses, delivery service, neonatal care and referral system will be analyzed by descriptive method.
7. Compute the association between birth asphyxia and risk factors, which include maternal factor data, fetal factor data, intrapartum factor data,

and maternity care service received factor data in the study group and control group by using chi-square test.

8. Compute the degree of association of risk factors which include maternal factor data, fetal factor data, intrapartum factor data including maternity care service received factor data and birth asphyxia by Logistic Regression test to calculate Odds ratio.