CHAPTER III

RESEARCH DESIGN OVERVIEW

3.1 Design Overview

This is a descriptive cross sectional survey, comparing the level of difference in competence between two groups, the terai and the hill. The primary outcome is to describe the level of competence and knowledge of ANMs in the hill and the terai. The intention of this design is aimed at making crude assessment of the level of difference of competence and knowledge of the hill and the terai auxiliary nurse midwives in antenatal care. The sample consist of ANMs working in the maternal and child health service in the Eastern Development Region of Nepal. This study concerns only to the activities of ANMs in antenatal care. The dependent variable of this study is the level of competence and knowledge in antenatal care. The independent variables used to predict the level of competence include age, duration of work, marital status, availability of supply and equipment, amount of supervision received, refresher course, work load or number of patients per day.

Before proceeding to data collection baseline data were collected from the Nursing Division at Kathmandu and Eastern Development Regional Office which is located at Dhankuta to estimate the number of ANMs in the sample place and to request that these ANMs should not be transferred during the data collection period. Data were collected by using two instruments, i.e., direct observational checklist with a review of ANC record and questions to test knowledge in antenatal care. Data were coded to assure confidentiality and to make it easy to analyse the data of the hill and the terai. Close ended scenario questions were used.

3.2 Justification of the Study Question

According to the literature reviewed there has been no related study in Nepal about the assessment of auxiliary nurse midwife in antenatal care. There have been three related articles studied in other countries about the assessment of auxiliary nurse midwife. Among them one study was done in Thailand, about knowledge and practice of ANMs on high risk antenatal care between midwife and sanitarian as already mentioned in literature review (chapter two). This design is to find out whether there is a difference of level of competence and knowledge

between the hill and the terai ANMS on antenatal care. It also tries to find out factors associated with the level of competence in both the hill and the terai ANMs. The level of competence and knowledge of ANMs in ANC were measured according to the extent to which the standard competence or standard job description was attained. The level of difference of competence and knowledge was measured considering different factors as mentioned earlier. For the antenatal care of maternal and child health service, history taking, physical examination, abdominal examination, blood pressure measurement, urine testing, TT vaccination to pregnant women, patient education and communication skill are important activities. If the ANMs can identify high risk pregnancy in early stage, she will be able to save many pregnant woman lives.

3.3 RESEARCH QUESTION

Primary research question

1. Is there any difference in the levels of competence between auxiliary nurse midwives working in the hill and the terai antenatal clinic of maternal and child health service (MCH) at eastern region of Nepal?

Secondary research question

1. Is there any difference in the levels of knowledge about antenatal care between auxiliary nurse midwife working in the hill and the terai antenatal clinic at Eastern Development Region at Nepal?
2. What are the factors associated with the level of competence of auxiliary nurse midwives working in the hill and the terai antenatal care?

3.4 Objectives

1. To determine the level of competence of auxiliary nurse midwives working in the hill and terai antenatal clinic in Nepal.
2. To determine the level of knowledge about antenatal care of auxiliary nurse midwives working in the hill and the terai ANC.
3. To identify factor associated with the level of competence in both the hill and the terai auxiliary nurse midwives.
4. To identify areas for retraining or refresher training course.

3.5 Design Justification

As already stated this study is a descriptive cross sectional design. The descriptive design is used

to determine the level of competence and knowledge. The cross sectional design allows determination of factors associated to the level of competence. This is a descriptive cross sectional study because investigator had collected data only at one point of time. From this survey, the study data can be obtained realistically because in this study primary instrument was direct observational checklist, crosscheck by ANC record review. After observations were finished questions to test the ANC knowledge were given.

3.6 A Diagram of Study Design

DESCRIPTIVE CROSS SECTIONAL RESEARCH

Target population
All ANM working in
MCH service

SAMPLE

Terai & Hill
ANMs who work
MCH at Eastern
development

OUTCOME

1 Level of competence

2 Level of Knowledge

3 Associated factor.

Inclusion

exclusion

S A M P L I N G

DATA COLLECTION

Eligible subject who fit in inclusion and exclusion criteria

MULTISTAGE SAMPLING

Direct observational checklist
Record review
Question to test knowledge

DATA ANALYSIS

Figure 1. Overview of the study design.

3.7 Operational Definition of the Variables

Antenatal care (ANC) : Care of pregnant mothers from the time of conception to the time before the birth of baby.

Auxiliary nurse midwife (ANM) : Health personnel who completed the related 2 years of training course and had completed academic education above class 8.

Health post : Health service unit at subdistrict level responsibility includes the health service to the people for providing primary health services to the people in its area. The coverage of population ranges from 5 to 10 thousands.

Standard job description : Auxiliary nurse midwife job description is defined by the Nursing Division, Ministry of Health.

Hilly region : The geographical area 1000 to 16,000 feet above the sea level, comprising 23 % of total land area.

Terai : The geographical area 200 to 1000 feet above sea level, covering 42 % of total land area.

M.C.H : Maternal and child health.

FP: Family planning.

District health office : The health service unit at the district level responsible for providing health service to the people in its area, in which public health nurse is incharge of MCH/FP.

Competence: The percentage of actual performance of equal and above 60% of total performance items.

Refresher course: Short term training in antenatal care for one or above one day as necessary.

3.8 Limitation of the Study

1. This study can only be generalized to Eastern Development Region of Nepal due to time and budget constraint.
2. Investigator could not hire more than one observer due to budget constraint so investigator herself had to carry out the observation since the result can be dominated by her subjective opinion. But the investigator tries to minimize this bias by doing intrarator reliability test.
3. One nurse was observed only once due to time constraint.
4. Health/post could not be randomized due to time and budget constraint.

3.9 SAMPLING

MULTISTAGE SAMPLING

EASTERN DEVELOPMENT REGION

16 DISTRICTS

STRATIFIED ACCORDING TO GEOGRAPHICAL AREA

5 DISTRICTS IN TERAI	11 DISTRICTS IN HILL
CHOOSED 3 DISTRICTS	CHOOSED 3 DISTRICT

Figure 2. Sampling

3.10 The Study Sample

A population is defined as "all members of any well defined class of people, event or object". A sample is a portion of a population. The purpose of drawing a sample from a population is to obtain information concerning that population. It is important that the individual included in a sample constitute a representative cross section of individual in the population, i.e., sample must be representative if one is to generalize with confidence from the sample to the population (Ary, D.et al 1979).

3.11 The Target Population.

The target population is the total study population. It is usually not possible to deal with the whole of the target population. One must identify the proportion of the population to which one can assess, this is called accessible population. From this accessible population one need to select a sample in such a way that it will be representative of the population.

In this study target population is intended to include all auxiliary nurse midwives who work in maternal and child health clinic. Accessible population is the auxiliary nurse midwives who work in maternal and child health clinic in Eastern Development Region of Nepal.

3.12 The Sample

From the accessible population, there is a need to select a sample in such a way that it will be representative of that population.

Eligibility Criteria

The following eligibility criteria will be applied to each subject:

3.13 Inclusion Criteria

The subject with the following characteristic will be considered for inclusion:

All the auxiliary nurse midwives who are working in maternal and child health clinic were included. The researcher did not set a definite cut off point for the duration of work because all ANMs was also analysed according to the duration of work as a predictor of the level of performance.

Exclusion Criteria

1. Auxiliary nurse midwives who work in services other than maternal and child health service.

3.14 Allocation of Sample

In this study, the study sample is intended to be representative of the Eastern Development Region. The steps in sample selection are zone, geographical region: hill and terai and district. In this study multistage sampling was used :

In first stage the Eastern Development Region was selected for the study site. In this region, there are 16 districts. Then, these 16 districts were stratified by geographical region: the hill and

the terai ie there are total 5 districts in the terai and 11 hill districts. According to sample size calculation, there is a need for 124 subjects ie 62 in each group. Concerning primary research question, it is needed to find out the difference of competence betweeen two groups, so three is a need for equal number of subjects in each group to attain high statistical power. In average there are only 24 ANMs in one district. Therefore, 3 districts were selected in both groups, i.e., in terai out of 5 districts, 3 were selected according to simple random sampling and 3 from 11 hill districts.

3.15 Sample Size

In order to make the study reliable the number of study unit must be large enough. The bigger the sample, there is more chance to ensure the representativeness of the population.

3.16 Sample Justification

The study sample is the auxiliary nurse midwives who work in the antenatal care of maternal and child health service. The generalizability of this study is aimed at antenatal care of maternal and child health clinic at the Eastern Development Region

of Nepal. The alpha level was set at 0.05 (two tailed) which represented the chance we were willing to accept of making a wrong conclusion that there is a difference of the level of comptence when there is none in truth. Type one error occurs when we conclude the terai has greater competence compared to hill (or vise versa,two tailed) when in truth it is not so. The beta level was set at 0.20 which represented the chance we were willing to accept of making a type II error, which occurs when the conclusion made from the survey indicated that there was no difference between groups when in truth there was a difference.

3.17 Sample Size Calculation

The study compared two independent groups, the terai and hill. The data were summarized in proportions.

The formula for sample size calculation was as follows:

$$N/group = [2(Z\alpha + Z\beta)^2 \quad (1-\bar{P})]/(P_H - P_T)^2$$

N = The number of subjects

$Z\alpha$ is the standard normal deviate corresponding to the probability.

Type I error was set at 5% which represents z = 1.96 (two tailed).

Z_{β} is the standard normal deviate corresponding to the probability of Type II error which was set at 20%

Z_{β} = 0.84

P_T = Expected event rate in the control group

= level of competence in terai group

= 90%

P_H = Expected event rate in the treatment group

= level of competence in hill group.

= 70%

$\bar{\pi} = (P_T + P_H)/2$

$= (.90 + .70)/2$

$= 0.8$

$N/group = [2(1.96 + .84)^2\ 0.8(1 - 0.8)]/(.90 - .70)^2$

= 62 subjects in one group

2 group = 124 Subjects

Thus, to detect a 20% difference in the level of difference of competence and knowledge, testing the significance at 5% level and beta level at 20%, a minimum number of 124 subjects was needed for the study. Sixty two subjects were for each group either the hill or the terai.