



## CHAPTER V

### THE MANOEUVRE

#### 5.1. INTRODUCTION

The primary concern of this study is to clarify the strength of relationship between the admission criteria and institute final examination scores of certificate level nursing program.

The study has been undertaken in all nursing campuses in Nepal except two campuses. These two campuses are newly established and do not have graduates. Remaining five nursing campuses are involved. They are Maharajgunj Nursing campus and UMN Nursing campus located in Kathmandu, central region; Biratnagar Nursing campus located in eastern region of Nepal; Pokhara Nursing campus in western region and Birgunj Nursing campus in southern region of Nepal. The admission criteria of certificate level nursing program and capacity for enrollment are stated in chapter II. Institute final examination is employed in first year, second year and third year by examination section at Dean's office, Kathmandu, Nepal. The subjects for examinations are different in each year. It is three years course. The

same prescribed curriculum is implemented by all nursing campuses. The requirement for admission is same for all nursing campuses.

## 5.2. PREPARATORY PHASE

This study involves various campuses, controller office-SLC Board of examination, and examination section at Dean's office, Maharajgunj. Therefore it is necessary to ask for co-operation. The person responsible for examination affair were consulted. The investigator assured confidentiality.

Information collection forms have been prepared in advance for data collection. The study program was started from second week of November 1990 to first week of May 1991. There was a helper to collect the data from various sources. The helper was given a clear instruction about data collection process and her responsibility. The investigator was over all responsible for managing the study program. The helper was responsible for collecting complete data, maintaining confidentiality of obtained data and completing the work in time. The time schedule was arranged with the helper.

### 5.3. SOURCES OF INFORMATION

The information were collected from following sources:-----

- a) Controller office, SLC Board of examination, Kathmandu.
- b) Examination section, Dean's office, Maharajgunj, kathmandu.
- c) Maharajgunj Nursing campus, Kathmandu.
- d) UMN Nursing campus, Patan.
- e) Biratnagar Nursing campus, Morang, Koshi zone.
- f) Birgunj Nursing campus, Parsa, Narayani zone.
- g) Pokhara Nursing campus, Kaski, Gandaki zone.

### 5.4. METHOD

The sample for this study composed of all the graduate professional staff nurses who completed certificate level nursing program and graduated from all nursing campuses in 1986 to 1989. The subjects were inservice (ANM) and fresh graduates.

Institute final examination is an index of success and to practise as a professional staff nurse. Institute final examination score is selected as a criterion variable. The institute final examination is employed at end of each year course. There are separate components in each institute final examination. Figure 5.2. depicts the various subjects of criterion variable. Various predictor variables are identified from admission

information. The predictor variables include three compulsory subjects of admission criteria, previously earned academic certificate, previous work experience related to nursing, parents' occupation, residence, students' age in months upon admission, marital status, attended campus, and high school rank. (Please see Table 5.1.). Previously earned academic certificate refers to Auxiliary Nurse - Midwifery (ANM) certificate and other certificates. This is non-credit two years nurse-midwifery course for ANMs. They work in hospitals and community levels under the supervision of professional staff nurse and health post incharges respectively. Previous work experiences related to nursing refers to the work experiences of ANMs. The another predictor variable, parents' occupation involves the type of work the parent do for a living which are measured as none, farmer, service, business and professional-managerial. The other variable residence refers to two categories like rural and urban areas. The age of the subjects are calculated in months upon admission to nursing. The attended campus refers to the graduating campus of each subject. The high school rank refers to SLC divisions. The last predictor, the marital status refers to married, single, widow and divorced. While identifying the predictor variables, an attempt was made to select those predictor variables in such a manner to minimize the bias in estimation of regression

coefficients.

The recording forms were devised to collect the data from SLC transcript and certificate, campus examination records and application forms. (See Table 6.1, Chapter 6). The information were collected from student records. So the clearance was obtained from campus chiefs and departmental heads. The campus chiefs and departmental heads were told that the data will be treated confidentially and it will not be reported as to reflect discredit to institute. The data will not disclose the names of subjects even though the names were needed to record for computation of indices of relationship. Thus, data were coded in a manner to assure confidentiality of information. It was made clear who will copy the data because some campus chiefs may insist that such copying be done by campus personnel, and prefer that the work be done by investigator herself. The investigator consulted with campus personnel to get co-operation. The mode of data collecting was based on categories of independent and dependent variables. The method of data collecting was from records. So it is essential such data be copied accurately and that the copying be checked. Check marks were entered adjacent to each entry to indicate that had been done. The data were written clearly and understandable manner. In copying numerical data from several columns of a table, a strip of card was used in following a row of figures. The

registration numbers of subjects were also copied carefully to avoid confusion. The copied data were appropriately labeled. If the heading and subheadings of tables are brief, it is necessary to seek their precise meanings in the context or elsewhere. Data were collected from different sources and the terms or labels used in records were different. Therefore the meaning were made clear.

The data collecting format was well designed to minimize error. The format contained all relevant and desired information.

PREDICTOR VARIABLES

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- |   |  |                    |
|---|--|--------------------|
| 1. English.                                       |  |                    |
| 2. Mathematics.                                   |  | -----SLC subjects. |
| 3. Science.                                       |  |                    |
| 4. Total SLC scores.                              |  |                    |
| 5. Age.   |  |                    |
| 6. Marital status.                                |  |                    |
| 7. Parents' occupation.                           |  |                    |
| 7.1. Farmer                                       |  |                    |
| 7.2. Service.                                     |  |                    |
| 7.3. Business.                                    |  |                    |
| 8. Resident                                       |  |                    |
| 9. Previously earned academic certificate.        |  |                    |
| 10. Previous work experiences related to nursing. |  |                    |
| 11. SLC Division I                                |  |                    |
| 12. SLC Division II                               |  |                    |
| 13. SLC Division III                              |  |                    |
| 14. Attended campuses                             |  |                    |
| 14.1. UMN campus                                  |  |                    |
| 14.2. Biratnagar                                  |  |                    |
| 14.3. Birgunj                                     |  |                    |
| 14.4. Pokhara                                     |  |                    |
| 14.5. Maharajgunj.                                |  |                    |
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Table 5.1.

CRITERION VARIABLE

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1. First year IFE scores
    - 1.1. English.
    - 1.2. Nepali.
    - 1.3. Nepal Parichaya.
    - 1.4. Fundamental of Nursing - Theory and practicum.
    - 1.5. Community Health Nursing I.
    - 1.6. Human biology.
    - 1.7. Pharmacology.
    - 1.8. Microbiology.
    - 1.9. Applied Science.
  
  2. Second year IFE scores
    - 2.1. Adult Nursing I
    - 2.2. Adult Nursing II
    - 2.3. Adult Nursing - Practicum.
    - 2.4. Community Health Nursing II -- Theory and practicum.
    - 2.5. Social Psychology.
    - 2.6. Nutrition.
  
  3. Third year IFE scores
    - 3.1. Midwifery 'A' -- Theory and practicum.
    - 3.2. Midwifery 'B' -- Theory and practicum.
    - 3.3. Midwifery 'C' -- Theory and practicum.
    - 3.4. Ward Management -- Theory and practicum.
    - 3.5. Community Health Nursing III -- Theory and practicum.
  
  4. Child Nursing -- Theory and practicum.
  
  5. Over all IFE score
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Table 5.2.

NOTE: IFE = Institute final examination.



Data processing is an integral part of the study. Figure 5.3 shows the steps of data processing which was followed. The seven subjects with incomplete data were eliminated from data analysis. The information are in raw scores, and some are in nominal and discrete data. The SLC scores and institute final examination scores are raw scores and continuous data which are used for computing. The nominal information includes marital status, residence, parents occupation, and previously earned certificate. These nominal information represent distinguishable qualities without other qualitative properties. In other words, the nominal scales make qualitative distinctions among the objects they describe. Thus, nominal scales are sets of groups which differ on some qualitative attribute. But these information which constitutes nominal scales may be expressed quantitatively. The remaining are in ordinal form like high school rank. For this reason, the data were transformed into dummy variables and coded. A dummy variable is defined as any variable in a regression equation that takes on a finite number of values so that different categories of a nominal variable can be identified. It simply relates to the fact that the values taken on by such variables like 0, 1, and -1 indicate no meaningful measurement but rather the categories of interest. (Kleinbaum, D. G. et al 1988). Dummy coding involves the assignment of the weights 1 and 0 to represent membership in the categories of the

nominal variable. For instance, if resident - rural is scored 1 and urban 0. Similarly other nominal variables were also assigned 1 and 0. Numerical codes were used for nominal and ordinal data.

Although no formal studies on reliability and validity have been conducted regarding the measures of SLC scores and institute final examination scores, it is considered reliable and valid.

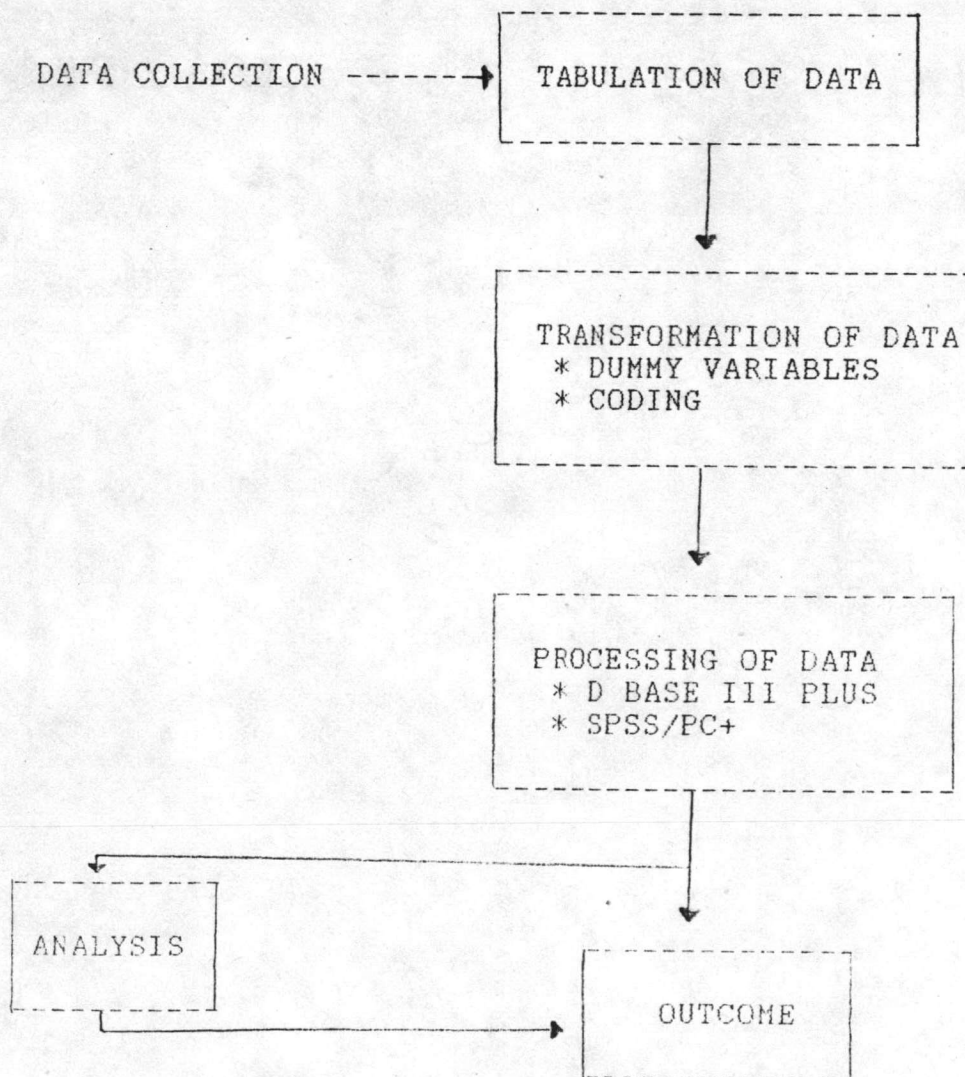


Figure 5.3. Data processing steps.

The data analysis was computed by using DBase III plus and software SPSS/PC+ program. It requires the user to execute the proper commands to activate the program and then to submit the problem data. The data have been entered into a stepwise multiple regression analysis program. Multiple regression allows for the simultaneous use of several independent variables. Thus it is used to examine the relationship between a criterion variable and a set of predictors. By using more than one independent variable, it may be better for explaining the variation in Y and hence provide more accurate predictions. The criterion variable is represented by the symbol Y and the predictor variables by X. The index of association used with this technique is the multiple correlation coefficient, R. This coefficient value ranges between 0 and 1. 0 indicates no relationship between criterion and the predictor and 1 indicates that the criterion can be completely accounted for by the predictor variables. Each of the predictor variables will be entered into the regression equation while determining multiple correlation. (Dyer, J. R. 1979).

The statistical analysis procedures were completed in four steps. The first step involved computing a stepwise multiple regression from the raw scores of all three IFEs (First, second and third year IFEs) and raw scores of three compulsory subjects

(English, Math., Science); raw scores of SLC total and numerical values of other predictor variables. (See Table 5.1). The data were entered into a stepwise multiple regression analysis program. The group of 507 graduates formed the data-base for the current study. Seven subjects with incomplete information were eliminated from data analysis. The three IFE scores were predicted separately using same set of predictor variables.

In this stepwise multiple regression analysis program, the variable with highest correlation with the criterion is entered into regression equation first. After partialing out the variance explained by the first variable, the second variable is entered. The order of subsequent partialing out is determined by reduction of criterion variance. Once entered, a variable is removed from the regression equation if a combination of other variables yield a higher multiple correlation with the criterion. The variables are partialled out until the F-level is insufficient for further computation. In other words, this procedure may be continued until the inclusion of additional variables add nothing of much significance to the multiple correlation coefficient. The tests of significance is applied to determine whether the addition of one or more variables add significantly to the multiple correlation. The F-ratio is used to test

whether an observed multiple correlation coefficient is significantly different from 0.

During the second step, same analysis program was undertaken to study the contribution of whole set of predictor variables (Table 5.1) to the prediction of each subjects of IFEs. (Table 5.2). The same steps of computation were followed during this step. Percentile rank was also computed to rank the dependent variables based on  $R^2$ . At the third step of analysis, cross-validation was performed after splitting the total sample randomly into two groups: group 1 as a validation group while the hold-out sample that is group 2 was used for cross-validation. The group 1, the first sample composed of 254 graduates and group 2, the second sample composed of 253 graduates. Cross validation was performed to check on the applicability of the weights in new samples. Finally, the three compulsory subjects (English, Math., Science) of admission criteria were computed to investigate their contribution in predicting IFEs.