

CHAPTER 2

MATERIALS AND METHODOLOGY

2.1 Background to the Study

The study was carried out because of an outbreak of occurrence of dermatitis amongst paddy field farmers in the Kota Bharu area, Kelantan as determined by the health authority there. Dermatitis has been plaguing the farmers since the late 90s. It had become a serious problem and in certain areas residents were forced to abandon rice growing and opt for tobacco growing hence resulting in rice shortage. A survey was thus undertaken by the Institute of Medical Research (IMR) to investigate the prevalence of the dermatitis among the paddy field farmers in this area.

2.2 Study Area

Kelantan is a densely populated rice-growing state in the north east of Malaysia near the Thai border. It is the second biggest rice producer of the country after Kedah. The study was conducted in 4 villages in Kelantan, in the Bachok-Kota Bharu area, 22km south of Kota Bharu, Peninsular Malaysia (5° 07' N and 102° 18' E) (Figure 2.2.1). The 4 villages involved the study are:

1. Kampung Tok Junuh
2. Kampung Alor Bakat
3. Kampung Serdang Muda
4. Kampung Serdang Surau (Serdang Tua)

All 4 villages are located next to each other. The most populated village is Kampung Alor Bakat followed by Kampung Tuk Junuh and Serdang Muda and the least populated village is Kampung Sedang Surau. All 4 villages are located next to paddy fields or in between paddy fields. The socio-economic profile of the population of the 4 villages will be discussed in Chapter 3.

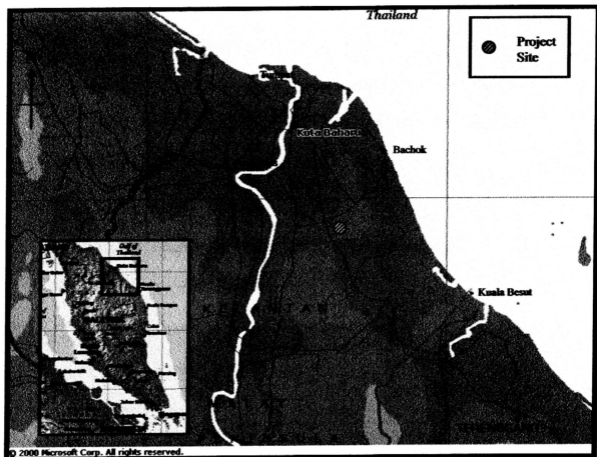


Figure 2.2.1: Location of the Project site

2.3 Data Collection

A survey using questionnaires was conducted by IMR between 1995 and 1999 in the four villages in the Kota Bharu area. The data collected was subjected to statistical analysis using SPSS Version 11.5.1. Person-to-person interviews were also conducted throughout the villages to measure the level of knowledge of the disease, its occurrence and reoccurrence.

The questionnaire (Appendix I) seeks to establish:

- a) The occupation of the interviewee.
- b) The occurrence and reoccurrence of the dermatitis.
- c) The method of farming used by the paddy field farmers.
- d) Time spent in fields.
- e) Condition of fields.
- f) Source of water for farming and domestic use.
- g) Types of animal reared.
- h) Treatment received for disease.
- i) Place and type of treatment.

An association analyses was done to determine if there was any correlation between the occurrences of dermatitis with the types of animals reared by farmers or found in the vicinity of the paddy fields and other factors such as sex of the farmers, age group of the farmers, water sources for irrigation and domestic usage, the planting stages and the use of pesticides and fertilizers. Follow up visit to the area to determine if there are any changes of the land under paddy cultivation was also carried out.

2.4 Data Analysis

1. Socio-Economic Status

The socio-economic status of the population was analysed to determine the distribution pattern and job breakdown according to sex and age of the population of the four villages.

2. Statistical Analysis of Occurrence and Prevalence of Dermatitis

The prevalence (the number of positive cases divided by the total population X 100) of the dermatitis was calculated for each of the 9 major variables (see below). Pearson's Chi-Square test of association (in SPSS Release 11.5.1 Version for Window Software) (Delucchi, 1983, Howell, 1997, Coakes and Steed, 1999 and Kinnear and Gray, 2000) was used to determine whether there are any associations between the variables. Level of significance accepted is at $p < 0.05$. The Chi-Square test of association was done to determine the relationship between the occurrence of dermatitis (% prevalence) with the following variables (factors):

- a) Site of Village
- b) Sex
- c) Age Group
- d) Stages of Farming (Preparation of the Fields, Sowing of Seeds ["Menyemai"], Transplanting ["Mengubah"], Application of Fertilizer ["Membaja"], Weeding of the Fields ["Merumput"], Harvesting of Fields)
- e) Use of Fertilizers and Pesticides

- f) Type of Fertilizers and Pesticides Used
- g) Hours spent in the Field
- h) Water Sources (For Farming and Home Usage)
- i) Animal Husbandry (Rearing of Chicken, Ducks, Buffaloes, Cows and Goats)

2.5 Critical Review of Analytical and Statistical Methods Used

Pearson Chi-Square test of association (χ^2) was used to describe the relationship between two variables of nominal value and to test the null hypothesis that the proportions of variables estimated from two (or more) independent samples are the same, or in other words to determine the presence of an association between two variables. The Chi-Square test of association selected for this study is based on the Flow charts shown in Figures 2.5.1 to 2.5.3.

The following assumptions were taken into consideration when the Pearson Chi-Square test of association was used:

- a) Data collected are a related pair that is, for a score obtained for variable X there must also be a score for variable Y for the same subject.
- b) Data collected are in interval or ratio in nature.
- c) The scores within the variables are normally distributed.
- d) The relationship between the two variables is linear.

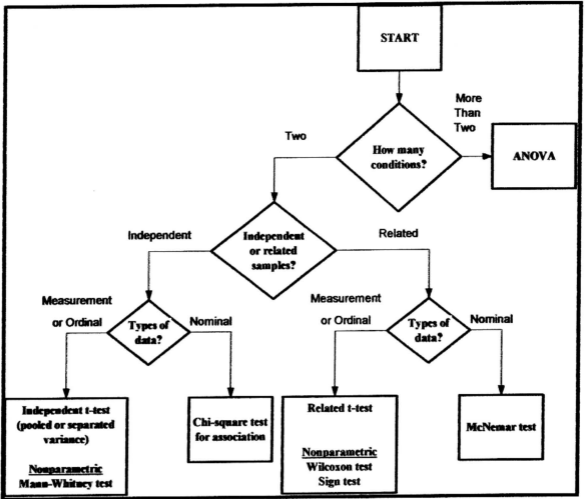


Figure 2.5.1: Flow-chart Showing the Selection of Suitable Test for Differences Between Averages (From, Kinnear and Gray, 2000)

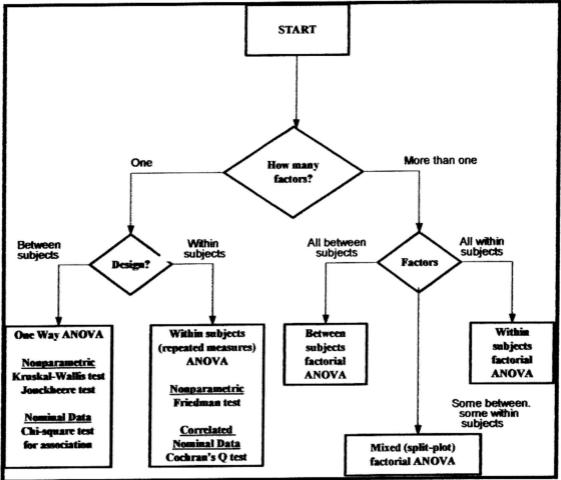


Figure 2.5.3: Flow-chart for ANOVA Designs (From, Kinnear and Gray, 2000)