THE BEHAVIOUR OF THE PEOPLE OF NE THAILAND TOWARDS MEDICINES FOR SELF-TREATMENT

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อุทิศ.....แด่

คุณยาย,คุณพ่อ-คุณแม่

คุณหมอวิทยา,ลูกเจม-จูน-เจด,

คณาจารย์ และผู้ที่มีส่วนช่วยเหลือประชาชนที่ทุกข์ทรมาน

จากความเจ็บปวด

To.....

my grandmother, my parents,

my husband, my three children,

my supervisors and those who take part in helping to relieve

the people from their pain

ABSTRACT

Musculoskeletal pain is one of the most common illnesses among the people in NE Thailand which is commonly treated by self-medication. Ya-chud (several medicines together in a small plastic bag) for the treatment of musculoskeletal pain is an illegal treatment but has been used by lay people for more than 20 years. A better understanding of the people's perception of and behaviour in taking Ya-chud for treatment of musculoskeletal pain should help in designing an effective implementation programme to reduce the taking of Ya-chud.

The study group was 15 years old and over and lived in 2 rural (N = 619) and 2 urban (N = 494) areas of NE Thailand. The study method used individual interviewing. The study aimed to investigate self-treatment of musculoskeletal pain with and without Ya-chud in the urban and rural areas. The attitudes of Ya-chud users in the urban (N = 136) and the rural (N = 128) were measured using a 6 point Likert Scale with a Conbach's alpha coefficient of 0.7509. Comparative analyses of variables between these two areas and between the users and non-users were conducted. In-depth interviews and laboratory analysis of Ya-chud samples were carried out to obtain more detailed information.

The study found that Ya-chud for musculoskeletal pain was often used as the alternative treatment to treat pain which occurred at many locations of the body at the same time when the previous outcome had been unsatisfactory. The discriminant stepwise analysis showed that 85.9 percent of Ya-chud users in both rural and urban

areas were 25 years old and over and had an education level of primary/secondary school. The overall prevalence of Ya-chud users in the rural areas was higher than in the urban areas but the prevalence of those who had taken Ya-chud within one year was greater in the urban areas. Ya-chud use varied with the season. It peaked during periods of heavy work such as harvesting. The main source of Ya-chud was groceries (82.3 percent in the urban and 79.6 percent in the rural). People had the perception that Ya-chud was a potent drug, cheap and had beneficial effects. They also perceived that the specific name of Ya-chud was easy to remember and described their symptoms. Attitudes towards Ya-chud were positive in the rural areas but negative in the urban areas ($p < 0.01$). Most of the respondents did not know the harmful effects of Ya-chud. The study showed that the locations of pain for non-users were not different from the users and also that the treatment outcome after taking Ya-chud was predominantly 'no change' (46.2 percent in the rural and 44.6 percent in the urban) ($p < 0.01$).

The results from the Ya-chud users in-depth interviews indicated that in the urban areas there was more use of massage, rest and health services for the treatment of musculoskeletal pain but in the rural areas medicines from the drug stores were more often used ($p < 0.01$). Only 10.9 percent of the respondents could be cured by the above treatments in the urban areas and 4.4 percent in the rural areas ($p > 0.05$). After taking Ya-chud the result of treatment was a 'cure' for 45.5 percent of users in the urban and for 35.3 percent of users in the rural areas ($p > 0.05$).

Identification of the medicines contained in a packet showed that steroids, NSAIDs and tranquillisers were most often combined in a package. It can be concluded that Ya-chud for musculoskeletal pain is not only unnecessary but also a dangerous use of these hazardous medicines which mask the symptoms rather than cure the illness. Intensive and continuous education campaigns together with legal enforcement should be beneficial for a short term programme to reduce Ya-chud use. Long term programmes should focus on providing licensed dispensers in every drug store so that the lay people can gain more helpful knowledge about medicines and so that legal enforcement can be better implemented since pressure could then be brought to ensure such licensed dispensers complied with legislation.

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TABLE OF CONTENTS

List of Figures

LIST OF TABLES

List of Appendices

CHAPTER 1. INTRODUCTION

1.1 Background of the Study

The primary health care (PHC) programme in Thailand started in 1966 as a pilot project which aimed to develop community participation in initiatives directed at solving the people's health problems through community effort. It was included in the 4th Five Year National Economic and Social Development Plan (1977-1981) which was implemented throughout the country in 1979 (1).

The availability of essential medicines as household remedies was introduced as one of the essential elements under the PHC programme in 1987 (2). It was conducted through the 'drug fund' which was managed by the village health volunteers for tackling the shortage of essential medicines, particularly in the less developed areas. By 1992, approximately 42,000 drug funds were already set up. It seemed to be a successful programme for increasing the availability of medicines throughout the Thai communities (2).

It was estimated that two-thirds of medicine expenditure was by way of health professionals, the other one-third through the purchase of self-medication (1992) (3). There was evidence of overconsumption and irrational use of medicines. One of the critical problems concerning irrational use of medicines was that medicines classified by the government regulations as "dangerous", "specially controlled", "psychotropic"

and the so-called "Ya-chud" were illegally sold in some village groceries or even through some official village drug funds (3) (Figure 1).

Resulting from concern about the situation of the use of Ya-chud in the country, the Thai FDA launched many activities aimed to decrease the number and availability of Ya-chud in the market. The Thai authorities have pursued this course of action since 1984. Most effort has been concentrated on educational programmes and inspection activities as follows (4):

1. The educational programme on the harmful effects of Ya-chud was conducted by providing booklets and leaflets for school teachers, the heads of villages and the owners of drug stores in 1984.

2. The four year planning programme (1987-1990) for regular inspection and occasional education for the drug sellers coupled with the mass education campaign for the general public concerning the harmful effects of Ya-chud.

3. The ministry of public health has encouraged the provincial health officers to set their own plans to increase the awareness of the general public regarding Ya-chud use and any other irrational use of medicines. The plans could vary depending on the situation in each province (1989-1991).

In addition a seminar was organised by the committee for primary health care of Thai nongovernmental organisation (CCPN). This was co-ordinated under the topic

'Problems of Ya-chud' on 17 October 1983. The participants comprised a range of disciplines such as teachers, representatives from the mass media organisations, public health officials and non governmental organisations' representatives.

This seminar aimed to develop appropriate strategies for creating an awareness of the dangers of taking Ya-chud among the general public. However these activities did not markedly improve the situation.

Although many attempts to reduce the taking of Ya-chud were carried out over 10 years, a field survey by the inspection division of FDA found in 1991 that the availability of Ya-chud in the drug stores was still quite high (Appendix 1). It showed that the most popular Ya-chud were 42.3 percent used for the treatment of musculoskeletal pain, 32.5 percent used for the treatment of fever and 8.1 percent used for the treatment of diarrhoea (Appendix 1).

The identification of the various medicines in Ya-chud for the treatment of musculoskeletal pain (Puad-muay) was examined by the Medical Sciences Centre, Ministry of Public Health, Bangkok, Thailand. The results indicated that approximately 3-5 tabs or capsules were combined in one package (Appendix 1) which consisted of these following groups of medicine (Appendix 2):

1. Steroids
2. Non-steroidal anti-inflammatory drugs
3. Analgesics

4. Tranquillisers
5. Antihistamines
6. Anti-infectives
7. Antacids
8. Vitamins

Because of the hazardous effects due to the presence of 'specially controlled' medicines and some 'dangerous' medicines combined in Ya-chud, the people's health could be seriously affected both in the short and the long term. There was a need to reconsider the previous intervention programmes and further develop the most effective one through research in order to reduce these problems.

The previous studies concerning Ya-chud were mostly focused on the distribution channel of medicines and the magnitude of the existing problem. The studies showed that the main cluster of Ya-chud use was in the north east region (5). No studies had been undertaken which aimed to investigate the underlying reasons for using Ya-chud, from the people's perspective and in their own context and which were also combined with biomedical investigations involving health assessment.

This study aims to gather information on the prevalence of Ya-chud use, the demographic characteristics of Ya-chud users, the people's attitudes towardsYa-chud and the people's satisfaction levels. A comparative study of urban and rural areas was also conducted in order to determine differences in the use of Ya-chud and any different demographic characteristics between the two situations. The knowledge

gained from this study would be used to help develop intervention strategies aimed at reduction of the taking of Ya-chud by the people.

This study focuses on Ya-chud for treatment of musculoskeletal pain and **MK** will be used as the abbreviation for musculoskeletal pain. The term **Ya-chud** will refer to Ya-chud for the treatment of musculoskeletal pain.

1.2 Objectives

1.2.1 General Objectives

To compare Ya-chud use behaviour and the related characteristics of Ya-chud users living in urban and rural areas.

1.2.2 Specific Objectives

- To determine the prevalence of MK in the two areas.
- To determine the prevalence of Ya-chud users in the two areas.
- To describe the characteristics of the people who had Ya-chud in the two areas.
- To describe people's attitudes towards Ya-chud.

- To identify the behavioural factors related to Ya-chud use and the associated behavioural factors between the users and non-users in both areas.

- To identify the characteristics of Ya-chud and medicines contained in Ya-chud.

- To propose a model of Ya-chud use for the treatment of musculoskeletal pain.

1.3 Definition of Terms Used

1.3.1 Ya-chud

Ya-chud has been known to lay people and has been available in Thai communities since 1977 (4). It generally contains more than 3 different medicines together in a small plastic bag either labelled or unlabelled (Figure 1). The name 'Ya-chud' is the general name for these packets of medicines (Ya = medicine, chud = set). Specific names are given for packages intended to treat different symptoms such as 'Ya-chud Mor-nuad' (masseur's), 'Ya-chud kra-jai-sen' (relaxing the muscle), 'Ya-chud Kae-khai' (cure the fever) and 'Ya-chud Kae-puad-muay' (cure the musculoskeletal pain). (4)

In general the meaning of each specific Ya-chud name is related to the symptoms or illness which the Ya-chud is intended to treat.

The revision of the Medicines Act BE 2530 (1987) issue V, No 75 mentions that the combination of many varieties of medicine in one prepacked package sold or supplied to the consumer for prevention, cure or promotion of health is restricted. Any person who sells or supplies this medicine is guilty of an offence. The liability on conviction or indictment is imprisonment for a term not exceeding five years or a fine not exceeding 50,000 bahts (36 - 40 bahts = £1) (1996) or both.

Medical doctors, veterinarians, dentists and pharmacist in the pursuance of their professions are exempted.

1.3.2 Musculoskeletal Pain (MK)

This term is used differently from the professional usage. In this study MK is classified according to the lay people's perception as the fatigue and/or pain from the neck to the legs which can be localised in some parts of the body or cannot be localised. In the local language this is called 'Puad-muay' (6) (7).

FIGURE 1 **Ya-chud for Treatment of Musculoskeletal Pain**

Source : Village Groceries in North East Thailand, 1995

1.3.3 Ya-chud for Treatment of MK

Due to the existence of many types of Ya-chud, they are named according to the lay people's perception of the symptoms to be treated. In 1991 these were reported as follows (4):

1. Ya-chud for curing fever

2. Ya-chud for curing MK

3. Ya-chud for curing allergy

4. Ya-chud for curing diarrhoea

5. Ya-chud for increasing appetite

6. Ya-chud for the treatment of malaria.

Ya-chud for the treatment of MK is intended to cure or relieve symptoms which can lead to the feeling of discomfort, weakness, fatigue and pain in the body muscles.

1.3.4 Noxious Stimulus (8)

A noxious stimulus is one that is potentially or actually damaging to body tissue.

Note: In the true Sherringtonian sense, noxious stimulus is defined as "one of intensity and quality which is adequate to trigger a nociceptive reaction of an animal, including the feeling of pain in humans". In some instances there is no lasting tissue damage (eg muscle pain due to excessive exercise) (8).

1.3.5 Nociceptor (8)

A receptor preferentially sensitive to a noxious stimulus or to a stimulus that would become noxious if prolonged (8).

1.3.6 Lay People

Refers to those people who are not members of the medical profession.

1.4 Conceptual Framework

MK is the subjective manifestation which is commonly associated with trauma and exercise. The physiological factors such as ageing, improper work position and repetitive movement for daily life activities also affect the body function and can cause MK (9). Even though environmental factors such as the working conditions may not directly affect MK, they have the potential to contribute.

The interpretation of pain stimuli relates to the personal perception which is influenced by beliefs and past experiences through the thought processes.

The people may choose the health services, self-medication or no action at all for coping with their MK. The use of Ya-chud is one of many accessible choices available to the Thai community. This study aims to explore the extent and the characteristics of the users, characteristics of medicines and the pattern of their use and also the reason for using the particular medicine (Figure 2).

The study also aimed to compare the variables between the populations of urban and rural areas.

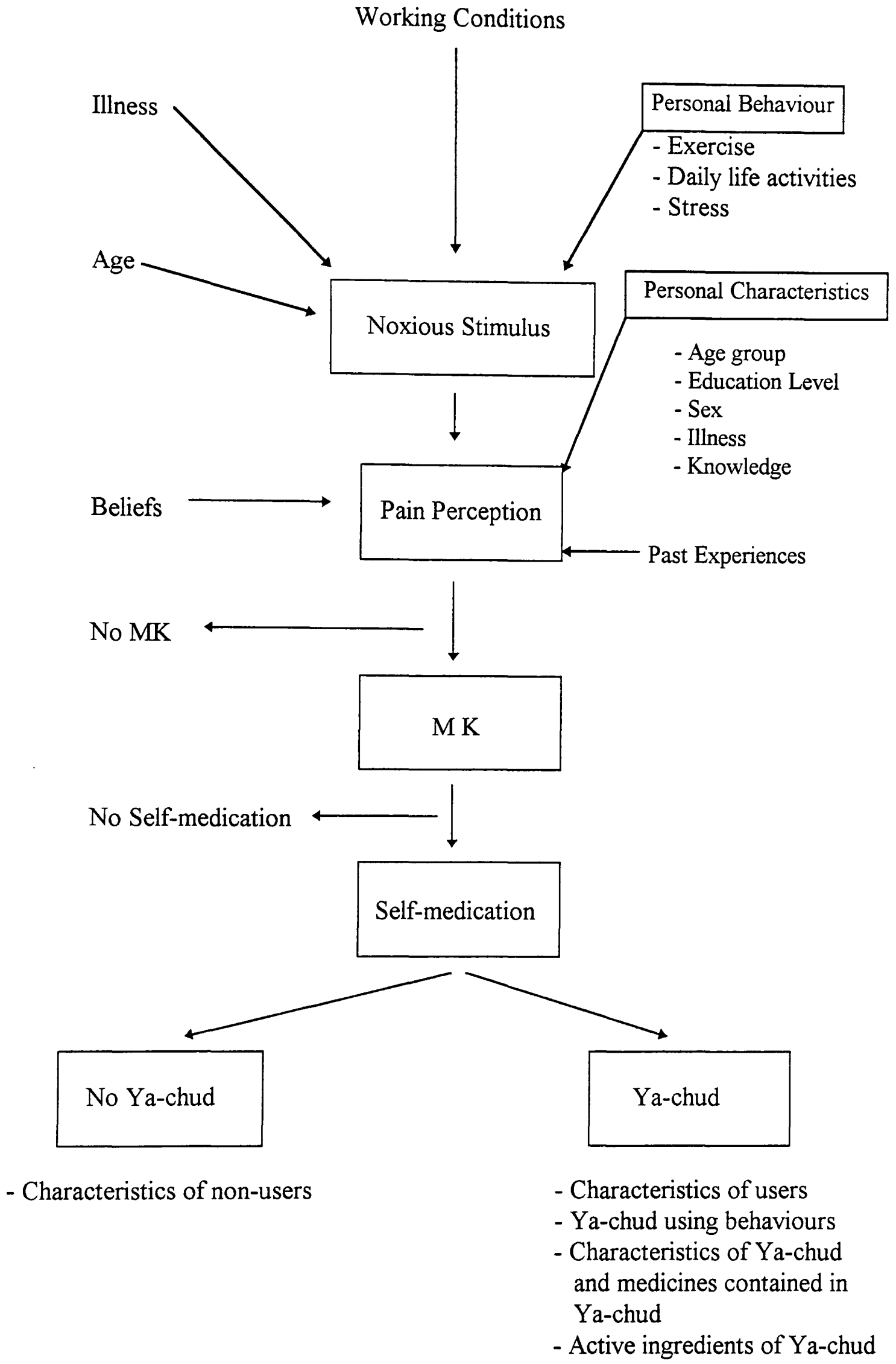


FIGURE 2 Conceptual Framework

1.5 Literature Review

1.5.1 Medicines Classification

Medicines (as defined in the Thai Medicines Act, Buddhist Era (BE) 2530 that is 1987 AD) means:

- modern medicines
- traditional medicines
- psychotropic substances
- narcotics.

By the end of 1993, approximately 30,000 products had been registered in Thailand. 28,800 formulations were modern and traditional medicines, 462 formulations were psychotropic substances and 199 formulations were narcotics. Only one third of these registered products were available on the market and they were reduced to be 16,700 formulations by early 1994 (3).

1.5.2 Drug Stores in Thailand

Drug stores (as defined in the Thai Medicines Act, BE 2530 (1987)) means:

- modern drug stores selling pharmaceutical compounds including those considered 'dangerous' and 'prescription' medicines;

- modern drug stores selling only ready packed 'non-dangerous medicines' (so-called OTC);

- traditional drug stores providing 'herbal medicines' in accordance with the Medicines Act.

These 3 types of drug stores number 4,471 : 5,365 : 2,345 respectively.

There were approximately 300,000 village groceries in Thailand. These also sold household remedies (1993) (3) .

1.5.3. Self-medication in North East Thailand

A study in north east Thailand (1989) revealed that self-medication was the main method of treatment of most unwell people when compared to the use of health services and the use of other alternatives (10) (11). It showed that 70 percent of the cases of illness were initially treated by self-medication (11). The common cold and muscle pain were the most common (12). Muscle pain is commonly experienced by those people of working age (13) (14).

People seek treatment for the common illnesses such as diarrhoea, the common cold, fever and muscle pain in different ways. A study showed that episodes treated by self-medication were about eight times as numerous as those which were professionally treated (15). Among these illnesses diarrhoea was the one which contained the smallest proportion of the self-medicated treatments. This study also found that there were differences among the working age bands which suffered from muscle pain. Females were more likely to seek professional help than males (15).

Medicines for self-medication were obtained from many sources such as peddlers, drug stores, groceries, neighbours and also household stock kept for self-medication. (15).

The largest source of medicines was the local grocery (12). These are the nearest places to obtain medicines whenever people get ill. There are many medicines available in the communities. Even though they are prescription medicines, they may still be purchased freely in the same way as over the counter medicines.

Many studies showed that self-medication was more common in those 15 years old and over (16) (17).

The people resorted to self-medication for many reasons such as to avoid long waiting periods in the hospitals, to treat minor illnesses, to treat illnesses they considered to be beyond the competence of the western trained doctor and when there was no doctor for them to see (13) (17).

1.5.4. Lay People's Perception of Illness

Illness refers to all the experiential aspects of bodily disorders which are shaped by cultural factors governing perception, labelling and explanation of the discomforting experience (18) (19).

Chrisman (1977) provides a framework from a review of cross-cultural evidence of folk ideas about illness which calls such modes of thought 'logics' and identifies four basic kinds as follows (18):

1. A logic of degeneration in which illness follows the running down of the body.

2. A mechanical logic in which illness is the outcome of blockages or damage to bodily structures.

3. A logic of balance in which illness follows from disruption of harmony between parts or between the individual and the environment.

4. A logic of invasion which includes germ theory and other material intrusions responsible for illness.

There is a study that shows lay people's conceptions are pragmatic and not concerned much about the theoretical rigor of the treatment options they give rise to (18) (19).

The lay people's belief involves the factor of the health locus of control which explains that people who feel they control their own health are likely to engage in healthy behaviour and to act in accordance with the recommendations of official health agencies, whereas those who feel powerless to control their own health, will be less likely to do so (20). A study in the Philippines (1991) showed that illness was perceived to be caused by environmental influences, especially heat and cold. The reason people took medicines was to get rid of their illnesses. With over 50 percent of the medication this desired effect was achieved. In another 20 percent symptoms were partly relieved. In 10 percent of the cases the therapy was said to have no effect, and in another 11 percent a specific effect was reported (21). This study revealed that people generally consider a drug effective if it causes symptoms to disappear. Effectiveness is not on the basis of how the medication cures the disease. If the effect of a drug coincides with that of a traditionally 'expected' effect, then the drug is likely to become popular. Similar results were obtained in a study in north east Thailand (14).

1.5.5 Thai Traditional Medicine

There is evidence that Ayurvedic traditional medicines were introduced to Thailand with Buddhism before BE 1800 (22). Chinese traditional medicine and also western medicine were both brought to Thailand later. This was during the Ayuthaya reign but these were not well accepted until the reign of King Rama V (1889) when

western medicine was introduced into the teaching of the medical school. After that time, Thai traditional medicine was gradually replaced by western medicine.

The principle of Thai traditional medicine referred to the causes of illness which was due to the imbalance of the 4 elements named earth, water, wind and fire in the body.

The explanation of these 4 elements is as follows (23):

- 'earth' referred to the hard texture of the body such as muscle, bone, hair and internal organs;

- 'water' referred to the body fluid including saliva, sweat, urine and gastric juice;

- 'wind' referred to the internal power which had the driving force throughout the body and it was classified to be 3 types as follows:
    - breathing wind
    - body cavity wind (wind outside the stomach but was in the body cavity)
    - gastro-intestinal wind (wind inside the stomach and intestinal tract)

- 'fire' referred to the heating or energy for regulating the body function.

The herbal medicines and also massages were used to correct imbalance in these areas.

Because most illnesses were caused from more than one element which was unbalanced, it was commonly the case that many kinds of herbal medicine were used in the recipe. Each ingredient had a specific purpose. It was almost unknown to have only one plant in a recipe of Thai traditional medicine (22).

1.5.6 The Nature of Pain

Pain is the subjective manifestation of trauma transmitted by the sympathetic nervous system which may interfere with normal functioning (International Association for the Study of Pain, 1990). It is a perception through the sensory, emotional and motor process which may occur in isolation or in varying combinations and proportions (24). It is also viewed as a psychophysiological process, partly sensation, partly emotion, partly cognitive evaluation and partly behavioural response (25). The explanation of this process is based on the gate control model. This was postulated by Melzack and Wall in 1965 (26) to provide a model to explain the operation of the psychological and physiological factors.

In 1982, Melzack and Wall modified their theory to include excitatory and inhibitory links from the substantia gelatinosa to the transmission cells as well as descending inhibitory control from the brain stem systems. This is reported review by Karoly (25).

From the gate control theory pain is viewed as consisting of sensory-discriminative, motivational-affective and cognitive-evaluative components (25). The major

contribution of the gate control theory was to acknowledge the strong influence of emotional and cognitive states on the perception and experience of pain.

There are two types of pain - fast pain and slow pain. Fast pain is linked to the pain threshold. It warns of sudden localised injury. Slow pain is linked to the pain tolerance. The muscles often go rigid or contract and change according to the past experience and the present state of mind (27).

1.5.7 Pain Behaviour

Pain may be defined as acute and chronic. Acute pain is characterised by a well defined cause and time of onset. When the cause is removed the pain disappears (28). Chronic pain persists long after healing has occurred and it is often associated with both physiological and behavioural changes (29).

It is believed that the way a person copes with a pain depends on his view of the situation, its importance to his well-being, and the resources he has to cope with the threat (30). Patients with chronic pain often exhibit 'learned helplessness' which tends to become reinforced by frequent medication and dependency on others (31). Several studies have shown that the individual perception that things were under his control was associated with a better coping with pain while the individual's perception that things were controlled by chance or luck was associated with maladaptive coping (32).

There is evidence from both laboratory and clinical studies to show that the persons who possess higher self-efficacy are willing to tolerate higher levels of pain. Bandura (1977) has referred to four major sources by which self-efficacy can be influenced. They are : performance experiences, vicarious experiences, verbal or social persuasion and emotional or physiological arousal (33).

1.5.8 The Nature of Musculoskeletal Pain (MK)

Musculoskeletal pain (MK) is commonly associated with trauma or exercise and is of a temporary nature. However, it causes a considerable number of people who suffer from muscle pain to seek advice. A wide variety of pathological conditions may also give rise to myalgia (34). It occurs after direct trauma, inflammation and during sustained muscular contractions. It has been observed that MK can be produced by noxious stimulation of muscle, fascia and tendons (34). Daily activities or repetitive movements while working are some of the precipitating factors which can cause a range of low level of pain to excruciating aching and/or burning pain. Patients usually present with persistent pain, tight or aching muscles, limited range of movement and/or general fatigue (35). A variety of nutritional and metabolic and endocrine factors including vitamin deficiencies, mineral inadequacy, hypometabolism, and endocrine dysfunction are important predisposing and perpetuating factors (36).

The common terms for the symptoms which the people use are stiffness, soreness, aching, spasms or cramps (34). MK is most often reported as having a dull, aching quality. The terms cramp, contracture, spasm and tetanus or tetany have precise

definitions but are often used inaccurately (34). Patients often complain of weakness, fatigue or exercise intolerance. Swelling or painful muscles is often reported but rarely substantiated. Pain localisation is poor in skeletal muscle and patients may also be unable to differentiate pain arising from tendons, ligaments and bones and from joints and their capsules (34). MK may be due to neuropathy which can cause muscle contraction as a result of pain (37).

1.5.9 Medication for Musculoskeletal Pain

An internal report of research conducted by Thai FDA personnel in 1991 indicated that steroids, nonsteroidal anti-inflammatories, tranquilizers, vitamins and other adjuvant medicines were combined in multiple medicine packets known as Ya-chud. The properties of these medicines which are relevant to their use in Ya-chud are as follows:

Steroids

Prednisolone and Dexamethasone are the most commonly found steroids in Ya-chud. Prednisolone is an intermediate acting glucocorticoid and Dexamethasone is a long acting glucocorticoid. There are studies to show that corticosteroids are associated with gastroduodenal lesions in humans ranging from gastric ulcer to gastric or duodenal erosions (38) (39). It is known that steroid consumption leads to a decrease in bone formation which is more prominent in trabecular bones (eg ribs and

vertebrae) (40). There is also evidence to show that the patients treated with steroids are more susceptible to bacterial, fungal, viral and parasitic infections (38).

Corticosteroids enhance analgesia by preventing the release of prostaglandins. In addition they commonly stimulate appetite and elevate mood (41). Low dose glucocorticoids (7.5 mg or less of prednisolone or the equivalent of another short-acting glucocorticoid) can reduce the state of joint destruction (40). Prednisolone and dexamethazone are classified in the Thai Medicines Act as 'specially controlled medicines'.

Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

Aspirin, phenylbutazone, indomethacin and piroxicam are nonsteroidal anti-inflammatory drugs (NSAIDs) which are used to treat rheumatoid arthritis. This is a chronic autoimmune disease of unknown etiology. NSAIDs are often described as peripherally acting compounds which act as prostaglandin synthetase inhibitors, so they possess analgesic, antipyretic, antiplatelet and anti-inflammatory properties (42). They also reach a ceiling effect above which the increasing of the dose beyond a certain level does not produce additional analgesic effects, although it may increase the duration of the effect (43).

Adverse effects from NSAIDs such as gastrointestinal effects are most common and include distress, nausea, vomitting, diarrhoea, bleeding and ulceration (44). The central nervous effects such as dizziness, fussiness and headache commonly occur.

There is evidence to show that NSAIDs cause interstitial nephritis, tubular necrosis, papillary necrosis and decrease renal blood flow (45) (46).

The Thai Medicines Act BE 2530 (1987) has classified the steroidal and nonsteroidal anti-inflammatory drugs as follows:

- the 'specially controlled medicines' such as prednisolone, dexamethasone, phenylbutazone and dipyrone.
- the 'dangerous medicines' such as indomethacin and piroxicam
- the 'over the counter medicines' such as aspirin and paracetamol.

Dipyrone

Dipyrone is a pyrrazolone derivative which has analgesic, antiinflammatory and antipyretic activity (47). Due to the risk of agranulocytoses dipyrone combined with antispasmodics has been withdrawn by the Thai FDA since 19 January 1994 (Medicines Act No. 51 BE 2530 (1987)).

The single drug formulation of dipyrone was exempted by this Medicines Act.

Paracetamol

Paracetamol is an OTC medicine. It is recommended as an analgesic and antipyretic for self care because it is well tolerated at recommended dose and has mild side effects at normal doses (47). The serious adverse effect of overdosage with paracetamol is hepatic necrosis (48). Even when taken in therapeutic doses the patients with impaired liver function may develop hepatotoxicity from paracetamol (49).

Tranquillizers

The most commonly used medicines of this group are diazepam and chlordiazepoxide. Diazepam was classified as a 'psychotropic substance' and chlordiazepoxide as a 'dangerous medicine' in the Thai Medicines Act BE 2530 (1987). Diazepam is a benzodiazepine which can cause drowsiness and psychological dependence (50). It also has a central action which can relax tension of striated muscle (51). Chlordiazepoxide is also a member of the benzodiazepines but it is inferior to diazepam for muscular relaxation. It causes drowsiness and produces psychological dependence (52).

1.5.10 Attitudes

Components of Attitude

Attitude may be defined as a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object (53). The four important aspects of attitudes are as follows:

1. attitudes are learned through experience;

2. they predispose people to behave in certain ways;

3. attitudes and behaviour conform to a principle of consistency;

4. the unfavourable or favourable manner of behaving reflects the evaluative component of attitudes.

The traditional three components of attitude are affection, cognition and conation. The cognitive component refers to beliefs, the affective component refers to the evaluation which reflects a person's values and the conative component refers to behaviour (53). Fishbein and Ajzen (1975) proposed that attitudes must be taken towards specific behaviour and intentions to perform that specific behaviour taken into account (54). So attitudes are reinforced by beliefs and often attract strong feelings which may lead to particular behavioural intents (55). Attitudes are learned through experience, both direct and vicarious (56) and in particular from family and from the groups to which one belongs.

Attitudes have many attributes (55). The 'content' of attitudes explains what the attitude is about. The 'intensity' of attitude is the degree of preference for a particular object. The 'interrelations' to the attitudes of others are the linkages to other attitude components which may be in the same level or different levels of value systems within a person.

Attitudes and Behaviour

People may differ in their attitudes towards the same thing or person and may react in different ways to the same or different situation. Fishbein and Ajzen claim that only when knowledge of a person's attitude towards that behaviour and social norm are known is it possible to predict the behavioural intention. Knowing the intention should lead to a high degree of accuracy in predicting behaviour (53).

The intention to action does not always lead to behaviour. It will depend on the specific circumstances or the setting in which it exists. The theory of reasoned action postulates that a person's intention to perform (or not perform) a behaviour is the immediate determinant of that action. Barring unforeseen events, people are expected to act in accordance with their intentions. However, intentions can change over time; the longer the time interval, the greater the likelihood that unforeseen events will produce changes in intentions (57).

Measuring Attitudes

Attitudes can be measured by both indirect and direct methods. Indirect measures are the methods which do not ask the person about his/her attitude directly but other techniques are used such as physiological, unobtrusive and projective techniques (53). Direct measures include the methods which ask the person to answer by means of rating attitudes using scales. These methods are popular because they are easy to administer and construct (58) and also provide reasonably valid and reliable measures.

The Likert procedure is one of the direct methods for measuring attitudes which was developed by Likert in 1932. A number of statements relevant to the topic would be made. Half of these statements would be favourable in content and half would be unfavourable.

The respondents would rate each statement on a five or seven point scale. A person's attitude is simply the summed score from each question (55). The Likert procedure can be briefly described as follows:

An item pool is selected and pre-tested with a group of similar respondents to those on whom the scale is intended to be used. An item analysis is then performed to decide which are the best statements. The internal-consistency method of item selection is applied to see if the statements show uni-dimensionality or not. All items which do not fulfil this requirement are eliminated. The final attitude score is obtained by summing the responses towards those items left in the scale (55).

CHAPTER 2. METHODS

The study was divided into 3 stages.

STAGE 1 The epidemiological study of the use of Ya-chud for MK.

STAGE 2 People's attitudes towards Ya-chud for MK.

STAGE 3 In-depth interview of the Ya-chud users and the Ya-chud non-users.

2.1 The Epidemiological Study of the Use of Ya-chud for MK

2.1.1 Study Design and Pre-survey

The study focused on the way that people treat themselves to relieve MK according to their concepts and behaviour.

A comparative cross sectional survey was conducted in the urban and rural areas. The questionnaire used was open ended and semi-structured to allow the people to freely describe their answers within their own context.

The piloted questionnaire consisted of questions on general health status, experience of taking medicines during the previous month, experience of health services for the

previous year. This was followed by the pain assessment which mostly comprised a body diagram (front view and back view) to enable identification of the correct area of pain together with a checklist of details of the last pain experienced. The questions were narrowed down to the use of Ya-chud (Appendix 7).

At the beginning of the study the pre-survey had three objectives:

1. To assure a basic understanding of the local language by the interviewers.

2. To obtain the general characteristics of the sample population and the study areas including the infrastructure, the general life style and the local traditions (Appendix 6a and 6b).

3. To establish a good relationship with the villagers.

2.1.2 Sample Size Determination

A previous questionnaire based research study in North East Thailand (1994) indicated that approximately 21 percent of the studied population took Ya-chud for MK (15).

The sample size within 5 percentage points of the true value with a 95 percent confidence level was calculated for this study as follows:

Estimating the difference between 2 population proportions with specified absolute precision (59).

Anticipated urban and rural population proportions	21%, 21%
Confidence level	95%
Absolute precision	5 percentage points

Intermediate value $V = P_1(1-P_1) + P_2(1-P_2)$

$= 0.2(1-0.2) + 0.2(1-0.2)$

$= 0.32$

It is shown in standard statistical tables that for $d = 0.05$ and $v = 0.32$ a sample size of 492 people would be needed in each group (59).

2.1.3 Sample Selection

Two villages in Muang district and two villages in Chonnabot district were chosen by random sampling for the study. For the census data collection, the people were coded and numbered in each village. Every fourth person from a list was selected by systematic random sampling. Household surveys were repeatedly carried out to check for the actual existence of the sample populations chosen. Those people who had moved for more than one month from the village were deleted and the next person on the list was used as a replacement. In order to cover all village zones, 30 percent of the total population of the urban villages were used in the study. An additional 3 percent was added after the pilot study. This was due to lack of participation on the part of some people due to the sensitive nature of using Ya-chud.

For these reasons, the total sample population in the urban areas was 619 (Kum-Hai and Ban-Ped)(Figure7 and 8). The 2 villages in the rural areas (Huay-Rai-Neur and Nong-Tao)(Figure 9 and 10) were mixed and coded for systematic random sampling as well. The sample population was 494 in the rural areas.

2.1.4 Exclusion criteria

The previous research study into the use of Ya-chud for self-medication showed that it was rare for people under 15 years of age to take Ya-chud (14), so the age group 14 years old and under was excluded from this study. The exclusion criteria were as follows:

1. Those below 15 years of age at the time of the first survey carried out as part of the study.

2. Those staying away from the village for a period of one month or more.

3. Those with health problems which made effective communication impossible (mute and learning disabilities).

4. Those not willing to take part in this study.

2.1.5 Data Collection Standardisation

Four interviewers who were acquainted with the north east region, were fluent in the local language and had some experience of social science research were chosen for this study.

A one day visit was arranged for the interviewers to the areas of study in order to introduce the interviewers to the head of the village, the village committees and the people.

A one day training programme was conducted to help standardise the performance of the four interviewers in the social areas of having a better understanding of what issues and what subjects they should be aware of when asking the questions and recording the data.

The topics were included as follows:

1. Pre-interview preparation

2. Identification of respondents

3. Etiquette and cultural norms to be followed

4. Interview techniques

5. Data recording

6. Data management

7. Disengagement

Interview guidelines were also provided to help ensure the gathering of good quality data. There were two kinds of guidelines. One was the issue concerning how to gather specific information (Appendix 7) and the other was about the actual interviewing techniques (Appendix 8).

Work plans to facilitate regular discussions among the interviewers and the researchers were set up. These meetings were scheduled every 4 days which aimed at correcting different aspects of data recording and of solving any problems occurring during the period of interviewing.

The interviewers were asked to obtain a sample of Ya-chud from respondents or from their source of supply. They were asked to record by labelling the indication, the specific name and the price of the Ya-chud. The samples were enclosed in plastic containers with silica gel to prevent humidity adversely affecting the procedures used for medicine identification. The coded samples were sent to the Regional Medical Sciences Centre, Ubonratchathani Province using blind techniques for medicine identification.

2.1.6 Data Processing and Analysis

SPSS for MS windows release 6.0 was used for data entry and data analysis. The simple statistics such as frequency distribution, percentage, ratio, means and standard deviations were used todescribe and interpret the data. The association between the variables using Pearson chi-square for significance to analyse categorical variables was conducted to compare between the urban and the rural areas and also the categorical variables in the same areas between the Ya-chud user and non users.

Stepwise discriminant function analysis was used to classify the Ya-chud users and non-users.

2.1.7 The limitations of the Study

Although 1,113 respondents were included in this survey, it was not possible to avoid seasonal variation which could act as a confounder for this study. The survey was conducted between December 1995 and June 1996 which covered the cool season (December - March) and part of the hot season (April - July). Many respondents migrated to work outside the villages especially during the hot season. This situation could lead to many drop outs among the respondents. Information exchange among the respondents and also information from the mass media, such as TV, could also affect the respondents' perception. The recall bias was one of the threats to the internal validity of this study.

2.2 People's Attitudes Towards Ya-chud for MK

2.2.1 Study Design and Pilot study

Attitudes towards Ya-chud were measured using a scale constructed on the Likert format and procedure (60). A questionnaire with 30 statements was included and arranged in random order. To ensure the same frames of attitude characteristics, the people rated for these statements all had experience in taking Ya-chud. The procedure was conducted as follows:

a) The Structured Interview Development

The structured interview was designed and commented on by 8 experts, 4 were researchers who had experience in community drug use research particularly in the north east region of Thailand. The other 4 were resource persons in the community and at the provincial level. The panel discussion was to decide the context of the interview, the scale of measurement and how to collect the data. The structured interview consisted of statements concerning health beliefs, beliefs about medicines and attitudes towards Ya-chud.

b) The Reliability of Attitude Statements

Each statement was rated by the 155 respondents, who had experience of Ya-chud, in different areas each of which had similar demographic characteristics. An item

analysis was performed. Statements intercorrelated with attitude scale were included. The Cronbach's alpha coefficient was more than 0.5 for health beliefs, more than 0.6 for beliefs about medicines and more than 0.7 for attitudes towards Ya-chud.

As a result of the pilot study, the structured interview form was designed to minimise response bias by starting with statements about health beliefs (2 statements), then beliefs about medicines (3 statements) and followed by attitudes toward Ya-chud (9 statements). These statements are given below:

Health beliefs

1. My health status will change with age.

2. Everyone should have some knowledge of self care.

Beliefs about Medicine

3. Whenever I get MK, I need to treat with medicine.

4. There should be a wide range of medicines in drug stores.

5. Good medicines should have a rapid action.

Attitudes towards Ya-chud

6. Ya-chud is cheap and good value for use in medication

7. The government should allow unrestricted sale of Ya-chud

8. Ya-chud has no harmful effect.

9. The risks from taking Ya-chud are less than the benefits obtained.

10. It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.

11. Ya-chud suitable for producing an antipyretic effect can also be used for MK as well.

12. Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope.

13. Medicines supplied by the hospital for taking at the same time are the same as Ya-chud.

14. Ya-chud should be used for severe MK.

Interviewing was conducted to obtain the information because approximately 15 percent of the respondents were insufficiently competent in writing and reading. The scale of measurement consisted of 6 levels which had no neutral scale. The study was pre-tested and designed to avoid the tendency for answers to be clustered in the middle of the range.

The respondents were asked to indicate for each statement as to whether they agreed or disagreed and to make a choice of degrees of agreement or disagreement by selecting the symbol representing the level of preference (Figure 3). The period of interviewing was from September 1996 until December 1996.

☺ **AGREEMENT**			**DISAGREEMENT** ☹		
					
Agree strongly	Agree	Agree mildly	Disagree mildly	Disagree	Disagree strongly

Figure 3 : The Scale of Symbols for Attitude Measurement Towards Ya-chud.

2.2.2 Sample Size Determination And Sample Selection

Ya-chud users resulting from the epidemiological study were enlisted. There were 156 in the urban areas and 157 in the rural areas. Because of the sensitive nature of the use of Ya-chud some people were unwilling to take part in this study. Thus, the response rate was 87.2 percent (136 of the total 156) in the urban and 81.5 percent (128 of the total of 157) in the rural areas.

2.2.3 Exclusion Criteria

The exclusion criteria of the sample population were as follows:

- Those staying away from the village for one month or more
- Those with health problems which made effective communication impossible (mute and learning disabilities)
- Those not willing to take part in this study.

2.2.4 Data Collection Standardisation

The four interviewers who conducted the epidemiological study survey were trained for one day to increase the understanding of the structured interview (Appendix 9).

The guidelines for the community survey (Appendix 8) were also confirmed to ensure the quality of the subjective interview. The period of attitude measurement was from September -December 1996.

2.2.5 Data Processing and Analysis

SPSS for MS windows release 6.0 was used for data entry and data analysis. The frequency distribution, median and standard deviations were used to describe and interpret the data. The chi-square and Mann-Whitney U tests were used as appropriate to compare the relationship between the urban and the rural areas.

2.2.6 The limitations of the study

Firstly, the directed choice of a 6 point type did not allow the respondents to give a middle of the range or undecided answer (61).

Secondly, the respondents' answers might not be entirely truthful due to the illegal nature of Ya-chud.

Thirdly, the attitude measurement for this study was based on the assumption that the attitudes lay along a single dimension. The people's beliefs and opinions are commonly complex and multidimensional (62). Thus, the score may not be good enough to reflect the specificity of their concerns.

2.3 In-depth Interview of the Ya-chud Users and the Ya-chud Non-users

2.3.1 Study Design and Pilot Study

The Interview guidelines for the Ya-chud users and the Ya-chud non-users were tested in separate but similar areas. From the pilot study it was known that the suitable time for interviewing was in the evening after work hours or after dinner and it should not take longer than 50 minutes. This time limit was made because of the sensitive nature of taking Ya-chud and because the respondents showed less interest in longer conversations.

The Ya-chud users were interviewed in-depth by the trained interviewers using the interview guideline of 11 questions (Appendix 11). Ya-chud non-users were interviewed using 6 questions (Appendix 12). The period of interviewing was from January 1997 until May 1997.

2.3.2 Sample Size Determination and Sample Selection

All respondents who had experience of taking Ya-chud were enlisted. That is 156 in the urban areas and 157 in the rural areas. Some people refused to take part in the study and some people migrated for temporary extra work, particularly in the urban areas. So the sample size for the in-depth interview of Ya-chud users was 110 (70.5

percent response rate) in the urban and 136 (86.6 percent response rate) in the rural areas (Figure 4).

The sample size of the Ya-chud non-users was calculated as follows:

Estimating the difference between 2 population proportions with specified absolute precision (59).

Anticipated urban and rural population proportions among MK

= $\frac{352}{508} \times 100$ and $\frac{229}{386} \times 100$ = 69.3%, 59.3%

Confidence level 90%

Absolute precision 10 percentage points

Intermediate value V $= P_1(1-P_1) + P_2(1-P_2)$

$= 0.7(1-0.7) + 0.6(1-0.6)$

$= 0.45$

It is shown in standard statistical tables that for d = 0.1 and v = 0.45 a same size of 120 -125 people would be needed in each group. Systematic random sampling for every third person from a list was carried out (59).

Some people refused to take part in the study and some people migrated for extra work, so the next person from the list was used as a replacement. Unfortunately the number of 101 in the rural areas did not reach the number required for estimating the differences between the two areas with absolute precision. However, it is unusual for

in-depth interviews to have statistically valid numbers because by their nature they are carried out at length and with small numbers. The final sample size for the urban area was 135 and for the rural area it was 101.

2.3.3 Exclusion Criteria

The exclusion criteria for in-depth interviews were as follows:

- Those staying away from the village for one month or more;
- Those with health problems which made effective communication impossible (mute and learning disabilities);
- Those not willing to take part in this study;
- Those not enlisted in the previous survey for the epidemiological study.

2.3.4 Data Collection Standardisation

A one day training programme was arranged for the interviewers. The topics were concerned with the general consideration of the in-depth interview (Appendix 10), how to record the data (Appendix 13) and what probing was to be allowed (Appendix 11).

To ensure standardisation of the performance of the interviewers two informal meetings were conducted during the beginning of the data collection period for checking the quality of the fieldwork.

2.3.5 Data Processing and Analysis

The simple statistical methods for describing survey data were used. These were frequency distribution, percentage, mean and ratio. The meaningful variables were analysed using a statistical significance test of the difference between the urban and the rural areas by Pearson's Chi-square test.

To illustrate the deeper information, what the antecedents or the consequences were, the narrative statements were presented to describe these situations. These were the main reasons for this study design.

2.3.6 The Limitations of the Study

The respondents may give an incorrect answer because of their incorrect memory, their knowledge gain during the period of the study, or by intention.

In order to obtain good quality data it is necessary to make a good relationship with the respondents by starting talking about the topics of daily life. It always takes time and it is also difficult to stop the conversation. It was noticed that the later questions took less time than the earlier ones, while most of the important questions were the later ones.

The frequent travelling and difficulties of transportation to the rural areas were some of the obstacles met during this data collection.

2.4 Overall Study Design and Methods of Data Collection

The study of epidemiology, the people's attitudes towards taking Ya-chud and the in-depth interview are summarised in Figure 4.

The collection of data from the villages chosen by random sampling presented severe logistical difficulties as the villages were located about 60 kilometres from the researcher's residence. In addition the workload of interviewing was more than one person could undertake. Nevertheless the researcher was fully involved in supervising the training and monitoring the performance of the interviewers to achieve as much standardisation in interview technique as possible.

It is accepted that the use of different people to undertake the interviewing did present problems of standardisation. Especially as the interviewers were mainly responsible for interviewing at different locations. The extreme result could be that the difference in results obtained in the different locations was related primarily to the different interviewing styles of the interviewers. The researcher however closely monitored the performance of each interviewer so that the bias introduced by the different interviewers was reduced as far as possible, and any remaining difference could be estimated.

The sensitive nature of the study, surrounding the illegal use of Ya-chud meant that respondents were unwilling to have the interviews recorded. Thus this useful research tool could not be utilised.

Seasonal variation could also introduce a bias into the study. The researcher was aware of this and sought to reduce the effect as far as possible. However it is accepted that effects of seasonal variation at the time of data collection did affect the epidemiological study. The in-depth interview was less affected by seasonal variation factors.

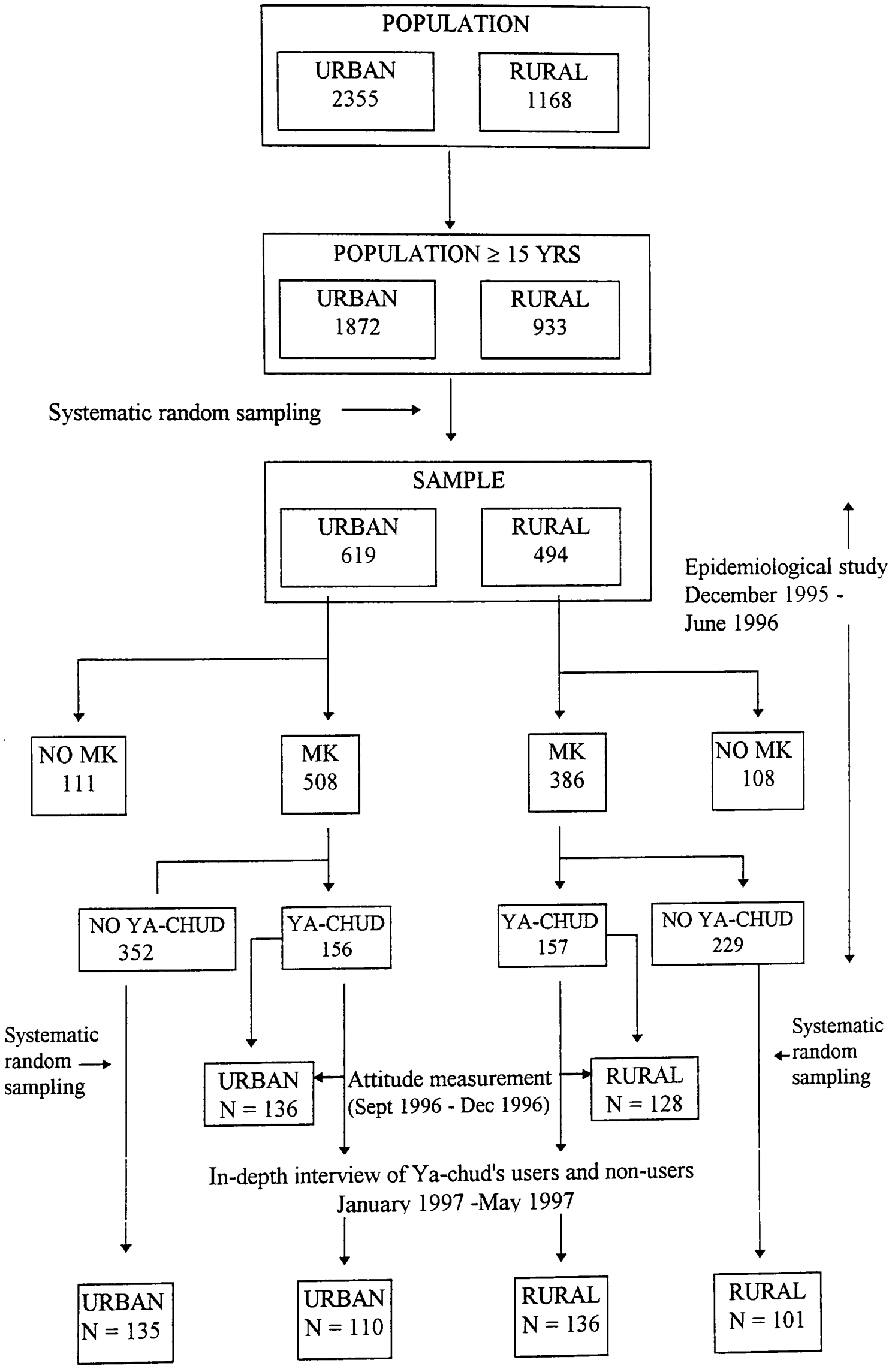


FIGURE 4 : Overall Study Design And Methods Of Data Collection

CHAPTER 3. STUDY AREA

3.1 General Information about Thailand

Thailand consists of 513,115 square kilometres and is situated in South East Asia. Thailand is bordered by the Lao PDR in the north and north east, the Union of Myanmar in the north and west, the Andaman Sea to the south west. Cambodia and the Gulf of Thailand in the east and Malaysia to the South (Figure 5).

The country is divided into 4 main regions, the northern region, the southern region, the central region and the north-eastern region. For administrative purposes it consists of 76 provinces (1995). Bangkok is the capital city and is situated in the low lying fertile central part of Thailand. The driest and the least developed part is the north-east region encompassing 170,218 square kilometres (63). Thailand has a monsoon climate with 3 seasons. These are the hot season from March to June, the wet season from July to October and the cool season from November to February. Normally the rain starts in May and continues until November (63).

The population of Thailand was said to be 59,460,382 in 1995. The male population accounts for 50.1 percent and females accounts for 49.9 percent of these numbers (64). Most Thai citizens follow the Theravada Buddhist religion. The capital city, Bangkok, is the centre of communication, national trade and national governmental institutions of the country and has a population of 5,570,743 in 1995 (64).

Thailand experienced a period of rapid economic growth with the per capita income doubling during the 1987 to 1992 period. GDP growth rate in real terms (1993) was forecast at 7.9 percent and per capita GDP approximately 53,462 baht per annum (65). It is now considered to be a newly industrialised country because manufactured goods are an important source of foreign exchange revenue and account for at least 30 percent of Thailand's exports (65). The national official language is Thai.

Khon Kaen is one of 17 provinces which belongs to the north east region. It covers an area of 10,145.3 square kilometres consisting of 23 districts and is bordered by the provinces of Udonthani and Loei to the north, Buriram and Nakhon-Ratchasima to the south, Chaiyaphum to the west, Kalasin and Mahasarakham to the east (Figure 6). The most important food crop of the north east region is rice. Approximately 80 percent of the total cultivated land is used for rice production.

Khon Kaen province has a population of 1,652,030 and 829,095 are male while 822,935 are female (64). The average household size in Khon Kaen province is four with an average monthly household income of around 6,400 bahts (£1 = 36-40 bahts) (1996).

Muang district, that is the city district, has an area of 953.39 square kilometres. It is divided into 17 sub-districts, 197 villages and one municipality. From these 197 villages, 2 villages, Kum-Hai and Ban-Ped were selected by random sampling as the urban study areas.

From the other 22 districts of Khon Kaen province, Chonnabot was selected to be the rural study area by random sampling. From within this area the two villages, Huay-Rai-Neur and Nong-Tao were selected by random sampling.

3.2 Urban Areas

Muang district, the city district was selected for the following reasons. Firstly, the people's eating pattern has changed from the traditional household cooking to buying ready prepared food from the department store. Secondly, the provincial health office is situated in this district, and staff have experience of many rational drug use programmes. Thirdly, the consumption patterns and also the living conditions in Muang district are the same as for the other Muang districts of other provinces in Thailand.

The term 'Muang' has been described as 'Urban' which is the city district. It is the centre of communication, education and government institutions at the provincial level. Every province in Thailand has its own Muang district.

Community Profile : Kum-Hai

Kum-Hai is situated 150 metres from the Khon Kaen - Chumpae highway which is about one and a half kilometres from the city (Figure 7). The population is 763, comprising 50.5 percent males and 49.5 percent females (1994). There is one government school for primary school students (levels 1 - 6). The educational

coverage in Kum-Hai is about 90 percent. In general, 20 percent of the labourers were semi-skilled workers who worked in industries and offices as their main occupation but also had other temporary work. Twenty percent were farmers who had no extra job and 60 percent were farmers with extra jobs (66). The people usually owned their own house. In 1993 the government launched a project to build a bypass road avoiding the city. Parts of the road passed through the Kum-Hai area and this development put up the value of the land. The owners who sold land were able to pay for many new facilities such as a new house, a new car and various high technology equipment.

Subsequent to the new highway road being built, flooding has occurred over the cultivated land particularly during the wet season. Development has occurred since 1993 on the land surrounding the big lake named 'Nong-kode' and along the concrete roads from the city to Kum-Hai. Over seventy percent of the people live in 2 storied houses made out of wood and bricks. The village is administered by a leader called the Poo-yai-ban (head of the village). The village also has 7 village committees and 5 community groups. The 7 village committees are given in Appendix 3 (65). Two of these groups were a womens group and a health volunteer group. Both groups had 12 members. The other groups had fewer members.

The health services for the people in Kum-Hai are in the Tambon health centre which is located in Ban-Ped and the community primary health care centre (CPHCC) (Appendix 4) which is located in the centre of the village. The former covers prevention programmes and primary treatment, the latter covers first aid. The people

use self-medication as the first step in treatment and then go to the community primary health care centre for help. More severe illnesses are dealt with by the Tambon health centre, a private clinic in the city, the university hospital or the Khon Kaen regional hospital. There are also two traditional doctors in the village. One of them is an expert on herbal pill preparations and the other person on crude drug preparations. Traditional medicine is not popular in Kum-Hai at the present time.

Community Profile : Ban-Ped

Ban-Ped is located 11 kilometres from the city (Figure 8). It is also in Muang district and situated near the same highway as Kum-Hai. The living conditions and also local traditional festivals are the same as in Kum-Hai. Although the cultivated land is fertile, the people sold some land in order to profit from increased land value resulting from the proximity of the city bypass road. Ban-Ped has one government primary school (levels 1-6). The government requires the young people to finish the primary school level as their minimum education. This is the situation throughout the whole country. For this reason every village has to have an accessible school. Like Kum-Hai, the majority of the people are semi-skilled labourers and industrial workers but they also work in the field occasionally. Many people work in the department stores in the Muang district. There are six big department stores at present. A minority of people work in the fields as their main occupation. There are some small farms such as chicken farms, duck farms and pig farms supplying an agricultural company in the city. Livestock such as buffaloes and cows are reared for sale but not for agricultural work at all.

The village is administered by a Poo-yai-ban (head of the village). There are seven village committees the same as Kum-Hai (Appendix 3) (65). The people hold strongly to traditional activities. This is a noticeable characteristic of Thai people in general.

The Tambon health centre is situated in Ban-Ped. It serves the people in this village and the villages nearby as well. The health centre in Ban-Ped has three officers responsible for preventive medicine and primary treatment. When the people get ill, they use self-medication for initial treatment. More severe medical cases are taken to either the private clinic, the university hospital or the Khon Kaen regional hospital. The private clinics and hospitals are popular because of shorter waiting times than at government hospitals. The community primary health care centre (CPHCC) (Appendix 4) is situated in the centre of Ban-Ped. It provides over the counter medicines for treating mild illnesses. Both Khum-Hai and Ban-Ped have telephone lines.

3.3 Rural Areas

Natural water resources are very important for Thai farmers in rural areas. That is one of the reasons why the names of the villages begin with 'Huay', 'Nong' and 'Boeng' (Huay means the stream or creek, Nong or Boeng means the lake).

Chonnabot is located fifty-eight kilometres from the Muang district. It is one of twenty-three districts in Khon Kaen province and is situated to the south close to

Ban-Pai district (Figure 6). There are eight sub-districts with seventy-six villages. The total population in 1994 was 50,899 of which 50.29 percent were male and 49.71 percent were female (63). The majority of people are small farmers. Approximately 84 percent of the labour force are farmers (63). Due to the high cost of living in Khon Kaen and the reduction in the quantity of agricultural products the people seek for extra jobs, especially in the dry season and after harvesting is finished. Some people do semi-skilled work such as hand weaving, furniture making, plumbing, car maintenance and building construction in the provincial capital and also in Bangkok. Women in Chonnabot play an important extra earning role by hand weaving. They weave one of the famous Thai silk styles which is produced in Khon Kaen.

Community Profile : Huay-Rai-Neur

Huay-Rai-Neur is located in Chonnabot district which is to the south of Muang district. It is 63 kilometres from Khon Kaen city (Figure 9). The population by census survey in August 1994 was 702 which consisted of 50.71 percent male and 49.29 percent female. Most people are farmers and there is extra work for the women as hand weavers. In the dry season some people temporarily migrate to Bangkok for factory and construction work. Although the major occupation is farming, the agriculture production is for household consumption and it is not enough for sale. The people live in their own wooden houses. They also own the land they farm. The rainfall is unreliable and insufficient for farming in some years. The people use rural tap water supplied from within these villages. The family structure is the extended one which comprises grandfather or grandmother including grandson or

granddaughter in the same house. The husband is the leader of the household and makes the decisions with respect to earning activities and education. The women are commonly responsible for the household budgeting and also for health care (63). There is one primary school which covers level 1 -6. The Huay-Rai-Neur people are strongly traditional in beliefs and culture. Almost every month there is an annual local festival similar to Kum-Hai, Ban-Ped and Nong-Tao (Appendix 5).

The Tambon health centre is situated in the village nearby to Huay-Rai-Neur. For minor illness the people use self-medication and the community primary health care centre (CPHCC) (Appendix 4). For major illness they will go to the Chonnabot community hospital, Ban-Pai community hospital or perhaps to private clinics in the Ban-Pai district. For more serious cases they will visit Khon Kaen regional hospital or the university hospital in Khon Kaen. There are the same seven village committees in the village (Appendix 3) (65). The village is administered under the authority of the Poo-yai-ban (head of village). Other community groups also function such as the health volunteer group, the housewives group and the elderly persons group.

Community Profile : Nong-Tao

The people named the village 'Nong-Tao' because the village history indicates that a large turtle lived in the big lake in the village (nong means lake, tao means turtle). It is situated 77 kilometres from Muang district (Figure 10). The population from the census survey in August 1994 was 466 which consisted of 51.07 percent male and 48.93 percent female. There are 7 village committees as listed (Appendix 3) (65).

The basic infrastructures in Nong-Tao are the same as in Huay-Rai-Neur. That is the school, water supply and health services. The majority of people are small farmers who own their own land. The working age groups migrate for extra earning to Bangkok particularly during the dry season and after harvesting. A few people work abroad in the middle eastern countries. The traditional festivals (Appendix 5) and community groups are the same as in Huay-Rai-Neur. Both Nong-Tao and Huay-Rai-Neur have electricity. Television is the most popular medium of communication to these two villages.

Nong-Tao and Huay-Rai-Neur were selected by random sampling for this study. Both of them are situated in the same district named 'None-Pa-Yom'.

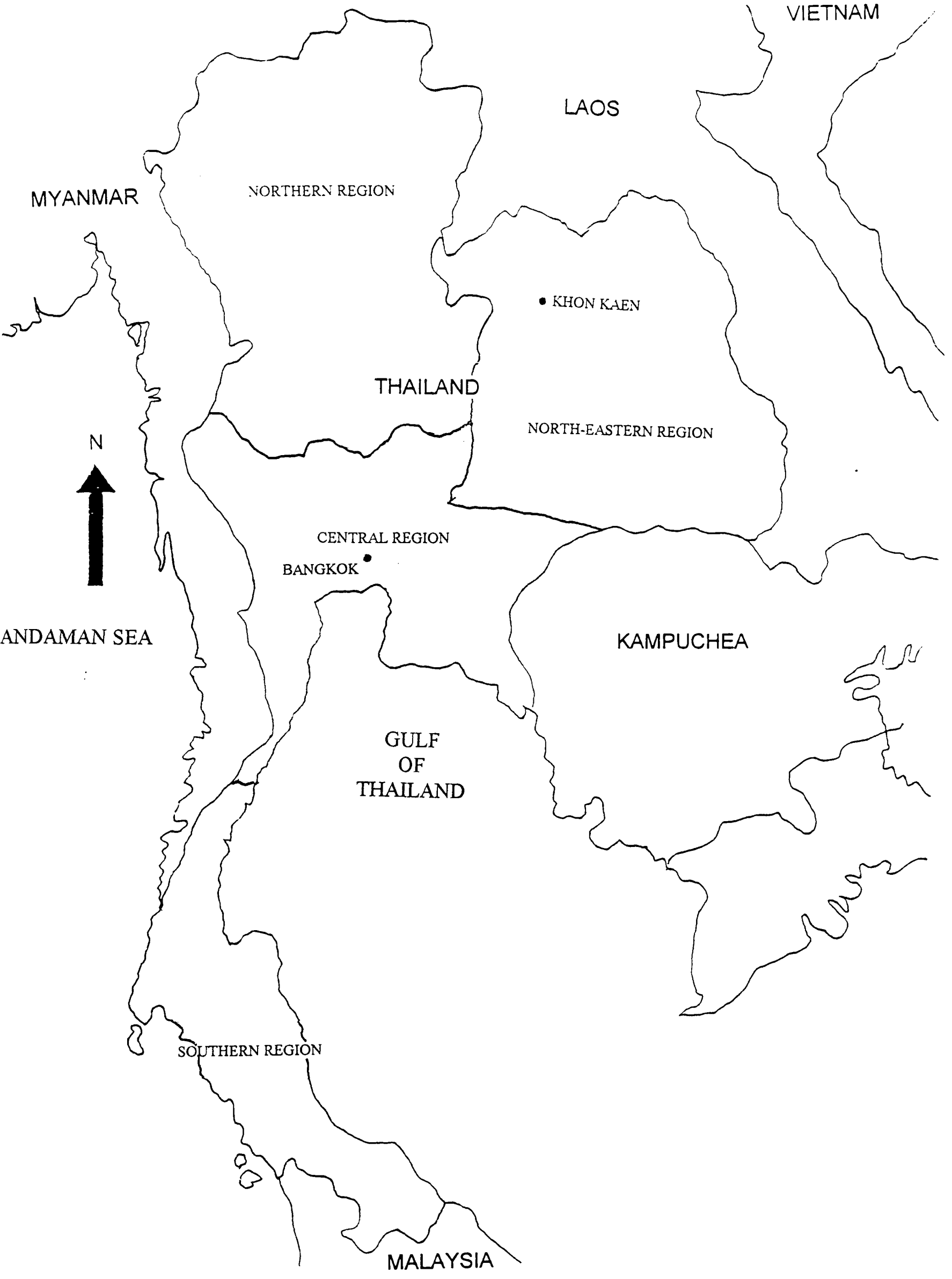


FIGURE 5 MAP OF THAILAND

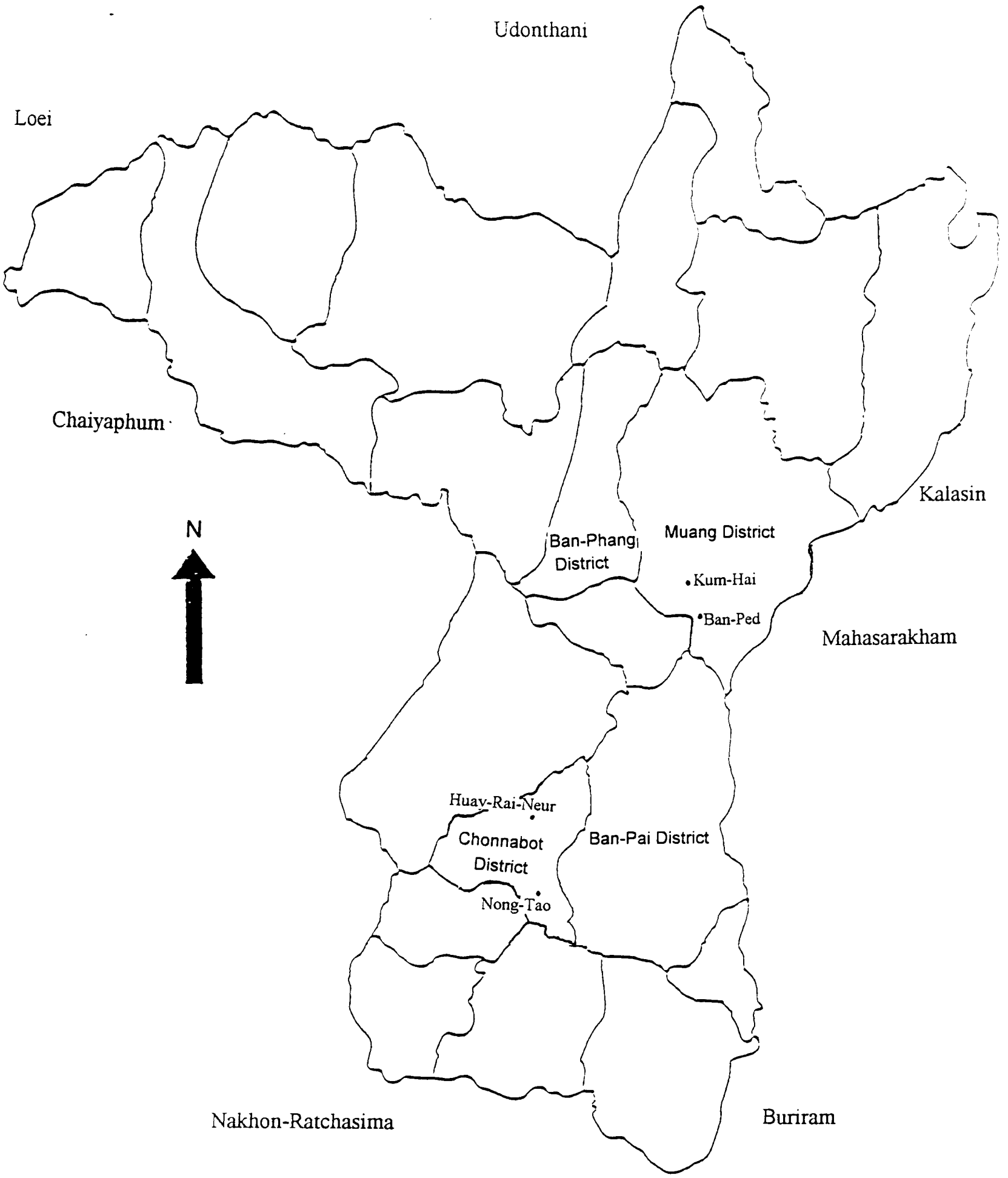


FIGURE 6 MAP OF KHON KAEN PROVINCE

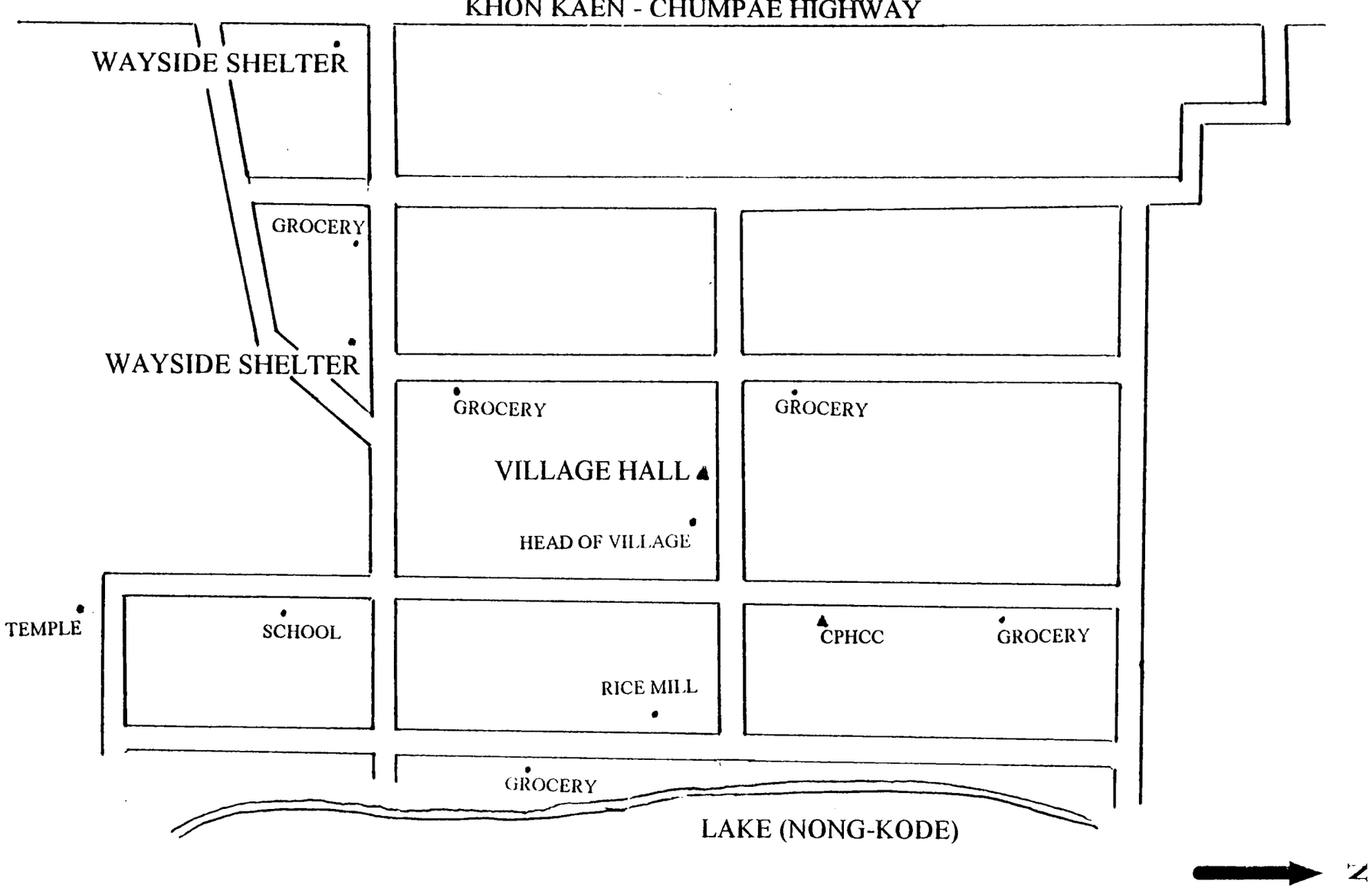


FIGURE 7 MAP OF KUM-HAI

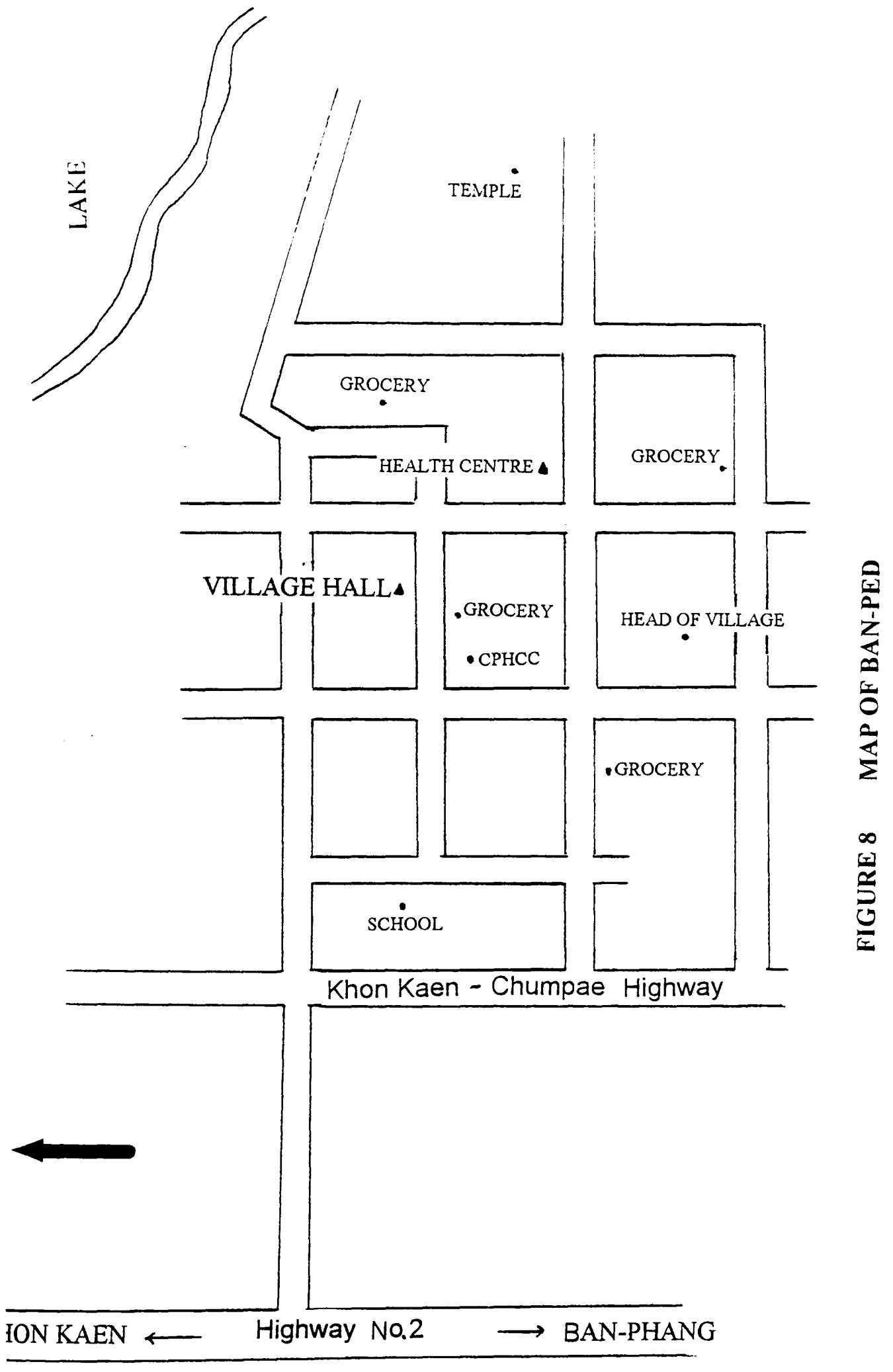


FIGURE 8 MAP OF BAN-PED

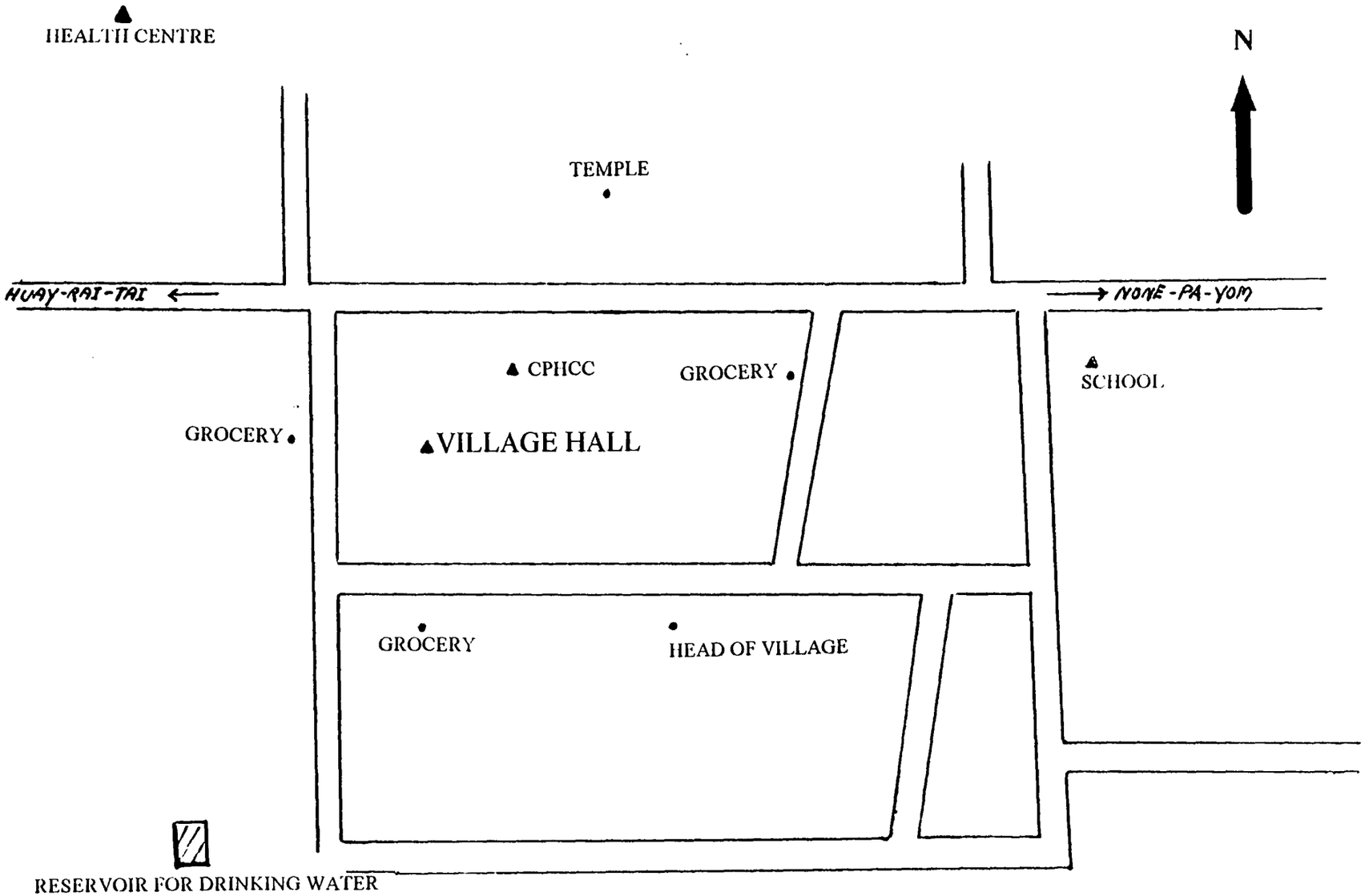


FIGURE 9 MAP OF HUAY-RAI-NEUR

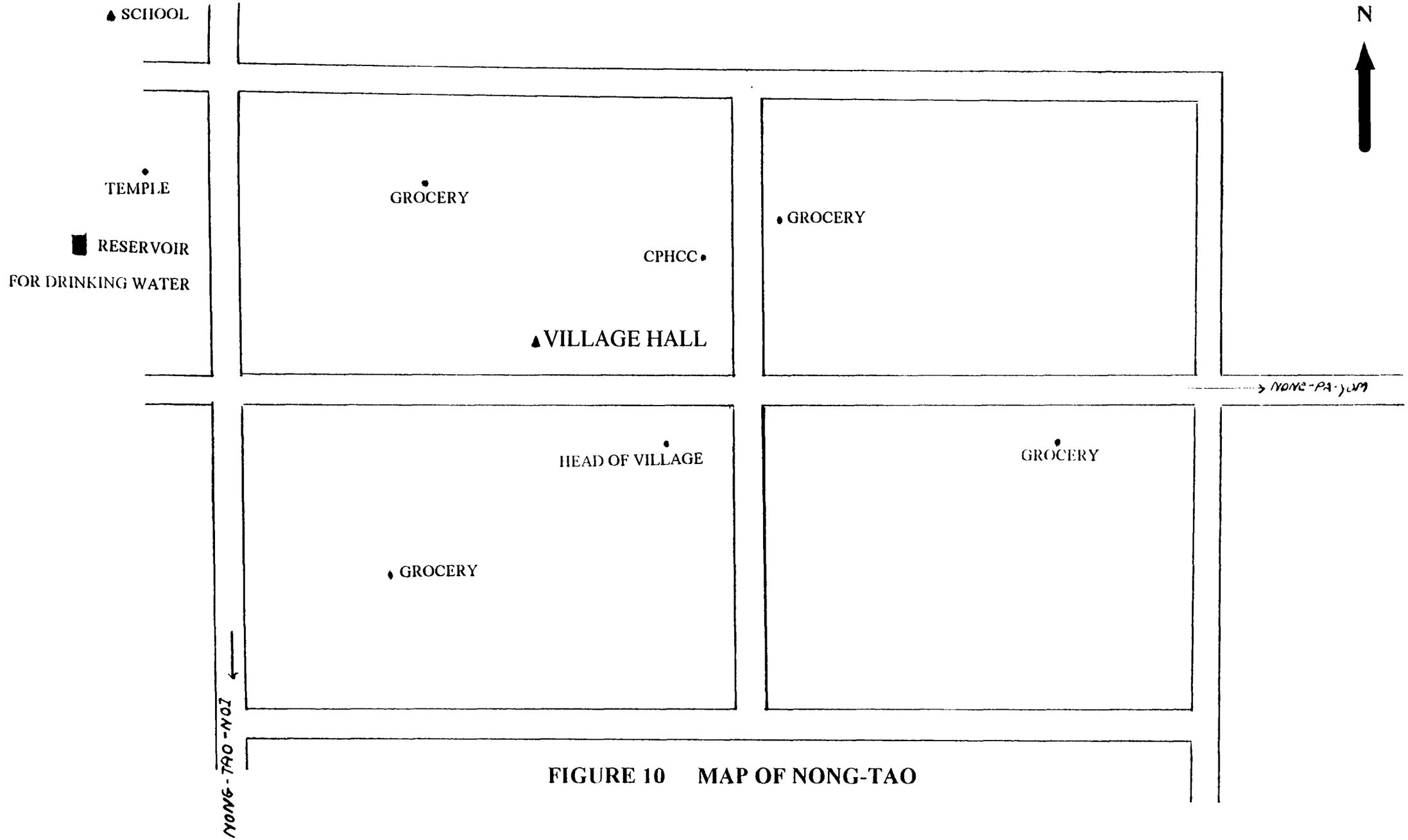


FIGURE 10 MAP OF NONG-TAO

CHAPTER 4. RESULTS AND DISCUSSION

4.1 Results of the Epidemiological Study

4.4.1 The General Characteristics of the Sample Population

The total population in the urban areas was 2,355 (Kum-Hai = 763, Ban Ped =1,592) and in the rural area was 1,168 (Huay-Rai-Neur = 702, Nong-Tao = 466).

The epidemiological study consisted of two surveys, the first was a presurvey, providing an exploratory study of the general background of the study population (Appendix 6a), demographic characteristics and the literacy competency of the people (Appendix 6b).

The data was examined using the following main demographic characteristics:

Age group

Education level

Occupation

Literacy competency

The second study was the epidemiological survey on general health status, self medication behaviour, experience of MK and Ya-chud taking behaviour which was done using an open ended and semi-structured questionnaire (Appendix 7).

Table 1 illustrates the frequency distribution and the relationship between the urban and the rural population. The number in the age bracket was quite high for the 0 - 34 years old group in both urban (62.2 percent) and rural areas (57.6 percent). The highest educational level percentage was the primary school in urban (56.7 percent) and 72.3 percent in rural areas which shows a significant difference ($p < 0.01$) between these two areas. The sex distribution was almost equal with a slightly higher percentage of men than women in both urban (52.2 percent) and rural (50.9 percent) areas. These were no significant gender differences between these two areas ($p > 0.05$).

The urban area has a greater percentage in regular office work, housework, sales, no job and students than in the rural areas but less farmers (urban = 37.9 percent, rural = 61.7 percent) (Table 1). These are significant differences between these two areas for the level of occupation. This was caused by the reduction in cultivated land due to the proximity of the city bypass road. The people have gradually changed their life style of earning from being farmers to being regular office workers, shop owners and sales and participating in higher education. This is to obtain the qualifications necessary for many jobs at the present.

There were 11.4 percent in the urban and 9.7 percent in the rural areas who could not read and write. Most of them were in the elderly and pre-school groups. Although 33.8 percent in the urban and 46.1 percent in the rural were classified as 'fair' but slow in reading and writing, there were 5.3 percent and 4.6 percent in urban and rural areas respectively who could not finish reading the newspaper paragraph provided by

the interviewer.

From the results of this presurvey, the interviewing technique was chosen for the main study. All of these variables investigated had significant differences between the urban and the rural areas except for gender which had no statistically significant differences using the chi - square test.

Table 1 The Frequency Distribution and the Relationship of Demographic Characteristics Between the Urban Populations (N = 2,355) and the Rural Populations(N = 1,168) : December 1995

Variables	*Urban (N = 2,355)*			*Rural (N = 1,168)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Age group									
0 - 14	483	480.0	**20.5**	235	238.0	**20.1**			
15 - 24	486	492.0	**20.6**	250	244.0	**21.4**			
25 - 34	497	457.9	**21.1**	188	227.1	**16.1**			
35 - 44	360	361.6	15.3	181	179.4	15.5			
45 - 54	239	254.7	10.1	142	126.3	12.2			
55 - 64	159	166.4	6.8	90	82.6	7.7			
≥ 65	131	142.4	5.6	82	70.6	7.0			
							17.03571	6	0.00915
Educational level									
primary school	1336	1457.9	**56.7**	845	723.1	**72.3**			
secondary school	493	454.6	20.9	187	225.4	16.0			
certificate/graduate	267	197.2	11.3	28	97.8	2.4			
no class room learning	259	245.3	11.0	108	121.7	9.2			
							117.38693	3	0.00000
Gender									
male	1230	1219.3	**52.2**	594	604.7	**50.9**			
female	1125	1135.7	47.8	574	563.3	49.1			
							0.58960	1	0.44258
Occupation									
no job	302	267.4	12.8	98	132.6	8.4			
student	519	510.0	22.0	244	253.0	20.9			
housework	143	96.3	6.1	1	47.7	0.1			
farmer	892	1078.2	**37.9**	721	534.8	**61.7**			
regular office worker	421	328.2	17.9	70	162.8	6.0			
shop owner/direct seller	78	74.9	3.3	34	37.1	2.9			
							258.98104	5	0.00000
Literacy									
fluent	1165	1087.6	49.5	462	539.4	39.6			
fair	797	893.1	33.8	539	442.9	46.1			
need some help	124	119.0	5.3	54	59.0	4.6			
cannot read and write	269	255.4	**11.4**	113	126.6	**9.7**			
							50.62566	3	0.0000

* Pearson chi - square probability

Table 2 The Frequency Distribution and the Relationship of Demographic Characteristics of Populations (Age group ≥ 15 Years Old) Between the Urban (N = 1,872) and the Rural (N = 933) Areas : December 1995

Variables	*Urban (N = 1,872)*			*Rural (N = 933)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val*	*. percent*			
Age group									
15 - 24	486	491.2	**26.0**	250	244.8	**26.8**			
25 - 34	497	457.2	**26.5**	188	227.8	**20.2**			
35 - 44	360	361.1	19.2	181	179.9	19.4			
45 - 54	239	254.3	12.8	142	126.7	15.2			
55 - 64	159	166.2	8.5	90	82.8	9.6			
≥ 65	131	142.2	7.0	82	70.8	8.8			
							16.93490	5	0.00463
Educational level									
primary school	1149	1256.7	**61.4**	734	626.3	**78.7**			
secondary school	437	392.4	23.3	151	195.6	16.2			
certificate/graduate	267	196.9	14.3	28	98.1	3.0			
no class room learning	19	26.0	1.0	20	13.0	2.1			
							123.75782	3	0.00000
Gender									
male	954	947.0	**51.0**	465	472.0	49.8			
female	918	925.0	49.0	468	461.0	**50.2**			
							0.31376	1	0.57538
Occupation									
no job	114	94.1	6.1	27	46.9	2.9			
student	228	208.9	12.2	85	104.1	9.1			
housework	143	96.1	7.6	1	47.9	0.1			
farmer	891	1072.5	**47.6**	716	534.5	**76.7**			
regular office workers	419	326.3	22.4	70	162.7	7.5			
shop owners/direct seller	77	74.1	4.1	34	36.9	3.6			
							258.46291	5	0.00000
Literacy									
fluent	1057	963.0	56.5	386	480.0	41.4			
fair	729	826.2	38.9	509	411.8	54.6			
need some helps	63	54.1	**3.4**	18	26.9	**1.9**			
cannot read and write	23	28.7	**1.2**	20	14.3	**2.1**			
							69.80559	3	0.00000

* Pearson chi - square probability

Table 3 Comparison of the Ratio of the Highest Percentage for Demographic Characteristics in Urban and Rural Areas with and without < 15 Years Old Age Group

Variables	The highest percentage for each variable			The highest percentage for each variable (exclude < 15 years old)		
	Urban	*Rural*	*Ratio*	*Urban*	*Rural*	*Ratio*
Age group 0 -34	62.2	57.6	1.1	52.5	47.0	1.1
Education level primary school	56.7	72.3	0.8	61.4	78.7	0.8
Gender male	52.2	50.9	1.0	51.0	49.8	1.0
Occupation farmer	37.9	61.7	0.6	47.6	76.7	0.6
Competent reading and writing	49.5	39.6	1.3	56.5	41.4	1.4

After discarding the age group less than 15 years old the urban population was 1,872 and the rural population was 933.

The results show that there were demographic differences between the urban and the rural areas which were age group, education level, occupation and literacy competency using the chi - square test of significance ($p < 0.01$) except for the gender ($p > 0.05$) (Table 2).

The highest percentage of age group was 15 - 34 years old in both urban and rural areas (52.5 percent and 47.0 percent). Primary school students gave the highest percentage amongst the education levels and was 61.4 percent in the urban and 78.7 percent in the rural areas. Gender distribution was slightly higher for males in the urban (51.0 percent) than in the rural areas (49.8 percent).

Farmers formed the highest percentage of the occupations for both areas. Literacy competency was fluent reading and competent writing and was high in both of these two areas. The ratio of the highest percentage of these variables is shown in Table 3. It also shows that there was the same pattern of demographic characteristics even though the 0 - 14 years old were discarded from this study.

Table 4 gives a rough picture of the sample population in urban and rural areas which were 619 and 494, respectively. It shows the age group distribution which has the highest percentage (48.0 percent) is the 25 -44 age group in the urban and the 35 - 54 age group in the rural areas (41.7 percent). There are significant differences for age group between these two areas ($p < 0.01$). Because of migration from among the 15 -34 age group, this group was more male than female in both of the two areas. This migration also affected the age goup percentage of the sample population which was lower among the 15 -34 age group than the total population in Table 2. The female percentage was higher than male in the urban area (52.2 percent) and even higher in the rural areas (57.7 percent) (Table 4). However there was no significant difference for gender between the urban and the rural areas ($p > 0.05$).

Primary school education level (65.2 percent) and farmers (88.1 percent) were predominantly in the rural area and were higher than for the urban area. There were also significant differences in the education level and the occupations between these two areas ($p < 0.01$).

Table 4 **The Frequency Distribution and the Relationship of Demographic Characteristics of Sample Populations Between Urban (N = 619) and Rural (N = 494) Areas : December 1995 - June 1996**

Variables	*Urban (N = 619)*			*Rural (N = 494)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp. Val.*	*Percent*			
Age group									
15 - 24	123	119.6	19.9	92	95.4	18.6			
25 - 34	154	136.3	**24.9**	91	108.7	18.4			
35 - 44	143	137.4	**23.1**	104	109.6	**21.1**			
45 - 54	83	102.9	13.4	102	82.1	**20.6**			
55 - 64	58	62.3	9.4	54	49.7	10.9			
≥ 65	58	60.5	9.4	51	60.6	9.4			
							15.52865	5	0.00833
Educational level									
primary school	299	345.4	**48.3**	322	275.6	**65.2**			
secondary school	125	121.2	20.2	93	96.8	18.8			
certificate/graduate	139	112.9	22.5	64	90.1	13.0			
no class room learning	56	39.5	9.0	15	31.5	3.0			
							43.44385	3	0.00000
Gender									
male	296	280.9	47.8	209	224.1	42.3			
female	323	338.1	**52.2**	285	269.9	**57.7**			
							3.36695	1	0.06652
Occupation									
no job	20	11.7	3.2	1	9.3	0.2			
student	48	43.9	7.8	31	35.1	6.3			
housework	53	30.0	8.6	1	24.0	0.2			
farmer	333	427.1	**53.8**	435	340.9	**88.1**			
regular office workers	120	73.4	19.4	12	58.6	2.4			
shop owners/direct seller	45	32.8	7.3	14	26.2	2.8			
							177.31938	5	0.00000

* Pearson chi - square probability

The respondents were asked to state their own health status with regard to their own general perception. The health belief question which was concerned with the respondents' ideas of what influenced their health was open-ended. The respondents were asked to reply with the words which came first to their minds. The respondents

gave both positive and negative replies which were categorised in terms of external, internal and mixed type as follows :

External type	**Internal type**	**Mixed type**
- good food	- genetic	(the answer belongs to
- money	- enough exercise	both groups)
- drugs	- without stress	
- good housing	- happiness feeling	
- relationships among the relatives	- good emotion	
	- enough rest	
- good weather (not too cold, not too hot)	- no anxiety	
	- appropriate activities	
- cigarettes	- drinking alcoholic beverages	
- alcoholic beverages	- smoking	
- germs		

It was noticeable that the respondents who referred to the cigarettes or alcoholic beverages which had an influence on health did not refer to smoking or drinking alcoholic beverages. So they were categorised as external type.

The data in Table 5 indicates that the majority of the respondents in both urban and

rural areas which were 76.7 percent and 78.5 percent respectively perceived that they were 'healthy'. There was a slightly higher percentage in the rural areas than in the urban areas ($p < 0.05$).

The external types of health belief are shown in a higher proportion in the urban (42.6 percent) and rural (72.1 percent) areas than the other 2 types. These were much higher in the rural than in urban area. There were shown to be significant differences by the chi - square test ($p < 0.01$) for health beliefs between these two areas (Table 5).

Table 5 The Frequency Distribution and the Relationship of Sample Populations on Current Health Status and Health Beliefs Between the Urban (N = 619) and the Rural (N = 494) Areas : December 1995 - June 1996

Variables	*Urban (N = 619)*			*Rural (N = 494)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Current health status									
healthy	475	480.0	**76.7**	388	383.0	**78.5**			
fair	84	91.8	13.6	81	73.2	16.4			
illness	51	40.6	8.2	22	32.4	4.5			
do not know	9	6.7	1.5	3	5.3	0.6			
							9.42592	3	0.02413
Health belief									
external	264	344.8	**42.6**	356	275.2	**72.1**			
internal	219	151.3	35.4	53	120.7	10.7			
mixed	136	122.9	22.0	85	98.1	17.2			
							114.13060	2	0.00000

*Pearson chi - square probability

All respondents were asked to recall self-medication experiences for any illness during the previous month and also any health service visit during the previous year. The

following table (Table 6) indicates that 33.4 percent of the respondents in the urban and 59.9 percent of the respondents in the rural areas had experiences of self medication during the previous month.

It was shown that 44.6 percent of the respondents in the urban and 58.7 percent in the rural areas had visited the health services during the previous year. Taking medicine once within a month for self-medication and one visit within a year for a health service visit are the highest percentages in these two areas (Table 6).

It is noticeable that there are markedly significant differences for self-medication and health service visit between these two areas using the chi - square tests ($p < 0.01$). The prevalence of illness appears to be lower in the urban area or it is more common for the respondents in the rural area to seek for treatment whenever they feel discomfort or illness or the respondents in the urban area appear to have a threshold for continuing normally for as long as possible.

Table 6 **The Frequency Distribution and the Relationship of Health Care Experience of the Sample Populations Between the Urban (N = 619) and the Rural (N = 494) Areas : December 1995 - June 1996**

Variables	*Urban (N = 619)*			*Rural (N = 494)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Self-medication during the previous month									
no use	412	339.3	66.6	198	270.7	40.1			
once	127	152.4	**20.5**	147	121.6	**29.8**			
twice	41	62.8	**6.6**	72	50.2	**14.6**			
3 - 5 times	36	35.0	**5.8**	27	28.0	**5.5**			
> 5 times	3	29.5	**0.5**	50	23.5	**10.1**			
							115.42187	4	0.00000
Health service visit during the previous year									
no use	343	304.2	55.4	204	242.8	41.3			
once	154	189.1	**24.9**	186	150.9	**37.7**			
twice	42	51.7	**6.8**	51	41.3	**10.3**			
3 - 5 times	60	45.6	**9.7**	22	36.4	**4.5**			
> 5 times	20	28.4	**3.2**	31	22.6	**6.3**			
							45.72490	4	0.00000

* Pearson chi - square probability

4.1.2 The Prevalence of the Respondents Who had Experience of MK

There are no significant differences for the chi - square test between the urban and the rural areas for the numbers of respondents who had experience of MK. Table 7 shows that the prevalence of MK in the urban area was found to be 82.1 percent and in the rural area 78.1 percent amongst the people who were more than 15 years old

Table 7 The Frequency Distribution and the Relationship of the Respondents Who had MK Between the Urban (N = 619) and Rural (N =494) Areas : December 1995 - June 1996

Variables	*Urban (N = 619)*			*Rural (N = 494)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
MK	508	497.2	**82.1**	386	396.8	**78.1**			
no MK	111	121.8	17.9	108	97.2	21.9			
							2.68510	1	0.10129

* Pearson chi - square probability

According to question No. 6 (Appendix 7) the respondents were asked to indicate the time occurrence of experiencing MK starting from the 'one week period'. If the answer was 'no', the 'within one month' would be asked next. It can be said that the numbers of respondents who had MK within one month are the numbers of the respondents who answered that they had MK 'within one week' plus the numbers of respondents who answered that they had MK 'within one month'. The numbers of respondents who had MK within one year were calculated similarly except for the 'more than one year' which had excluded the other respondents already.

Table 8 The Frequency Distribution and the Relationship of the Time of Occurrence of MK for the Urban (N = 508) and the Rural (N = 386) Areas : December 1995 - June 1996

Variables	*Urban (N = 508)*			*Rural (N = 386)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
within last week	210	155.7	**41.3**	64	118.3	**16.6**			
within last month	88	86.9	**17.3**	65	66.1	**16.8**			
within last year	108	11.9	**21.3**	89	85.1	**23.1**			
more than one year	102	149.4	**20.1**	161	113.6	**41.7**			
do not know	-	4.0	-	7	3.0	**1.8**			
							88.31731	4	0.00000

* Pearson chi - square probability

The calculation of the period prevalence for each time occurrence from Tables 7 and 8 are shown as follows:

Period prevalence of MK within last week in urban area

= [(210) x 100]/619 = 33.9 percent

Period prevalence of MK within last week in rural area

= [(64) x 100]/494 = 13.0 percent

Period prevalence of MK within last month in urban area

= [(210 + 88) x 100]/619 = 48.1 percent

Period prevalence of MK within last month in rural area

= [(64 + 65) x 100]/494 = 26.1 percent

Period prevalence of MK within last year in urban area

= [(210 + 88 + 108) x 100]/619 = 65.6 percent

Period prevalence of MK within last year in rural area

= [(64+ 65 + 89) x 100]/494 = 44.1 percent

Period prevalence of MK for more than one year in urban area

= (102 x 100)/619 = 16.5 percent

Period prevalence of MK for more than one year in rural area

= (161 x 100)/494 = 32.6 percent

There are marked significant differences for the chi - square test ($p < 0.001$) between the urban and the rural areas (Table 8). The highest percentages are of 41.3 percent of 'within one week' in the urban and of 41.7 percent 'more than one year' in the rural areas.

4.1.3 The Prevalence of Respondents Who had Experience of Ya-chud.

There are significant differences for the chi - square test between the urban and rural areas for the numbers of respondents who had experience of Ya-chud taking

($p < 0.01$) (Table 9). It also shows that the prevalence of experienced Ya-chud users was 25.2 percent in the urban and 31.8 percent in the rural areas.

The prevalence of experienced Ya-chud users amongst the MK respondents (N = 508 in the urban and N = 386 in the rural) was 30.7 percent in the urban and 40.7 percent in the rural areas (Table 10). The chi - square test shows that there are significant differences between these two areas ($p < 0.01$).

Table 9 The Frequency Distribution and the Relationship of Experienced Ya-chud Users and Non-users Amongst Sample Respondents Between the Urban (N = 619) and the Rural (N = 494) Areas : December 1995 - June 1996

Variables	*Urban (N = 619)*			*Rural (N = 494)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
no MK	111	121.8	17.9	108	97.2	21.9			
MK without Ya-chud	352	323.1	56.9	229	257.9	46.4			
MK with Ya-chud	156	174.1	**25.2**	157	138.9	**31.8**			
							12.19912	2	0.00224

* Pearson chi - square probability

Table 10 The Frequency Distribution and the Relationship of Experienced Ya-chud Non-users and Users Amongst MK Respondents Between theUrban (N = 508) and the Rural (N = 386) Areas : December 1995 - June 1996

Variables	*Urban (N = 508)*			*Rural (N = 386)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
no Ya-chud	352	330.1	69.3	229	250.9	59.3			
Ya-chud	156	177.9	**30.7**	157	135.1	**40.7**			
							9.57227	1	0.00198

* Pearson chi-square probability

Table 11 The Frequency Distribution and the Relationship Between the Last Time Ya-Chud was Taken for the Urban (N = 156) and the Rural (N = 157) Users

Variables	*Urban (N = 156)*			*Rural (N = 157)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
within last week	29	22.4	**18.6**	16	22.6	**10.2**			
within last month	23	22.9	**14.7**	23	23.1	**14.6**			
within last year	51	44.4	**32.7**	38	44.6	**24.2**			
more than one year	53	66.3	**34.0**	80	66.7	**51.0**			
							11.13255	3	0.01103

* Pearson chi - square probability

Considering the times of taking Ya-chud, the period prevalence can be calculated from Table 11 (using the same method as on page 77) as follows :

Period prevalence of takingYa-chud within last week in urban areas

= (29 x 100)/619 = 4.7 percent

Period prevalence of takingYa-chud within last week in rural areas

= (16 x 100)/494 = 3.2 percent

Period prevalence of takingYa-chud within last month in urban areas

= [(29+ 23) x 100]/619 = 8.4 percent

Period prevalence of takingYa-chud within last month in rural areas

= [(16+ 23) x 100]/494 = 7.9 percent

Period prevalence of taking Ya-chud within last year in urban areas

= [(29 + 23 + 51) x 100]/619 = 16.6 percent

Period prevalence of taking Ya-chud within last year in rural areas

= [(16+ 23 + 38) x 100]/494 = 15.6 percent

Period prevalence of taking Ya-chud more than one year ago in urban areas

= (53 x 100)/619 = 8.6 percent

Period prevalence of taking Ya-chud more than one year ago in rural areas

= (80 x 100)/494 = 16.2 percent

Table 11 shows that there is a significant difference for the numbers of Ya-chud users taking Ya-chud for the last time between the urban and rural areas ($p < 0.05$).

4.1.4 MK Experience : Urban and Rural Comparison

The prevalence of MK in the urban areas was found to be higher than in the rural areas (Table 7) even though there were no significant differences ($p > 0.05$). The demographic characteristics from Table 12 show that there are no gender differences in MK experiences ($p < 0.05$) but age group, occupation and education level all show differences by the chi-square test of significance ($p < 0.01$) between the urban and rural areas.

The age group who experienced the highest percentage of MK in the urban areas was the 25 - 44 year old age group while in the rural areas it was the 35 - 54 year old age group. When the age groups were stratified and compared with the sample population in both areas, the highest risk groups were shown to be the 55 - 64 year old group in the urban and the 65 and over age group in the rural areas (see also Table 13).

Table 12 The Frequency Distribution and the Relationship of Demographic Characteristics of Those Who had MK Experience Between Urban (N = 508) and Rural (N = 386) Areas

Variables	*Urban (N = 508)*			*Rural (N = 386)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Age group									
15 - 24	92	88.1	18.1	63	66.9	16.3			
25 - 34	121	104.6	**23.8**	63	79.4	16.3			
35 - 44	121	113.6	**23.8**	79	86.4	**20.5**			
45 - 54	71	89.8	14.0	87	68.2	**22.5**			
55 - 64	52	55.7	10.2	46	42.3	11.9			
≥ 65	51	56.3	10.0	48	42.7	12.4			
							18.29893	5	0.00259
Educational level									
primary school	254	297.2	**50.0**	269	225.8	**69.7**			
secondary school	108	98.3	21.3	65	74.7	16.8			
certificate/graduate	106	84.1	20.9	42	63.9	10.9			
no class room learning	40	28.4	7.9	10	21.6	2.6			
							40.90678	3	0.00000
Gender									
male	235	226.7	46.3	164	172.3	42.5			
female	273	281.3	**53.7**	222	213.7	**57.5**			
							1.26339	1	0.26101
Occupation									
no job	14	8.5	2.8	1	6.5	0.3			
student	31	30.1	6.1	22	22.9	5.7			
housework	44	25.6	8.7	1	19.4	0.3			
farmer	291	360.8	**57.3**	344	274.2	**89.1**			
regular office work	90	54.0	17.7	5	41.0	1.3			
Shop owner/direct seller	38	29.0	7.5	13	22.0	3.4			
							132.43251	5	0.00000

* Pearson chi-square probability

Table 13 Ratio of the Respondents having MK Experience to the Sample Population Stratified by Age Group : Comparison Between Urban and Rural Areas

	Urban			Rural		
	MK (N=508) (1)	Sample (N=619) (2)	Ratio (1) : (2)	MK (N=386) (3)	Sample (N=494) (4)	Ratio (3) : (4)
Age group						
15 -24	92	123	0.75	63	92	0.68
25 - 34	121	154	0.79	63	91	0.69
35 - 44	121	143	**0.85**	79	104	0.76
45 - 54	71	83	**0.86**	87	102	**0.85**
55 - 64	52	58	**0.90**	46	54	**0.85**
≥ 65	51	58	**0.88**	48	51	**0.94**

It can be said that the high risk age group for MK is 35 years old and over in the urban areas (ratio ≥ 0.85) and 45 years old and over in the rural area (ratio ≥ 0.85). The highest ratio by age group is the 55 - 64 years old group in the urban and the ≥ 65 years old age group in the rural areas.

The same method can be used to calculate any other demographic characteristic such as education level, gender and occupation as shown in Table 14.

Table 14 Ratio of the Respondents Having MK Experience to the Sample Population Stratified by Some Demographic Variables : Comparison Between Urban and Rural Areas

	Urban			Rural		
	MK (N=508) (1)	Sample (N=619) (2)	Ratio (1) : (2)	MK (N=386) (3)	Sample (N=494) (4)	Ratio (3) : (4)
Education Level						
primary school	254	299	**0.85**	269	322	**0.84**
secondary school	108	125	**0.86**	65	93	0.70
certificate/graduate	106	139	0.76	42	64	0.66
no class room learning	40	56	0.71	10	15	0.67
Gender						
male	235	296	0.79	164	209	0.78
female	273	323	**0.84**	222	285	**0.78**
Occupation						
no job	14	20	0.7	1	1	1
student	31	48	0.64	22	31	0.7
housework	44	53	0.83	1	1	1
farmer	291	333	**0.87**	344	435	0.79
regular office work	90	120	0.75	5	12	0.42
shop owner/ direct seller	38	45	**0.84**	13	14	**0.93**

Table 14 shows that the ratio of those having MK experience to the sample population was high (ratio > 0.85) among those only educated at primary and secondary school in the urban areas. In the rural areas an equivalent high ratio = 0.84 was only observed for those educated to primary school level. The lower level of education of the people was related to higher prevalence of MK. This is also confirmed by the chi-square test which showed significant differences between these

two areas ($p < 0.01$) (Table 12). There are no gender differences amongst respondents having MK experience between these two areas (Table 12) but in the urban area there were more female (ratio = 0.84) than male (ratio = 0.79). In the rural areas the gender ratio was the same (Table 14) for both males and females.

The distribution of occupation for those with MK experience is shown in Table 12. The highest percentage in both areas was the farmers (57.3 percent in the urban and 89.1 percent in the rural areas). The ratio those who had MK experience to sample population showed that the farmer had the highest (ratio = 0.87) in the urban areas but the shop owner/direct seller was the highest ratio in the rural areas (ratio = 0.93) (Table 14). However, the shop owner/direct seller in the urban areas also had a high ratio of 0.84 (Table 14). This may be due to the daily work load of carrying their goods, such as silk cloth and mattresses and walking through the nearby villages. The shop owners also had extra work such as weaving for the females and housework for both males and females.

Table 15 The Frequency Distribution and the Relationship of Perception on Health Status and Health Beliefs Between the Urban (N = 508) and the Rural (N = 386) Areas

	Urban (N = 508)			*Rural (N = 386)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Current health status									
healthy	380	383.7	**74.8**	296	292.3	**76.5**			
fair	78	83.4	15.4	69	63.6	17.8			
illness	44	36.3	8.7	20	27.7	5.2			
do not know	6	4.5	1.2	2	3.5	0.5			
							5.73506	*3*	*0.12524*
Health beliefs									
external	224	228.3	**44.1**	284	219.7	**73.4**			
internal	182	126.6	35.8	41	96.4	10.6			
mixed	102	93.1	20.1	62	70.9	16.0			
							91.30538	2	0.00000

* Pearson chi-square probability

Table 16 Ratio of the Respondents having MK Experience to the Sample Populations Stratified by Current Health Status and Health Beliefs : Comparison Between Urban and Rural Areas

	Urban			Rural		
	MK (N=508) (1)	Sample (N=619) (2)	Ratio (1) : (2)	MK (N=386) (3)	Sample (N=494) (4)	Ratio (3) : (4)
Current health status						
healthy	380	475	0.80	296	388	0.76
fair	78	84	**0.93**	69	81	0.85
illness	44	51	0.86	20	22	**0.91**
do not know	6	9	0.67	2	3	0.67
Health belief						
external	224	264	**0.85**	284	356	**0.80**
internal	182	219	0.83	41	53	0.77
mixed	102	136	0.75	62	85	0.73

There are no significant differences for perception of current health status for MK experience between the urban and the rural (Table 15). The highest percentage considered themselves 'healthy' as shown by 74.8 percent in the urban and 76.5 percent in the rural area. The ratios in Table 16 however show that the highest ratio was 'fair' health status in the urban (ratio = 0.93) and suffering illness as a health status in the rural (ratio = 0.91).

Table 15 shows that the perception on health beliefs was highest for the external type and was greater in the rural area (73.4 percent) than the urban areas (44.1 percent). The ratio of those with MK experience to sample population in the urban areas (ratio = 0.85) was higher than in the rural areas (ratio = 0.80) (Table 16). It is noticeable

these the result are opposite to each other. It can be said that in general the respondents in both urban and rural areas belonged to the 'external' type, but this was more predominant in the rural areas. Among those who had MK experience the 'external' type was found at the higher ratio in the urban areas than in the rural areas.

4.1.5 Ya-chud Users : Urban and Rural Comparison

MK Experience Treated with Ya-chud

The respondents who had experience of taking Ya-chud were interviewed during December 1995 - June 1996 to obtain information on the last episode of MK which was treated with Ya-chud. The results from Table (17) indicate that 'body' (37.2 percent) and 'waist' (25.0 percent) were the first and second major sites of MK in the urban areas. The same rank order was obtained for the locations of the last MK in the rural areas. These were 32.5 percent for 'body' and 31.2 percent for 'waist'. There was no significant difference between the urban and rural areas for the location of the last episode of MK treated with Ya-chud. It is noticeable that 'body' was referred to most in this survey when the respondents could not define the MK location and when MK occurred at many locations of the body at the same time.

The cause of the last episode of MK treated with Ya-chud was from 'work', 57.7 percent in the urban and 70.7 percent in the rural areas. There were significant differences between these two areas ($p < 0.01$) (Table 17). The time occurrence of the last episode of MK treated with Ya-chud was more than one year (34.0 percent in

the urban and 51.0 percent in the rural areas). The differences were significant, using the chi-square test, between the urban and the rural areas ($p < 0.05$). The pattern of MK was a 'new event'/'acute episode' in the urban area with 64.1 percent. In the rural areas it was an 'old event'/'chronic' experience for 52.9 percent. These results showed markedly significant differences between the urban and rural areas ($p < 0.01$). Treatment of the last episode of MK with Ya-chud not combined with another treatment was found to be the majority response in both areas (92.9 percent in the urban and 70.1 percent in the rural areas). These results also showed markedly significant differences ($p < 0.01$).

Table 17 **The Frequency Distribution and the Relationship of the Last Episode of MK Treated with Ya-chud Between Ya-chud Users in Urban (N = 156) and Rural (N = 157) Areas. December 1995 - June 1996**

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Location of MK									
arm, shoulder	11	12.5	7.1	14	12.5	8.9			
chest, back	5	5.0	3.2	5	5.0	3.2			
waist	39	43.9	**25**	49	44.1	**31.2**			
hip, leg	29	27.4	18.6	26	27.6	16.6			
joint, knee	12	11.5	7.7	11	11.5	7.0			
body	58	54.3	**37.2**	51	54.7	**32.5**			
do not know	2	1.5	1.3	1	1.5	0.6			
							2.48318	6	0.87034
Causes of MK									
work	90	10.2	**57.7**	111	100.8	**70.7**			
illness	16	14.0	10.3	12	14.0	7.6			
sport/accident	8	5.5	5.1	3	5.5	1.9			
multifactors	36	22.4	23.1	9	22.6	5.7			
do not know	6	14.0	3.8	22	14.0	14.0			
							30.37816	4	0.00000
Time Occurrence									
within last week	29	22.4	18.6	16	22.6	10.2			
within last month	23	22.9	14.7	23	23.1	14.6			
within last year	51	44.4	32.7	38	44.6	24.2			
more than one year	53	66.3	**34.0**	80	66.7	**51.0**			
							1.13255	3	0.01103
Pattern									
new event/acute	100	86.7	**64.1**	74	87.3	47.1			
old event/chronic	56	69.3	35.9	83	69.7	**52.9**			
							9.12656	1	0.00252
Multiple Treatment									
yes	11	28.9	7.1	47	29.1	29.9			
no	145	127.1	**92.9**	110	127.9	**70.1**			
							27.14583	1	0.00000

* Pearson chi-square probability.

Table 18 The Frequency Distribution and the Relationship of Sources of Ya-chud and Treatment Outcome Between Ya-chud Users in Urban (N = 156) and Rural (N = 157) Areas.

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Sources of Ya-chud									
drug stores	129	126.6	**82.7**	125	127.4	**79.6**			
do not know	27	29.4	17.3	32	29.6	20.4			
							0.48353	1	0.48683
Treatment Outcome									
cure	50	37.9	32.1	26	38.1	16.6			
improved	30	44.4	19.2	59	44.6	37.6			
no change	72	70.8	**46.2**	70	71.2	**44.6**			
do not know	4	3.0	2.6	2	3.0	1.3			
							17.72021	3	0.00050

* Pearson chi-square probability

Ya-chud users were interviewed for the sources of their medicines and also the perception on outcome from taking Ya-chud. The results are shown in Table 18. The data from Table 18 indicates that the sources of Ya-chud were the same in both urban and rural areas. This was the drug stores (82.7 percent in the urban and 79.6 percent in the rural areas). These results showed no significant differences ($P < 0.05$). It was noticeable that groceries in the village having medicines for sale were drug stores from the respondents' perception.

Even those who took Ya-chud, had the highest percentage perception of their treatment outcome to be 'not changed'. That is 46.2 percent in the urban and 44.6 percent in the rural areas. The respondents' perception that MK was 'cured' with Ya-chud was 32.1 percent in the urban and 16.6 percent in the rural areas. 'Improved'

was found to be 37.6 percent in the rural areas and this was higher than in the urban areas (19.2 percent). There were significant differences for the respondents' perception on treatment outcome between the urban and the rural areas ($p < 0.01$).

Characteristics of Ya-chud Users

The demographic characteristics of Ya-chud users are shown in Table 19. The highest percentage of Ya-chud users (28.2 percent) was in the 35-44 age group in the urban area and in the 45 - 54 age group in the rural area (29.9 percent). There were no significant differences for the age group between these two areas ($p > 0.05$). The education of primary school level had the highest percentage for both urban and rural areas (64.1 percent and 84.1 percent respectively) but for the rural areas there was a markedly higher percentage than for the urban area. These differences were found to be significant ($p < 0.01$).

There was a higher percentage of male users in the urban area (53.8 percent) but in the rural area the females had a higher percentage (60.5 percent) and there were significant differences between the urban and the rural areas ($p < 0.05$). This result contrasted with the experience of MK in Table 14 which showed that the higher ratio of females who had experienced MK was in the urban area (ratio = 0.84).

The highest percentage of Ya-chud users in the urban and the rural areas were among the farmers (69.2 and 97.5 percent respectively). The differences were significant between these two areas ($p < 0.01$).

The highest percentage for perception on the current health status experienced by Ya-chud users in the urban and rural areas was 'healthy' (66.7 and 70.1 percent respectively). There were no significant differences between these two groups ($p > 0.05$) (Table 20). The perception on health beliefs from Table 20 shows that external type was the highest percentage for users in the urban areas (41.7 percent) and in the rural (66.2 percent) areas. There was a higher percentage of external type in the rural area. There were significant differences between these two areas ($p < 0.01$). Self-medication during the previous month by the Ya-chud users in the rural areas (68.8 percent) was higher than in the urban areas (51.3 percent) (Table 21). There were markedly significant differences between the urban and the rural areas ($p < 0.01$).

Table 19 The Frequency Distribution and the Relationship of Demographic Characteristics of Ya-chud Users Between the Urban (N = 156) and the Rural (N = 157) Areas

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Age Group									
15 - 24	8	9.5	5.1	11	9.5	7.0			
25 - 34	29	26.4	18.4	24	26.6	15.3			
35 - 44	44	35.9	**28.2**	28	36.1	17.8			
45 - 54	26	36.4	16.7	47	36.6	**29.9**			
55 - 64	22	21.9	14.1	22	22.1	14.0			
≥ 65	27	25.9	17.3	25	26.1	15.9			
							10.61587	5	0.05955
Education Level									
primary school	100	115.6	**64.1**	132	116.4	**84.1**			
secondary school	31	24.9	19.9	25.1	12.1	7.6			
certificate/graduate	22	12.5	14.1	3	12.5	1.9			
no classroom learning	3	3.0	1.9	3	3.0	1.9			
							21.73082	3	0.00007
Gender									
male	84	72.8	**53.8**	62	73.2	39.5			
female	72	83.2	46.2	95	83.8	**60.5**			
							6.47960	1	0.01091
Occupation									
no job, student, housework, office, direct seller	48	25.9	30.8	4	26.1	2.5			
farmers	108	130.1	**69.2**	153	130.9	**97.5**			
							44.98665	1	0.00000

* Pearson chi-square probability

Table 20 **The Frequency Distribution and the Relationship of Perception on Current Health Status and Health Beliefs Between Ya-chud Users in Urban (N = 156) and in Rural (N = 157) Areas**

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Current Health Status									
healthy	104	106.7	**66.7**	110	107.3	**70.1**			
fair	30	31.9	19.2	34	32.1	21.7			
illness	22	17.4	14.1	13	17.6	8.3			
							2.72934	2	0.25546
Health belief									
external	65	84.2	**41.7**	104	84.8	**66.2**			
internal	57	39.9	36.5	23	40.1	14.6			
mixed	34	31.9	21.8	30	32.1	19.1			
							23.69705	2	0.00001

Table 21 **The Frequency Distribution and the Relationship of Health Care Experience of Ya-chud Users Between the Urban (N = 156) and the Rural (N = 157) Areas**

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Self-medication During the Previous Month									
no use	76	62.3	48.7	49	62.7	31.2			
once	43	49.8	**27.6**	57	50.2	**36.3**			
twice	18	23.9	**11.5**	30	24.1	**19.1**			
3 - 5 times	19	15.0	**12.2**	11	15.0	**7.0**			
> 5 times	-	5.0	**0.0**	10	5.0	**6.4**			
							22.92237	4	0.00013
Health Services Visit During the Previous Year									
no use	78	71.8	50.0	66	72.2	42.0			
once	41	47.8	**26.3**	55	48.2	**35.0**			
twice	10	14.0	**6.4**	18	14.0	**11.5**			
3 - 5 times	21	15.0	**13.5**	9	15.0	**5.7**			
> 5 times	6	7.5	**3.8**	9	7.5	**5.7**			
							10.72430	4	0.02984

4.1.6 Characteristics of Ya-chud Used for MK : Urban and Rural Comparison

The results from Table 22 indicate that the respondents in both areas commonly used one set of Ya-chud for a treatment of MK. There were 57.1 percent in the urban and 75.2 percent in the rural. The minority which was 7.1 percent in the urban and 5.7 percent in the rural had four sets and over. These were significant differences between the urban and rural areas ($p < 0.01$).

There are significant differences of the numbers of sets used for MK, prices per set and numbers of tablets per set between the urban and rural areas ($p < 0.01$) (Table 22). One set for each MK was the highest percentage in both urban (57.1 percent) and rural areas (75.2 percent). Prices per set in the rural areas were higher than in the urban areas. The price of 4 bahts was the highest percentage for the rural area (38.2 percent). In the urban the price of 3 bahts was the highest percentage (57.7 percent) (Table 22). These were significant differences between the urban and the rural areas ($p < 0.01$).

The first and the second rank for the numbers of tablets in a set in the urban areas were 36.5 percent for 5 tablets and 29.5 percent for 4 tablets in a set. In the rural areas, it was found to be 40.1 percent for 5 tablets and 36.9 percent for 7 tablets, respectively. These were significant differences for the chi-square test ($p < 0.01$).

It can be said that Ya-chud in the urban areas mostly consisted of 4 or 5 tablets in a set and were priced at 3 bahts a set. In the rural areas there were mostly 5 or 7

tablets in a set and the price was 4 bahts a set.

Table 22 The Frequency Distribution and the Relationship of Characteristics of Ya-chud in Urban (N = 156) and Rural (N = 157) Areas

	Urban (N = 156)			*Rural (N = 157)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Numbers of Set Used									
one set	89	103.2	**57.1**	118	103.8	**75.2**			
two sets	39	28.9	25.0	19	29.1	12.1			
three sets	17	14.0	10.9	11	14.0	7.0			
four sets and over	11	10.0	7.1	9	10.0	5.7			
							12.44200	3	0.00601
*Prices per Set***									
less than 3 bahts	10	5.0	6.4	-	5.0	-			
3 bahts	90	52.3	**57.7**	15	52.7	9.6			
4 bahts	1	30.4	0.6	60	30.6	**38.2**			
5 bahts	32	39.4	20.5	47	39.6	29.9			
6 - 8 bahts	9	10.0	5.8	11	10.0	7.0			
10 bahts and over	14	18.9	9.0	24	19.1	15.3			
							126.31478	5	0.00000
Numbers of Tabs in a Set									
less than 3	10	6.0	6.4	2	6.0	1.3			
3 tabs	17	10.0	10.9	3	10.0	1.9			
4 tabs	46	31.9	**29.5**	18	32.1	11.5			
5 tabs	57	59.8	**36.5**	63	60.2	**40.1**			
6 tabs	15	11.0	9.6	7	11.0	4.5			
7 tabs	3	30.4	1.9	58	30.6	**36.9**			
more than 7 tabs	8	7.0	5.1	6	7.0	3.8			
							80.46593	6	0.00000

* Pearson chi-square probability

** 36-40 bahts = £1 (1996)

Table 23 shows the location of last MK treated with other medicines or other methods in the urban area. The highest percentage was at 'waist' for both Ya-chud users (34.0 percent) and non-users (33.2 percent). There were no significant differences of the location of MK between the Ya-chud users and non-users ($p > 0.05$). Even though 'no change' was found to be higher for the Ya-chud users (51.3 percent) than non-users (49.4 percent), there were no significant differences for the treatment outcome for Ya-chud users and non users ($p > 0.05$).

The same result for the location of last MK without taking Ya-chud in the rural area was shown in Table 24. The highest percentage of Ya-chud users and non-users were at 'waist' (35.7 percent for Ya-chud users and 38.4 percent for Ya-chud non-users). There were no significant differences ($p > 0.05$). The treatment outcome 'improved' was the highest percentage response for both Ya-chud users (58.0 percent) and non-users (61.1 percent). 'No change' in outcome as the result of treatment was found to be higher for the Ya-chud users (28.7 percent) than for the non-users (19.2 percent). Cure was found to be higher percentage for the non-users (18.8 percent) than the users (8.3 percent). There were significant differences for the treatment outcome between the Ya-chud users and non-users in the rural area ($p < 0.01$).

The results of treatment outcome show that 'cure' was found to result more in Ya-chud non-users than Ya-chud users for both urban and rural areas.

Table 23 The Frequency Distribution and the Relationship of the Last Episode of MK Treated with Other Medicines/Methods Between Ya-chud Users (N = 156) and Ya-chud Non-users(N = 352) in the Urban Areas : December 1995 - June 1996

	Ya-chud Users (N = 156)			*Ya-chud Non-users(N = 352)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Location of MK									
neck	-	3.4	-	11	7.6	3.1			
arm, shoulder	11	14.1	7.1	35	31.9	9.9			
chest, back	10	7.7	6.4	15	17.3	4.3			
waist	53	52.2	**34.0**	117	117.2	**33.2**			
hip, leg	37	39.9	23.7	93	90.1	26.4			
joint, knee	18	18.7	11.5	43	42.3	12.2			
arm and leg	4	4.0	2.6	9	9.0	2.6			
body	23	16.0	14.7	29	36.0	8.2			
							11.72334	7	0.11003
Treatment Outcome									
cure	32	39.9	20.5	98	90.1	27.8			
improved	44	37.8	28.2	79	85.2	22.4			
no change	80	78.0	**51.3**	174	176.0	**44.4**			
do not know	-	0.3	-	1	0.7	0.3			
							4.26770	3	0.23397

* Pearson chi-square probability.

Table 24 The Frequency Distribution and the Relationship of the Last Episode of MK Treated with Other Medicines/Methods Between Ya-chud Users (N = 157) and Ya-chud Non-users(N = 229) in the Rural Areas : December 1995 - June 1996

	Ya-chud Users (N = 157)			*Ya-chud Non-users(N = 229)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Location of MK									
neck	4	7.3	2.5	14	10.7	6.1			
arm, shoulder	13	11.4	8.3	15	16.6	6.6			
chest, back	7	10.2	4.5	18	14.8	7.9			
waist	56	58.6	**35.7**	88	85.4	**38.4**			
hip, leg	30	24.4	19.1	30	35.6	13.1			
joint, knee	19	16.3	12.1	23.7	9.2	12.2			
arm and leg	5	2.8	3.2	2	4.2	0.9			
body	23	26.0	14.6	41	38.0	17.9			
							11.05223	7	0.13636
Treatment Outcome									
cure	13	22.8	**8.3**	43	33.2	**18.8**			
improved	91	94.0	**58.0**	140	137.0	**61.1**			
no change	45	36.2	**28.7**	44	52.8	**19.2**			
do not know	8	4.1	5.1	2	5.9	0.9			
							17.24661	3	0.00063

* Pearson chi-square probability.

4.1.7 Discriminant analysis of Ya-chud Non-users and Ya-chud Users

The Stepwise Discriminant Analysis was used for this purpose and SPSS for MS Windows Release 6.0 was the computer programme used for the analysis.

By means of comparing a whole series of variables it was found that 'Age band' and 'Education level' was the best discriminator for determining Ya-chud use (Appendix 22).

It is seen from Table 25 that 85.9 percent of Ya-chud users were discriminated correctly using the 'Age band' and 'Education level' discriminators. The age band used compared those 15-24 years with those 25 years and over. The education level compared those having primary or secondary level education with those having a higher level of education than the secondary level. The age banding of 25 years and over and the education level lower than secondary level were the critical indicators to give a good estimate of the respondents having MK who would take Ya-chud.

The numbers of Ya-chud non-users (urban and rural areas) and Ya-chud users (urban and rural areas) were 581 and 313 respectively. The results are shown as follows:

Standardised canonical discriminant function coefficients were:

	Func 1
Age group	0.59795
Education level	-0.58324

Canonical discriminant functions were evaluated at group means (group centroids) as below:

Group	Func 1
Ya-chud non-users	-0.19293
Ya-chud users	0.35812

Table 25 Numbers of Ya-chud Non-users (N = 581) and Ya-chud Users (N = 313) Classified by the Method of Stepwise Discriminant Analysis

		Predicted Ya-chud Non-users		Predicted Ya-chud users	
Group	No of Cases	Freq	Percent	Freq	Percent
Ya-chud non-users	581	210	361	371	63.9
Ya-chud users	313	44	14.1	269	**85.9**

The percent of grouped cases correctly classified by the Discriminant Analysis was 53.58 percent (See also Appendix 22a)

If different age bands or different education groupings were used then the discrimination of the Ya-chud user was less good. Examples of this are given in Appendix 22b and 22c. Appendix 22b shows the computer print-out for the calculations using a different age band. The age bands used were 15-44 years and 45 years and over. The results show that 52.4 percent of Ya-chud users were discriminated correctly. Appendix 22c shows the computer print out for the calculations using different education levels. A primary education level was used as one group and all those having more than a primary education level was used as the other group. The results show that 73.8 percent of Ya-chud users were discriminated correctly. Although this was quite a good discriminator it was not as good as the 85.9 percent quoted for the best discriminator.

The linear discriminant functions for discrimination between Ya-chud non-users and Ya-chud users are as follows:

= 0.59795 age group - 0.58324 education level

The final summary given in Table 25 shows that 85.9 percent of Ya-chud users are classified correctly but 63.9 percent of Ya-chud non-users are classified wrongly. It can be said that between the Ya-chud users and non-users, age group and educational level is a screening indicator for predicting their behaviour. These two variables can discriminate 85.9 percent of Ya-chud users from the Ya-chud non-users but 63.9 percent of the Ya-chud non-users included are false positives. The false negatives are 14.1 percent of Ya-chud users excluded by these two variables (Table 25).

The stepwise discriminant analysis was also used to classify the Ya-chud non-users and Ya-chud users in the urban and the rural areas. The summary tables (Table 26 and Table 27) show similar results. That is those age groups and education level are not a good indicator for predicting the behaviour for not taking Ya-chud among respondents who had MK.

Table 26 Numbers of Ya-chud Non-users (N = 352) and Ya-chud Users (N = 156) in the Urban Areas Classified by the Method of Stepwise Discriminant Analysis

		Predicted Ya-chud Non-users		Predicted Ya-chud users	
Group	No of Cases	Freq	Percent	Freq	Percent
Ya-chud non-users	352	145	41.2	207	58.8
Ya-chud users	156	29	18.6	127	**81.4**

Table 26 shows the percent of grouped cases correctly classified by the Discriminant Analysis was 53.54 percent.

Table 27 Numbers of Ya-chud Non-users (N = 229) and Ya-chud Users (N = 157) in the Rural Areas Classified by the Method of Stepwise Discriminant Analysis

		Predicted Ya-chud Non-users		Predicted Ya-chud users	
Group	No of Cases	Freq	Percent	Freq	Percent
Ya-chud non-users	229	65	28.4	164	71.6
Ya-chud users	157	15	9.6	142	**90.4**

Table 27 shows the percent of grouped cases correctly classified by the Discriminant Analysis was 53.63 percent

The discriminant functions of the urban and the rural respondents are show as follows:

Urban = 0.72229 age group - 0.46090 education level

Rural = 0.67897 education level - 0.46114 age group

The stepwise discriminant analysis of the urban and rural areas are also shown in Appendix 14 and Appendix 15.

The explanation of the high percentage of false positive results is that the age group was regrouped to be 2 groups. These were 15-24 years old and 25 years old and over. The education level was also regrouped to be two groups which were primary and secondary school in one group and the other levels combined together to be another group. The frequency distribution of the Ya-chud non-users was quite high among the age group 25 years old and over due to the high prevalence of MK among this age group. There were 76.1 percent in the urban and 77.3 percent in the rural areas (Appendix 16 and Appendix 17). The frequency distribution of primary and secondary school for the Ya-chud non-users in both urban and rural areas were also quite high percentage (65.7 percent and 79.9 percent respectively) (Appendix 16 and Appendix 17). These can lead to high percentage of false positive for discriminant analysis.

The results show that the age group 25 years old and over with an education level of primary or secondary school who had MK is the indicator to predict Ya-chud users in the urban and rural areas which correctly classifed 53.58 percent of grouped cases.. It would still be useful to have health education programmes about Ya-chud even though the 63.9 percent of Ya-chud non-users (Table 25) represents a false positive

in this investigation. Any other intervention programmes which aim to solve Ya-chud problems need to have other investigations to differentiate the Ya-chud users and non-users more accurately. This would result in a reduction of the cost of carrying out these programmes.

4.1.8 Discussion

This study aimed to compare the MK behaviour of the Ya-chud users and non-users in two different areas. These were the urban and the rural areas of Khon Kaen Province. It also aimed to clarify the relationship between Ya-chud users and behavioural factors and investigate the differences between Ya-chud users and non-users among the age group 15 years old and over. The semi-structured interviews were used to determine Ya-chud use with reference to MK viewed from the user's perspective. The sample in the urban areas belonging to 15 years old and over was 619 and in the rural areas it was 494. From the results obtained the following conclusions could be made:

4.1.8.1 The Prevalence of the Respondents who had MK

The prevalence rate of respondents 15 years old and over in the urban areas with MK was found to be higher (82.1 percent) than in the rural (78.1 percent) areas (Table 7). There was no significant difference between the prevalence rates in the two areas.

When the time occurrence of the last MK was broken down (see also Table 8), the period prevalences of the last MK were as shown in Table 28.

Table 28 The Prevalence Of MK Related To the Time Of Occurrence : Comparison Between The Urban And The Rural Areas

Time of Occurrence	Urban (N = 619)		Rural (N = 494)	
	MK Experience	Period Prevalence (Percent)	MK Experience	Period Prevalence (Percent)
Previous one week	210	33.9	64	13.0
Previous one month	289	48.1	129	26.1
Previous one year	406	**65.6**	218	44.1
More than one year	102	16.5	161	**32.6**

The period prevalence of within one year was found to be higher in the urban areas than in the rural areas and a period prevalence of more than one year was higher in the rural areas (Table 28)

4.1.8.2 The Prevalence of the Respondents who had Ya-chud

Due to the fact that the study focused on the use of Ya-chud for MK, all respondents who had MK were included in the next step to the interviewing process. This included 508 respondents in the urban and 386 in the rural areas. (See also Figure 4).

The results from this study showed that the prevalence of Ya-chud users in the urban and in the rural areas could be presented in two ways as follows (Table 29 and Table 30):

Table 29 Comparison of the Prevalence of Ya-chud Users among 15 Years Old and Over Between the Urban (N = 619) and Rural (N = 494) Areas

	Urban			Rural		
	No of Risk Group	No of Ya-chud Users	Prevalence (Percent)	No of Risk Group	No of Ya-chud Users	Prevalence (Percent)
Prevalence of Ya-chud Users ≥ 15 Years Old	619	156	25.2	494	157	31.8
Prevalence of Ya-chud Users who had MK with ≥ 15 Years Old	508	156	**30.7**	38.6	157	**40.7**

The times of occurrence of last taking Ya-chud were broken down (see also Table 11) and the period prevalences of Ya-chud users related to their last taking Ya-chud is shown in Table 30.

Table 30 The Prevalence of Ya-chud Users Related to the Time Occurrence of Taking Ya-chud : Comparison Between the Urban and the Rural Areas

Time of Occurrence	Urban (N = 619)		Rural (N = 494)	
	Ya-chud Users	Period Prevalence (Percent)	Ya-chud Users	Period Prevalence (Percent)
Previous one week	29	4.7	16	3.2
Pervious one month	52	8.4	39	7.9
Previous one year	103	**16.6**	77	15.6
More than one year	53	8.6	80	**16.2**

The prevalence of Ya-chud users in the rural areas was higher than in the urban areas (Table 29). This was confirmed with the period prevalence of more than one year (Table 30) but the results were the opposite way round ie., greater in the urban than in the rural areas when the period prevalence rates were calculated for the time periods of one week, one month and one year.

It was observed that there was more MK in the urban areas but despite this there was more Ya-chud use in the rural areas (See also Table 28).

It is also seen from page 104 and Appendix 22c that the primary level of education in probably the chief component of Ya-chud users in the education level grouping which includes both primary and secondary level education. This confirms the results of the epidemiological study of Ya-chud users given in Table 19 which indicates that the primary level of education accounted for 64.1 percent of users in the urban areas

and 84.1 percent in the rural areas. The finding that lower education levels combined with higher age groupings is the best discriminator for predicting Ya-chud users is a useful finding. This highlights the main target group for intervention studies aimed at Ya-chud use.

4.1.8.3 The Demographic Characteristics and Health Care Behaviours of Ya-chud Users

The results (Table 31) showed that the age group distribution of Ya-chud users and the respondents' perception on health status did not have significant differences for the chi-square test between the users in the urban and rural areas but:
education level, gender, occupation, health beliefs, self-medication experience and health service all had significant differences for the users between the urban and rural areas.

In the urban areas only the perception on health belief had no significant differences between the users and non-users (41.7 percent). The other variables in the urban areas had significant differences.

In the rural areas only two variables, that is gender (60.5 percent) and visits to health service facilities (35.0 percent) had no significant differences, the other variables all had significant differences between users and non-users.

Table [(b)] 31 Comparison of the Variables for the Highest Percentages of the Respondents Who Took Ya-chud in the Urban (N = 156) and Rural (N = 157) Areas

Variables	Urban		Rural		Significance*
	Ya-chud Users	Percent	Ya-chud Users	Percent	
Demographic					
Age group	35-44 years old	28.2**	45-54 years old	29.9**	Not different
Education Level	Primary school	64.1**	Primary school	84.1**	Different
Gender	Male	53.8**	Female	60.5	Different
Occupation	Farmers	69.2**	Farmers	97.5**	Different
Perception					
Health status	Healthy	66.7**	Healthy	70.1**	Not different
Health belief	External	41.7	External	66.2**	Different
Health Care Experience					
Self-medication	Once a month	27.6**	Once a month	36.3**	Different
Health service	Once a week	26.3**	Once a week	35.0	Different

* = Significant differences between the Ya-chud users in the urban and in the rural areas.

** = Significant differences between the Ya-chud users and non-users.

(b) = See also Appendix 14a - Appendix 19.

4.1.8.4 Behavioural Factors Related to Ya-chud Use and the Associated Behavioural Factors Compared Between Users and Non-users

Table 32 Summary Table of the Last Occasion of MK without and with Ya-chud Treatment Compared Between the Ya-chud Users in the Urban (N = 156) and the Rural (N = 157) Areas.

Variables	Urban		Rural		Significance
	Ya-chud Users	Percent	Ya-chud Users	Percent	
Without taking Ya-chud (a)					
Location of MK	Waist	34.0[n]	Waist	35.7[n]	-
Causes of MK	Work	60.3[n]	Work	68.8*	-
Time of Occurrence	Within last week	41.0[n]	More than one year	50.3*	-
Pattern	New event/acute	58.0*	New event/acute	60.3*	-
Source of Treatment	Self-medication	50.6*	Self-medication	85.4*	-
Treatment outcome	No change	51.3[n]	Improved	58.0*	-
*The last occasion of suffering MK and also taking Ya-chud***					
Location of MK	Body	37.2	Body	32.5	Not Different
Causes of MK	Work	57.7	Work	70.7	Different
Time occurrence	More than one year	34.0	More than one year	51.0	Different
Pattern	New event/acute	64.1	Old event/chronic	52.9	Different
Multiple treatment	No	92.9	No	70.1	Different
Sources of Ya-chud	Drug stores	82.7	Drug stores	79.6	Not Different
Treatment outcome	No change	46.2	No change	44.6	Different

n = no significant differences between users/non-users.

* = significant differences between users/non-users.

** = see also Table 17 and Table 18.

(a) = see Appendix 14b and Appendix 17b

The results from Table 32 indicate that the location of the last MK without taking Ya-chud for Ya-chud users was found to be the 'waist' for the highest percentage of Ya-chud users in both urban and rural areas. This showed no significant differences

between the users and non-users of Ya-chud in each area (see Table 23 and Table 24). It can be concluded that the body location of MK was not a suitable indicator to use in order to predict the respondents who used or did not use Ya-chud.

The time period of the last occurrence of MK without taking Ya-chud was found to be 'within the last week' for the majority of MK sufferers in the urban areas. This showed no significant differences between the users and non-users of Ya-chud. In the rural areas it was found to be 'more than one year' and this had significant differences between the users and non-users of Ya-chud (Table 32).

In both rural and urban areas it was the new events which formed the majority of episodes of MK. There were significant differences between the users and non-users of Ya-chud between the two areas.

Self-medication for treatment of MK was the majority response for the treatment choice in both areas and had significant differences between the users and non-users in each area. It was also found that there were much higher percentages of self-medication in the rural areas than in the urban areas. The majority perceived outcome from such treatments was found to be 'no change' in the urban areas. In the rural areas 'improved' was found to be the highest response. This showed significant differences between the users and non-users. It can be seen that respondents in the rural areas had a more positive perceived outcome from treatment than those in the urban areas.

The location of the last occasion of suffering from MK for which the respondents took Ya-chud were mostly located as the 'body'. This was the same for both urban and rural areas which showed no significant differences. The respondents perceived that this MK was caused by 'work'. This was the majority response for both urban and rural areas. There were significant differences between the two areas. The majority time occurrences of suffering MK and taking Ya-chud was found to be 'more than one year' in both areas. Again there were significant differences between the two areas.

The pattern of MK for which Ya-chud was taken was found to be 'new event' for the highest percentage of respondents in the urban areas but in the rural areas 'old event' was found to be the highest percentage response. There were significant differences between these two areas.

The majority of respondents in both areas had Ya-chud for treatment of MK without another concurrent treatment with medicine. There were no significant differences between the two areas. The source of supply for Ya-chud was from the drug stores in the villages for the highest percentage of respondents in both urban and rural areas. There were no significant differences between the two areas.

The respondents perceived the treatment outcome after taking Ya-chud to be 'no change' in both areas. This however, showed significant differences between these two areas (Table 32).

The results indicate that MK was the most common illness among the respondents in the urban and rural areas during this study. It may be acute/chronic/recurrent symptoms but these could not be classified further from this study. The respondents took Ya-chud as the alternative treatment when the previous treatment outcome was unsatisfactory. After taking Ya-chud the treatment outcome which had the highest percentage response was found to be 'no change'. Was the MK for which Ya-chud was taken more serious than the previous MK when no Ya-chud was taken or did Ya-chud have no effect for that type of MK? The in-depth interviews were performed in order to gather more information about these situations.

Discussion

This study focused on the perception which the respondents who had used Ya-chud gave to their MK. Some people only reported the location of intense pain but other reported many areas of pain. However the study was not concerned with pain intensity but with pain location.

The data obtained from interviewing(Table 18) indicated that the perceived outcome amongst Ya-chud users in the rural areas was more positive than that amongst Ya-chud users in the urban areas. However the study did not evaluate the actual contents of the Ya-chud packages in the rural and the urban areas. Therefore it was not known whether the people in the two areas were taking the same or a closely similar cocktail of medicines or not. The difference in perception of the perceived outcome of Ya-chud taking in the rural and urban areas could therefore have resulted from a more

effective set of medicines having been used in the rural areas. This factor would have to be clarified before making firm conclusions about the difference in perception of Ya-chud use between the two areas.

4.2 Results of Identification of Medicines in Ya-chud Samples

Samples of Ya-chud were collected by the interviewers during the survey (December 1995 - June 1996). There were 23 different types which had not any labelling on the package. The identity of medicines in Ya-chud was determined using a blind technique by the Medical Science Centre, Ubolrajathani, Thailand. The composition of the medicines is shown in Table (33). The top ten ingredients found in Ya-chud samples were as follow:

1.	Chlorpheniramine	60.9 percent
2.	Dexamethasone	56.5 percent
3.	Vitamin B	52.2 percent
4.	Phenylbutazone	39.1 percent
5.	Paracetamol	30.4 percent
6.	Indomethacin	21.7 percent
7.	Aspirin	17.4 percent
8.	Prednisolone	17.4 percent
9.	Diazepam	17.4 percent
10.	Al^{+++}	17.4 percent

There were 2 samples collected from Kum-Hai, one sample from Huay-Rai-Neur and one sample from Nong-Tao which had only one tablet in one envelope. The respondents who gave these medicines explained that they had bought them from drug stores when they requested Ya-chud for the treatment of MK. They all agreed

that this one tablet had the same action as Ya-chud with many tablets. Identification of the medicines showed that the single Ya-chud was dexamethasone in the samples from Kum-Hai, Huay-Rai-Neur and Nong-tao. Piroxicam was also found in one sample from Kum-Hai.

The Ya-chud which was popular in the samples collected from Kum-Hai was treatment number 9 (Table 33). The composition was as follows:

Treatment 9

- Dexamethasone
- Prednisolone
- Phenylbutazone
- Diazepam
- Vitamin B

In Ban-Ped the popular treatments were numbers 2, 6 and 20 and their compositions were as follows:

Treatment 2

- Dexamethasone
- Phenylbutazone (2 tabs)
- Dipyrone
- Vitamin B
- Antacid tablet

Treatment 6

- Dexamethasone
- Prednisolone
- Phenylbutazone
- Chlorpheniramine
- Vitamin B (2 tablets)

Treatment 20

- Dexamethasone
- Phenylbutazone
- Paracetamol
- Indomethacin
- Diazepam
- Vitamin B

In Huay-Rai-Neur the popular treatments were numbers 3, 12 and 18 and their compositions were as follows:

Treatment 3

- Dexamethasone
- Phenylbutazone (2 tabs)
- Indomethacin
- Vitamin B

Treatment 12

- Dexamethasone
- Phenylbutazone
- Chlorpheniramine
- Vitamin B (3 tablets)
- Antacid tablet

Treatment 18

- Aspirin
- Dexamethasone
- Indomethacin
- Chlorpheniramine
- Vitamin B

In Nong-Tao the popular treatments among the samples collected were treatments numbers 4 and 13 and their compositions were as follows:

Treatment 4

- Dexamethasone
- Paracetamol
- Indomethacin
- Chlorpheniramine
- Vitamin B
- Antacid tablet (2 tablets)

Treatment 13

- Paracetamol
- Chlorpheniramine (3 tablets)

Table 33 Identity of Medicines in Ya-chud Samples Collected from Four Villages in North East Thailand : December 1995 - June 1996

Treatment \ Medicines	Aspirin	Dexamethasone	Prednisolone	Phenylbutazone	Paracetamol	Indomethacin	Dipyrone	Piroxicam	Diazepam	Chlorpheniramine	Cyproheptadine	Diphenhydramine	Vitamin B	Al^{+++}	Ampicillin	Tetracycline	Dextromethorphan	Unclassified	Kum-Hai	Ban-Ped	Huay-Rai-Neur	Nong-Tao	No of Tabs/Caps	Price (baht)
1		/		/									/	/				/		*			5	3
2		/		//			/						/							*			5	3
3		/		//		/							/								*		5	5
4		/			/	/				/			/	//								*	7	4
5	/				/					/								/		*			4	4
6		/	/	/						/			//							*			6	3
7		/								/	/		/							*			4	5
8						//			/	/			/							*			5	3
9		/	/	/					/				/						*				5	5
10					/										/		/		*				3	3
11					/					/					/				*				3	5
12		/		/						/			///	/							*		7	5
13					/					///												*	4	3
14	/									/					/						*		3	3
15	/									/		//								*			4	4
16			/				/									/				*			3	5
17		/		/						/			//	/						*			6	3
18	/	/				/				/			/								*		5	5
19		/	/	/	/				/	/										*			6	20
20		/		/	/	/			/				/							*			6	5
21		/																	*		*	*	1	2
22								/											*				1	2
23										/								///				*	4	4
No of samples	4	13	4	9	7	5	2	1	4	14	1	1	12	4	3	1	1	3						
Percentage	17.4	56.5	17.4	39.1	30.4	21.8	8.7	4.4	17.4	60.9	4.4	4.4	52.2	17.4	13.0	4.4	4.4	13.0						

4.2.1 Conclusion

These findings are similar to the results from the FDA post marketing surveillance programme in drug stores in 1991 (4). Dexamethasone was found to be more popular in the recommended treatments than either prednisolone or NSAIDs. The most popular active ingredient in Ya-chud recommended for treating MK was a steroid. Phenylbutazone and indomethacin were also used in this study. Thus combination may depend on the knowledge of the people and also the expertise of the drug sellers in increasing the numbers of the treatments for a wide range of choices (4). Antacid tablets were included in some treatments in an attempt to reduce the gastrointestinal side effects (4). Vitamin B was considered to be included more to increase the number of drugs in a Ya-chud treatment than to increase the benefits from the drug actions. If more than two tablets of Vitamin B where included in one envelope of treatment it was found to consist of tablets which had different shapes and colours (4).

Chlorpheniramine was also popular in treatments in order to increase the number of medicines and also for their side effect of producing drowsiness (4). Aspirin and paracetamol were both combined with steroids. The combination of aspirin and or paracetamol with other kinds of drugs than steroids was not found to be popular from this study.

Antibiotics were used in the treatments to reduce fever or to treat colds. Sometimes when the patients caught a cold they also experienced MK and so antibiotics were

used to treat these cases (4).

It should be noted that these samples of Ya-chud were not necessarily representative of the range of Ya-chud used in each village. The interviewers bought from those respondents who were more open in their relationship with the interviewers.

4.3 Results of People's Attitudes Towards Ya-chud for Musculoskeletal Pain

4.3.1 Reliability Analysis

A total of 155 respondents were recruited for pre-testing the structured interview. The reliability analysis of the scales were determined using Cronbach's alpha coefficient. The items with a small correlation ($r < 0.500$) were discarded from this study. Thus, the 2 items, statements No 1 and No 2, which were concerned with the health beliefs were included for conducting the measurement ($r = 0.5908$) (Table 34). The alpha coefficient of beliefs about medicines, statements No 2 - No 4, (Table 35) and attitudes to Ya-chud, statements No 5 - No 14, (Table 3) were 0.6198 and 0.7509. The total number of statements validated were 14 of the original 30 statements tested.

To ensure the reproducibility of the structured interview developed in the pre-test the reliability analysis was also determined in both of the areas where the full study was undertaken. This data is given in Table 37 - Table 42.

The overall results indicated that the scales used were quite reliable because Cronbach's alpha coefficients obtained in the pretesting and in the main study areas gave similar values.

Table 34 Summary Statistics for Two Selected Items and the Relationship Between the Scale and These Two Items Concerning Health Beliefs : Pre-Test (N = 155)

Statistics for Scale	Mean	Variance	SD	No of Variables		
	10.6065	1.4740	1.2141	2		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	5.3032	5.2323	5.3742	0.1419	1.0271	0.0101
Item Variance	0.5193	0.2876	0.7509	0.4633	2.6105	0.1073
Inter-item Covariances	0.2177	0.2177	0.2177	0.0000	1.0000	0.0000
Inter-items Correlations	0.4685	0.4685	0.4685	0.0000	1.0000	0.0000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 1.	5.3742	0.2876	0.4685	0.2195	-
No 2.	5.2323	0.7509	0.4685	0.2195	-

Reliability Coefficients 2 Items

Alpha = 0.5908 Standardised Item Alpha = 0.6380

No 1. My health status will change with age.

No 2. Everyone should have some knowledge of self care.

Table 35 Summary Statistics for Three Selected Items and the Relationship Between the Scale and These Three Items Concerning Beliefs about Medicines : Pre-Test (N = 155)

Statistics for Scale	Mean	Variance	SD	No of Variables		
	13.5032	8.7321	2.9550	3		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	4.5011	4.0452	4.8774	0.8323	1.2057	0.1779
Item Variance	1.7080	1.4139	2.0174	0.6035	1.4268	0.0912
Inter-item Covariances	0.6014	0.5450	0.6939	0.1488	1.2731	0.0052
Inter-items Correlations	0.3545	0.3227	0.3755	0.528	1.1636	0.0006

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 3.	9.4581	4.2369	0.4238	0.1807	0.5335
No 4.	8.9226	5.0979	0.4135	0.1735	0.5445
No 5.	8.6258	4.5214	0.4551	0.2075	0.4822

Reliability Coefficients 3 Items

Alpha = 0.6198 Standardised Item Alpha = 0.6223

No 3. Whenever I get musculoskeletal pain, I need to treat with medicine.

No 4. There should be a wide range of medicines in drug stores.

No 5. Good medicines should have a rapid action.

Table 36 **Summary Statistics For Nine Selected Items And The Relationship Between The Scale And These Nine Items Concerning Attitudes To Ya-chud: Pre-Test (N = 155)**

Statistics for Scale	Mean	Variance	SD	No of Variables		
	29.0710	69.7677	8.3527	9		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	3.2301	2.3226	3.9355	1.6944	1.6944	0.3888
Item Variance	2.5779	2.2036	3.2662	1.0626	1.4822	0.1205
Inter-item Covariances	0.6468	0.0727	1.3021	1.2294	17.9135	0.0942
Inter-items Correlations	0.2532	0.03118	0.255	0.4937	16.5393	0.0151

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 6.	25.9613	53.6089	0.5228	0.4007	0.7115
No 7.	26.7484	55.0467	0.5654	0.4162	0.7073
No 8.	26.6516	57.6830	0.4148	0.3813	0.7302
No 9.	26.3806	55.8217	0.4954	0.4091	0.7175
No 10.	25.4323	57.9743	0.3808	0.237	0.7356
No 11.	25.6452	56.8018	0.4301	0.2405	0.7278
No 12.	25.1355	60.0919	0.3247	0.2203	0.7435
No 14.	25,1484	56.8804	0.4193	0.2839	0.7295

Reliability Coefficients 9 Items

Alpha = 0.7509 Standardised Item Alpha = 0.7532

No 6. Ya-chud is cheap and good value for use in medication.

No 7. The Government should allow unrestricted sale of Ya-chud

No 8. Ya-chud has no harmful effect

No 9. The risks from taking Ya-chud are less than the benefits obtained.

No 10. It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.

No 11. Ya-chud suitable for producing an antipyretic effect can also be used for MK as well.

No 12. Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope.

No 13. Medicines supplied by the hospital for taking at the same time are the same a Ya-chud.

No 14. Ya-chud should be used for severe MK.

Table 37 **Summary Statistics for Two Items and the Relationship Between the Scale and the First Two Items Concerning Health Beliefs in the Urban Areas (N = 136)**

Statitics for Scale	Mean	Variance	SD	No of Variables
	10.6250	1.5250	1.2349	2

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	5.3125	5.2206	5.4044	0.1838	1.0352	0.0169
Item Variance	0.5339	0.2871	0.7860	0.4935	2.7190	0.1218
Inter-item Covariances	0.2286	0.2286	0.2286	0.0000	1.0000	0.0000
Inter-item Correlations	0.4830	0.4830	0.4830	0.0000	1.0000	0.0000

Two Items Total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 1	5.4044	0.2871	0.4830	0.2333	-
No 2	5.2206	0.7806	0.4830	0.2333	-

Reliability Coefficients with 2 itmes

Alpha = 0.5997 Standardised Item Alpha = 0.6514

Table 38 **Summary Statistics for Two Items and the Relationship Between the Scale and the First Two Items Concerning Health Beliefs in the Rural Areas (N = 128)**

Statitics for Scale	Mean	Variance	SD	No of Variables
	10.3047	1.4891	1.2203	2

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	5.1523	5.0234	5.2813	0.2578	1.0513	-
Item Variance	0.5307	0.4325	0.6289	0.1964	1.4541	-
Inter-item Covariances	0.2138	0.2138	0.2138	0.0000	1.0000	-
Inter-item Correlations	0.4100	0.4100	0.4100	0.0000	1.000	-

Item-total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 1	5.0234	0.4325	0.4100	0.6181	-
No 2	5.2813	0.62889	0.4100	0.6181	-

Reliability Coefficients with 2 itmes

Alpha = 0.5744 Standardised Item Alpha = 0.5815

Table 39 **Summary Statistics for Three Items and the Relationship Between the Scale and the Next Three Items Concerning Beliefs about Medicines in the Urban Areas (N = 136)**

Statitics for Scale	Mean	Variance	SD	No of Variables
	13.2721	8.7328	2.9551	3

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	4.4240	3.9265	4.7868	0.8603	1.2191	0.1987
Item Variance	1.7176	1.3743	2.0094	0.6351	1.4621	0.1025
Inter-item Covariances	0.5967	0.5303	0.6879	0.1576	1.2972	0.0053
Inter-item Correlations	0.3503	0.3191	0.3668	0.0477	1.1494	0.0006

Item-total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 3	9.3456	4.2871	0.4151	0.1728	0.5336
No 4	8.7132	5.1542	0.4141	0.1761	0.5339
No 5	8.4853	4.4442	0.4493	0.2029	0.4773

Reliability Coefficient with 3 items

Alpha = 0.6149 Standardised Item Alpha = 0.6179

Table 40 **Summary Statistics for Three Items and the Relationship Between the Scale and the Next Three Items Concerning Beliefs about Medicines in the Rural Areas (N = 128)**

Statitics for Scale	Mean	Variance	SD	No of Variables
	14.1875	7.3031	2.7024	3

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	4.7292	4.5156	4.9219	0.4063	1.0900	0.0416
Item Variance	1.4572	1.1024	1.7320	0.6297	1.5712	0.1039
Inter-item Covariances	0.4886	0.3504	0.6233	0.2729	1.7788	0.0149
Inter-item Correlations	0.3379	0.2536	0.3820	0.1284	1.5064	0.0043

Item-total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 3	9.6719	3.6238	0.3886	0.1598	0.5432
No 4	9.4375	4.5157	0.3776	0.1569	0.5521
No 5	9.2656	3.5352	0.4785	0.2304	0.3965

Reliability Coefficient with 3 items

Alpha = 0.6021 Standardised Item Alpha = 0.6049

Table 41 **Summary Statistics for Nine Items and the Relationship Between the Scale and the Final Nine Items Concerning Attitudes to Ya-chud in the Urban Areas (N = 136)**

Statitics for Scale	Mean	Variance	SD	No of Variables
	31.8309	56.6008	7.5234	9

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	3.5368	2.5368	4.5294	1.9926	1.7855	0.3895
Item Variance	2.0054	1.3621	2.5233	1.1612	1.18525	0.1349
Inter-item Covariances	0.5354	-0.0121	1.6129	1.6250	-133.3919	0.1161
Inter-item Correlations	0.2650	-0.0052	0.6409	0.6462	-122.2204	0.0237

Item-total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 6	28.1324	42.2194	0.5744	0.5016	0.7226
No 7	28.6176	41.0527	0.6423	0.5176	0.7103
No 8	29.2941	44.3277	0.6050	0.5041	0.7218
No 9	28.9118	45.7847	0.4785	0.3812	0.7397
No 10	28.3088	44.0669	0.5640	0.3838	0.7262
No 11	27.3015	44.1603	0.3714	0.2159	0.7549
No 12	28.4926	49.3629	0.2832	0.1357	0.7676
No 13	27.9926	50.6444	0.1863	0.1132	0.7831
No 14	27.5956	47.6352	0.3423	0.1701	0.7604

Reliability Coefficient with 9 items

Alpha = 0.7663 Standardised Item Alpha = 0.7644

Table 42 Summary Statistics for Nine Items and the Relationship Between the Scale and the Final Nine Items Concerning Attitudes to Ya-chud in the Urban Areas (N = 128)

Statitics for Scale	Mean	Variance	SD	No of Variables
	35.5859	59.6618	7.7241	9

	Mean	Minimum	Maximum	Range	Max/ Min	Variance
Item Means	3.9540	2.8984	4.6563	1.7578	1.6065	0.4386
Item Variance	2.0117	1.1093	3.1801	2.0709	2.8669	0.3934
Inter-item Covariances	0.5772	0.2184	1.1893	0.9708	5.4444	0.0643
Inter-item Correlations	0.2968	0.0980	0.5445	0.4465	5.5564	0.0138

Item-total Statistics

	Scale Mean if Items Deleted	Scale Variance if Item Deleted	Corrected Items Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 6	31.5625	45.0512	0.6064	0.4392	0.7417
No 7	32.6250	49.6220	0.3538	0.2124	0.7804
No 8	32.6875	48.7835	0.4185	0.3488	0.7703
No 9	31.8906	45.4053	0.6095	0.5011	0.7417
No 10	31.0234	49.5664	0.5513	0.3895	0.7551
No 11	30.9297	51.1840	0.4890	0.3084	0.7634
No 12	31.4375	50.7520	0.4042	0.2628	0.7713
No 13	31.5547	46.2017	0.4240	0.2910	0.7737
No 14	30.9766	49.1727	0.4454	0.2993	0.7661

Reliability Coefficient with 9 items

Alpha = 0.7836 Standardised Item Alpha = 0.7916

4.3.2 People's Attitudes Towards Ya-chud : Urban and Rural Comparision

The data of 14 items presented in Table 43 show the median score, standard deviation, percentage of the respondents who have positive agreement and negative agreement and the chi-square test of significance between urban and rural areas. The score distribution of 14 items is also shown in Appendix 23a and Appendix 23b.

Health Beliefs

The majority of the respondents in urban and rural areas agreed to the belief that their health status will change with age (95.6 percent and 95.3 percent). The negative skewness of the score distribution of statements No 1 and No 2 are shown in Appendix 23a and Appendix 23b. This data indicates that most respondents have high rating scores.

Every respondent has rated on the scale 4-6 for statement No 2. That is 100 percent agreement in both areas regarding self care knowledge for everyone. This statement does not need to be checked with the chi-square test for significance.

Beliefs about medicines

There is a slightly negative skewness with the statement No 3 (Appendix 23a and Appendix 23b) where the median score for the rural respondents is higher than for the urban respondents (5.00 in rural area and 4.00 in urban area). The data indicates a

slight significant difference with the chi-square test between the urban and the rural areas ($p < 0.05$). It can be said that the respondents in both areas agree that medicine is necessary to treat MK, although there was more agreement in the rural areas (62.5 percent in urban and 74.2 percent in rural)

The views concerning the availability of a wide range of medicines in drug stores indicate that the large majority of the respondents in both areas had positive agreement (82.4 percent in urban and 89.1 percent in rural). There is no statistical difference for this statement between the urban and the rural areas (Table 43).

The respondent median score of 5.00 in urban areas and 5.00 in rural areas for the concept that good medicines should have a rapid action are very similar and gave strong positive agreement (82.4 percent in urban and 83.6 percent in rural areas). No significant differences were found between the two areas.

The slight difference of agreement between the two areas was for the treatment of pain with medicines ($p < 0.05$). The respondents in the rural areas rated higher scores than in the urban areas. Nevertheless both areas had a majority who agreed with the statement.

Attitudes towards Ya-chud

All nine items for measuring attitudes towards Ya-chud are shown in Table 43 and Table 44. They are also shown in Appendix 23c for the score distribution of the nine

items.

There are many subtypes of Ya-chud and so it was explained to the respondents that the Ya-chud referred to in all nine statements was in the context of musculoskeletal pain.

Statements No 10, No 12 and No 13 concern the physical characteristics of Ya-chud. The majority of respondents in both areas agreed with the statement that Ya-chud should have many medicines in order to enhance the potency of the medicines (statement No 10). In the rural area 85.9 percent agreed but in the urban area only 51.5 percent agreed. The chi-square test confirmed that there were significant differences for statement No 10 between the two areas studied ($p < 0.001$) (Table 43).

The score distribution in the urban areas is shown in Appendix 23a. This contrasts with a negative skewness of the score distribution in the rural areas (Appendix 23b). This is because there is a greater agreement in the latter.

Statement No 12 is the converse of statement No 10 but has the same meaning. That is statement No 10 suggests many medicines together in Ya-chud is more potent than few medicines. Statement No 12 indicates that Ya-chud consisting of only a few medicines will be less effective than Ya-chud containing many medicines. The rural area respondents strongly support both statements and thus show a consistency. The urban respondents very slightly agree with No 10 (51.5 percent) and slightly disagree

with No 12 (59.6 percent). The differences between the rural and the urban areas are significant for both No 10 and No 12. ($p < 0.01$).

The statements No 8, No 11 and No 14 reflect to the effect of medicines. The larger majority in both areas disagree with the statement that Ya-chud has no harmful effect (79.4 percent in urban and 70.3 percent in rural). There is no significant difference between the urban and the rural areas.

The response to statement No 13 that multiple medicines supplied from hospitals for concurrent administration are similar to Ya-chud gave the same response exactly for the urban and the rural areas. There was 62.5 percent agreement in both areas and no significant differences.

The respondents in the urban and rural areas show a similar response to statement No 14. That is 75 percent in the urban area and 78.9 percent in the rural area disagree that Ya-chud should be used for severe MK. This is an important finding.

Statements No 6 and No 9 deal with the evaluative aspects of Ya-chud. Ya-chud is cheap and good value for self-medication was agreed with by the respondents in each area (55.1 percent in urban and 60.9 percent in rural). The score distributions were almost the same for statement No 6 and also had normal shapes (Appendix 23a and Appendix 23b).

There are quite great differences in the response to statement No 9 that the risks from

taking Ya-chud are less than the benefits obtained. Disagreement was found to be expressed in the urban areas (66.9 percent) compared with a slight majority in agreement with this statement in the rural area (53.9 percent). The difference between areas is statistically significant (chi-square test $p<0.01$).

Statement No 7 concerns the distribution channel of Ya-chud. The responses show no statistical difference. Both areas have a greater percentage who disagree (57.4 percent in urban and 65.6 percent in rural areas) with the statement that the government should allow unrestricted sale of Ya-chud.

The results are summarised in Table 44.

The sum for the statements of attitudes towards Ya-chud are shown in Table 46 and Table 47 . The results indicate that the respondents in the rural areas (60.2 percent) have a positive attitude towards Ya-chud but a negative attitude (63.2 percent) in urban areas. There was a significant difference between these two areas ($p < 0.01$).

4.3.3 Summary

The results may be summarised as follows (Table 44 and Table 45):

All agreed in both urban and rural locations that everyone should have some knowledge of self care (statement No 2) and health status will change with age (statement No 1).

Secondly, the respondents perception that good medicines should have a rapid action (statement No 5) and good drug stores should have a wide range of medicines (statement No 4) were found to be in fairly strong agreement in both urban and rural areas. The responses from the statement that medicines are necessary for MK (statement No 3) showed a significant difference between the urban and rural areas. It was also shown that there was a greater preference to using medicines for treatment of MK by the rural respondents.

Thirdly, the sum of scores for the statements of attitudes towards Ya-chud (Table 46) indicate that the respondents in the rural areas had a positive attitude towards Ya-chud but in urban areas had a negative one. There was a significant difference for the total score of the 9 statements by the Mann-Whitney U (Wilcoxon Rank SumW) Test ($p < 0.01$) (Table 14) between the mean scores of these two areas ($p < 0.01$).

When considered separately for each statement it was found there was a similar direction of agreement for all items except for statement No 9 and No 12 (Table 45). These two statements are 'the risks from taking Ya-chud are less than the benefits' and 'Ya-chud which have only a few tablets are less effective than Ya-chud having more tablets in one envelope'. The data show that there was mild disagreement with the statements in the urban areas which contrasted with the rural areas which mildly agreed. The statement that Ya-chud has no harmful effect which has higher levels of disagreement in the urban area provides an indication of the respondents' awareness to the danger of medicines. The perception on the understanding of Ya-chud according to the numbers of tablets and/or capsules in one envelope shows that there

is a significant difference between the urban and rural areas. It points to the conclusion that the numbers of tablets and/or capsules in the envelope is one of the essential properties for the medicines which are called 'Ya-chud'. This is particularly the case for the perception of the respondents in the rural areas.

The response to statement No 13 gives an understanding of the urban and rural respondents concept of Ya-chud. Both urban and rural respondents considered that multiple prescribing of concurrent medication by hospitals constituted Ya-chud.

Although the majority of the respondents in the rural areas have a positive attitude toward Ya-chud, they do not agree that these should be on unrestricted sale.

Statements	Urban (N = 136) Median	SD	No. Disagree (%)	No. Agree (%)	Rural (N = 128) Median	SD	No. Disagree (%)	No. Agree (%)	Value	DF	Significance*
Health Beliefs											
No 1 My health status will change with age	5.00	0.88	6 (4.4)	130 (95.6)	5.00	0.79	6 (4.7)	122 (95.3)	0.01155	1	0.91440
No 2 Everyone should have some knowledge of self care	5.00	0.54	-	136 (100)	5.00	0.66	-	128 (100)	-	-	-
Beliefs about medicines											
No 3 Whenever I get MK, I need to treat it with medicine	4.00	1.42	51 (37.5)	85 (62.5)	5.00	1.32	33 (25.8)	95 (74.2)	4.17411	1	0.04105
No 4 There should be a wide range of medicines in drug stores	5.00	1.17	24 (17.6)	112 (82.4)	5.00	1.05	14 (10.9)	114 (89.1)	2.40907	1	0.12063
No 5 Good medicines should have a rapid action	5.00	1.33	24 (17.6)	112 (82.4)	5.00	1.24	21 (16.4)	107 (83.6)	0.07180	1	0.78874
Attitudes towards Ya-chud											
No 6 Ya-chud is cheap and good value for use in medication	4.00	1.58	61 (44.9)	75 (55.1)	4.00	1.51	50 (39.1)	78 (60.9)	0.90732	1	0.34083
No 7 The government should allow unrestricted sale of Ya-chud	3.00	1.58	78 (57.4)	58 (42.6)	2.00	1.54	84 (65.6)	44 (34.4)	1.90311	1	0.16773
No 8 Ya-chud has no harmful effect	2.00	1.31	108 (79.4)	28 (20.6)	2.00	1.48	90 (70.3)	38 (29.7)	2.91176	1	0.08794
No 9 The risks from taking Ya-chud are less than the benefits obtained	2.00	1.38	91 (66.9)	45 (33.1)	4.00	1.47	59 (46.1)	69 (53.9)	11.64757	1	0.00064
No 10 It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.	4.00	1.41	66 (48.5)	70 (51.5)	5.00	1.14	18 (14.1)	110 (85.9)	36.10819	1	0.00000
No 11 Ya-chud suitable for producing an antipyretic effect can also be used for musculoskeletal pain	5.00	1.17	27 (19.9)	109 (80.1)	5.00	1.05	15 (11.7)	113 (88.3)	3.26121	1	0.07094
No 12 Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope	3.00	1.36	81 (59.6)	55 (40.4)	4.00	1.27	36 (28.10)	92 (71.9)	26.40244	1	0.00000
No 13 Medicines supplied by the hospital for taking at the same time are the same as Ya-chud	4.00	1.45	51 (37.5)	85 (62.5)	5.00	1.78	48 (37.5)	80 (62.5)	0.00000	1	1.00000
No 14 Ya-chud should be used for severe MK	2.00	1.45	102 (75.0)	34 (25.0)	2.00	1.38	101 (78.9)	27 (21.1)	0.56630	1	0.45173

* = Pearson chi - square probability Median = Median value on six-point scale
No. Disagree = numbers of respondent on rating scale 1-3 No. Agree = numbers of respondent on rating scale 4-6
(1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = mildly agree, 5 = agree, 6 = strongly agree)

TABLE 43 : MEDIAN SCORE AND CHI-SQUARE TEST OF SIGNIFICANCE OF HEALTH BELIEFS, BELIEFS ABOUT MEDICINES AND ATTITUDES TOWARDS YA-CHUD BETWEEN URBAN (N=136) AND RURAL (N = 128) AREAS

Table 44 The Summarised Table of Health Beliefs, Beliefs About Medicines and Attitudes Towards Ya-chud Between Urban (N = 136) and Rural (N = 128) areas, North East Thailand : Septemeber - December 1996

Statements	Urban (N = 136)	Rural (N = 128)	Pearson chi-square test for significance
	Response	Response	
Health Beliefs			
No 1	Agree	Agree	Not different
No 2	Agree	Agree	-*
Beliefs about medicine			
No 3	Mildly agree	Agree	Different
No 4	Agree	Agree	Not different
No 5	Agree	Agree	Not different
Attitudes towards Ya-chud			
No 6	Mildly Agree	Mildly agree	Not different
No 7	Mildly disagree	Mildly disagree	Not different
No 8	Mildly disagree	Mildly disagree	Not different
No 9	Mildly disagree	Mildly agree	Different
No 10	Mildly agree	Agree	Different
No 11	Agree	Agree	Not different
No 12	Mildly disagree	Mildly agree	Different
No 13	Mildly agree	Mildly agree	Not different
No 14	Mildly disagree	Mildly disagree	Not different

* No chi-square test of significance for statement No 2 because all respondents disagreed.

Table 45 Salient Results of Attitudes Towards Ya-chud : Comparison of Ya-chud Users in Urban (N = 136) and Rural Areas (N = 128)

Statement	Agree	Disagree	Significant differences
No 6 Ya-chud is cheap and good value for use in medication	U, R		No
No 7 The government should allow unrestricted sale of Ya-chud		U, R	No
No 8 Ya-chud has no harmful effect.		U, R	No
No 9 The risks from taking Ya-chud are less than the benefits obtained.	R	U	Yes
No 10 It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.	U, R		Yes
No 11 Ya-chud suitable for producing an antipyretic effect can also be used for MK as well.	U, R		No
No 12 Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope.	R	U	Yes
No 13 Medicines supplied by the hospital for taking at the same time are the same as Ya-chud.	U, R		No
No 14 Ya-chud should be used for severe MK.		U, R	No

* See also Table 43

U = Urban, R = Rural

Table 46 The Frequency Distribution of the Levels of Agreement and Their Relationship with Attitudes Towards Ya-chud (9 Statements) Between the Urban (N = 136) and the Rural (N = 128) areas : September - December 1996

	Urban (N = 136)			*Rural (N = 128)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Strongly Disagree	-	-	-	-	-	-			
Disagree	12	9.8	8.8	7	9.2	5.5			
Mildly Disagree	74	60.8	54.4	44	57.2	34.4			
Mildly Agree	36	49.5	26.5	60	46.5	46.9			
Agree	14	16.0	10.3	17	15.0	13.3			
Strongly Agree	-	-	-	-	-	-			
							15.00458	3	0.00181

* Pearson chi-square probability

Table 47 Mann-Whitney U(Wilcoxon Rank Sum W)Test of 9 Statements Between the Urban (N = 136) and the Rural (N = 128) Areas : September - December 1996

Mann-Whitney U(Wilcoxon Rank Sum W)Test

Mean Rank				
114.31	Urban (N = 136)			
151.82	Rural (N = 128)			
U		W	Z	2-Tailed p
6230.5		19433.5	-3.9937	0.0001

4.3.4 Discussion

Experienced Ya-chud users were evaluated in this study in order to avoid response bias which could arise from non experienced persons. This provides some understanding of the Ya-chud user in the dimension of psychosocial aspects. The positive attitudes towards Ya-chud for MK in the rural areas were confirmed. It should be noted that a favourable attitude is more likely to lead to desired action than is an unfavourable one (53). Interestingly the attitudes in the urban areas were found to be different. A negative attitude towards Ya-chud was demonstrated but nevertheless Ya-chud was still used for the treatment of MK.

The relationship between attitude and Ya-chud behaviour could not be deduced from this study. Even though there was agreement on the harmful effects of Ya-chud in the rural areas, they still held a positive attitude to Ya-chud. Perhaps they did not realise the real harmful effects of Ya-chud or the net outcome on their evaluation process was derived from balancing the positive and the negative influencing factors. In-depth interviews of the Ya-chud user would provide more information on this point. The perception that Ya-chud related to the numbers of medicines to be taken concurrently lead to the misunderstanding that multiple therapy from hospital was Ya-chud. It indicates the way of thinking exhibited by the respondents who derived meaning from the physical characteristics of the medicines without taking into account the complexity of the professional's decision making process which took into account the medicines, the dose frequency and duration of treatment and also the differences of the chemical constituents. If the people equate multiple therapy with

Ya-chud that will give a rationality to Ya-chud in the minds of the people. It would seem that education is needed.

Another interesting finding is the disagreement on the indication of Ya-chud for severe MK. This needs to be explored in order to understand the reason underlying this perception. Does it mean that Ya-chud should not be used for severe MK anymore or does it mean it is suitable to be used only for other symptoms such as mild MK and fever? It would help a successful intervention programme in reducing the Ya-chud consumption if it was known that people in north east Thailand had reached the conclusion that Ya-chud should not be used for severe MK and should not be used for the other symptoms as well. It should then be easier to persuade them to have alternative effective less toxic therapy for MK and for the other symptoms.

4.4 Results of In-depth Interview

The respondent answers from the in-depth interviews were coded and analysed for content, then placed in groups having a similar content. The results were thus put into a quantitative form for statistical analysis using the chi-square test for significance (Tables 50 - 54). Extreme answers have been quoted in narrative form (p 166).

4.4.1 In-depth Interview of Ya-chud Users : The Characteristics of Ya-chud Users

The in-depth interview of Ya-chud users in urban (N = 110) and rural areas (N = 136) were conducted during January - May 1997. The drop out rate was 29.5 percent in the urban and 13.4 percent in the rural areas because some people were not willing to answer the questions and some people moved to work outside of the village. Table 48 shows the demographic characteristics of the respondents who were interviewed in-depth (N = 110) compared with the Ya-chud users (N = 156). The percentage of male was 44.5 percent for in-depth interviews which was markedly lower than the percentage of male of the Ya-chud users from the epidemiological study (53.8 percent). Thus the gender distribution of respondents for the in-depth interview are not representative for the Ya-chud user in the urban area. In the rural area, there was not such a difference in gender distribution (Table 49). The age group distribution for the in-depth interviews when compared with the Ya-chud users from the epidemiological study is seen to have almost the same pattern (Table 48 and Table

49) in both urban and rural areas, but there are maturation effects during the period of the study which affected the 35-44 age group in the rural area. So the numbers of respondents in this age group were higher than in the previous epidemiological study (Table 49). Table 50 indicates that there were significant differences for the chi-square test comparing the occupations between these two areas ($P < 0.01$). It also shows that the majority occupation in both areas was farming although this was a higher percentage in the rural areas (88.2 percent) and 60.9 percent in the urban areas. These figures are also different from the epidemiological study which gave 97.5 percent farmers in the rural area and 69.2 percent farmers in the urban areas (Table 19).

The answers for the current health status evaluation in the in-depth interview are quite different from the epidemiological study. Some respondents (13.6 percent in the urban and 8.8 percent in the rural) insisted that they were not ill and were not healthy but that they were elderly persons. There was not a significant difference in their perception on the current health status between the two areas ($p < 0.005$).

Table 48 The Comparison of Demographic Characteristics from the In-depth Interview of the Ya-chud User Respondents (N = 110) with the Structured Interview in the Epidemiological Study of the Ya-chud Users (N = 156) in the Urban Areas

Variables	In-depth user respondents (N = 110)		Ya-chud user (N = 156)	
	Freq	**Percent**	**Freq**	**Percent**
Gender				
male	49	44.5	84	53.8
female	61	55.5	72	46.2
Age group				
15 - 24	4	3.6	8	5.1
25 - 34	21	19.1	29	18.6
35 - 44	29	26.4	44	28.2
45 - 54	18	16.4	26	16.7
55 - 64	16	14.5	22	14.1
≥ 65	22	20.0	27	17.3

Table 49 The Comparison of Demographic Characteristics of In-depth Interview of Ya-chud User Respondents (N = 136) with the Structured Interview in the Epidemiological Study of the Ya-chud Users (N = 157) in the Rural Areas

Variables	In-depth user respondents (N = 136)		Ya-chud users (N = 157)	
	Freq	**Percent**	**Freq**	**Percent**
Gender				
male	51	37.5	62	39.5
female	85	62.5	95	60.5
Age group				
15 - 24	7	5.1	11	7.0
25 - 34	18	13.3	24	15.3
35 - 44	30*	22.1	28	17.8
45 - 54	39	28.7	47	29.9
55 - 64	22	16.2	22	14.0
≥ 65	20	14.7	25	15.9

* This figure is higher than expected. It should be less than 28 but the number of 30 may be due to the dates of birthdays of a number of respondents such that they change age band during the course of the investigation.

Table 50 The Frequency Distribution and the Relationship of Demographic Characteristics of Ya-chud Users from the In-depth Interviews Between the Urban (N = 110) and the Rural (N = 136) Areas : January - May 1997

	Urban (N = 110)			*Rural (N = 136)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Gender									
male	49	44.7	44.5	51	55.3	37.5			
female	61	65.3	**55.5**	85	80.7	**62.5**			
							1.25121	1	0.26332
Age group									
15 - 24	4	4.9	3.6	7	6.1	5.1			
25 - 34	21	17.4	19.1	18	21.6	13.2			
35 - 44	29	26.4	**26.4**	30	32.6	22.1			
45 - 54	18	25.5	16.4	39	31.5	**28.7**			
55 - 64	16	17.0	14.5	22	21.0	16.2			
≥ 65	22	18.8	20.0	20	23.2	14.7			
							7.17756	5	0.20777
Occupation									
housework	27	16.5	24.5	10	20.5	7.4			
farmer	67	83.6	**60.9**	120	103.4	**88.2**			
merchant	4	3.1	3.6	3	3.9	2.2			
miscellaneous	12	6.7	10.9	3	8.3	2.2			
							25.91659	3	0.00001
Current health status									
healthy	72	75.1	62.5	96	92.9	70.6			
illness	23	22.8	20.9	28	28.2	20.6			
elderly**	15	12.1	**13.6**	12	14.9	**8.8**			
							1.52113	2	0.46740

* Pearson chi-square probability

** These people claimed to be neither ill or healthy but 'elderly'.

The locations of pain were mostly the hip/leg and back/waist regions. The percentage for back/waist (38.2 percent) was higher than the percentage of hip/leg (35.5 percent) in the urban area but the reverse was found for the rural area (44.1 percent for hip/leg and 31.6 percent for back/waist) (Table 51). The respondents could not localise the exact position and said that commonly, MK occurred for many areas in the body. Body muscle, back and waist pain were often experienced at the same time. They also explained that some MK started from the hip and extended to the leg with the most severe involvement at the upper body. It is noticeable that the musculoskeletal pain perception of the lay people was quite different from the professional medical understanding which differentiates muscle pain from pain in other tissues (34).

When the people developed MK, they usually used many sources for obtaining treatment. In the urban area 40.9 percent used massage, rest and the health service facilities for MK while in the rural areas 48.5 percent used drug stores for treatment. These were significant differences between these two areas ($p < 0.01$).

Even though the results of the treatment seemed to be good it was shown that only 10.9 percent of the respondents could be cured by the above treatments in the urban areas and only 4.4 percent in the rural areas (Table 51). The great majority of treatments resulted in improvement of symptoms (89.1 percent in the urban and 95.6 percent in the rural areas).

Table 51 **The Frequency Distribution of Last MK Behaviour (without Taking Ya-chud) and Their Relationship Between the Ya-chud Users in the Urban (N = 110) and the Rural (N = 136) Areas : January - May 1997**

	Urban (N = 110)			*Rural (N = 136)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp. Val.*	*Percent*			
Location of MK									
neck, arm, shoulder	12	9.8	10.9	10	12.2	7.4			
back, waist	42	38.0	**38.2**	43	47.0	**31.3**			
hip, leg	39	44.3	**35.5**	60	54.7	**44.1**			
body	10	8.9	9.1	10	11.1	7.4			
joint, knee	7	8.9	6.4	13	11.1	9.6			
							3.74196	4	0.44205
Source of Method of Treatment									
health service	18	11.2	16.4	7	13.8	5.1			
drug stores	26	41.1	23.6	66	50.9	**48.5**			
many sources	45	44.7	**40.9**	55	55.3	40.4			
massage, rest, herb	21	13.0	19.1	8	16.0	5.9			
							6.60815	3	0.00001
Treatment Outcome									
cured	12	8.0	**10.9**	6	10.0	**4.4**			
improved	98	102.0	**89.1**	130	126.0	**95.6**			
							3.78555	1	0.05170

* Pearson chi-squared probability

4.4.2 The Prevalence of Ya-chud Users

The results from Table 52 indicate that most of the people had experienced taking Ya-chud during the last year (42.7 percent in the urban and 46.3 percent in the rural areas). The prevalence of people taking Ya-chud for MK in this one year period was calculated as follows:

Urban

$$= \frac{42.7 \times 156}{619}$$

$$= 10.8 \text{ percent}$$

Rural

$$= \frac{46.3 \times 157}{494}$$

$$= 14.8 \text{ percent}$$

These were different rates from the prevalence rates calculated from the epidemiological study (page 80) which were 16.6 percent in the urban and 15.6 in the rural areas. This was due to the survey being started in December in the urban areas. This was the harvesting period. This led to the higher prevalence of Ya-chud users in the urban areas over a one week period. In the rural area little or no differences were observed. This was because the survey and in-depth interviews in the rural areas were conducted during the same season of different years (March-June), so the seasonal variation was minimised.

4.4.3 The Respondents' Behaviour and Evaluation of Taking Ya-chud for the Last Occasion of Treating Musculoskeletal Pain

It was shown that Ya-chud was used for the treatment of hip/leg pain and this was the highest percentage of Ya-chud treatment in both areas (37.3 percent in the urban and 35.3 percent in the rural) (Table 52). In the urban area, the percentage of back/waist pain was the same percentage as for body pain (26.4 percent). This was very similar in the rural areas where the percentage for the back/waist pain was 29.4 percent and for the body pain was 28.7 percent. It was noticeable that there were higher precentage of 'body' with taking Ya-chud (Table 52) than without taking Ya-chud (Table 51).

The last time of MK for which the Ya-chud was taken accounted for 42.7 percent during the last year in the urban areas and for 46.3 percent in the rural areas (Table 52). There were no significant differences of location of MK and the results of treatment between the urban and rural areas ($p > 0.05$).

Most of the respondents knew about Ya-chud from their neighbours and the advice of drug sellers (70.9 percent in the urban and 97.1 percent in the rural areas).

The majority used one package for treating each episode of MK (90.0 percent in the urban and 88.2 percent in the rural areas). There were 6 respondents in the urban and 2 respondents in the rural areas who had Ya-chud routinely. That was one package every few days.

The respondents perceived that the result of treatment was a cure for 45.5 percent in the urban and 35.3 percent in the rural areas and this was a higher percentage of cure than for treatment without Ya-chud (Table 51).

More than 95 percent of the Ya-chud users in the urban and rural areas used Ya-chud as a single treatment of MK. The data from Table 52 shows that there were no significant differences between these two areas ($p > 0.05$).

Table 52 Evaluation of the Frequency Distribution and the Relationship of Ya-chud Use Behaviour Between the Urban (N = 110) and the Rural (N=136) Areas: In-depth Interviews of Ya-chud Users : January - May 1997

	Urban (N = 110)			*Rural (N = 136)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Location of Pain									
neck, arm, shoulder	8	5.8	7.3	5	7.2	3.7			
back, waist	29	30.9	**26.4**	40	38.1	**29.4**			
hip, leg	41	39.8	**37.3**	48	49.2	**35.3**			
body	29	30.4	**26.4**	39	37.6	**28.7**			
joint, knee	3	3.1	2.7	4	3.9	2.9			
							1.88300	4	0.75727
Time of Occurrence									
last year	47	49.2	**42.7**	63	60.8	**46.3**			
> 1-5 years ago	43	43.4	39.1	54	53.6	39.7			
> 5-10 years ago	6	7.6	5.5	11	9.4	8.1			
> 10 years ago	14	9.8	12.7	8	12.2	5.9			
							3.97812	3	0.26384
Source of Advice									
neighbour	19	9.8	17.3	3	12.2	2.2			
neighbour & drug seller	78	93.9	**70.9**	132	116.1	**97.1**			
drug seller	13	6.3	11.8	1	7.7	0.7			
							33.43329	2	0.00000
Dose (a)									
1 package/course	99		**90.0**	120		**88.2**			
2 & >2 package/Course	5		4.5	14		10.3			
1 package every 2-3 days	6		5.5	2		1.5			
Result of Treatment									
cured	50	43.8	**45.5**	48	54.2	**35.3**			
improved	60	66.2	54.5	88	81.8	64.7			
							2.61941	1	0.10556
co-treatment									
yes	5	4.9	4.5	6	6.1	4.4			
no	10.5	105.1	**95.5**						

Most of the respondents (100 percent in the urban and 97.0 percent in the rural area) evaluated that the most beneficial effect from taking Ya-chud was rapid relief of symptoms. Even though some perceived that Ya-chud could be harmful and have adverse effects (Table 53), nevertheless the percentage who had these views was still low in both areas (30.0 percent in the urban and 17.0 percent in the rural areas). Those who did not know Ya-chud was harmful or had adverse effects were a higher percentage (70.0 percent in the urban and 83.1 percent in the rural areas). There were significant differences between the opinions in the urban and rural areas ($p < 0.05$).

The choice for treatment of MK was the same in the urban and the rural areas. That is 64.5 percent and 81.6 percent in the urban and rural areas respectively chose to see the doctor as their first choice. Some still seemed to want to choose Ya-chud. This was deduced from the answers that 'Ya-chud is good' (30.9 percent in the urban and 18.4 percent in the rural areas).

Table 53 Evaluation of the Frequency Distribution and the Relationship of Taking Ya-chud Between Urban (N = 110) and the Rural (N = 136) Areas. In-depth Interviews of Ya-chud Users : January - May 1997

	Urban (N = 110)			*Rural (N = 136)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Benefits (a)									
rapid relief	110		**100.0**	132		**97.1**			
easy to obtain	-		-	3	80.7	2.2			
do not know	-		-	1		0.7			
Disadvantages									
harmful	16	13.0	**14.5**	13	16.0	**9.6**			
adverse effects	17	12.1	**15.5**	10	14.9	**7.4**			
do not know	77	85.0	70.0	113	105.0	83.1			
							6.26827	2	0.04354
Satisfaction (a)									
Ya-chud is good	34		**30.9**	25		**18.4**			
better to see the doctor	71		**64.5**	111		**81.6**			
do not know	5		64.5	-	20.5	-			

(a) = Cells with expected frequency < 5 more than 25 percent

* Pearson chi-square probability

4.4.4 The Characteristics of Ya-chud

It was noticed from the in-depth interview that some respondents used the Ya-chud recommended for fever for the treatment of MK. They perceived that some MK was caused by fever which could be treated successfully with the Ya-chud for fever. The percentages using the Ya-chud designated for fever to treat MK were 9.1 percent in the urban and 2.2 percent in the rural areas (Table 54).

The data from the in-depth interviews showed that the cost of each Ya-chud was 3 or 4 bahts (1996) in both areas. The majority was 3 bahts in the urban (56.8 percent) and 4 bahts in the rural areas (44.9 percent) (Table 54). The numbers of 7 tablets in one package was found to be the highest percentage (39.0 percent) in the rural areas. In the urban areas 5 tablets was the highest percentage (35.8 percent).

It can be said that the more tablets in a packet then the greater the cost of the packet.

The Specific Name of Ya-chud

In-depth interviews of Ya-chud users indicated that there were specific names for the types of Ya-chud recommended for MK. These specific names are 'Pra-dong-sen', 'Kra-jai-sen', 'Pra-dong-pha-sung', 'Mor-nuad' and 'Kae-khai'. In rural areas, the majority of the respondents use Ya-chud 'Kae-puad-muay' which has the meaning of 'curing body muscle pain'.

Table 54 Evaluation of the Frequency Distribution and the Relationship of the Characteristics of Ya-chud Between the Urban (N = 110) and the Rural (N = 136) Areas. In-depth Interviews of Ya-chud Users : January - May 1997

	Urban (N = 110)			*Rural (N = 136)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Kind of Ya-chud									
for Pain	76	89.0	69.1	123	110.0	90.4			
for fever	10	5.8	9.1	3	7.2	2.2			
for pain and fever	22	13.4	20.0	8	16.6	5.9			
miscellaneous	2	1.8	1.8	2	2.2	1.5			
							18.86584	3	0.00029
*Price***									
3 bahts	79	56.8	**71.8**	48	70.2	35.3			
4 bahts	2	28.2	1.2	61	34.8	**44.9**			
5 bahts	22	18.3	20.0	19	22.7	14.0			
less than 3 bahts and more than 5 bahts	7	6.7	6.4	8	8.3	5.9	61.04097	3	0.00000
Number of tabs									
3 tabs	24	14.8	21.8	9	18.2	6.6			
4 tabs	33	23.7	**30.0**	20	29.3	14.7			
5 tabs	37	35.8	**33.6**	43	**44.2**	31.6			
7 tabs	5	25.9	4.5	53	**32.1**	39.0			
miscellaneous	11	9.8	10.0	11	12.2	8.1			
							47.96887	4	0.00000

* Pearson chi-square probability

** 36-40 bahts = £1 (1996)

The respondents classified 'Pra-dong' as a group of symptoms comprising fever, itching (sometimes) and swelling in more severe cases. 'Pra-dong-sen' is one kind of 'Pra-dong' symptom.

The meanings may be described as follows:

Specific Names of Ya-chud for MK	**Meanings**
Pra-dong-sen	Muscle strain/stiffness with fever/burning sensation and pain
Kra-jai-sen	relaxing of muscle strain/stiffness
Pra-dong-pha-rung	western medicine for 'pra-dong' symptom
Mor-nuad	masseur
Kae-khai	antifever (often with body fatigue)
Kae-puad-muay	curing body muscle pain

The respondents explained that these terms were easy to remember and described their symptoms. It is difficult for them to understand the terminology used for western medicines. Side effects, drug allergies and drug toxicities also have different and variable meanings among the lay people.

4.4.5 Discussion of Ya-chud Users' Perception

Paracetamol was known by the lay people. They perceived that paracetamol was a weak medicine which could not relieve severe pain. Ya-chud was seen to be more potent and only one package could diminish their pain. The respondents reinterpret the meanings of Ya-chud from their own experience. Similar results from other studies show that lay people's conceptions are pragmatic (18) (19).

Two respondents illustrated the disadvantages of taking Ya-chud as follows:

"Ya-chud is harmful, one neighbour took it and got severe stomach pain. He had to be admitted to the hospital for an emergency operation .... but for me .... I will take it carefully. I will stop if after the symptoms are relieved .... not more than 2 packages is enough"

"It's not worth waiting a long time in the hospital and seeing the doctor for just 5 minutes without any diagnosis, only a few questions are asked .... and then having to wait for the medicines for a least 20 minutes to get a simple pain killer"

The first respondent considered that although his neighbour experienced harmful side-effects in his opinion he could use Ya-chud carefully and thus avoid harmful side-effects. Unfortunately this is not true and he is misleading himself and putting himself at risk.

The second respondent considered that Ya-chud offered a better option than attending the local hospital which he considers to be rather a waste of time for ineffective treatment. This lack of confidence in the health services is a concern but it is a minority opinion.

The respondents commonly took one package of Ya-chud for each episode (90 percent in the urban and 88.2 percent in the rural). One of these respondents described how they took Ya-chud as follows:

The data indicates that 9.1 percent in the urban areas and 2.2 percent in the rural areas used the Ya-chud for fever (Ya-chud Kae-khai) and for the treatment of MK (Table 54).

In Table 53 it is seen that the majority of respondents considered that the greatest advantage obtained from taking Ya-chud was the rapid relief of symptoms (100 percent in the urban and 97.0 percent in the rural areas) at an affordable cost. Seven respondents from this group explained in more detail as follows:

"Ya-chud strengthens the muscle"

"Chronic MK is not easily cured because of drug tolerance, we need more powerful medicines"

"Ya-chud is as potent as an injection"

"The shorter time for treatment, the faster is our health recovery"

"It is better to have one medicine which cures every symptom, and it seems to be impossible to have that medicine .... it will become a very big tablet ..... that is why Ya-chud is suitable for us"

"When I want some treatment I will consider the cost"

"Without Ya-chud, I could not sleep well"

These statements indicate that some respondents considered that Ya-chud had much greater benefits than just relieving their symptoms and indicates an unjustified faith in the beneficial action of Ya-chud. This attitude expressed by several people is a cause for concern. There is also a feeling that Ya-chud offers value for money.

"I just tried one package ..... I won't use it regularly"

This respondent indicated that he was possibly slightly embarrassed to admit taking Ya-chud. He wanted to establish that he was not a regular user.

One respondent proposed their idea about the sources of advice of Ya-chud as follows:

"Good advice is to explain what kind of medicine is required for each symptom .... drug sellers can give suggestion in that way .... for my opinion using Ya-chud should not be prohibited and we should not only know the bad effects of medicines"

This respondent indicated that he would welcome having more advice and information about the medicines he was taking and that he should be allowed to decide whether or not he wanted to take the medicine based on that advice. That is he would like to be involved in the decision making process about his medicines.

4.4.6 In-depth Interviews of Ya-chud Non-users

In-depth interviews of Ya-chud non-users were conducted during January - May 1997. Even though systematic random sampling was used to assess the representatives of the Ya-chud non-user, there were many missing cases due to moves to other areas and people not willing to answer the questions. There were 135 respondents in the urban and 101 respondents in the rural areas who took part in this

study. Table 55 and Table 56 show that the gender distribution of the sample was not represented in the non-user population.

This was shown by the ratio male : female as follows:

	Urban In-depth Non-user	Urban Non-users Population (from survey)
	(N = 135)	(N = 352)
Ratio Male : Female	0.53	0.75
	Rural In-depth Non-user	Rural Non-user Population (from survey)
	(N = 101)	(N = 229)
Ratio Male : Female	0.55	0.80

The age group distribution was also not representative in the non-user population. In the urban areas there was markedly more population between 45-64 years old in the Ya-chud non-user sample than in the Ya-chud non-user population (Table 55). In the rural area (Table 56) there was a greater proportion of age group between 15-24 years old in the sample (25.7 percent) than in the non-user population (22.7 percent), while the 35-44 and the 45-54 years old groups were less in percentage (19.8 and 15.8 percent respectively) than in the non-user population (22.3 and 17.5 percent respectively). Therefore it can be said that both gender and age group variables from in-depth interview of non-users could not be used as indicators for predicting non-

user behaviour. Table 57 shows the frequency distribution of gender and age group. There was no significant difference between these two areas ($p > 0.05$).

The results also indicate that there was no significant difference in the location of pain between the non-users in urban and rural areas ($p > 0.05$) (Table 58). Hip and leg formed the majority location in both areas (57.8 percent in the urban and 45.5 percent in the rural areas). Back and waist was the second in rank order and accounted for 25.2 percent in the urban and 38.6 percent in the rural areas. In both areas, the respondent described the characteristics of MK as stretching or 'sen' which had the same meaning as 'taut band' (35). These were the highest percentage in the rural areas (51.5 percent).

In the urban areas, there were almost the same numbers who described MK as 'sen' and 'numbness' (42.1 percent and 42.9 percent respectively). The rest were 'did not know' because they had forgotten these feelings and some respondents were not able to explain in their own words. It was noticed that the term 'sen' was known in the general population. This description may be said to be equivalent to the 'taut band' in muscle which Travell & Simon reported in (1983) (36). Such a description was classified as specific myofascial pain syndrome by the International Association for the Study of Pain (IASP) (Merskey 1986) (67).

Table 56 The Comparison of Demographic Characteristics of In-depth Interview Non-users (N = 101) with the Ya-chud Non-users (N = 229) from the survey in the Rural Areas

	In-depth Non-users (N = 101)		Ya-chud Non-users (N = 229)	
	Freq	**Percent**	**Freq**	**Percent**
Gender				
Male	36	35.6	102	44.5
Female	65	64.4	127	55.5
Age group				
15 - 24	26	25.7	52	22.7
25 - 34	18	17.8	39	17.0
35 - 44	20	19.8	51	22.3
45 - 54	16	15.8	40	17.5
55 - 64	10	9.9	24	10.5
≥ 65	11	10.9	23	10.0

Table 55 The Comparison of Demographic Characteristics of In-depth Interview Non-users (N = 135) with the Ya-chud Non-users (N = 352) from the Survey in the Urban Areas

	In-depth Non-users (N = 135)		Ya-chud Non-users (N = 352)	
	Freq	**Percent**	**Freq**	**Percent**
Gender				
Male	47	37.8	151	42.9
Female	88	65.2	201	57.1
Age group				
15 - 24	28	20.7	84	23.9
25 - 34	30	22.2	92	26.1
35 - 44	27	20.0	77	21.9
45 - 54	25	18.5	45	12.8
55 - 64	16	11.9	40	8.5
≥ 65	9	6.7	24	6.8

Table 57 The Frequency Distribution and the Relationship of the Demographic Characteristics Between the Urban Non-users (N = 135) and the Rural Non-users (N = 101) : In-depth Interviews : January - May 1997

	Urban Non-users (N = 135)			*Rural Non-users (N = 101)*			*Value*	*DF*	*Significance*
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			*
Gender									
Male	47	47.5	34.8	36	35.5	35.6			
Female	88	87.5	65.2	65	65.5	64.4			
							0.01740	1	0.89505
Age group									
15 - 24	28	30.9	20.7	26	23.1	25.7			
25 - 34	30	27.5	22.2	18	20.5	17.8			
35 - 44	27	26.9	20.0	20	20.1	19.8			
45 - 54	25	23.5	18.5	16	17.5	15.8			
55 - 64	16	14.9	11.9	10	11.1	9.9			
≥ 65	9	11.4	6.7	11	8.6	10.9			
							2.83744	5	0.72503

Table 58 The Frequency Distribution and the Relationship of MK Behaviour Between the Ya-chud Non-users in Urban Areas (N = 135) and in Rural Areas (N = 101) : In-depth Interviews : January - May 1997

	Urban Non-users (N = 135)			*Rural Non-users (N = 101)*			*Value*	*DF*	*Significance**
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Location of Pain									
neck, arm, shoulder	4	5.7	3.0	6	4.3	5.9			
back, waist	34	41.8	**25.2**	39	31.2	**38.6**			
hip, leg	78	70.9	**57.8**	46	53.1	**45.5**			
body	13	10.3	9.6	5	7.7	5.0			
joint, knee	6	6.3	4.4	5	4.7	5.0			
							7.91293	4	0.09482
Pain Characteristics									
'sen' (taut band)	56	61.3	**42.1**	51	45.7	**51.5**			
numbness	57	46.4	**42.9**	24	34.6	**24.2**			
do not know	20	25.2	15.0	24	18.8	24.2			
							9.25780	2	0.00977
Causes of Pain									
work	114	112.7	**84.4**	83	84.3	**82.2**			
illness, elderly	4	6.3	3.0	7	4.7	6.9			
do not know	7	16.0	12.6	11	12.0	10.9			
							2.12793	2	0.034508
Sources of Treatment									
health service	28	39.5	20.7	41	29.5	40.6			
drug stores	17	17.7	12.6	14	13.3	13.9			
many sources	2	2.9	1.5	3	2.1	3.0			
rest/massage	88	74.9	**65.2**	43	56.1	**42.6**			
							13.78543	3	0.00321
Reasons for Not Using Ya-chud									
harmful	73	89.8	**54.1**	84	67.2	**83.1**			
adverse effect	34	26.3	**25.2**	12	19.7	**11.9**			
obesity from taking Ya-chud	2	1.1	1.5	-	0.9	-			
difficulties for taking	13	7.4	9.6	-	5.6	-			
many reasons	13	10.3	9.6	5	7.7	5.0			
							25.47851	4	0.00004

* Pearson chi-square probability

Table 59 The Frequency Distribution and the Relationship of the Opinion about Ya-chud Between the Ya-chud Non-users in Urban Areas (N = 135) and in Rural Areas (N = 101) : In-depth Interviews : January - May 1997

	Urban Non-users (N = 135)			*Rural Non-users (N = 101)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Opinion on Taking Ya-chud for the next MK									
no use	132	130.4	**97.8**	96	97.6	**95.0**			
may use	3	4.6	2.2	5	3.4	5.0			
							1.31316	1	0.25182
Opinion on the Reasons for Others Using									
cheap	16	9.7	11.9	1	7.3	1.0			
rapid relief	27	48.6	20.0	58	36.4	**57.4**			
many reasons	83	57.8	**61.5**	18	43.2	17.8			
do not know	9	18.9	6.7	24	14.1	23.8			
							69.74023	3	0.0000
*Problems from MK***									
interfere daily life	135	-	**100.0**	101	-	**100.0**			
Suggestions for Solving Ya-chud Problem (a)									
using health services	126	127.6	**93.3**	97	95.4	**96.0**			
stop taking Ya-chud	1	0.6	0.7	-	0.4	-			
many methods	7	4.6	**5.2**	1	3.4	**1.0**			
mass media campaigns	1	2.3	0.7	3	1.7	3.0			

* Pearson chi-square probability

** No chi-square test of significance

(a) = Cells with expected frequency < 5 more than 25 percent

The cause of pain was from 'work' which was quite similar in both areas (84.4 percent in urban and 82.2 percent in rural areas). The respondents also explained that without taking medicine accompanied by using analgesic cream and massage, they felt sleepless and very irritable (65.2 percent in urban and 42.6 percent in rural areas) (Table58). They had to ask a family member to help by massaging. After that the pain was relieved. There were two masseurs serving in these two areas. The people also used health services such as the private clinic and the tambon health offices for treatment of MK (20.7 percent in the urban and 40.6 percent in the rural). A similar percentage in both urban and rural bought medicines from drug stores (12.6 and 13.9 percent respectively). There were significant differences for the sources of treatment between the urban and the rural areas ($p < 0.01$).

In-depth interviews of the Ya-chud non-users indicated that perception of the harmful and side effects of medicines was 79.3 percent in the urban respondents and 95.1 percent (Table 58) in the rural respondents. The results were higher among the non-users for both areas compared with the results of the in-depth interviews of the Ya-chud users for the disadvantages of Ya-chud which was 30.0 percent (14.5 + 15.5) by the urban and 17.0 percent (9.6 + 7.4) by rural respondents (Table 53). A few respondents who did not take Ya-chud would like to try Ya-chud for MK in the future because of the severity of their MK. They considered that over the counter medicine could not relieve this severe pain. However, the majority of non-users of Ya-chud did not intend to take Ya-chud in the future (97.8 percent in urban and 95.0 percent in rural areas) (Table 59). There were no significant differences between the two areas by the chi-square test ($p > 0.05$). The non-users' opinion on Ya-chud use

was due to 'rapid relief' and 'many reasons' since these formed the highest proportion of answers in both areas (Table 59). Cheapness was referred to by 11.9 percent in the urban areas but only 1.0 percent in the rural area.

Every respondent perceived MK to be one of the problems of daily life. They also suggested that the way to solve this problem was to advise people to see their doctors (93.3 percent in urban and 96.0 percent in rural areas). Suggestions of 'stop taking Ya-chud' and using 'mass media campaigns' were hardly referred to (Table 59). 'Many methods' such as exercise and rest were referred to by quite small numbers (5.2 percent in urban and 1.0 percent in rural areas). It appears that the respondents had more expectation of help from 'using health services' than they had of expectation of how to solve their MK themselves. This is shown in their belief in 'external' loci of influence of health beliefs (Table 5).

CHAPTER 5. THE YA-CHUD MODEL FOR THE TREATMENT OF MUSCULOSKELETAL PAIN

Pain is a perception through the sensory, emotional and motor process (25). This was explained by the gate control theory postulated by Melzack and Wall (26). When stimuli were applied to the body, some of them could become noxious stimuli (8) which were the ones which are adequate to trigger the feeling of pain (Figure 11).

Exercises, repetitive movements, illnesses and stress can be noxious stimuli and can produce MK (36). MK is not only a sense but also an emotion. The severity of pain does not depend on factors such as the amount of the tissue damaged and psychosocial status (27).

The way a person copes with MK depends on his view of the situation. How a person views the situation varies from person to person and from time to time. It is affected by individual characteristics such as age, knowledge, education level and also belief or attitudes. Some pain is easily forgotten. These types of pain are those to which a person mostly responds by a reflex movement. This is called fast pain (27). Mostly MK is slow pain or deep pain which is a more complex emotional process which changes in perception according to past experience and the present state of mind.

MK is not considered to be a life threatening symptom. When a person feels ill from MK , he/she uses self-medication. Not every MK needs to be treated with medicines. It will depend on his/her felt need.

Felt needs refer to the perceptions of the patient when they feel ill as proposed by Bradshaw (1972) (68). The choice of medicines used for the treatment of MK is a complex process. The factors involved are the individual's experiences, his/her beliefs on health, illness or medicines, the treatment cost, medicine cost, transportation cost and also the opportunity cost are all involved in addition to the nature of the sources where those medicines are obtained. It is a changing process starting with the choice of medicines through decision making until the step of taking the medicines. If those medicines are not available another medicine will be reconsidered. A person evaluates the treatment outcome and also his/her feeling for that outcome. His/her goal for treatment of MK is a cure but an improved symptom may be acceptable and satisfactory. He/she will value those medicines because of their benefit. This makes them valuable to them for the money he/she had to pay for the medicine. This will then become an experience and be repeated because of the satisfactory outcome obtained. This is a then vicious cycle which becomes automatic and does not involve decision making. That is so long as those medicines are easily obtained and cheap. He/she may give advice to their neighbours, and it is passed from one person to another person in the community and will then become the practice of the lay people.

This model is suggested as a model for the working class people who formed the majority of the people in this study. The present study did not provide enough information to propose a model for other classes of people.

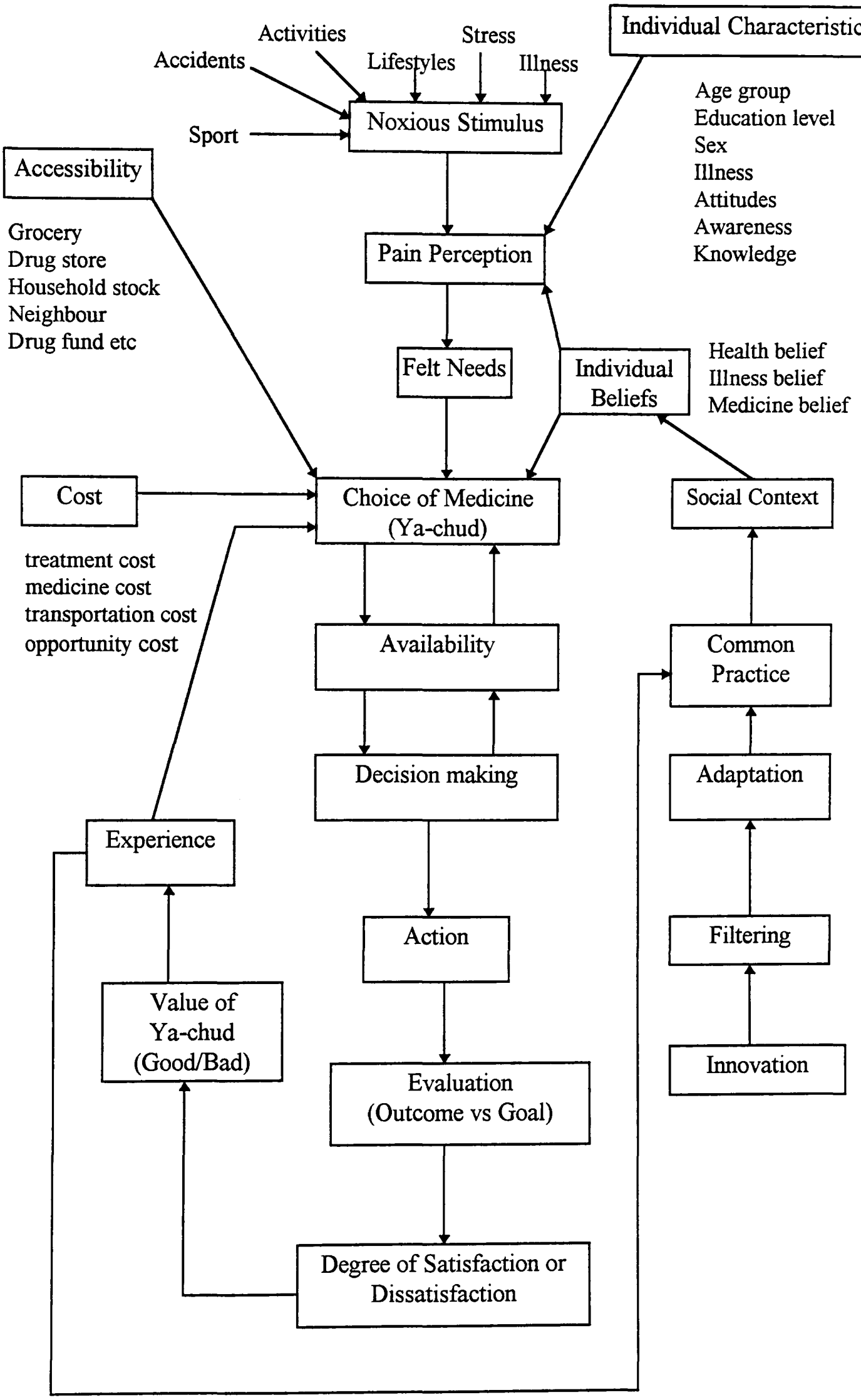


Figure 11 **The Ya-chud Model for the Treatment of Musculoskeletal Pain**

CHAPTER 6. OVERALL CONCLUSIONS AND RECOMMENDATIONS

6.1 Overall Conclusions

From the overall study results the following conclusions can be made:

1. Social factors to be considered for this study

- Literacy competency

There were 11.4 percent in the urban and 9.7 percent in the rural areas having problems with writing and reading (1.2 percent out of 11.4 in the urban and 2.1 percent out of 9.7 percent in the rural areas could not read or write at all) (Table 2).

Any health education programmes providing leaflets or booklets would not be appropriate for these groups.

- People's lifestyle and economical constraints

The main occupation in the rural areas was farming (76.7 percent) while the occupations in the urban areas of NE Thailand was found to be in the process of changing to working in offices and undertaking

further study. The farmers were fewer than the rural areas (47.6 percent) (Table 3).

Due to the economic constraints most of the people who were 15-34 years old had to undertake extra work as labourers and many migrated during the dry season. The women who were mostly housewives in the rural areas undertook extra paid work at home, such as weaving. Most of these activities involved repetitive movements. Whenever they had pain, they would like to shorten the time of illness. Sleeplessness from MK could lead to weakness and affect their daily life (100 percent in both urban and rural areas from Table 59). So demand for Ya-chud is not the real need of the people but rather fast relief from pain is the main goal desired (Table 53).

2. Lay people's perceptions of Ya-chud

- Ya-chud was seen to be a potent drug, it was known to be cheap and it was considered to have beneficial effects (Table 43).

- Ya-chud was understood to have harmful effects and so it was felt by many that Ya-chud should not be allowed for unrestricted sale (Table 43). However most of the respondents did not actually know the detail of the harmful effects or disadvantages of taking Ya-chud (70.0

percent in urban and 83.1 percent in the rural areas) ($p < 0.05$) (Table 53).

- The Ya-chud non-users were more aware of the disadvantages of taking Ya-chud than the users (Table 58).

- The multiple medicines which they had received from the hospital for taking together at one time were perceived to be similar to Ya-chud (Table 43).

- The location of pain for taking Ya-chud was found to be more at 'body' than the location for taking other medicines or another treatment (Table 51 and Table 52).

- Most of the respondents in both the urban and the rural areas used only one package of Ya-chud for each episode (Table 22 and Table 43).

It seemed to be rational to the lay people's perception to relieve their MK with the cheap and potent medicines. The many medicines together in Ya-chud could relieve their MK which originated in many parts of their body. These were similar concepts to the concepts about Thai traditional medicine which were that illnesses were caused by imbalance between more than one element.

Many kinds of herbal medicine would be used in the one recipe and each had a specific purpose in curing the symptoms (22).

This study showed that the lay people's conceptions were pragmatic. The way of their thinking was superficial and they could not understand the professional terminology such as side effects. They also viewed the multiple medicines from hospital as Ya-chud without understanding the complexity of the professional's decision making process which took into account the use of several medicines. In addition the lay people indicated that Ya-chud was mostly obtained from drug stores in the villages. It was noticed that the drug stores in the village investigated in this study were unregistered and all of them were groceries.

3. Treatment outcomes of taking Ya-chud

- The respondents in urban areas had negative attitudes towards Ya-chud but there was positive agreement to Ya-chud in the rural areas ($p < 0.01$) (Table 46).

From the survey 'no change' was found to be the most usual outcome from taking Ya-chud in both urban and rural areas (Table 18) but for the in-depth interview 'improved' was found to be the most usual outcome in both areas (Table 52). This difference in outcome of treatment between the

epidemiological and the in-depth investigations would seem to indicate a lack of conviction on the part of the respondents.

The results obtained from the Ya-chud non-users showed differences of their perceptions from the perceptions of the Ya-chud users on treatment outcomes in both the epidemiological survey and the in-depth interview.

6.2. Recommendations

The large variety of medicines available in the market constitute a big burden of choice for those who wish to self-medicate. This means that people need more information in order to gain knowledge on which to base good judgement. It is unsuspected that the more complicated the information that is provided the greater is the potential for misinterpreting the information. This can lead to inappropriate medicine use. It is believed that self-medication is still necessary particularly in the Thai community where the doctor and other health care professionals, such as the pharmacist, are not numerous enough to provide the heath service required.

There are many studies that show that the drug store was the most important source for drug distribution (12) (15). These studies also found that drug sellers had inappropriate knowledge to sell medicines and they provided inaccurate information to the people.

The recommendations from this present work for helping to solve Ya-chud use problems are as follows:

1. Appropriate health education to the risk group to be conducted in continuity. The education programmes should be performed both for individuals and for whole groups.

2. Development of standard treatment guidelines for self-medication of MK and other common illnesses.

3. Further support for the authorised personnel to conduct regular surveillance programmes and the authority for them to ensure that the drug sellers comply with the law.

4. National campaigns to increase the public awareness about Ya-chud.

5. Strengthening the support for the district health officers so that they increase their knowledge on the treatment of MK.

6. The long term planning programme should provide for the training of qualified 'dispensers' to work in the drug stores. This is considered to be one of the most important strategies in order to protect the public from inappropriate use of medicine.

Rigourous evaluation of any of the above interventions shuld be integral to their implementation to inform furture service provision in Thailand.

'One intervention at a time' and need to prioritise.

REFERENCES

1. Nitayarumphong, S. *Evolution of primary health care in Thailand.* Health Policy & Planning, 1990, **3**, 246-254.
2. Suvanarejh, C. *Thailand Primary Health Care Profile*. Primary Health Care Office, Office of Permanent Secretary, Ministry of Public Health, Bangkok, 1992, pp1-20.
3. Kornkasem, M., Wibulpolprasert, S., Yamphayak, N. and Silkavuth, P. Thai Drug System: A Situation Analysis for Further Development. *In* : R.R. Chaudhury, ed. *International Experience in Rational Use of Drugs, Volume II.* Prachachon Co., Ltd., 1997, pp90-107. ISBN : 974-634-964-3.
4. Hongsamutr, D. *Technical Report of Ya-chud.* Inspection Division, FDA, Ministry of Public Health, Thailand, 1992, pp1-17.
5. Jaidee, S. Ya-chud in Thailand. *Thai Journal of Pharmaceutical Sciences*, 1980, **5** (4), 217-247.
6. Phongphamorn, P. *Traditional Medicine*. Amnuay Saan Press, 1979, pp1-15.
7. Sujamnong, P. *Thai-Chinese Medical Textbook, Fokloric Medicines, Herbal Medicines and Traditional Medicines in Thailand.* Praewitaya Press, 1981, pp1-24.
8. International Association for the Study of Pain : *Pain Terms : A list with definitions and notes on usage*. Pain; 1979, **6**, 249; 1982, **14**, 205.
9. Fry, HJH. Overuse syndrome of the upper limb in musicians. *Medical Journal of Australia*, 1986, **144**, 182-185.

10. Grand, A. le, Sri-ngernyuang, L. and Streetland, P.H. Enhancing appropriate drug use : the contribution of herbal medicine promotion. A case study in rural Thailand. *Journal of Social Science and Medicine*, 1993, **36**, 1023-1035.

11. Grand, A. le and Sri-ngenyuang, L. *Herbal Drugs in Primary Health Care, Thailand : the Impact of Promotional Activities on Drug consumption, Drug Provision and Self-reliance.* Amsterdam, Royal Tropical Institute, 1989, pp1-7.

12. Supunchaimatr, V. Thai Farmers' Illnesses and Their Source of Treatment. *In* : T. Hongvivatana, ed. *Health Behaviour*. Centre of Health Policy Studies, Mahidol University, Bangkok, Thailand, 1991, pp 194-209.

13. Nakorn, N.S. Kummeng, T., Osaka, R., Usawapak, V., Donkrasin, B. et al. *An Assessment of Communities' Health Problems and Felt Needs in Khon Kaen Northeast, Thailand : A Participatory Action Research.* Khon Kaen University, 1993, pp77-88. ISBN : 974-556-246-7.

14. Sri-ngernyuang, L., Hongvivatana, T. and Pradabmuk, P. Socio-Cultural Aspects of Pain Killers Use : A Case Study of Thailand. *In : Proceedings the First International Conference on Social and Cultural Aspects of Pharmaceuticals, Woudchoten, Leist, The Netherlands, October 17-21, 1991.*

15. Sri-ngernyuang, L., Hongvivatana, T. and Pradabmuk, P. *Implications of Community Health Workers Distributing Drugs : A case study of Thailand.* WHO/DAP/94.19, 1995, pp 27-36.

16. Chadbunchachai, S., Jirawatkul, A., Loengenkasut, P., Tontakulrat, C, Prayulhong, T. et al. *Information sources and Decision Making Process Regarding the Use of Drugs by the People in Northeastern Thailand : Case study in* **4** *Villages.* Khon Kaen : Khon-Kaen-Karn-Pim Press, 1990, pp55-92. ISBN : 974-555-747-1.

17. Olatunde, A. *Self medication : Benefits, Precautions and Dangers.* Macmillan Press, 1979 p 33.

18. Fitzpatrick, R., Hinton, J., Newman, S., Scambler, G. and Thompson, J. *The Experience of Illness.* Tavistock Publications, 1984, pp 13-17.

19. Kleinman, A., Eisenberg, L. and Good, B. Culture, illness and cure. *Annals of Internal Medicine*, 1978, **88**, 251-259.

20. Bandura, A. Self-efficacy Mechanism in Phychological Activation and Health-promoting Behaviour. *In* : J. Madden, S. Matthysse and J. Barchas; eds. *Adaption, Learning and Effecting.* New York : Raven Press, 1986, pp1-49.

21. Hardon, A.P. *Confronting Ill Health : Medicines, Self-care and the Poor in Manila.* Quezon City, Health Action Information Network, 1991, pp103-171, 215-216.

22. Bunyapraphatsara, N. Medicinal Plants and Primary Health Care in Thailand. *In* : R.R. Chaudhury, ed. *International Experience in Rational Use of Drugs, Volume II.* Prachachon Co., Ltd, 1997, pp143-154. ISBN : 974-634-964-3.

23. Joengsatiensub, K. Thai traditional medicine in rural areas. *In* : N. Kunawat, ed. *Traditional Medicine Vol 2.* Centre for Thai Traditional Medicine Development, Ministry of Public Health, Bangkok, Thailand, 1992, pp3-28.

24. Bond, M.R. Patients' Experience of Pain. *In* : N E Williams and H. Wilson, eds. *Pain and its Management, International Encyclopedia of Pharmacology and Therapeutics Section 112.* Pergamon Press, 1983, p1.

25. Karoly, P. *The Assessment of Pain : Concepts and Procedures, in Measurement Strategies in Health Psychology.* John Wiley & Sons, 1985, pp461-474.

26. Melzack, R. and Wall, P.D. Pain mechanism : A new theory. *Science*, 1965, **150**, 971.

27. Wells, C. and Nown, G. *In Pain? A Self Help Guide for Chronic Pain Sufferers.* Optima Press, 1993, p25.

28. Melzack, R. and Dennis, S.G. Neurological foundations of pain. *In* : R.A. Sternbach, ed. *The psychology of pain.* New York : Raven Press, 1978, pp1.

29. O'Hara, P.M. *Pain Management for Health Professionals.* Chapman & Hall, 1996, p13. ISBN : 0412 62990 9.

30. Folkman, S., Lazarus, R.S., Dunkel-Schetter, C., De Longis, A and Gruen, R.J. Dynamics of a stressful encounter : cognitive appraisal, coping and encounter outcomes. *Journal of Personality and Social Psychology*, 1986, **50**, 992-1003.

31. McArthus, D.L., Cohen, M.J., Gottlieb, H.J., Naliboff, B.D. and Schandler, S.L. Treating chronic low back pain. I. Admission to initial follow-up. *Pain*, 1987, **29**, 1-22.

32. Jensen, M.P., Turner, J.A, Romano, J.M. and Karoly, P. Self-efficacy and outcome expectancies : relationship to chronic pain coping strategies and adjustment. *Pain*, 1991, **44**, 263-269.

33. Bandura, A. Self-efficacy : toward a unifying theory of behavioural change. *Psychological Review*, 1977, **84**, 192-215.

34. Newham, D.J., Edwards, R.H.T and Mills, K.R. Skeletal muscle pain. *In* : P D Wall and R Melzack, eds. *Textbook of Pain*. Edinburgh : Churchill Livingstone, 1994, pp423-428.

35. Travell, J.G. Myofascial Trigger Points : Clinical View. *In* : J.J. Bonica and D. Albe-Fessard, eds. *Advances in Pain research and Therapy. Vol. 1*. New York : Raven Press, 1976, pp 919-926.

36. Simons, D.G. and Travell, J.G. Myofascial pain syndromes. *In* : P.D. Wall and R Melzack, eds. *Textbook of Pain*. Edinburgh : Churchill Livingstone, 1994, pp263-276.

37. Gumn, C.C Neuropathic pain, a new theory for chronic pain of intrinsic origin. 1989, **22**, 257. *Annals of the Royal College of Physicians and Surgeons of Canada.*

38. Herfindal, E.T., Gourley, D.R. and Hart. L.L. *Clinical Pharmacy and Therapeutics, Fifth edition*. Williams and Wilkins, 1992, pp262-265.

39. Spiro, H. Is the steroid ulcer a Myth? *New England Journal of Medicine*, 1983, **309**, 45-47.

40. Baylink, D.J. glucocorticoid-induced osteoporosis. *New England Journal of Medicine.*, 1983, **309 (5)**, 306-308.

41. Schell, H.W. Adrenal corticosteroid therapy in far advanced cancer. *Geriatrics*, 1972, **27**, 131.

42. Abramson, S.B. and Weissman, G. The mechanism of action of non-steroidal anti-inflammatory drugs. *Arthritis and Rheumatism (Atlanta)*, 1989, **32**, 1-9.

43. Netter, P., Bannworth, B. and Royer Morrot, M.J. Recent findings on the pharmaco-kinetics of non-steroid anti-inflammatory drugs in synovial fluid. *Clinical Pharmacokinetics*, 1989, **17**, 145-162.

44. Roth, S.H. NSAID and gastropathy : a rheumatologist's review. *Journal of Rheumatology* 1988, **15**, 912-919.

45. Cooper, K. and Dennett, W. Nephrotoxicity of common drugs used in clinical practice. *Archives of Internal Medicine*, 1987, **147**, 1213-1218.

46. British National Formulary No. 32. British Medical Association and the Royal Pharmaceutical Society of Great Britain, September, 1996, pp302-303, 407-419. ISBN : 0 85369 3625.

47. Wonsiewicz, M.J. and McCurdy, P. *Goodman and Gilman's The Pharmacological Basis of Therapeutics*. McGraw-Hill, 1996, pp632, 642-643.

48. Flower, R.J., Moncada, S. and Vane, J.R. Analgesic-antipyretics and the anti-inflammatory agents : drugs employed in the treatment of gout. *In* : A.G. Gilman, L.S. Goodman, T.W. Rall and F. Murad, eds. *The pharmacological basis of therapeutics, 7th edn.* New York : Macmillan, 1985, pp674-715.

49. Seeff, L.B., Cuccherini, B.A., Zimmerman, H.J., Adler, E. and Benjamin, S.B. Acetaminophen hepatotoxicity in alcoholics. *Annals of Internal Medicine*, 1986, **104**, 399-404.

50. Herfindal, E.T. and Gourley, D.R. *Textbook of Therapeutics : Drug and Disease Management, sixth edition.* Williams & Wilkins, 1996, pp1064-1065.

51. Budd, K. Psychotropic drugs in the treatment of chronic pain. *Anaesthesia*, 1978, **33**, 531-534.

52. File, S.E. Tolerance to the behavioural actions of benzodiazepines. *Neurosci. Behav. Rev.*, 1985, **9**, 113-121.

53. Pennington, D.C. *Essential Social Psychology : 'Attitudes and attitude change'.* Edward Arnold, 1986, pp61-79.

54. Fishbein, M. and Ajzen. I. *Belief, attitude, intention and behaviour : An introduction to theory and research.* Readings. Massachusetts : Addison-Wesley, 1975.

55. Oppenheim, A.N. *Questionnaire design, Interviewing and Attitude Measurement, new edition.* Pinter Publisher, 1992, pp174-196.

56. Baker, M.J. *Marketing an introductory text, fourth edition.* Macmillan, 1985, p72.

57. Ajzen, I. From Intentions to actions : A Theory of Planned Behaviour : *In* : J. Kuhl and J. Bechmann, eds. *Action Control From Cognition to Behaviour.* Springer-Verlag Berlin Heiderberg, 1985, p12.

58. Judd, C.M., Smith, E.R. and Kiddler, L.H. *Research Methods in Social Relations, sixth edition.* Harcourt Brace Jovanovich College Publishers, 1991, pp163-170.

59. Lwanga, S.K. and Lemeshow, S. *Sample size determination in health studies, A practical manual*. World Health Organization, Geneva, 1991, pp6, 34-35.

60. Likert, R. A technique for the measurement of attitudes. *Archives of Psychology*, 1932, **140**, 1-55.

61. Polgar, S. and Thomas, S.A. *Introduction to Research in the Health Sciences, third edition*. Churchill Livingstone, 1995, pp132-133.

62. Sommer, B. and Sommer, R. *A Practical Guide to Behavioural Research, Tool and Techniques, third edition*. Oxford University Press, 1991, pp157-170.

63. Planning and Development Division, Provincial Health Office, Khon Kaen. *General Information on Thailand and Khon Kaen*. Annual Report, 1996.

64. Central Office for Civil Registration, Ministry of Interior, Bangkok, Thailand. *Statistical National Survey*. Annual Report, December, 1995.

65. National Rural Development Committee, Community Department, Ministry of Interior. *Handbook for the Officers for Rural Development*. Bangkok, 1994, pp 1-12.

66. District Administrative Office, Muang District, Khon Kaen. *General Information on Muang District*. Annual Report, 1996.

67. Sola, A.E. and Bonica, J.J. Myofascial Pain Syndrone. *In*: J.J. Bonica, ed. *The Management of Pain, second edition, Volume I*. Lea & Febiger, 1990, pp353-361.

68. Armstrong, D. *Outline of Sociology as Applied to Medicine, fourth edition*. Butterworth Heinemann, 1994, pp4-5,126.

Drug Store Survey Conducted By The Inspectorate Division, FDA, Ministry Of Public Health, Bangkok, 1991.

No of Ya-chud	Types of Ya-chud	No of tabs/caps per package	Percentage
52	Musculoskeletal Pain	4-5	42.3
40	Cold Remedy	4-5	32.5
3	Cold Remedy for Children	3-4	2.4
2	Inflammation of the Kidney	3-4	1.6
7	Neurotonic	3-5	5.7
4	Increasing the Appetite	3-6	3.3
2	Antimalarial	5	1.6
2	Antipruritic	3	1.6
1	Antiflatulence	2	0.8
10	Antidiarrhoeal	3-5	8.1
Total = 123			100

The Identification Of Medicines In Ya-Chud For The Treatment Of Musculoskeletal Pain Was Undertaken By The Medical Sciences Centre, Ministry Of Public Health, Bangkok, Thailand, 1991

Generic Name	Frequency
Dexamethasone	29
Prednisolone	10
Phynylbutazone	36
Indomethacin	15
Piroxicam	2
Phenylbutazone + Dipyrone	1
Aspirin	17
Paracetamol	9
Aspirin + Caffeine	4
Sodium Salicylate	2
Aspirin + Paracetamol + Caffeine	1
Diazepam	23
Chlordiazepoxide	4
Phenobarbital	1
Chlorpheniramine	10
Chlorpheniramine + Paracetamol	1
Chlorpheniramine + Paracetamol + Salicylamide + Caffeine	1
Cyproheptadine	2
Methyleneblue	18
Aluminium hydroxide	1
Sodium bicarbonate	1
Vitamin B_1	27
Vitamin $B_1 + B_2 + B_6$	9
Vitamin B_6	1
Vitamin $B_1 + B_2$	1
Vitamin B Complex	11
Vitamin C	1
Vitamin A	1

APPENDIX 3

The Fourth National Economic And Social Development Plan (1977-1981) focused on strengthening the administrative skill at the community level by profiling guidelines for organising and delegating the Poo-yai-ban's (village head man) authorities through the village committees. It commonly set-up 7 committees as follows:

1. Politics and Government Committee
2. Finance Committee
3. Public Health Committee
4. Education and Culture Committee
5. Public Security Committee
6. Religious Activity Committee
7. Social Welfare Committee

APPENDIX 4

The Community Primary Health Care Centre (CPHCC) was proposed by the Ministry of Public Health which aimed to be the centre for undertaking primary health care activities and the focal point for information exchange between the health officers and the village health volunteers. It aims to be the centre for village development funds and the village information centre for the villagers as well.

It was reported at the end of July 1992 that there were 11,040 such centres in rural areas and 140 in urban areas.

Source: Thailand Primary Health Care Profile 1992. Primary Health Care Office, Office of Permanent Secretary, Ministry of Public Health, Bangkok.

APPENDIX 5

The Common Local Festivals In North East Thailand:

1. New Year celebration in January
2. Bun-kao-ji and Bun-phra-ved (Buddhist ceremony) in February
3. Song-kran festival in April
4. Bun-kao-punsa (Buddhist ceremony) in June
5. Bun-ook-punsa (Buddhist ceremony) in July
6. Bun-kao-sart (harvesting ceremony) in August
7. Bun-kra-thin (Buddhist ceremony) in October
8. Loy-kra-thong festival in November

Presurvey Form A

- Mapping of the study area
  - main road from Khon Kaen to the village
  - main road within the village
  - the landmarks of the school, temple, groceries, tambon health office, village hall, community primary health care centre and broadcast information tower.

- Topic guide for interviewing the village key informant
  - lifestyle of the people (occupation, communication, health care, village infrastructure and relationships within the village)
  - cultural background (local tradition, religious and local language)
  - village administration (village committees and informal groups).

Presurvey Form B

Name ..... Surname .....

MR / MRS / MISS ☐ (circle the selected one)

Sex (male, female) ☐ (circle the selected one)

Household No ..... ☐☐☐☐☐

Age ..... yrs ☐☐; Village ..... ☐ (integer number)

ID code ☐☐☐☐☐☐☐☐

Education Level
- ☐ primary school
- ☐ secondary school
- ☐ certificate
- ☐ graduate
- ☐ no study
- ☐ ..... ☐

Occupation
- ☐ no job
- ☐ student
- ☐ housework
- ☐ farmer
- ☐ semi skilled
- ☐ regular office worker
- ☐ shop owner/direct seller ☐

Literacy
- ☐ fluent
- ☐ moderate
- ☐ need some help
- ☐ cannot read and write ☐

Questionnaire Interview Form For The Epidemiological Study Of Ya-Chud For Treatment Of Musculoskeletal Pain (Private And Confidential)

Name ..... Surname .....

MR / MRS / MISS ☐ Sex (male, female) ☐

Household No ..... ☐☐☐☐☐ Age ..... yrs ☐☐; Village ..... ☐ (interger number)

ID code ☐☐☐☐☐☐☐☐

Education Level
- ☐ primary school
- ☐ secondary school
- ☐ certificate
- ☐ graduate
- ☐ no study
- ☐ ..... ☐

Occupation
- ☐ no job
- ☐ student
- ☐ housework
- ☐ farmer
- ☐ semi skilled
- ☐ regular office worker
- ☐ shop owner/direct seller ☐

1. How is your current health status? (From the respondents' point of view) (Record in respondents' words, do not classify the health status yet)

- ☐ healthy
- ☐ fair
- ☐ ill
- ☐ do not know ☐

2. What is the most important thing that influences your good or bad health? (Record the respondents words)

3. Thinking back over the last month have you used any medicines for self-medication?

- ☐ yes
- ☐ no
- ☐ cannot remember ☐

If yes : state the frequency

- ☐ once
- ☐ twice
- ☐ 3 - 5 times
- ☐ more than 5 times ☐

4. Thinking back over the last year have you visited any health service for treatment of any illnesses/symptoms?

- ☐ yes
- ☐ no
- ☐ cannot remember ☐

If yes : state the frequency

☐ once

☐ twice

☐ 3 - 5 times

☐ more than 5 times ☐

5. Have you ever had any experience of musculoskeletal pain?

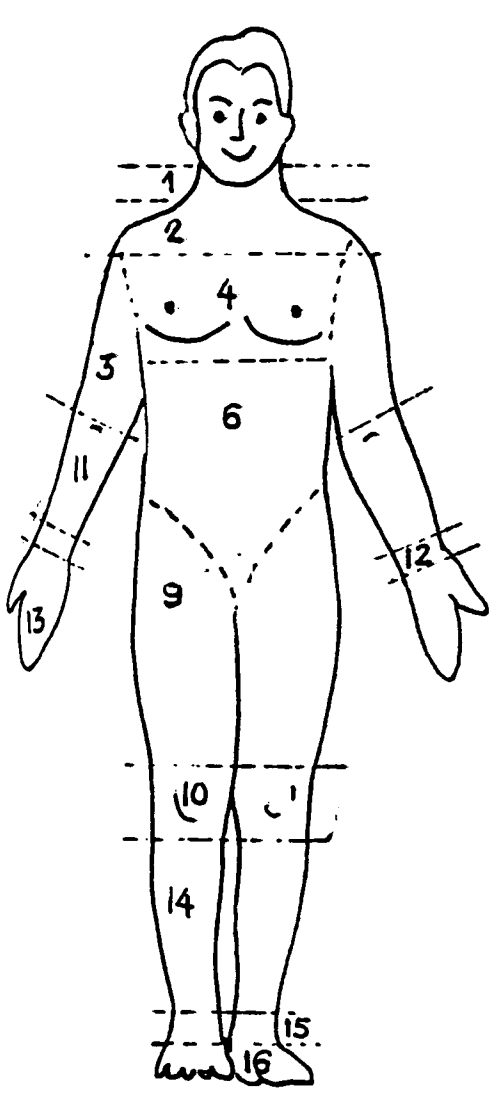
☐ yes

☐ no ☐

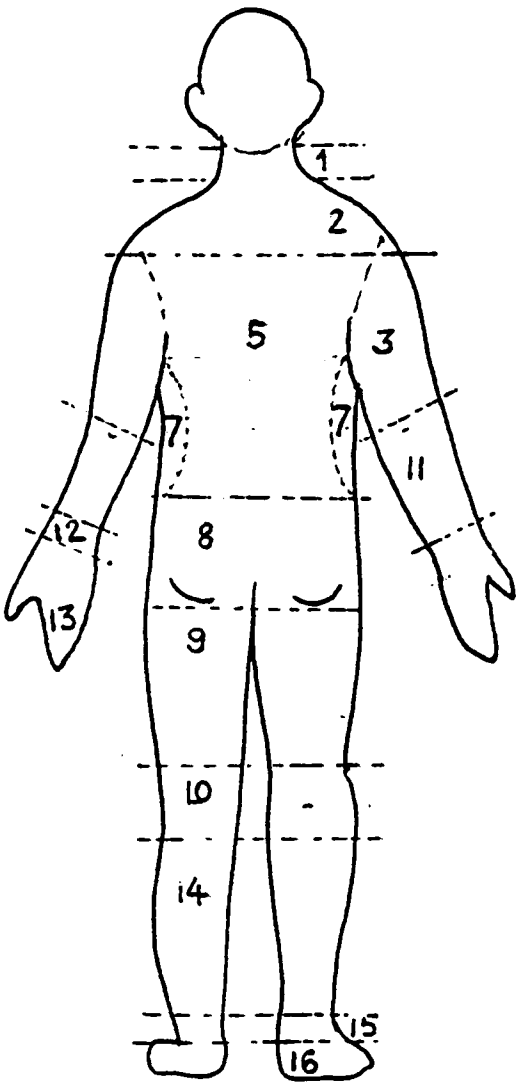
6. When was the last time that you have experience musculoskeletal pain?

6.1	within last week	☐ yes	☐ no	☐
6.2	within last month	☐ yes	☐ no	☐
6.3	within last year	☐ yes	☐ no	☐
6.4	more than one year	☐ yes	☐ no	☐

(Start from 6.1 → 6.4 orderly)



FRONT



BACK

1 = Neck

2 = Shoulder

3 = Upper arm

4 = Chest

5 = Back

6 = Stomach

7 = Waist

8 = Hip

9 = Upper leg

10 = Knee

11 = Lower arm

12 = Wrist

13 = Finger

14 = Lower Leg

15 = Ankle

16 = Foot

17 = ...

Figure 12 Body Location for Pain Assessment

7. Where was the musculoskeletal pain location? (The most serious one) (Can choose more than one location).

☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐

8. What was the cause of that musculoskeletal pain?

☐ work

☐ illness/elderly

☐ sport/accident

☐ many factors

☐ do not know ☐

9. State the characteristics of that musculoskeletal pain.

☐ new event ☐ old event ☐ ..... ☐

10. The sources of treatment.

☐ health service

☐ self-medication

☐ rest/massage

☐ miscellaneous

☐ cannot remember ☐

11. What was the outcome of that treatment?

☐ disappeared

☐ improved

☐ no change

☐ do not know ☐

12. Have you had any experience of taking Ya-chud for musculoskeletal pain?

☐ yes

☐ no ☐

If yes - ask the following questions

13. When was the last time that you have taken Ya-chud for the treatment of musculoskeletal pain?

13.1 within last week ☐ yes ☐ no ☐

13.2 within last month ☐ yes ☐ no ☐

13.3 within last year ☐ yes ☐ no ☐

13.4 more than one year ☐ yes ☐ no ☐

(Start from 13.1 → 13.4 orderly)

14. Where was the musculoskeletal pain location for which you took Ya-chud? (Similar to question No 7) (Can choose more than one location) (See Figure 12)

☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐

15. What was the cause of musculoskeletal pain for which you took Ya-chud?

- ☐ work
- ☐ illness/elderly
- ☐ sport/accident
- ☐ many factors
- ☐ do not know ☐

16. State the characteristics of that musculoskeletal pain.

☐ new event ☐ old event ☐ ..... ☐

17. The sources of Ya-chud.

- ☐ drug stores
- ☐ peddlers
- ☐ ..... ☐

18. What was the outcome of taking Ya-chud?

- ☐ disappeared
- ☐ improved
- ☐ no change
- ☐ do not know ☐

19. Did you have any multiple treatments?

- ☐ yes
- ☐ no

20. Number of packages used for treatment?

- ☐ one package
- ☐ two packages
- ☐ three packages
- ☐ four and more than four packages ☐

21. Price per package?

- ☐ less than 3 bahts
- ☐ 3 bahts
- ☐ 4 bahts
- ☐ 5 bahts
- ☐ 6-9 bahts
- ☐ 10 bahts ☐

22. Numbers of tablets/capsules in the package?

- ☐ less than 3
- ☐ 3 tabs/caps
- ☐ 4 tabs/caps
- ☐ 5 tabs/caps
- ☐ 6 tabs/caps
- ☐ 7 tabs/caps
- ☐ > 7 tabs/caps ☐

Guidelines For The Community Survey

a. Pre-interview preparation

- Before starting the interview, make sure that you have read and understand the questionnaire and instructions.
- Study the geographic area.
- Make a work plan every time before entering the village.
- Dress in a polite and comfortable way.
- A permanent ink ballpen should be used to keep records in good handwriting.

b. Identification of respondents

- Check the name listed which covers name, addresses, gender and age.
- Look up the addresses on the map for confirmation.
- For any absent cases, obtain more information for the next appointment (record the possible times the person will be back home)

c. Etiquette and cultural norms to be followed

- Visit the officials who are responsible for the study area.
- Enter with a friendly open smile and Sa-was-dee (polite greeting) for every entry and every departure.
- Introduce yourself by giving a bit of background information about yourself.

- Sit down when invited. Do not sit at a higher level than the respondent (culturally impolite).

d. Interview techniques

- Concentrate during the interview.
- Record the date of any interview and also clearly write your name after finishing the interview.
- Find a quiet place where you will not be interrupted by neighbours or relations (should not be far from their house).
- Look at the respondent when you are speaking to him/her.
- Be a good listener and nod your head sometimes to show that you understand and accept the respondent's ideas.

e. Data recording

- Fill in every blank. Write down the respondent's name, address, code numbers and the date of interviewing for every form.
- Follow the instructions for recording the data. Do not interpret the answer and write down your own ideas.
- If some suggestions appear to be useful for the study, do not forget to note that it comes from your idea.

f. Data Management

- List the respondents' name including the code and the home address which you could not complete at the interview for any reason and send to the researcher as soon as possible.
- Make sure the answer comes from the correct respondent by checking the completed form for the code number and also the name including address.
- Make a note to summarise the interesting information each day. The interesting points can be discussed in the planned meetings.

g. Disengagement

- Thank each respondent after finishing the interview.
- Try to meet the head of the village before your departure and also ask permission to go back in case of some missing data.
- It is very important to inform the Tambon and district health officers of your departure.

Checking The Respondents' Answer Corresponding To Each Statement With The Blank Options

	(6)	(5)	(4)	(3)	(2)	(1)
Health Beliefs						
• My Health status will change with age						
• Everyone should have some knowledge of self care						
Beliefs about medicines						
• Whenever I get MK, I need to treat with medicine						
• There should be a wide range of medicines in drug stores						
• Good medicines should have a rapid action						
Attitudes toward Ya-chud						
• Ya-chud is cheap and good value for use in medication						
• The government should allow unrestricted sale						
• Ya-chud has no harmful effect						
• The risks from taking Ya-chud are less than the benefits obtained						
• It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.						
• Ya-chud suitable for producing an antipyretic effect can also be used for MK as well.						
• Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope						
• Medicines supplied by the hospital for taking at the same time are the same as Ya-chud.						
• Ya-chud should be used for severe MK						

APPENDIX 10

Essential Information To Be Considered For In-Depth Interviewing

- Respectable presentation of yourself, polite dress and not too eye-catching or attractive;

- The interviewer should wait politely until respondents complete their conversation, even if the conversation is not concerned directly with the question;

- The interviewer should avoid arguing or discussing with the respondent to interpose their ideas;

- The interviewer should avoid making the respondent feel embarrassed by using sensitive questions;

- If the respondents ask questions which could lead to response bias then ask permission to answer the question after finishing the interview;

- After the last question has been completed, review the field notes carefully to make sure that no information is missing;

- Write down more detail after finishing the interview on a daily basis;

- Remember, not to use tape recording during this study;

- Reconfirm to the respondents that the data is confidential and anonymous.

In-Depth Interview Guidelines For The Ya-Chud Users

(Check the listed name and reconfirm whether the respondent has experience of taking Ya-chud for MK or not - exclude the respondents who had no experience of Ya-chud use at all).

1. Describe your job/activity.

2. Explain your current health status.

3. Have you ever had MK or not? (Exclude the respondents who have had no experience)

4. Describe the location of the MK (referred to in Question 3), how you cope with this symptom and what is the result of treatment?

5. When was the first time you used Ya-chud? (Any kind of Ya-chud). Who suggested it?

   Explain the result obtained and how it compared with taking the other drugs.

6. When was the last time you used Ya-chud for the treatment of MK? Explain the symptoms and the location of the pain.

7. Who suggested to you to take Ya-chud for MK?

8. Give details of price, number of tablets, frequency of use and specific name of this Ya-chud.

9. Explain the advantages and disadvantages of taking Ya-chud for MK.

10. Did you have any other co-treatment?

11. Which is your preferred method of treating MK?

The questions must be strictly asked in sequence as follows. 3 → 4, 6 → 7 → 8 → 9 → 10 → 11.

(Do not split these questions separately)

APPENDIX 12

In-Depth Interview Guidelines For Ya-Chud Non-Users

(Check the listed name and reconfirm whether the respondent has had experience of taking Ya-chud for MK or not - exclude the respondents who have had previous experience of taking Ya-chud from this interview. Start from the first question and work through until the last one in an orderly fashion).

1. Have you ever had MK or not? (Exclude from interviewing if the answer is 'no')

2. Explain in more detail the nature of MK : the causes, pain characteristics, pain location and how to cope with the symptoms.

3. Explain why you did not take Ya-chud for the treatment of MK. Will you use it if you get MK in the future, or not?

4. In your opinion, what are the reasons why people take Ya-chud?

5. Is MK a problem which interferes with your daily life?

6. Could you give some suggestions which would help solve the Ya-chud problem in your area?

Guidelines For Recording Data From In-Depth Interviewing

Question 1. Job = Occupation may be permanent or temporary or both.

Activities = What they do for surviving/earning/daily life.

Question 2. Current health status = subjectively classified by the respondent if he/she feels healthy, moderately good health, ill or suffering discomfort, can explain more if he/she wants to.

Question 3. MK = Musculoskeletal pain or body muscle pain/discomfort.

Question 4. The location of the pain = See the picture in Appendix ( ) if he/she has more than one location, record the answers for how they cope with these symptoms and what is the result of these treatments separately.

Question 5. Any kind of Ya-chud = not only Ya-chud for MK

First time = record the answer as Buddhist-Era (B E) together with the number of years he/she had experience of taking Ya-chud.

Question 6. Last time = record the answer as BE together with the numbers of years he/she had experience. Notice that this question is for Ya-chud for MK.

Question 7. Who suggested taking Ya-chud in Question 6?

Question 8. Record the specific name according to the respondent's words.

Question 9. Ask the respondent to state the advantages until they are finished, then ask for the disadvantages.

Question 10. Co-treatment = Any other treatment except for Ya-chud use. It may be massage, other medicines, herbal medicines or health service.

Question 11. Record according to the respondent's words

Table 60 The Frequency Distribution and the Relationship of Demographic Characteristics Between Ya-chud Users (N = 156) and Ya-chud Non-users (N = 352) in the Urban Areas

	Ya-chud Users (N = 156)			*Ya-chud Non-users (N = 352)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp. Val.*	*Percent*			
Age Group									
15 - 24	8	28.3	5.1	84	63.7	23.9			
25 - 34	29	37.2	18.6	92	83.8	26.1			
35 - 44	44	37.2	**28.2**	92	83.8	21.9			
45 - 54	26	21.8	16.7	45	49.2	12.8			
55 - 64	22	16.0	14.1	30	36.0	8.5			
≥ 65	27	15.7	17.3	24	35.3	6.8			
							41.65479	5	0.00000
Education Level									
primary school	100	78.90	**64.1**	154	176.0	43.8			
secondary school	31	33.2	19.9	77	74.8	21.9			
certificate/graduate	22	32.6	14.1	84	73.4	23.9			
no classroom learning	3	12.3	1.9	37	27.7	10.5			
							24.22054	3	0.00002
Gender									
male	84	72.2	**53.8**	151	162.8	42.9			
female	72	83.8	46.2	201	189.2	57.1			
							5.21199	1	0.02243
Occupation									
no job	5	4.3	3.2	9	9.7	2.6			
study	1	9.5	0.6	30	21.5	8.5			
housework	21	13.5	13.5	23	30.5	6.5			
farmer	108	89.4	**69.2**	183	201.6	52.0			
regular office work	13	27.6	8.3	77	62.4	21.9			
shop owner/direct seller	8	11.7	5.1	30	26.3	8.5			
							35.62126	5	0.00000

* Pearson chi-square probability

Table 61 The Frequency Distribution and the Relationship of MK Behaviour Between the Ya-chud Users (N = 156) and Ya-chud Non-users (N = 352) in the Urban Areas

	Ya-chud Users (N = 156)			*Ya-chud Non-users (N = 352)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Location of MK									
neck	-	3.4	-	11	7.6	3.1			
arm, shoulder	11	14.1	7.1	35	31.9	9.9			
chest, back	10	7.7	6.4	15	17.3	4.3			
waist	53	52.2	**34.0**	117	117.8	33.2			
hip, leg	37	39.9	23.7	93	90.1	26.4			
joint, knee	18	18.7	11.5	43	42.3	12.2			
arm and leg	4	4.0	2.6	9	9.0	2.6			
body	23	16.0	14.7	29	36.0	8.2			
							11.72334	7	0.11003
Causes of MK									
work	94	91.5	**60.3**	204	206.5	58.0			
illness	10	12.6	6.4	31	28.4	8.8			
sport/accident	7	12.6	4.5	34	28.4	9.7			
many factors	38	35.0	24.4	76	79.0	21.6			
do not know	7	4.3	4.5	7	9.7	2.0			
							7.26702	4	0.12243
Time occurrence									
within last week	64	64.5	**41.0**	146	145.5	41.5			
within last month	24	27.0	15.4	64	61.0	18.2			
within last year	37	33.2	23.7	71	74.8	20.2			
more than one year	31	31.3	19.9	71	70.7	20.2			
							1.13824	3	0.76785
Pattern									
new event/accute	204	188.5	**58.0**	68	83.5	43.6			
old event/chronic	148	163.5	42.0	88	72.5	56.4			
							8.96704	1	0.00275
Sources of Treatment									
health service	26	21.8	16.7	45	49.2	12.8			
self-medication	79	70.6	**50.6**	151	159.4	42.9			
rest/massage	44	58.3	28.2	146	131.7	41.5			
do not know	7	5.2	4.5	10	11.8	2.8			
							8.56371	3	0.03569
Treatment outcome									
cure	32	39.9	20.5	98	90.1	27.8			
improved	44	37.8	28.2	79	35.2	22.4			
no change	80	78.0	**51.3**	174	176.0	49.4			
do not know	-	0.3	-	1	0.7	0.3	4.26770	3	0.23397

* Pearson chi-square probability

Table 62 The Frequency Distribution and the Relationship of Perception on Current Health Status and Health Beliefs Between Ya-chud Users (N = 156) and Ya-chud Non-users (N = 352) in the Urban Areas

	Ya-chud Users (N = 156)			*Ya-chud Non-users (N = 352)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Current Health Status									
healthy	104	116.7	**66.7**	276	263.3	78.4			
fair	30	24.0	19.2	48	54.0	13.6			
illness	22	13.5	14.1	22	30.5	6.3			
do not know	-	1.8	-	6	4.2	1.7			
							14.55044	3	0.00224
Health Beliefs									
external	65	68.8	**41.7**	159	155.2	45.2			
internal	57	55.9	36.5	125	126.1	35.5			
mixed	34	31.3	21.8	68	70.7	19.3			
							0.66300	2	0.71784

* Pearson chi-square probability

Table 63 The Frequency Distribution and the Relationship of Health Care Experience Between Ya-chud Users (N = 156) and Ya-chud Non-users (N = 352) in the Urban Areas

	Ya-chud Users (N = 156)			*Ya-chud Non-users (N = 352)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Self-medication During the Previous Month									
no use	76	99.8	48.7	249	225.2	70.7			
once	43	35.6	**27.6**	73	80.4	20.7			
twice	18	10.7	11.5	17	24.3	4.8			
3-5 times	19	9.2	12.2	11	20.8	3.1			
> 5 times	-	0.6	-	2	1.4	0.6			
							33.35266	4	0.00000
Health Services Visited During the Previous Year									
no use	78	82.0	50.0	189	185.0	53.7			
once	41	40.5	**26.3**	91	91.5	25.9			
twice	10	11.7	6.4	28	26.3	8.0			
3 - 5 times	21	16.0	13.5	31	36.0	8.8			
> 5 times	6	5.8	3.8	13	13.2	3.7			
							2.92756	4	0.57002

* Pearson chi-square probability

Table 64 The Frequency Distribution and the Relationship of Demographic Characteristics Between Ya-chud Users (N = 157) and Ya-chud Non-users (N = 229) in the Rural Areas

	Ya-chud Users (N = 157)			*Ya-chud Non-users (N = 229)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Age Group									
15 - 24	11	25.6	7.0	52	37.4	22.7			
25 - 34	24	25.6	15.3	39	37.4	17.0			
35 - 44	28	32.1	17.8	51	46.9	22.3			
45 - 54	47	35.4	**29.9**	40	51.6	17.5			
55 - 64	22	18.7	14.0	24	27.3	10.5			
≥ 65	25	19.5	15.9	23	28.5	10.0			
							25.12790	5	0.00013
Education Level									
primary school	132	109.4	**84.1**	137	159.6	59.8			
secondary school	19	26.4	12.1	46	38.6	20.1			
certificate/graduate	3	17.1	1.9	39	24.9	17.0			
no classroom learning	3	4.1	1.9	7	5.9	3.1			
							31.42891	3	0.00000
Gender									
male	62	66.7	39.5	102	97.3	44.5			
female	95	90.3	**60.5**	127	131.7	55.5			
							0.97249	1	0.32406
Occupation									
no job, student	2	9.4	1.3	21	13.6	9.2			
housework, regular office work, direct seller	2	7.7	1.3	17	11.3	7.4			
farmer	153	139.9	**97.5**	191	204.1	83.4			
							18.96524	2	0.00008

* Pearson chi-square probability

Table 65 The Frequency Distribution and the Relationship of MK Behaviour Between the Ya-chud Users (N = 157) and Ya-chud Non-users (N = 229) in the Rural Areas

	Ya-chud Users (N = 157)			*Ya-chud Non-users (N = 229)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Location of MK									
neck	4	7.3	2.5	14	10.7	6.1			
arm, shoulder	13	11.4	8.3	15	16.6	6.6			
chest, back	7	10.2	4.5	18	14.8	7.9			
waist	56	58.6	**35.7**	88	85.4	38.4			
hip, leg	30	24.4	19.1	30	35.6	13.1			
joint, knee	19	16.3	12.1	21	23.7	9.2			
arm and leg	5	2.8	3.2	2	4.2	0.9			
body	23	26.0	14.6	41	38.0	17.9			
							11.05223	7	0.13636
Causes of MK									
work	108	111.0	**68.8**	165	162.0	72.1			
illness	6	10.6	3.8	20	15.4	8.7			
sport/accident	2	4.1	1.3	8	5.9	3.5			
many factors	7	10.6	4.5	19	15.4	8.3			
do not know	34	20.7	21.7	17	30.3	7.4			
							21.56494	4	0.00024
Time occurrence									
within last week	19	26.0	12.1	45	38.0	19.7			
within last month	28	26.4	17.8	37	38.6	16.2			
within last year	24	36.2	15.3	65	52.8	28.4			
more than one year	79	65.5	**50.3**	82	95.5	35.8			
do not know	7	2.8	4.5	-	-	-			
							25.19588	4	0.00005
Pattern									
new event/accute	138	126.4	**60.3**	75	86.6	67.8			
old event/chronic	91	102.6	39.7	82	70.4	52.2			
							5.87642	1	0.01534
Sources of Treatment									
health service	9	22.0	5.7	45	32.0	19.7			
self-medication	134	117.5	**85.4**	155	171.5	67.7			
rest/massage	5	13.4	32.2	28	19.6	12.2			
do not know	9	4.1	5.7	1	5.9	0.4			
							35.77077	3	0.00000
Treatment outcome									
cure	13	22.8	8.3	43	33.2	18.8			
improved	91	94.0	**58.0**	140	137.0	61.1			
no change	45	36.2	28.7	44	52.8	19.2			
do not know	8	4.1	5.1	2	5.9	0.9	17.24661	3	0.00063

* Pearson chi-square probability

Table 66 The Frequency Distribution and the Relationship of Perception on Current Health Status and Health Beliefs Between Ya-chud Users (N = 157) and Ya-chud Non-users (N = 229) in the Rural Areas

	Ya-chud Users (N = 157)			*Ya-chud Non-users (N = 229)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val.*	*Percent*			
Current Health Status									
healthy	110	120.4	**70.1**	186	175.6	81.2			
fair	34	28.1	21.7	35	40.9	15.3			
illness	13	7.7	8.3	6	11.3	2.6			
do not know	-	0.8	-	2	1.2	0.9			
							11.06177	3	0.01140
Health Beliefs									
external	104	115.1	**66.2**	179	167.9	78.2			
internal	23	16.7	14.6	18	24.3	7.9			
mixed	30	25.2	19.1	32	36.8	14.0			
							7.37722	2	0.02501

* Pearson chi-square probability

Table 67 The Frequency Distribution and the Relationship of Health Care Experience Between Ya-chud Users (N = 157) and Ya-chud Non-users (N = 229) in the Rural Areas

	Ya-chud Users (N = 157)			*Ya-chud Non-users (N = 229)*			*Value*	*DF*	*Significance* *
	Freq	*Exp. Val.*	*Percent*	*Freq*	*Exp.Val*	*Percent*			
Self-medication During the Previous Month									
no use	49	58.6	31.2	95	85.4	41.5			
once	57	52.5	**36.3**	72	76.5	31.4			
twice	30	23.6	19.1	28	34.4	12.2			
3-5 times	11	8.1	7.0	9	11.9	3.9			
> 5 times	10	14.2	6.4	25	20.8	10.9			
							10.05599	4	0.03949
Health Services Visited During the Previous Year									
no use	66	62.6	42.0	88	91.4	38.4			
once	55	62.2	**35.0**	98	90.8	42.8			
twice	18	15.5	11.5	20	22.5	8.7			
3 - 5 times	9	7.3	5.7	9	10.7	3.9			
> 5 times	9	9.4	5.7	14	13.6	6.1			
							3.09777	4	0.54160

* Pearson chi-square probability

Summary Statistics For Two Selected Items And The Relationship Between The Scale And These Two Items Concerning Health Beliefs : Pre-Test (N = 155)

Statistics for Scale	Mean	Variance	SD	No of Variables		
	10.6065	1.4740	1.2141	2		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	5.3032	5.2323	5.3742	0.1419	1.0271	0.0101
Item Variance	0.5193	0.2876	0.7509	0.4633	2.6105	0.1073
Inter-item Covariances	0.2177	0.2177	0.2177	0.0000	1.0000	0.0000
Inter-items Correlations	0.4685	0.4685	0.4685	0.0000	1.0000	0.0000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 1.	5.3742	0.2876	0.4685	0.2195	-
No 2.	5.2323	0.7509	0.4685	0.2195	-

Reliability Coefficients 2 Items

Alpha = 0.5908 Standardised Item Alpha = 0.6380

No 1. My health status will change with age.

No 2. Everyone should have some knowledge of self care.

Summary Statistics For Three Selected Items And The Relationship Between The Scale And These Three Items Concerning Beliefs About Medicines : Pre-Test (N = 155)

Statistics for Scale	Mean	Variance	SD	No of Variables		
	13.5032	8.7321	2.9550	3		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	4.5011	4.0452	4.8774	0.8323	1.2057	0.1779
Item Variance	1.7080	1.4139	2.0174	0.6035	1.4268	0.0912
Inter-item Covariances	0.6014	0.5450	0.6939	0.1488	1.2731	0.0052
Inter-items Correlations	0.3545	0.3227	0.3755	0.528	1.1636	0.0006

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 3.	9.4581	4.2369	0.4238	0.1807	0.5335
No 4.	8.9226	5.0979	0.4135	0.1735	0.5445
No 5.	8.6258	4.5214	0.4551	0.2075	0.4822

Reliability Coefficients 3 Items

Alpha = 0.6198 Standardised Item Alpha = 0.6223

No 3. Whenever I get musculoskeletal pain, I need to treat with medicine.

No 4. There should be a wide range of medicines in drug stores.

No 5. Good medicines should have a rapid action.

Summary Statistics For Nine Selected Items And The Relationship Between The Scale And These Nine Items Concerning Attitudes To Ya-Chud: Pre-Test (N = 155)

Statistics for Scale	Mean	Variance	SD	No of Variables		
	29.0710	69.7677	8.3527	9		

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	3.2301	2.3226	3.9355	1.6944	1.6944	0.3888
Item Variance	2.5779	2.2036	3.2662	1.0626	1.4822	0.1205
Inter-item Covariances	0.6468	0.0727	1.3021	1.2294	17.9135	0.0942
Inter-items Correlations	0.2532	0.03118	0.255	0.4937	16.5393	0.0151

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item is Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
No 6.	25.9613	53.6089	0.5228	0.4007	0.7115
No 7.	26.7484	55.0467	0.5654	0.4162	0.7073
No 8.	26.6516	57.6830	0.4148	0.3813	0.7302
No 9.	26.3806	55.8217	0.4954	0.4091	0.7175
No 10.	25.4323	57.9743	0.3808	0.237	0.7356
No 11.	25.6452	56.8018	0.4301	0.2405	0.7278
No 12.	25.1355	60.0919	0.3247	0.2203	0.7435
No 14.	25,1484	56.8804	0.4193	0.2839	0.7295

Reliability Coefficients 9 Items

Alpha = 0.7509 Standardised Item Alpha = 0.7532

No 6. Ya-chud is cheap and good value for use in medication.

No 7. The Government should allow unrestricted sale of Ya-chud

No 8. Ya-chud has no harmful effect

No 9. The risks from taking Ya-chud are less than the benefits obtained.

No 10. It is necessary that Ya-chud has many drugs in one envelope in order to enhance the potency of the drugs.

No 11. Ya-chud suitable for producing an antipyretic effect can also be used for MK as well.

No 12. Ya-chud which has only a few tablets is less effective than Ya-chud having more tablets in one envelope.

No 13. Medicines supplied by the hospital for taking at the same time are the same a Ya-chud.

No 14. Ya-chud should be used for severe MK.

Stepwise Discriminant Analysis in Urban Area

Variables	Wilks' Lambda	Significance
Age group	0.94964	0.0000
Education level	0.93935	0.0000

Canonian Discriminant Functions

Fen	Eigen Value	Pet of Variance	Cum Pet	Canonical Cass	After Fen	Wilks' Lambda	Chi-Square	Dif	Sig
					: 0	0.939353	31.595	2	0.000
1*	0.0646	100.00	100.00	0.2463	:				

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardised canonical discriminant function coefficients were:

	Func 1
Age group	0.72229
Education level	-0.46090

Canonical discriminant functions were evaluated at group means (group centroids)

Group	Func 1
Ya-chud non-users	-0.16882
Ya-chud users	0.38093

Test of Equality of Group Covariance Matrices was undertaken using Box's M.

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group Label	Rank	Log Determinant
Ya-chud non-user	2	-3.400485
Ya-chud user	2	-5.063307
Pooled within - groups covariance matrix	2	-3.747297

Box's M	Approximate F	Degree of freedom		Significance
82.25091	27.27190	3,	1942233.8	0.0000

Stepwise Discriminant Analysis in Rural Area

Variables	Wilks' Lambda	Significance
Education level	0.94523	
Age group	0.93584	

Canonian Discriminant Functions

Fen	Eigen Value	Pet of Variance	Cum Pet	Canonical Cass	After Fen	Wilks' Lambda	Chi-Square	Dif	Sig
					: 0	0.935838	25.398	2	0.0000
1*	0.686	100.00	100.00	0.2533	:				

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardised canonical discriminant function coefficients were:

	Func 1
Age group	-0.46114
Education level	0.67897

Canonical discriminant functions were evaluated at group means (group centroids) were:

Group	Func 1
Ya-chud non-users	0.21624
Ya-chud users	0.31541

Test of Equality of Group Covariance Matrices was undertaken using Box's M.

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group Label	Rank	Log Determinant
Ya-chud non-user	2	-3.982688
Ya-chud user	2	-6.064852
Pooled within - groups covariance matrix	2	-4.547569

Box's M	Approximate F	Degree of freedom		Significance
107.90329	35.754995	3,	7216961.6	0.0000

This Appendix (22a) provides the worked data for the examples discussed on pages 102-104.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S **APPENDIX 22a**

On groups defined by YACHUD

Analysis number 1

Stepwise variable selection
Selection rule: minimize Wilks' Lambda
Maximum number of steps..... 6
Minimum tolerance level..... .00100
Minimum F to enter..... 3.84000
Maximum F to remove..... 2.71000

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

---------- Variables not in the Analysis after Step 0 ----------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
YAAG	1.0000000	1.0000000	44.7018141	.9522774
YAED	1.0000000	1.0000000	43.8305622	.9531640
SEX	1.0000000	1.0000000	.7898539	.9991153

* *

At step 1, YAAG was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.95228	1	1	892.0		
Equivalent F	44.70181		1	892.0	.0000	

---------------- Variables in the Analysis after Step 1 ----------------

Variable	Tolerance	F to Remove	Wilks' Lambda
YAAG	1.0000000	44.7018	

---------------- Variables not in the Analysis after Step 1 ----------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
YAED	.8121750	.8121750	16.2323007	.9352392
SEX	.9999689	.9999689	.8157172	.9514064

* *

At step 2, YAED was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.93524	2	1	892.0		
Equivalent F	30.84873		2	891.0	.0000	

---------------- Variables in the Analysis after Step 2 ----------------

Variable	Tolerance	F to Remove	Wilks' Lambda
YAAG	.8121750	17.0769	.9531640
YAED	.8121750	16.2323	.9522774

---------------- Variables not in the Analysis after Step 2 ----------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
SEX	.9966261	.8094599	1.2704891	.9339060

F level or tolerance or VIN insufficient for further computation.

Summary Table

Step	Action Entered	Action Removed	Vars in	Wilks' Lambda	Sig.	Label
1	YAAG		1	.95228	.0000	new grouping
2	YAED		2	.93524	.0000	new education group

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi-square	df	Sig
1*	.0692	100.00	100.00	.2545	0	.935239	59.655	2	.0000

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1
YAAG	.59795
YAED	-.58324

Structure matrix:

Pooled within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	Func 1
YAAG	.85072
YAED	-.84239
SEX	.03514

Canonical discriminant functions evaluated at group means (group centroids)

Group	Func 1
1	-.19293
2	.35812

Test of Equality of Group Covariance Matrices Using Box's M

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group Label	Rank	Log Determinant
1	2	-3.568133
2	2	-5.309117
Pooled within-groups covariance matrix	2	-4.000911

Box's M	Approximate F	Degrees of freedom	Significance
157.14934	52.23903	3, 11682762.3	.0000

Classification results -

Actual Group		No. of Cases	Predicted Group Membership 1	2
Group	1	581	210	371
			36.1%	63.9%
Group	2	313	44	269
			14.1%	85.9%

Percent of "grouped" cases correctly classified: 53.58%

Classification processing summary

894 (Unweighted) cases were processed.
0 cases were excluded for missing or out-of-range group codes.
0 cases had at least one missing discriminating variable.
894 (Unweighted) cases were used for printed output.

This Appendix (22b) provides the worked data for the examples discussed on pages 102-104.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S **APPENDIX 22b**

On groups defined by YACHUD

Analysis number 1

Stepwise variable selection
Selection rule: minimize Wilks' Lambda
Maximum number of steps..... 6
Minimum tolerance level..... .00100
Minimum F to enter..... 3.84000
Maximum F to remove..... 2.71000

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

---------- Variables not in the Analysis after Step 0 ----------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
YAED	1.0000000	1.0000000	43.8305622	.9531640
SEX	1.0000000	1.0000000	.7898539	.9991153
AGEBAN	1.0000000	1.0000000	42.9269588	.9540852

* *

At step 1, YAED was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.95316	1	1	892.0		
Equivalent F	43.83056		1	892.0	.0000	

--------------- Variables in the Analysis after Step 1 ---------------

Variable	Tolerance	F to Remove	Wilks' Lambda
YAED	1.0000000	43.8306	

--------------- Variables not in the Analysis after Step 1 ---------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
SEX	.9970273	.9970273	1.4913738	.9515712
AGEBAN	.9193180	.9193180	22.5995499	.9295857

* *

At step 2, AGEBAN was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.92959	2	1	892.0		
Equivalent F	33.74573		2	891.0	.0000	

--------------- Variables in the Analysis after Step 2 ---------------

Variable	Tolerance	F to Remove	Wilks' Lambda
YAED	.9193180	23.4825	.9540852
AGEBAN	.9193180	22.5995	.9531640

--------------- Variables not in the Analysis after Step 2 ---------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
SEX	.9960194	.9158633	1.1166029	.9284209

F level or tolerance or VIN insufficient for further computation.

Summary Table

Step	Action Entered	Removed	Vars in	Wilks' Lambda	Sig.	Label
1	YAED		1	.95316	.0000	new education group
2	AGEBAN		2	.92959	.0000	reageband

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi-square	df	Sig
1*	.0757	100.00	100.00	.2654	0	.929586	65.057	2	.0000

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1
YAED	.62983
AGEBAN	-.61817

Structure matrix:

Pooled within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	Func 1
YAED	.80542
AGEBAN	-.79707
SEX	-.02510

Canonical discriminant functions evaluated at group means (group centroids)

Group	Func 1
1	.20178
2	-.37455

Test of Equality of Group Covariance Matrices Using Box's M

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group Label	Rank	Log Determinant
1	2	-3.204973
2	2	-3.868357
Pooled within-groups covariance matrix	2	-3.361988

Box's M	Approximate F	Degrees of freedom	Significance
66.91893	22.24495	3, 11682762.3	.0000

Classification results -

Actual Group		No. of Cases	Predicted Group Membership 1	2
Group	1	581	411	170
			70.7%	29.3%
Group	2	313	149	164
			47.6%	52.4%

Percent of "grouped" cases correctly classified: 64.32%

Classification processing summary

894 (Unweighted) cases were processed.
0 cases were excluded for missing or out-of-range group codes.
0 cases had at least one missing discriminating variable.
894 (Unweighted) cases were used for printed output.

This [illegible] provides the worked data for the examples discussed on pages 102-104.

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S

APPENDIX 22c

On groups defined by YACHUD

Analysis number 1

Stepwise variable selection
Selection rule: minimize Wilks' Lambda
Maximum number of steps..... 6
Minimum tolerance level..... .00100
Minimum F to enter..... 3.84000
Maximum F to remove..... 2.71000

Canonical Discriminant Functions

Maximum number of functions..... 1
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .50000

---------- Variables not in the Analysis after Step 0 ----------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
YAAG	1.0000000	1.0000000	44.7018141	.9522774
SEX	1.0000000	1.0000000	.7898539	.9991153
EDBAN	1.0000000	1.0000000	51.0605204	.9458566

* *

At step 1, EDBAN was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.94586	1	1	892.0		
Equivalent F	51.06052		1	892.0	.0000	

---------------- Variables in the Analysis after Step 1 ----------------

Variable	Tolerance	F to Remove	Wilks' Lambda
EDBAN	1.0000000	51.0605	

---------------- Variables not in the Analysis after Step 1 ----------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
YAAG	.7620584	.7620584	12.6981957	.9325660
SEX	.9986105	.9986105	1.2623611	.9445184

* *

At step 2, YAAG was included in the analysis.

		Degrees of Freedom			Signif.	Between Groups
Wilks' Lambda	.93257	2	1	892.0		
Equivalent F	32.21418		2	891.0	.0000	

---------------- Variables in the Analysis after Step 2 ----------------

Variable	Tolerance	F to Remove	Wilks' Lambda
YAAG	.7620584	12.6982	.9458566
EDBAN	.7620584	18.8329	.9522774

---------------- Variables not in the Analysis after Step 2 ----------------

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilks' Lambda
SEX	.9984019	.7608643	1.1321204	.9313812

F level or tolerance or VIN insufficient for further computation.

Summary Table

Step	Action Entered	Action Removed	Vars in	Wilks' Lambda	Sig.	Label
1	EDBAN		1	.94586	.0000	reedgroup
2	YAAG		2	.93257	.0000	new grouping

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi-square	df	Sig
1*	.0723	100.00	100.00	.2597	0	.932566	62.205	2	.0000

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1
YAAG	-.52291
EDBAN	.63466

Structure matrix:

Pooled within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	Func 1
EDBAN	.88973
YAAG	-.83249
SEX	-.02657

Canonical discriminant functions evaluated at group means (group centroids)

Group	Func 1
1	.19715
2	-.36596

Test of Equality of Group Covariance Matrices Using Box's M

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group Label	Rank	Log Determinant
1	2	-3.418683
2	2	-4.683260
Pooled within-groups covariance matrix	2	-3.730132

Box's M	Approximate F	Degrees of freedom	Significance
116.73543	38.80478	3, 11682762.3	.0000

Classification results -

Actual Group		No. of Cases	Predicted Group Membership 1	2
Group	1	581	294	287
			50.6%	49.4%
Group	2	313	82	231
			26.2%	73.8%

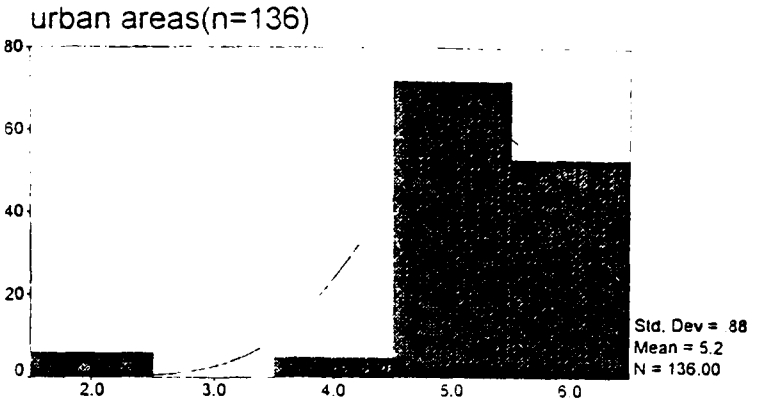
Percent of "grouped" cases correctly classified: 58.72%

Classification processing summary

894 (Unweighted) cases were processed.
0 cases were excluded for missing or out-of-range group codes.
0 cases had at least one missing discriminating variable.
894 (Unweighted) cases were used for printed output.

The Scores Distribution of Statements Numbers 1-14 in the Urban Areas (N = 136)

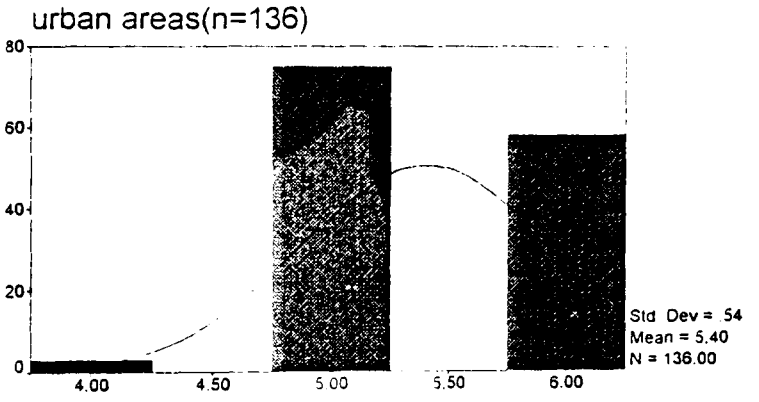
scores distribution of statement 1.
urban areas(n=136)



NO2

Value	Frequency	Percent	Valid Percent	Cum Percent
2	6	4.4	4.4	4.4
4	5	3.7	3.7	8.1
5	72	52.9	52.9	61.0
6	53	39.0	39.0	100.0
Total	136	100.0	100.0	

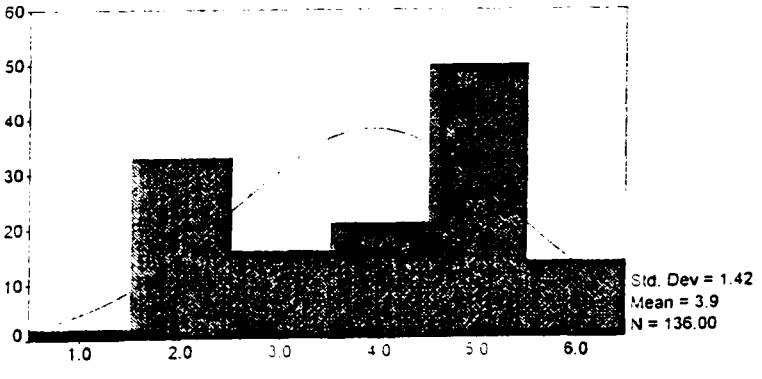
scores distribution of statement 2.
urban areas(n=136)



NO3

Value	Frequency	Percent	Valid Percent	Cum Percent
4	3	2.2	2.2	2.2
5	75	55.1	55.1	57.4
6	58	42.6	42.6	100.0
Total	136	100.0	100.0	

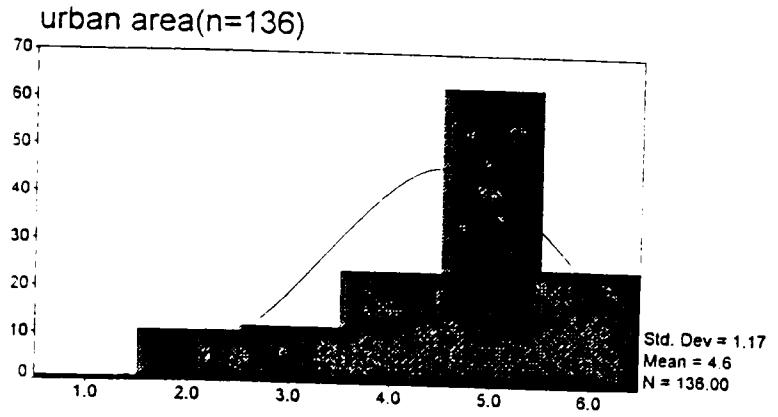
scores distribution of statement 3.
urban areas(n=136)



NO10

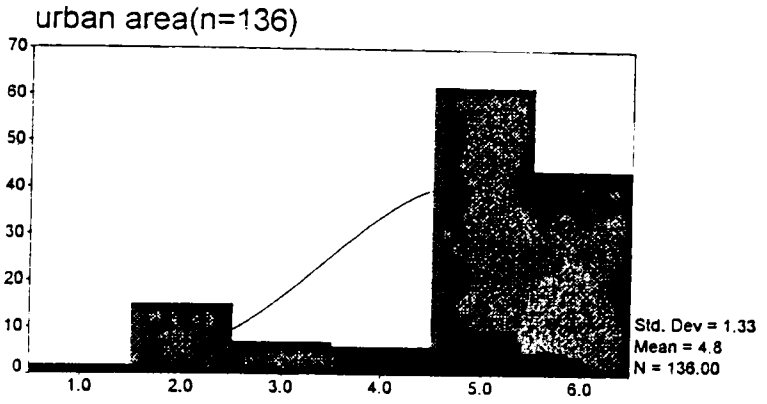
Value	Frequency	Percent	Valid Percent	Cum Percent
1	2	1.5	1.5	1.5
2	33	24.3	24.3	25.7
3	16	11.8	11.8	37.5
4	21	15.4	15.4	52.9
5	50	36.8	36.8	89.7
6	14	10.3	10.3	100.0
Total	136	100.0	100.0	

scores distribution of statement 4.
urban area(n=136)



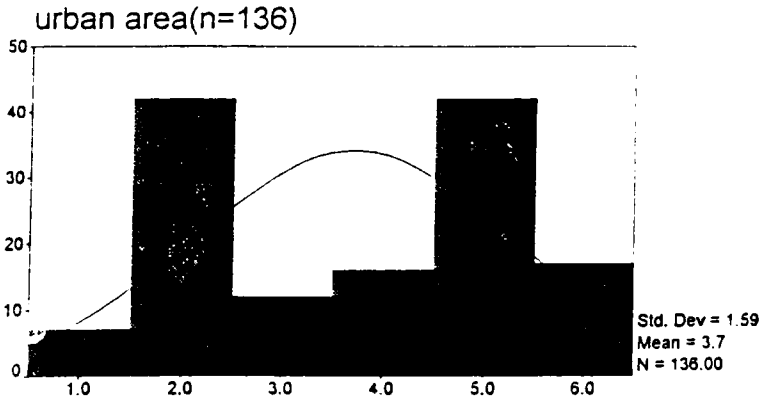
Value	Frequency	Percent	Valid Percent	Cum Percent
1	1	.7	.7	.7
2	11	8.1	8.1	8.8
3	12	8.8	8.8	17.6
4	24	17.6	17.6	35.3
5	63	46.3	46.3	81.6
6	25	18.4	18.4	100.0
Total	136	100.0	100.0	

scores distribution of statement 5.
urban area(n=136)



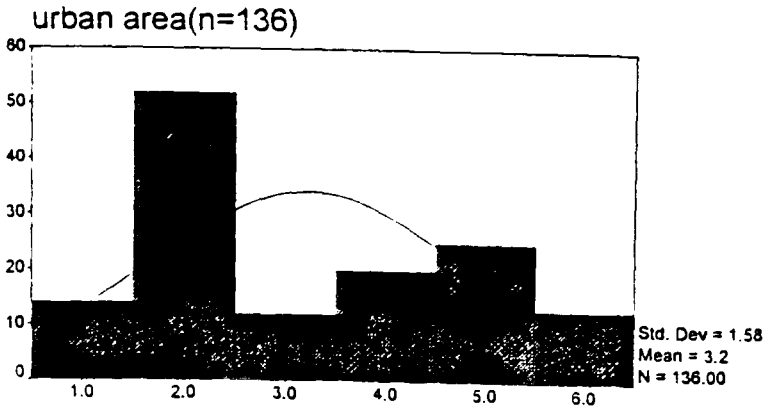
Value	Frequency	Percent	Valid Percent	Cum Percent
1	2	1.5	1.5	1.5
2	15	11.0	11.0	12.5
3	7	5.1	5.1	17.6
4	6	4.4	4.4	22.1
5	62	45.6	45.6	67.6
6	44	32.4	32.4	100.0
Total	136	100.0	100.0	

scores distribution of statement 6.
urban area(n=136)



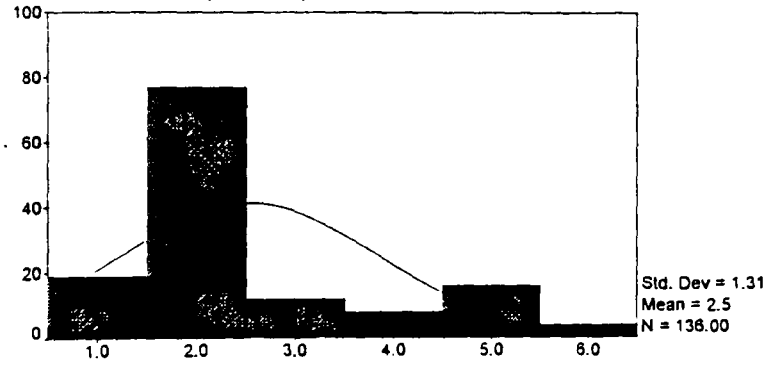
Value	Frequency	Percent	Valid Percent	Cum Percent
1	7	5.1	5.1	5.1
2	42	30.9	30.9	36.0
3	12	8.8	8.8	44.9
4	16	11.8	11.8	56.6
5	42	30.9	30.9	87.5
6	17	12.5	12.5	100.0
Total	136	100.0	100.0	

scores distribution of statement 7.
urban area(n=136)



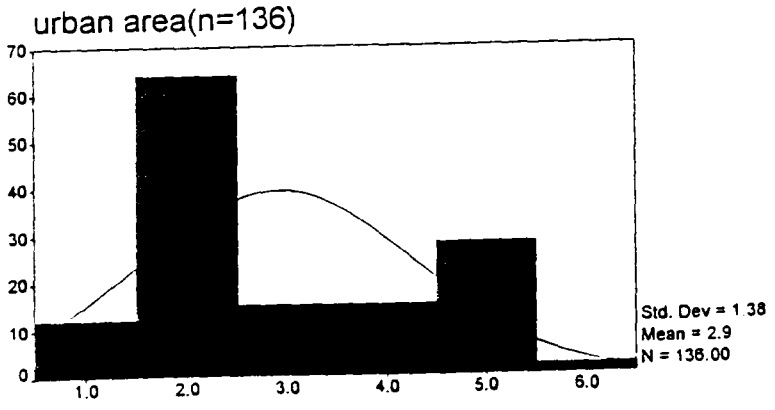
Value	Frequency	Percent	Valid Percent	Cum Percent
1	14	10.3	10.3	10.3
2	52	38.2	38.2	48.5
3	12	8.8	8.8	57.4
4	20	14.7	14.7	72.1
5	25	18.4	18.4	90.4
6	13	9.6	9.6	100.0
Total	136	100.0	100.0	

scores distribution of statement 8.
urban area(n=136)



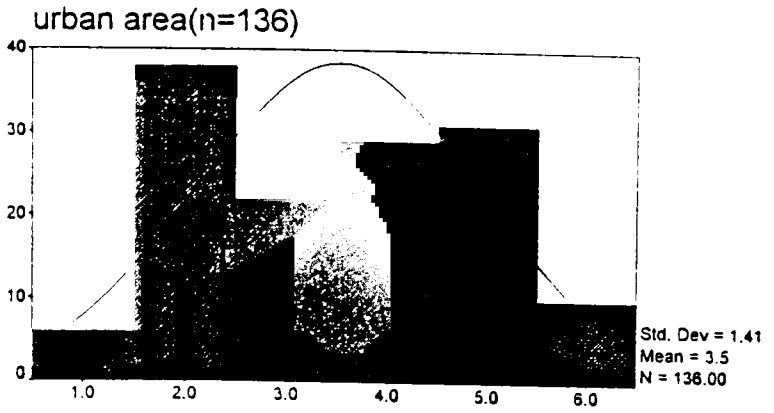
Value	Frequency	Percent	Valid Percent	Cum Percent
1	19	14.0	14.0	14.0
2	77	56.6	56.6	70.6
3	12	8.8	8.8	79.4
4	8	5.9	5.9	85.3
5	16	11.8	11.8	97.1
6	4	2.9	2.9	100.0
Total	136	100.0	100.0	

scores distribution of statement 9.
urban area(n=136)



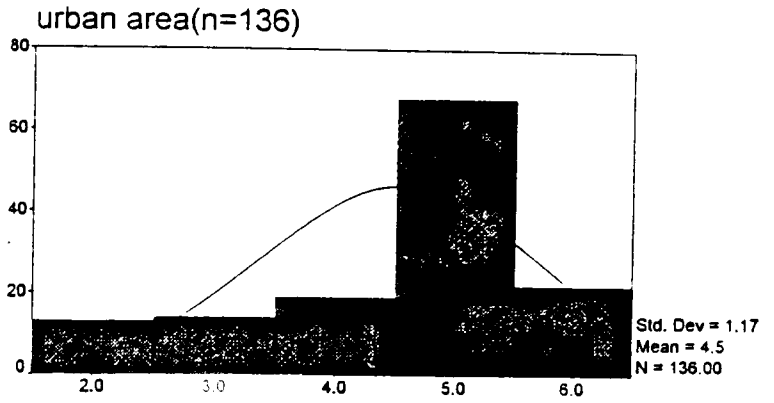
Value	Frequency	Percent	Valid Percent	Cum Percent
1	12	8.8	8.8	8.8
2	64	47.1	47.1	55.9
3	15	11.0	11.0	66.9
4	15	11.0	11.0	77.9
5	28	20.6	20.6	98.5
6	2	1.5	1.5	100.0
Total	136	100.0	100.0	

scores distribution of statement 10.
urban area(n=136)



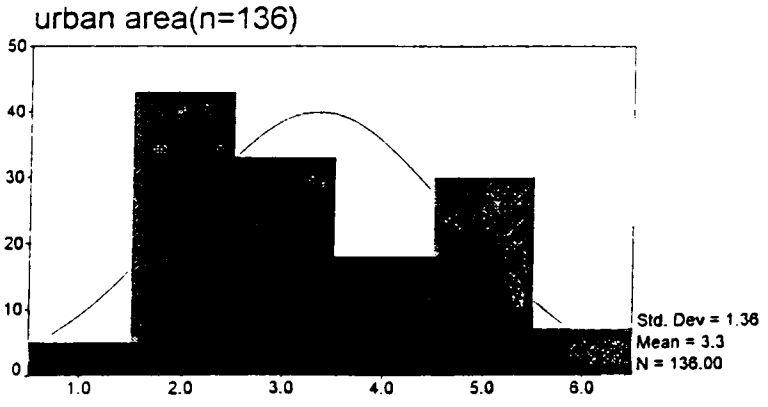
Value	Frequency	Percent	Valid Percent	Cum Percent
1	6	4.4	4.4	4.4
2	38	27.9	27.9	32.4
3	22	16.2	16.2	48.5
4	29	21.3	21.3	69.9
5	31	22.8	22.8	92.6
6	10	7.4	7.4	100.0
Total	136	100.0	100.0	

scores distribution of statement 11.
urban area(n=136)



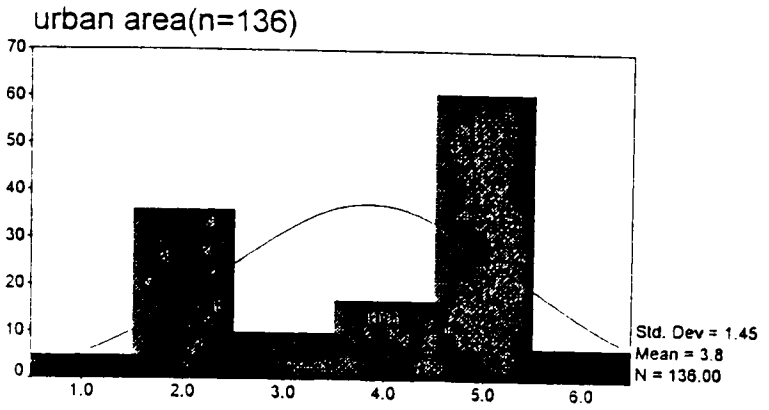
Value	Frequency	Percent	Valid Percent	Cum Percent
2	13	9.6	9.6	9.6
3	14	10.3	10.3	19.9
4	19	14.0	14.0	33.8
5	68	50.0	50.0	83.8
6	22	16.2	16.2	100.0
Total	136	100.0	100.0	

scores distribution of statement 12.
urban area(n=136)



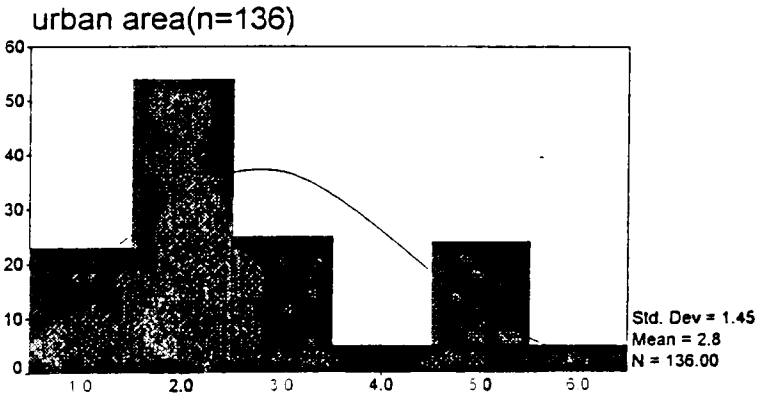
Value	Frequency	Percent	Valid Percent	Cum Percent
1	5	3.7	3.7	3.7
2	43	31.6	31.6	35.3
3	33	24.3	24.3	59.6
4	18	13.2	13.2	72.8
5	30	22.1	22.1	94.9
6	7	5.1	5.1	100.0
Total	136	100.0	100.0	

scores distribution of statement 13.
urban area(n=136)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	5	3.7	3.7	3.7
2	36	26.5	26.5	30.1
3	10	7.4	7.4	37.5
4	17	12.5	12.5	50.0
5	61	44.9	44.9	94.9
6	7	5.1	5.1	100.0
Total	136	100.0	100.0	

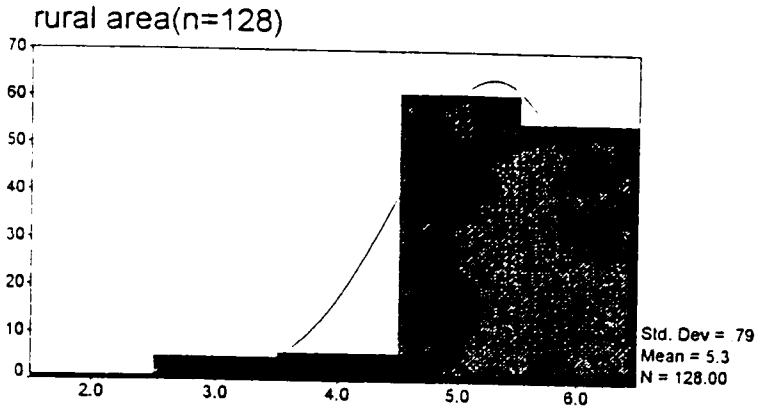
scores distribution of statement 14.
urban area(n=136)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	23	16.9	16.9	16.9
2	54	39.7	39.7	56.6
3	25	18.4	18.4	75.0
4	5	3.7	3.7	78.7
5	24	17.6	17.6	96.3
6	5	3.7	3.7	100.0
Total	136	100.0	100.0	

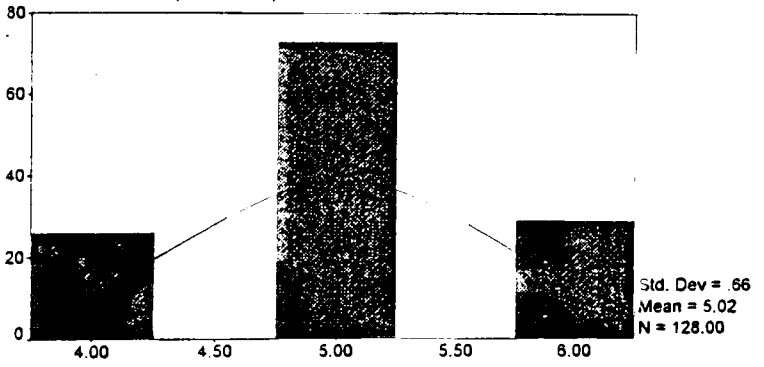
The Scores Distribution of Statements Numbers 1-14 in the Rural Areas (N = 128)

scores distribution of statement 1.
rural area(n=128)



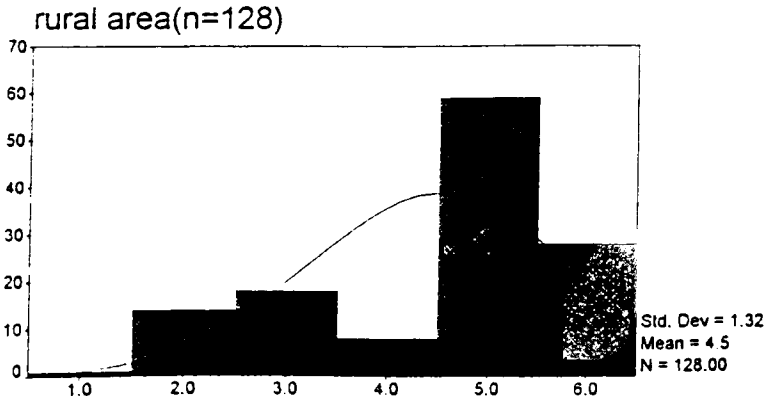
Value	Frequency	Percent	Valid Percent	Cum Percent
2	1	.8	.8	.8
3	5	3.9	3.9	4.7
4	6	4.7	4.7	9.4
5	61	47.7	47.7	57.0
6	55	43.0	43.0	100.0
Total	128	100.0	100.0	

scores distribution of statement 2.
rural area(n=128)



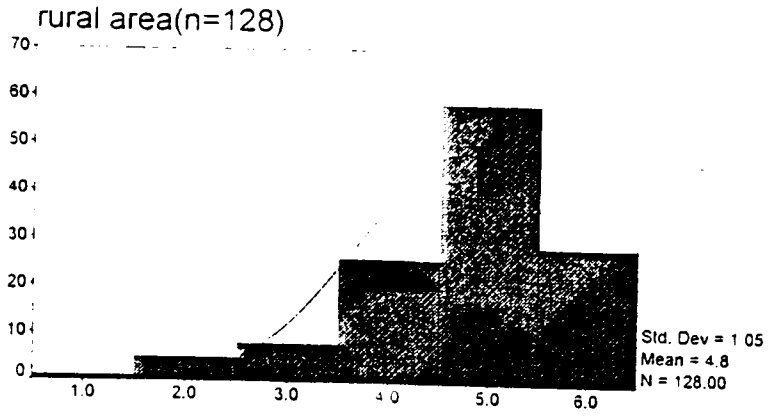
Value	Frequency	Percent	Valid Percent	Cum Percent
4	26	20.3	20.3	20.3
5	73	57.0	57.0	77.3
6	29	22.7	22.7	100.0
Total	128	100.0	100.0	

scores distribution of statement 3.
rural area(n=128)



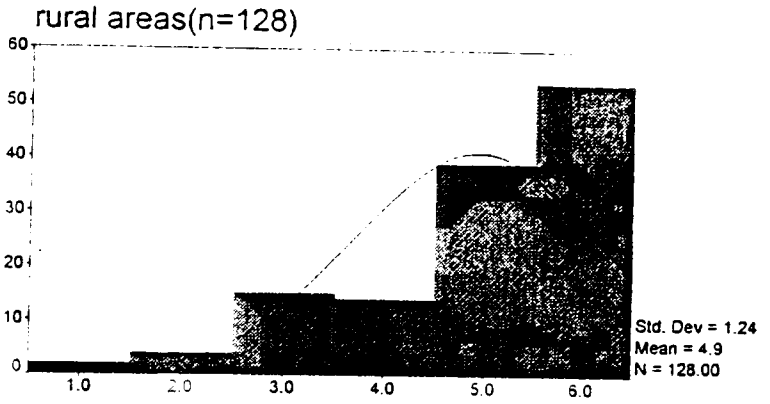
Value	Frequency	Percent	Valid Percent	Cum Percent
1	1	.8	.8	.8
2	14	10.9	10.9	11.7
3	18	14.1	14.1	25.8
4	8	6.3	6.3	32.0
5	59	46.1	46.1	78.1
6	28	21.9	21.9	100.0
Total	128	100.0	100.0	

scores distribution of statement 4.
rural area(n=128)



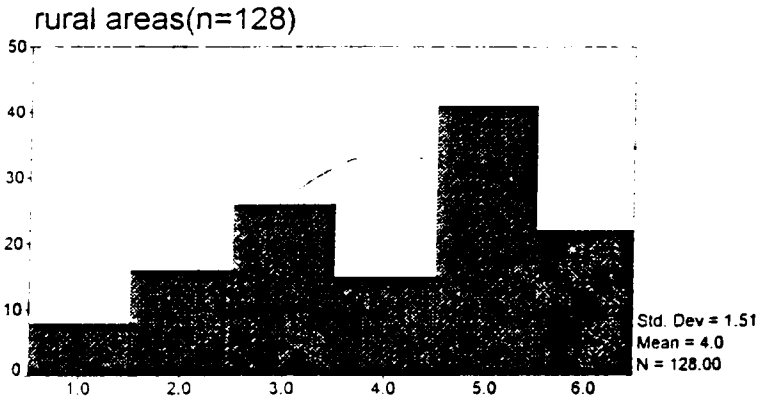
Value	Frequency	Percent	Valid Percent	Cum Percent
1	1	.8	.8	.8
2	5	3.9	3.9	4.7
3	8	6.3	6.3	10.9
4	26	20.3	20.3	31.3
5	59	46.1	46.1	77.3
6	29	22.7	22.7	100.0
Total	128	100.0	100.0	

scores distribution of statement 5.
rural areas(n=128)



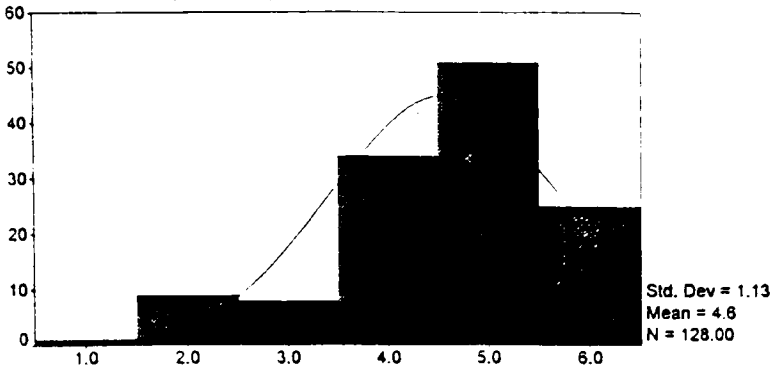
Value	Frequency	Percent	Valid Percent	Cum Percent
1	2	1.6	1.6	1.6
2	4	3.1	3.1	4.7
3	15	11.7	11.7	16.4
4	14	10.9	10.9	27.3
5	39	30.5	30.5	57.8
6	54	42.2	42.2	100.0
Total	128	100.0	100.0	

scores distribution of statement 6.
rural areas(n=128)



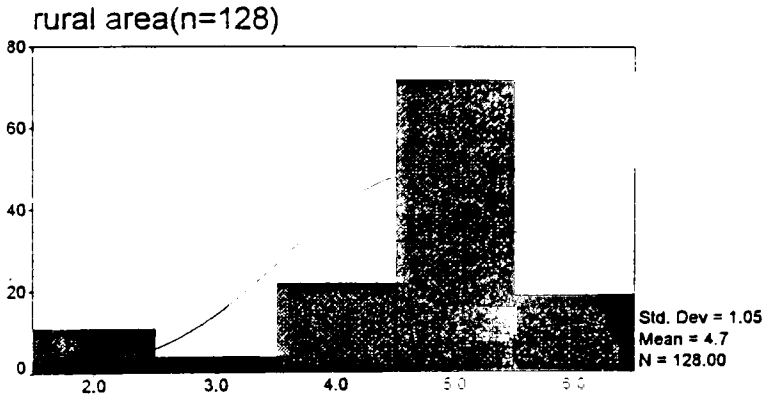
Value	Frequency	Percent	Valid Percent	Cum Percent
1	8	6.3	6.3	6.3
2	16	12.5	12.5	18.8
3	26	20.3	20.3	39.1
4	15	11.7	11.7	50.8
5	41	32.0	32.0	82.8
6	22	17.2	17.2	100.0
Total	128	100.0	100.0	

scores distribution of statement 10.
rural area(n=128)



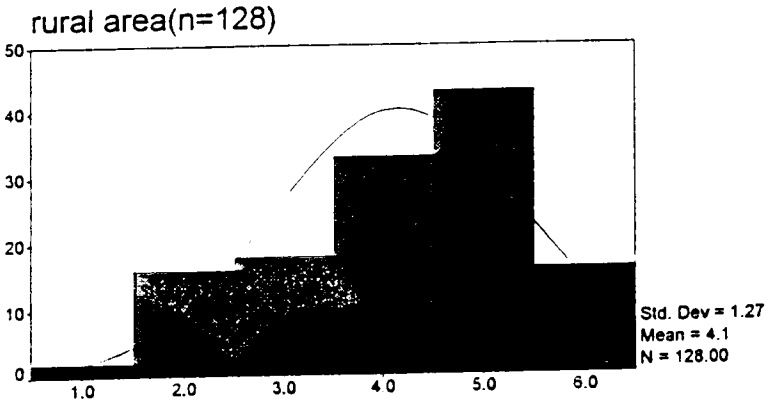
Value	Frequency	Percent	Valid Percent	Cum Percent
1	1	.8	.8	.8
2	9	7.0	7.0	7.8
3	8	6.3	6.3	14.1
4	34	26.6	26.6	40.6
5	51	39.8	39.8	80.5
6	25	19.5	19.5	100.0
Total	128	100.0	100.0	

scores distribution of statement 11.
rural area(n=128)



Value	Frequency	Percent	Valid Percent	Cum Percent
2	11	8.6	8.6	8.6
3	4	3.1	3.1	11.7
4	22	17.2	17.2	28.9
5	72	56.3	56.3	85.2
6	19	14.8	14.8	100.0
Total	128	100.0	100.0	

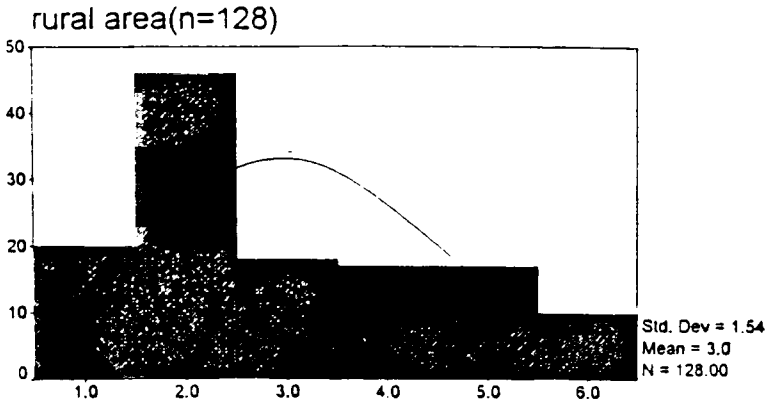
scores distribution of statement 12.
rural area(n=128)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	2	1.6	1.6	1.6
2	16	12.5	12.5	14.1
3	18	14.1	14.1	28.1
4	33	25.8	25.8	53.9
5	43	33.6	33.6	87.5
6	16	12.5	12.5	100.0
Total	128	100.0	100.0	

scores distribution of statement 7.

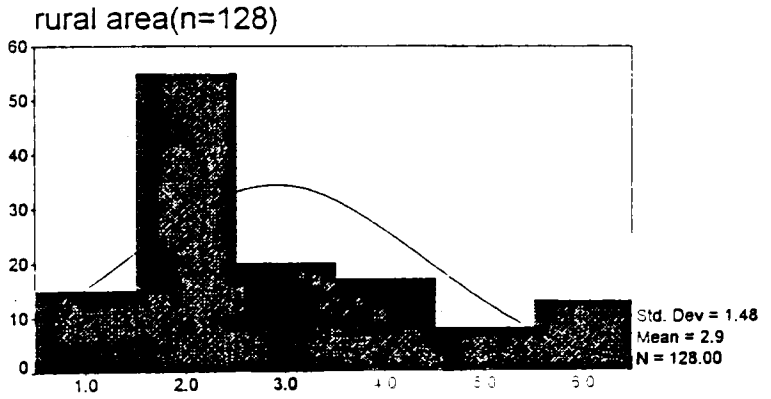
rural area(n=128)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	20	15.6	15.6	15.6
2	46	35.9	35.9	51.6
3	18	14.1	14.1	65.6
4	17	13.3	13.3	78.9
5	17	13.3	13.3	92.2
6	10	7.8	7.8	100.0
Total	128	100.0	100.0	

scores distribution of statement 8.

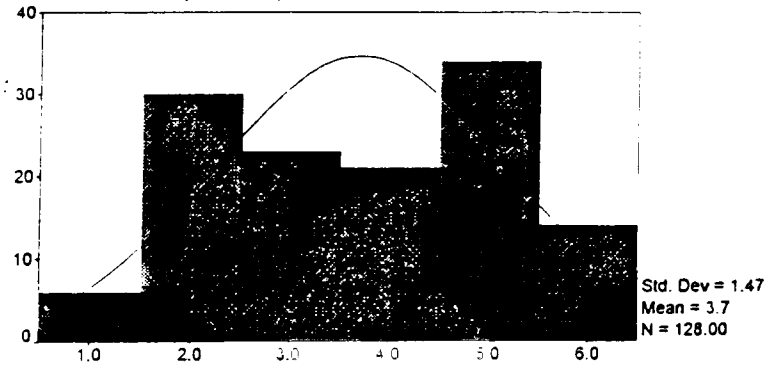
rural area(n=128)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	15	11.7	11.7	11.7
2	55	43.0	43.0	54.7
3	20	15.6	15.6	70.3
4	17	13.3	13.3	83.6
5	8	6.3	6.3	89.8
6	13	10.2	10.2	100.0
Total	128	100.0	100.0	

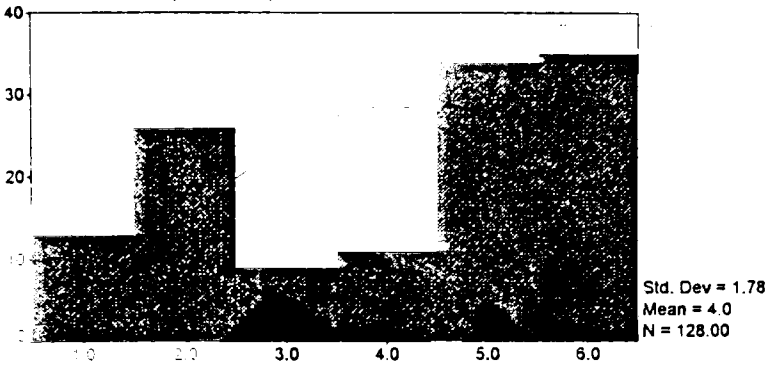
scores distribution of statement 9.

rural area(n=128)



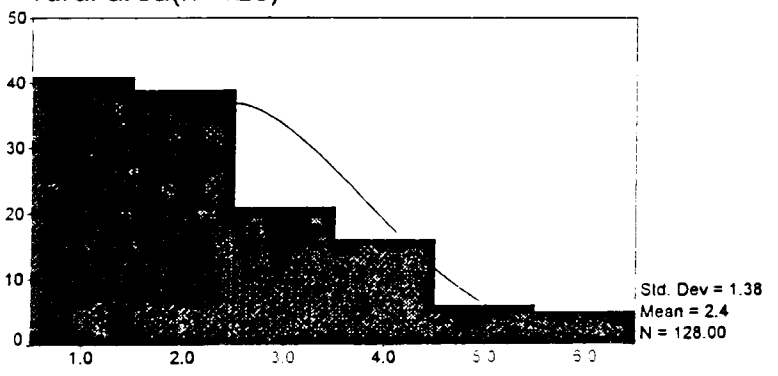
Value	Frequency	Percent	Valid Percent	Cum Percent
1	6	4.7	4.7	4.7
2	30	23.4	23.4	28.1
3	23	18.0	18.0	46.1
4	21	16.4	16.4	62.5
5	34	26.6	26.6	89.1
6	14	10.9	10.9	100.0
Total	128	100.0	100.0	

scores distribution of statement 13.
rural area(n=128)



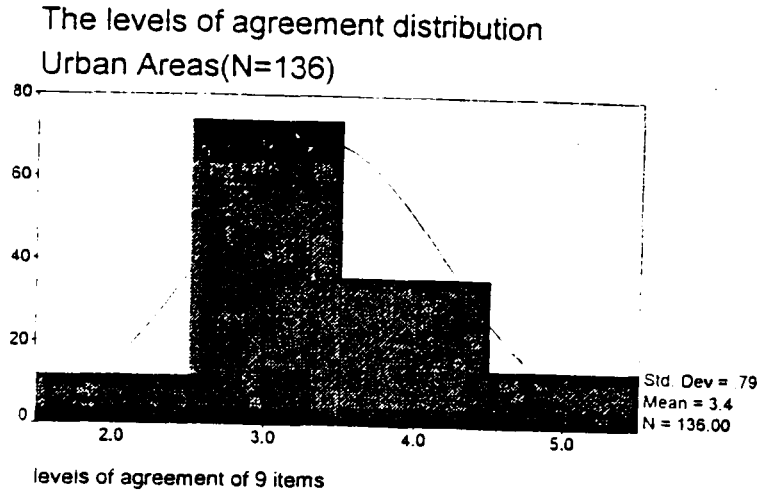
Value	Frequency	Percent	Valid Percent	Cum Percent
1	13	10.2	10.2	10.2
2	26	20.3	20.3	30.5
3	9	7.0	7.0	37.5
4	11	8.6	8.6	46.1
5	34	26.6	26.6	72.7
6	35	27.3	27.3	100.0
Total	128	100.0	100.0	

scores distribution of statement 14.
rural area(n=128)



Value	Frequency	Percent	Valid Percent	Cum Percent
1	41	32.0	32.0	32.0
2	39	30.5	30.5	62.5
3	21	16.4	16.4	78.9
4	16	12.5	12.5	91.4
5	6	4.7	4.7	96.1
6	5	3.9	3.9	100.0
Total	128	100.0	100.0	

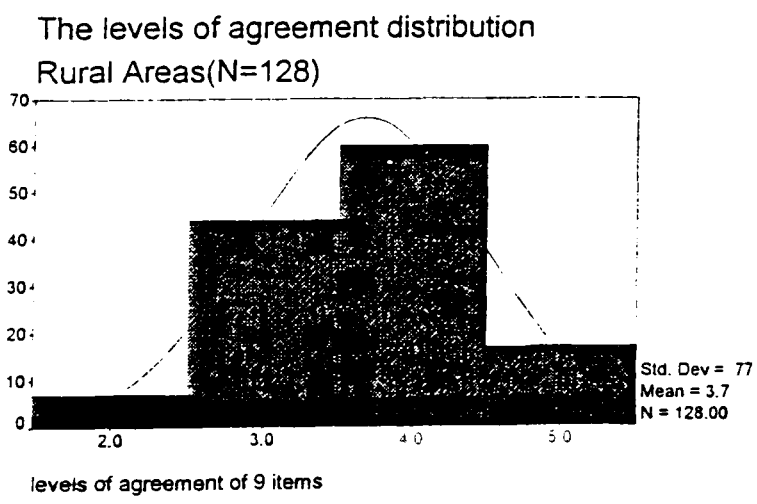
The Sum Score Distribution for Agreement Rating with Statements Numbers 6-14 in the Urban Areas



levels of agreement of 9 items

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
disagree(14-22)	2	12	8.8	8.8	8
mildly disagree(23-31)	3	74	54.4	54.4	63.
mildly agree(32-40)	4	36	26.5	26.5	89.
agree(41-49)	5	14	10.3	10.3	100.
	Total	136	100.0	100.0	

The Sum Score Distribution for Agreement Rating with Statements Numbers 6-14 in the Rural Areas



levels of agreement of 9 items

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
disagree(14-22)	2	7	5.5	5.5	5.5
mildly disagree(23-31)	3	44	34.4	34.4	39.8
mildly agree(32-40)	4	60	46.9	46.9	86.7
agree(41-49)	5	17	13.3	13.3	100.0
	Total	128	100.0	100.0	