

# 1. Introduction

## 1.1 Background

Today, as a result of medical developments, people with chronic diseases can live longer (Walker *et al* 2003). However, chronic diseases do impact across patients' lives affecting their physiological, psychological and socioeconomic quality of life (Walker *et al* 2003).

To meet patients' needs, health care professionals or patients themselves may try to find other treatment methods (van Haselen *et al* 2004), whether or not these ways are scientifically effective. Patients with chronic diseases may believe and adopt complementary therapies as a result of anecdotal claims and because they want to be as comfortable as possible. For health care professionals, if complementary therapies can not be scientifically proven, it is difficult to institute and use such therapies as an option for 'cure and care'.

It is claimed that complementary and alternative therapies 'promote relaxation, maintain health and enhance overall wellbeing' based on the premise that the body has the ability to heal itself (Kowalak, Chohan & Follin 2003). Although such therapies have been used for a long time, for example, therapeutic massage and chiropractic for chronic pain, there is a minimal body of scientific research to support the claimed benefits (Kowalak, Chohan & Follin 2003).

This study explored foot reflexology, one of the complementary therapies, to determine whether it shows any benefits to blood pressure, LDL cholesterol, triglycerides and quality of life in patients with hypertension.

## **1.2 Complementary therapies**

According to some authors, complementary therapies are requested by clients and provided by therapists to relieve acute and chronic symptoms after orthodox treatment has failed (Clark 2000; van Haselen *et al* 2004). It is commonly accepted that aromatherapy, Bach flower remedies, hypnotherapy, nutrition, massage and reflexology can all alleviate such symptoms (Long, Huntley & Ernst 2001). Massage and reflexology are recommended to relieve stress or anxiety, headache or migraine, and back pain (Long, Huntley & Ernst 2001). In addition, reflexology is claimed to tune body, mind and spirit to a state of harmony which assists the body to heal itself (Byers 2001; Dougans 2002; Seaward 1999).

### **1.2.1 Reasons for using complementary therapies**

Dougans (2002, p. 15) stated that ‘no one therapy can claim to be able to deal with every disease’. Medical and nursing professionals may focus on the disease while neglecting the needs of the patient’s mind and spirit (Clark 2000). The evolution of pathogens, any recurrence of the disease, and deterioration of the immune system can cause patients to suffer chronically from their diseases, with little health improvement by using only conventional therapy. Some complementary therapies appear to assist, for example, herbs and hypnosis help improve the immune system (Clark 2000); back massage helps decrease anxiety and depression (Fraser & Kerr

1993; Hernandez-Reif *et al* 1998) and also promotes sleep (Richards 1998); foot massage helps decrease anxiety and tension (Stevenson 1994).

In addition, people combine complementary therapies with their standard treatment to try to reduce their anxiety or deal with their disappointment with physicians who may not pay attention to what patients want to say (Clark 2000). Complementary therapies may also help decrease health care costs because they contribute to a reduction in the number of hospitalizations, prescriptions and laboratory examinations (Clark 2000; van Haselen *et al* 2004). Complementary therapies aim to heal individuals as a whole, which means taking into account the balance of body, mind and spirit (Clark 2000; Royal College of Nursing, Australia 1997).

### **1.2.2 The difference between an alternative therapy and a complementary therapy**

The terms ‘alternative therapy’ and ‘complementary therapy’ are sometimes used interchangeably. However, an ‘alternative therapy’ means a therapy that is used *instead of* a conventional or orthodox therapy; whereas a ‘complementary therapy’ is a therapy that is used *in combination with* conventional therapy (Keegan 2001).

### **1.2.3 The origins of alternative and complementary therapies**

Alternative and complementary therapies have been used in countries such as China and India for thousands of years, and include acupuncture, herbal medicine and massage. Alternative and complementary therapies were widely adopted by North Americans from the 1960s and 1970s on (Keegan 2001). In Thailand, the origins of alternative and complementary therapies such as Thai herbal medicine and Thai

massage remain unknown. However, historical evidence at Wat Po (Po Temple) in Bangkok indicates that such therapies have been used since the seventeenth century and are based on indigenous tradition and the influences of Indian, Chinese and Khmer cultures (Taomountain 2004).

For most Thai people, religion is an integral part of their lives and therefore crucial in matters of health. Buddha's philosophy, for example, is used as a complementary therapy for patients with AIDS, a disease that is difficult to treat using only orthodox therapy. At Wat Phra Baht Nam Phu, the Buddhist temple for AIDS patients, Thailand, patients receive help from Buddhist monks using Buddha's teaching (Wat Phra Baht Nam Phu n.d.).

This researcher has been unable to locate any statistical report that indicates the percentage of Thai people using complementary therapies. However, there is some anecdotal evidence to show the interest of Thai people in complementary therapies including national published and unpublished research about complementary therapies, and the many massage shops and schools, herbal medicine shops and schools, and natural health centres where people can receive or learn more about therapies.

### **1.3 Complementary therapies and nursing**

The role of nursing staff is to care for patients as a whole, encompassing body, mind and spirit (Kowalak, Chohan & Follin 2003). Demonstrating concern for patients' needs helps to achieve holistic care (Royal College of Nursing, Australia 1997). Patients with a chronic disease, who are suffering not only from the disease and any

treatment side effects but may also be worried and frustrated about their disease, may be open to complementary therapies as an adjunct to conventional treatments. Complementary therapies provided by health care professionals may help to fulfill patients' needs (Long, Huntley & Ernst 2001; van Haselen *et al* 2004). Complementary therapies can also improve the relationship between nursing staff and patients, and encourage nurses to focus on providing holistic care according to the nature of healing process from complementary therapies and caring with attention and concern from nurses by complementary therapy' s procedures (Chadwick 1999).

#### **1.4 Reflexology**

Reflexology is believed to have been used for more than 4,500 years in Egypt, as pictograph evidence was found in the tomb of an Egyptian physician; some claim that it originated in India and China (Dougans 2002; Mackereth & Tiran 2002).

Current reflexology practice is based on the theories of the American ear, nose and throat specialist, William Fitzgerald (1902), who found, in his work with patients receiving minor maxillofacial surgery, that pressing on a specific part of the body could reduce pain in another part. With this discovery, he described zones of the body which link to other parts using energy flow and he named this as zone therapy theory (Byers 2001; Dougans 2002; Mackereth & Tiran 2002). There are five zones on each longitudinal part of the body, with each zone running from head to toes (Appendix 1, diagram 1).

Reflexology was developed using feet mapping (see Figure 1.1 below) to show the relationship between the feet and body by Eunice Ingham (1930) who is known as the mother of modern reflexology (Byers 2001; Dougans 2002; Mackereth & Tiran 2002).

**Figure 1.1 Feet mapping** (Byers 2001).

Proponents of reflexology believe that pressing on the reflex points on feet, ears and hands (see Appendix 1, Diagrams 2 to 4) can prompt glands and organs of the body to achieve a state of equilibrium or homeostasis (Byers 2001; Dougans 2002; Mackereth & Tiran 2002). Reflexology also relates to meridians, which are the

Chinese energy flow lines located throughout the body. Twelve main meridians situated on each side of the body relate to the lungs, kidney, liver, gall bladder, stomach, etc. Each meridian line is believed to affect certain parts it passes through. If something is blocked along the meridians, the energy flow is also blocked (Dougans 2002). This can cause ailments such as upper toothache caused by an obstructed stomach meridian (which passes through the upper gums) (Dougans 2002). Due to these linkages, pressure techniques applied on the specific areas of the feet, ears and hands which are believed to relate to parts of the body might eliminate lactic acid in the feet and break up calcium crystals which are accumulating in the nerve endings blocking the energy flow (Dougans 2002; Kowalak, Chohan & Follin 2003). Some authors claim this also induces a state of relaxation and improves blood circulation, resulting in cells receiving more nutrients and oxygen (Dougans 2002; Kunz & Kunz 1999).

#### **1.4.1 Foot reflexology**

Compared with hands and ears, pressing on specific areas of the feet is quite feasible since there is enough surface area to apply reflexology techniques. In addition, feet are more sensitive than hands which are exposed all the time (Byers 2001). However, in some circumstances such as where feet are injured, it is more practicable to apply pressure techniques on hands and ears instead. Appendix 2 demonstrates how foot reflexology techniques are applied.

#### **1.4.2 Benefits of reflexology**

It is claimed that reflexology relieves stress and tension by inducing relaxation (Byers 2001; Farnsworth 1995). By doing this, it brings about vasodilatation, lower

blood pressure, improved blood flow and provision of oxygen-rich nutrients to cells (Byers 2001; Kuhn 1999; Rankin-Box 2001).

Some authors suggest that 70 to 80% of all diseases and illnesses come from stress including hypertension, migraine, headaches, the common cold, ulcers and coronary heart disease (Byers 2001; Seaward 1999). Stress causes physiological changes to the body by increasing blood pressure, the heart rate, ventilation rate, serum glucose, free fatty acid mobilization, blood coagulation, muscular strength and perspiration; it decreases clotting time, gastric movement, abdominal blood flow; it has a role in dilating arteries (Healey 2002; Morris, Raphael & Bordujenko 1999; Seaward 1999). In addition, stress also contributes to adrenal cortex enlargement; release of stress hormones (corticosteroids); lymphatic gland atrophy including the thymus gland, spleen and lymph nodes; a decrease in the white blood cell count; peptic ulcers and death (Morris, Raphael & Bordujenko 1999; Seaward 1999).

It is claimed that one of reflexology's benefits is that it helps to balance bodily functions (Byers 2001). Every tissue and organ in the body is controlled by hormones secreted by the pituitary gland which is controlled by the hypothalamus. If this gland malfunctions, people will undergo physio-psychological changes: imbalance of the immune system, thoughts and emotions, personality and glucose leading to signs and symptoms such as infection, depression and diabetes mellitus (Dougans 2002). Pressure techniques applied on the feet are believed to help unblock nerve supply and improve blood flow, which may help the body to function at its peak (Byers 2001). Related theories explaining how to free the energy flow, improve



blood and lymph flow, and return to a state of equilibrium are the U-bend Theory or Lactic Acid Theory and Meridian Theory.

The U-bend Theory is based on the idea that feet are the lowest part of the body, and that therefore calcium and uric acid accumulate there blocking blood and lymph flow, and resulting in an impeded energy flow. Reflexology can get rid of these blocker substances and return the body to a state of homeostasis (Mackereth & Tiran 2002).

Meridian Theory is based on the ancient Chinese belief that the body energy flows through the meridian lines from head to toes. If these meridians are blocked, people will get sick, or suffer pain or disease. Reflexology can unblock the meridians and free the energy flow, and bring back the state of homeostasis (Mackereth & Tiran 2002).

Pain control is also claimed as a benefit of reflexology, based on the idea that reflexology encourages the pituitary gland to produce endorphins and encephalins, the body's painkillers and mood enhancers (Dougans 2002; Mackereth & Tiran 2002). Another theory that focuses on how reflexology helps relieve pain is the Theory of Gate Control which proposes that the touch or contact from reflexology can deviate brain perceptions away from pain (Mackereth & Tiran 2002). Reflexology can therefore help the patient to be more comfortable, help relieve pain, and help improve the immune system. As a result, reflexology might be useful as a treatment option when providing palliative care to patients with cancer, multiple sclerosis or AIDS (Dougans 2002).

Although reflexology is considered a non-invasive therapy, reflexologists recommend monitoring patients for side effects after treatment. Side effects are believed to be caused by the body's efforts to eliminate toxic substances. Most symptoms are mild and short term, rapidly reversing following therapy. However, they have the potential to cause distress to patients and require recognition by both therapists and clients. Symptoms include fever, rash, diaphoresis and light diarrhoea from more frequent bowel movements; flatulence; increase in urination with a darker and stronger smell; increase of mucous in the nose, mouth and bronchials; disturbed sleep; increase in vaginal discharge; tiredness; headaches; and depression (Dougans 2002; Kowalak, Chohan & Follin 2003).

## **1.5 Massage**

Massage is a type of touch therapy. Since around 3000 BC, people have used it for pain relief and relaxation by touching, stroking and kneading parts of body such as the back, feet, face or all over the body. Massage is claimed to help improve blood and lymph circulation resulting in elimination of toxins such as lactic acid from muscles, a better thinking process, faster wound healing, anxiety reduction, and body and mind relaxation; it is also said to improve communication between the masseur and client (Kowalak, Chohan & Follin 2003; McCabe 2001; Rankin-Box 2001; Walker & Walker 2003).

### **1.5.1 Foot massage**

Foot massage is applied to the feet using massage procedures such as stroking, kneading, stretching and joint movements to improve blood circulation and induce

relaxation and relieve pain (Grealish, Lomasney & Whiteman 2000; Hattan, King & Griffiths 2002; Hulme, Waterman & Hillier 1999).

In this study, the researcher uses the term 'light foot massage'; this means that procedures applied to the feet will not affect the specific areas shown in reflexology procedures (Appendix 3).

## **1.6 Hypertension**

Hypertension is one of the conditions purported to be improved by complementary therapies such as foot reflexology (Byers 2001; Dougans 2002). Hypertension is defined as a condition in which individuals have a systolic pressure of equal to or greater than 140 mmHg and a diastolic pressure of equal to or greater than 90 mmHg on at least two occasions, or individuals who require medication to remain normotensive (Australian Institute of Health & Welfare 2004; deWit 1998; Monahan & Neighbors 1998).

### **1.6.1 The incidence of hypertension**

Hypertension, a significant cardiovascular condition, occurs worldwide, but particularly in developed countries. The National Health and Nutrition Examination Survey III [NHANES III, 1988-94] reported that 50 million or one in five Americans (and one in four adults) developed hypertension (American Heart Association 2002). In England, 40% of men and 39% of women had hypertension (American Heart Association 2003), while in Australia approximately 3 million Australian adults had the condition (Australian Institute of Health & Welfare 2002).

In Thailand, 94,160 Thai people were admitted to hospital with hypertension in 1998 (National Library of Thailand Cataloguing in Publication Data 2001). The most common type of hypertension found in Thailand is isolated diastolic hypertension – 59% of hypertension cases are this type, 34% are hypertension, and only 7% are isolated systolic hypertension (Chaiteerapan *et al* 1997). The rate of hypertension in Thai people is likely to increase as a result of environmental changes such as eating habits, physical activity, and industrial changes causing both physiological and psychological stress (National Economic and Social Development Board 1997).

### **1.6.2 Causes of hypertension**

There are many factors related to the development of hypertension; they include genetics and lifestyle factors such as stress events, obesity and lack of exercise (Mancia *et al* 2002). Other factors are the consumption of alcohol and nicotine, and some diseases such as renal diseases, hyper or hypothyroidism and diabetes. Use of hormones such as oestrogen may also contribute to hypertension (Kaplan, Lieberman & Neal 2002).

### **1.6.3 The impact of hypertension**

#### *Physiological impact*

Hypertension causes atherosclerosis. This kind of vascular damage will advance more quickly if patients also have hyperlipidaemia (Kaplan, Lieberman & Neal 2002). Raised blood pressure, especially systolic blood pressure, is a major risk factor for stroke, coronary heart disease, kidney disease, heart failure and death (National Heart Foundation of Australia 2003).

MacMahon *et al* (1990) demonstrated the relationship between diastolic blood pressure and the incidence of stroke and coronary heart disease. An increase of 5 mmHg of diastolic blood pressure contributed to at least a 34% increase in stroke and at least a 21% increase in coronary heart disease.

The most common causes of death in hypertensive people with diastolic blood pressures between 130 and 150 mmHg are stroke, myocardial infarction, heart failure and renal failure (Brien, Beevers & Marshall 1995). The World Health Report 2002 indicated that hypertension was directly related to 7.1 million or about 13% of global deaths (American Heart Association 2003). In 2000, in America, hypertension was cited as the cause of 118,000 out of 2.4 million total deaths (American Heart Association 2002). For Australians, hypertension contributed to 449 male deaths and 753 female deaths from total cardiovascular disease deaths of 66,817 and 61,474 respectively (Australian Institute of Health and Welfare 2002). Hypertension was reported to relate to deaths in 3.9% of cases in Thailand in 2001 (Ministry of Public Health 2001).

### *Psychological impact*

Hypertension contributes to brain function impairment, particularly in the case of having high diastolic blood pressure (Wolfgang 1984). Recent studies support the claim that hypertension is related to impairment of cognition and memory (Harrington *et al* 2000) but not continuity of attention (Saxby *et al* 2003). In addition, hypertension also reduces the quality of life as a result of hypertension treatment and its complications. Some hypertensive drugs, such as propranolol,

depress patients' mood and cognition, and some diuretics, such as chlorthalidone and the thiazides, increase the incidence of impotence (World Health Organization 1995).

#### *Socio-economic impact*

Hypertensive patients may face financial problems due to the cost of medical consultations and drug treatment, and loss of income as a result of health complications preventing them from working (World Health Organization 1995). In the United Kingdom, 4% of the total population consults their general practitioner for uncomplicated hypertension every year. Antihypertensive medications and diuretics made up 8% of all drug prescriptions (World Health Organization 1995). In Australia, during 1999-2000, 7,807 hypertensive patients were admitted to hospital and in 1993-1994 a total of AUD\$831 million health funding was spent treating hypertension (Australian Institute of Health and Welfare 2002). Estimated costs of hypertension and total cardiovascular diseases for Americans in 2003 were US\$50.3 and US\$351.8 billion respectively (American Heart Association 2002).

In Thailand, there is no current report for health cost from this disease, however chronic diseases and their complications bring about national economic burdens. The cost of treating chronic diseases such as hypertension are especially significant now, with the 30 Baht clinic scheme that was launched at the beginning of April 2001 (ABAC pol institution of Assumption University n.d.). Its aim is to assist people living in poverty to have access to the public health service by paying only 30 Bahts (approximately AUD\$0.98) for an entire treatment course. Accordingly, the Thai government budget for health service to help patients with chronic diseases is

increasing in order to provide funds for these clinics (ABAC pol institution of Assumption University n.d.).

## **1.7 Hyperlipidaemia**

### **1.7.1 The incidence of hyperlipidaemia**

The National Health and Nutrition Examination Survey (NHANES III) (1988-94) and the Centers for Disease Control and Prevention/the National Center for Health Statistics (CDC/NCHS) reported that 105 million Americans had high blood cholesterol (American Heart Association 2002). In England, high blood cholesterol occurred in 66% of men and 67% of women (American Heart Association 2003). Over 6 million Australians had high blood cholesterol in 1999-2000 (Australian Institute of Health and Welfare 2002).

In Thailand, the incidence of hyperlipidaemia is higher in urban areas than in rural areas (Chaiteerapan *et al* 1997) as a result of industrialization and adoption of western consumption behaviour (National Economic and Social Development Board 1997). In a 1991 study, a group of 55 to 64 year old Thai people were reported to have cholesterol levels of more than 240 mg/ml. Of that group, 51.2% and 27.3% were from urban and rural populations respectively (Chaiteerapan *et al* 1997).

### **1.7.2 Definition and causes of hyperlipidaemia**

The Joint European and National Cholesterol Education Program (NCEP) defined hyperlipidaemia as when plasma lipids are higher than desirable levels respectively: cholesterol  $\geq 5.2$  mmol/l or  $\geq 200$  mg/dl; LDL cholesterol  $\geq 2.6$  mmol/l or  $\geq 100$  mg/dl, triglycerides  $\geq 1.7$  mmol/l or  $\geq 150$  mg/dl (Faergeman & Grundy 2003). In

adults, a borderline-high risk for high blood cholesterol levels is 200-239 mg/dl, and a high risk for high blood cholesterol levels is 240 mg/dl or higher (American Heart Association 2002).

Hyperlipidaemia is related to a diet high in saturated fat, and contributes to an increase in blood pressure level. It has been found that using polyunsaturated fat helps decrease blood pressure levels (Smith-Barbaro & Pucak 1983). Polyunsaturated fat can also decrease LDL cholesterol and triglycerides (Faergeman & Grundy 2003). In addition, monounsaturated fat can decrease LDL cholesterol (Faergeman & Grundy 2003).

### **1.7.3 The impact of hyperlipidaemia**

Brien, Beevers & Marshall (1995) stated that 50% of hypertensive patients have hyperlipidaemia, and that these patients have an increased risk of cardiovascular disease. High cholesterol contributed to 4.4 million or 7.9% of global deaths (American Heart Association 2003). In Australia, the cost of high blood cholesterol was AUD\$199 million in 1993-1994 (Mathers & Penm 1999).

## **1.8 Treatments for hypertension and hyperlipidaemia**

Treatments for hypertension and hyperlipidaemia may be non-pharmacological, pharmacological, or a combination of these two approaches.

### **1.8.1 Pharmacological treatments**

There are now five major classes of antihypertensive agents which are commonly used as first-line therapy in the management of hypertension: low dose thiazide



diuretics, beta-blockers, angiotensin converting enzyme inhibitors, calcium channel blockers and angiotensin II receptor antagonists (National Heart Foundation of Australia 2003).

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure recommendations for treating hypertension were as follows: (1) isolated systolic hypertension should be treated; (2) first-line treatment should be thiazide diuretics; (3) provide an antihypertensive agent to patients with systolic blood pressure higher than 160 mmHg or diastolic blood pressure higher than 100 mmHg; (4) recommend the Dietary Approaches to Stop Hypertension diet, which has been shown to be as effective as single drug therapy in lowering blood pressure (Dickerson & Gibson 2005).

The aim of drug treatment is to achieve a blood pressure less than 140/90 mmHg (less than 130/80 mmHg in patients with diabetes mellitus or chronic kidney disease). Maintaining this blood pressure level can help decrease cardiovascular disease complications (Dickerson & Gibson 2005). However, as well as reducing blood pressure, hypertensive drugs also cause side effects, as shown in Table 1.1 below.

**Table 1.1 Hypertensive agents and their side effects**

Hypertensive agents	Side effects
Diuretics	hypokalemia, hypercholesterolemia, glucose intolerance and hyperinsulinemia, hyperuricemia, hypercalcemia, hyponatremia, hypomagnesemia, and erectile dysfunction
Adrenergic inhibitors:	
Peripheral inhibitors	nasal congestion, depression, orthostatic hypotension, diarrhea, fluid retention, and failure of ejaculation
Central alpha 2 agonists	sedation, dry mouth, hypotension and depression
Alpha 1 blockers	headache, drowsiness, fatigue and weakness
Beta-blockers	bronchospasm, congestive heart failure, masking of insulin-induced hypoglycemia, depression, poor peripheral circulation, insomnia, bradycardia, fatigue, decreased exercise tolerance, hypertriglyceridemia, and decreased HDL-cholesterol
Vasodilators:	
Direct vasodilators	headaches, tachycardia, flushing, hirsutism and a lupus-like syndrome
Calcium channel blockers	nausea, headache, hypotension, palpitation, conduction defects, flush, local ankle oedema and constipation
Angiotensin converting enzyme Inhibitors	cough, loss of taste, skin rash, a rare leukopenia, proteinuria, hypotension, hypoglycemia and impaired renal function
Angiotensin II receptor blockers	hyperkalemia, hypotension, renal impairment an rarely angioneurotic edema

(Kaplan, Lieberman & Neal 2002; Dickerson & Gibson 2005)

Hyperlipidaemia can be treated by reducing the amount of fat in the diet and by using lipid-lowering drugs such as statin agents for hypercholesterolaemia, and fibrate

agents for hypertriglyceridaemia (Faergeman & Grundy 2003). Fatty foods, particularly saturated fats found in dairy products, fat from mammals, coconut oil and palm oil should be reduced and substituted with monounsaturated or polyunsaturated fat instead which are found in olive oil, red meat, vegetable oils and fish oils (Faergeman & Grundy 2003). Ideally, hypertensive patients with hyperlipidaemia should use antihypertensive drugs which do not have the side effects of increased lipid plasma; this means that thiazides and  $\beta$ -blockers should be avoided (Brien, Beevers & Marshall 1995).

### **1.8.2 Non-pharmacological treatments**

Since lifestyle factors influence the incidence of hypertension and hyperlipidaemia, lifestyle modifications should be the first step in helping to reduce blood pressure and lipid levels (National Heart Foundation of Australia 2003). Lifestyle modifications, including dietary sodium reduction, weight loss and exercise, have been found to help control hypertension in Americans (He *et al* 2002; He & MacGregor 2003). Weight loss, particularly, also helps to lower plasma cholesterol (Thompson 1990). In addition, aerobic exercise (Georgiades *et al* 2000; Skoumas *et al* 2003; Stefanick *et al* 1998; Whelton *et al* 2002), a reduction in alcohol intake (Kaplan, Lieberman & Neal 2002; National Heart Foundation of Australia 2003; Xin *et al* 2001) and reduction in smoking (Lee *et al* 2001) play important roles in reducing blood pressure and cholesterol.

Although not yet widely used, relaxation techniques are potentially valuable non-pharmacological treatments to lower blood pressure. Such techniques include progressive muscle relaxation, yoga, biofeedback, transcendental meditation, the

Chinese breathing exercise Qi Gong and hypnosis (Kaplan, Lieberman & Neal 2002). As described earlier in this chapter, complementary therapies such as massage and reflexology are claimed to help reduce symptoms of stress and tension resulting in a decrease in blood pressure, and an adjustment of body, mind and spirit to a state of harmony (Byers 2001; Dougans 2002; Seaward 1999); they can also help improve quality of life (Hodgson 2000). Research investigating these claims is limited and will be further discussed in Chapter 2.

## **1.9 Quality of life**

Schalock (1996) defined quality of life as individuals' satisfaction with everything in their life. The World Health Organization (1996, p. 3) defines quality of life as:

Individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

Quality of life is used in health care services as a measurement to evaluate the quality of health care including health policy, medical interventions and also patients' satisfaction with such services (Renwick, Brown & Nagler 1996; World Health Organization 1996).

Many instruments are created to measure quality of life such as the World Health Organization Quality of Life Assessment (WHOQOL-100) (World Health Organization 1995); the World Health Organization Quality of Life Assessment-Abbreviated Version (WHOQOL-BREF) (World Health Organization 1996); the

Medical Outcomes Study, the Short Form 36 (SF-36 Health Survey) (McDowell & Newell 1996); and the Health-Related Quality of Life Measurements (Guyatt, Feeny & Patrick 1993).

This study selected the World Health Organization Quality of Life Assessment because trials for both versions (the full and the abbreviated) were done in many countries around the world including Thailand using a Thai version (The WHOQOL Group 1996; The WHOQOL Group 1998). These measurements are also suitable for measuring the benefits of different treatments performed on participants (The WHOQOL Group 1996). WHOQOL-BREF in particular was chosen because it is a brief version of WHOQOL-100, and more suitable for a clinical setting and research than WHOQOL-100 (The WHOQOL Group 1996). More information about the WHOQOL-BREF is provided in Chapter 2.

### **1.10 The research problem**

Since it is claimed that foot reflexology reduces blood pressure, and also improves quality of life for patients receiving palliative care, this research aimed to rigorously examine these claims. The questions posed in this study are:

1. Does foot reflexology lower blood pressure, LDL cholesterol and triglycerides in hypertensive patients?
2. Does foot reflexology improve quality of life for hypertensive patients?

To answer these questions, the study explored the effects of foot reflexology on blood pressure, LDL cholesterol, triglycerides and quality of life for hypertensive patients using a randomized controlled trial.

## **1.11 Outline of the thesis**

This thesis contains five chapters. Chapter 1 contains background to the research, the context of complementary therapies including foot reflexology and foot massage, and a discussion of hypertension, hyperlipidaemia and quality of life.

Chapter 2 explores current knowledge of reflexology, massage, hypertension, hyperlipidaemia and their related factors, and identified gaps in current knowledge. It concludes with a presentation of the conceptual framework guiding this study.

Chapter 3 describes the study aims, the hypotheses, the research design and methods, data collection and data analysis.

Chapter 4 presents the results from the study and data analyses including the demographic characteristics, baseline and outcomes of systolic blood pressure, diastolic blood pressure, LDL cholesterol, triglyceride, and quality of life scores.

Chapter 5 discusses the results gained from the study and makes recommendations for future research.