AN EVALUATION OF THE EFFICACY OF ACUPUNCTURE AND HOMOEOPATHIC TREATMENT IN HELPING PEOPLE TO STOP SMOKING

by

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I, Alexandra de la Rouviere, do hereby declare that this dissertation represents my own work in both conception and execution.

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ABSTRACT

The aim of this study was to compare the efficacy of acupuncture treatment and homoeopathic treatment in helping people to stop smoking. It was hypothesized that the acupuncture treatment would be more effective in aiding smoking cessation.

The study was a clinical trial, in which an acupuncture treatment group was compared with a homoeopathic treatment group. Thirty volunteers who were anxious to stop smoking participated in the trial and were randomly divided into two groups.

One group received acupuncture treatment (n=15), while the other group received homoeopathic treatment (n=15) in the form of isotherapy. The study took place over a period of 9 months and each participant completed a 3-month trial period.

Prior to the trial period each subject completed a set of questionnaires. These included the Fagerstrom Tolerance Test which determined their dependence on nicotine; a questionnaire to determine if the subject smoked predominantly for reduction of negative affect, for positive affect or as an habitual-addiction; and a questionnaire to determine the subject's estimation of the health risks of smoking.

A brief medical and smoking history was obtained from each subject, and they were given advice and an information sheet on how to cope with nicotine withdrawal.

Daily cigarette consumption was recorded by each subject in a daily smoking log prior to treatment (i.e. 1 week to 10 days after the initial consultation) and during the treatment period of 3 months. The median values of the daily cigarette consumption were calculated for both the acupuncture group and the homoeopathic group before and after treatment.

These values were analyzed statistically, using the analysis of variance technique and least significance method. The alpha value was set at 0.05 level of significance. The Mann-Whitney U test was used to compare the values between the groups before and after treatment. The Willcoxon signed rank test was used to compare the results within each group before and after treatment.

Prior to treatment, no significant difference in daily cigarette consumption was found between the 2 groups. Consequent to treatment, both the acupuncture group and the homoeopathic group were found to show a significant decrease in the number of cigarettes smoked.

At 3 months after commencing treatment, the cessation rate of the homoeopathic group was 40%, and that of the acupuncture group was 33%. Although there was no statistical difference

between the groups after treatment, the homoeopathic treatment group showed a 7% improvement over the acupuncture group.

From the results, it was apparent that both the acupuncture treatment and the homoeopathic treatment were effective methods in helping people to stop smoking.

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CH	Centesimal Hahnemannian Potency
CO	Carbon monoxide
COPD	Chronic obstructive pulmonary disease
ETS	Environmental tobacco smoke
FEV 1	Forced expiratory volume in one second
NRT	Nicotine replacement techniques
PPM	Parts per million
US	United States of America
WHO	World Health Organization

DEFINITION OF TERMS

1. **CANCER INCIDENCE:** Measures the rate at which new cancer cases arise among all persons who are at risk (Davis et al. 1994).

2. **CHRONIC OBSTRUCTIVE PULMONARY DISEASE:** Persistent obstuctive ventilatory impairment as measured by a test of lung function (Sherman 1992).

3. **DEPENDENCE:** (World Health Organization definition of drug dependence) A behavioural pattern in which the use of a given psychoactive drug is given a sharply higher priority over other behaviours which once had a significantly higher value (Benowitz 1988).

4. **DRUG:** A chemical substance that has an effect on body functioning but is not a food substance and is not required for normal life (Benowitz 1992).

5. **MORTALITY RATE:** The proportion (per thousand) of the general population that dies from a specific cause (Davis et al. 1994).

6. **NEGATIVE AFFECT:** A broad term referring to anxiety, tension and anger as well as depressed mood, or with depressive symptoms (Glassman et al. 1990).

7. **POSITIVE AFFECT:** A pleasurable relaxation, stimulation or sensorimotor manipulation (Goldstein 1988).

8. **TOLERANCE:** State in which, after repeated doses, a given dose of a drug produces less effect than before, or in which increasing doses are required to achieve the effect observed with the first dose (Benowitz 1988).

CHAPTER ONE INTRODUCTION

Cigarette smoking is currently the single most important known cause of cancer and other chronic diseases, such as coronary artery and cerebrovascular disease (Davis et al. 1994). Smoking rates in South Africa are increasing, with an overall prevalence rate of 31% (52% of men and 17% of women are smokers) (Younghusband 1995).

The greatest cause for concern is the increase of smoking in the black community, especially amongst the youth: 46% of primary school boys in Khayelitsha in the Cape smoke (Naidoo 1995). Because of the time lag between the onset of smoking and the development of many tobacco-related diseases (lung cancer may only develop after 2 decades of smoking), the full impact of current smoking trends will only be reflected in the morbidity and mortality figures of the next century (Yach 1995).

The importance of health professionals' intervention to encourage smoking cessation has become more prominent (UICC 1993; Gordon 1995; Mendelsohn and Richmond 1995). As a recent study by Simpson and Polson (1995) has shown, such practitioners are in an excellent position to have a significant impact on preventable morbidity and mortality rates which are directly attributable to smoking. Cummings (1994) states that the elimination of tobacco will do more to

reduce cancer and other chronic diseaes than any other measure in the field of preventative medicine.

The majority of scientific research on smoking cessation has been directed towards nicotine replacement techniques (NRT). Such techniques have included the nicotine patch (Mendelsohn and Richmond 1995), nicotine gum (Jamrozik et al. 1984) and nicotine nasal spray (Sutherland et al. 1992). Most studies, however, have recognized the need for a multifactorial approach to smoking cessation, as tobacco addiction is a complex process involving the interplay of pharmacology, learned or conditioned factors, personality and social settings (Benowitz 1992; Gordon 1995; Simpson and Polson 1995).

Nicotine replacement therapy provides constant protection from withdrawal symptoms and craving for cigarettes, while the patient focuses on changing behavioural aspects (Mendelsohn and Richmond 1995). The nicotine in these preparations can, however, lead to dependence after the therapeutic period (Hughes et al. 1986). Moreover, patients may discontinue the use of replacement preparations due to unpleasant and irritant side-effects (Tang et al. 1994) such as indigestion, nausea and local skin irritation.

A further disadvantage is that nicotine preparations are not only costly (Howard and Hughes 1995), but they are also contra-indicated in many of the patients most at risk from the

continuation of smoking, such as pregnant women, mothers who are breastfeeding, and persons suffering from recent myocardial infarction or cerebrovascular accident, unstable angina and severe arrhythmia. Patients are also warned against their use if suffering from hypertension, coronary artery disease, peripheral vascular disease, peptic ulcer disease and diabetes mellitus. (Simpson and Polson 1995.)

Other methods of smoking cessation which have been studied include hypnosis - with a wide range of success rates being reported (Schwartz 1992) - and acupunture, focusing especially on auriculo-, electro- and nasoacupunture (Ter Riet et al. 1990).

The use of homoeopathic remedies has been recorded in only one study (Labadie et al. 1983), in which they were used as an adjunctive therapy to tranquilizers and acupuncture treatment. No studies comparing the effectiveness of Traditional Chinese Acupuncture and Homoeopathic treatment in the cessation of smoking could be traced.

In the light of the above, the aim of this study was to investigate the efficacy of homoeopathic treatment in the cessation of smoking, and to compare this with patients who receive acupuncture for the same reason.

Homoeopathic treatment can be readily combined with the behavioural methods of intervention which are currently

recommended (Hurt et al. 1992; Schwartz 1992; Gordon 1995). It was therefore argued that this treatment would improve the overall rate of smoking cessation. Moreover, the treatment could be dispensed by the Homoeopathic physician as part of the overall health care programme of his patients.

CHAPTER TWO REVIEW OF THE RELATED LITERATURE

2.1 HISTORICAL PERSPECTIVE

Smoking is presently the major cause of preventable disease in developed countries, and its prevalence is rapidly increasing in the developing countries throughout the world (Kingman 1995). According to Yach (1995) tobacco use causes 3 million deaths per year: and it is estimated that this figure will rise to 10 million deaths per year in the 2020's. Of these deaths, 70% will occur in developing countries, compared to 35% in 1990 (Yach 1995).

Tobacco-related disease is a recent phenomenon, as although tobacco has been used for centuries within rituals of certain cultures (Yach and Martin 1993), it only became widespread following the production of cheap machine-made cigarettes in 1881 in Virginia, US (Willcox 1990).

The popularity of smoking grew with successful marketing during World War II, and by the 1950's and 60's the incidence of lung cancer (previously a very rare disease) reached unprecedented levels among the males of the developed countries (Willcox 1990 ; Samet 1992). This lead to the epidemiological foundation of research of tobacco-linked disease, until the Report of the US Surgeon General in 1964 established a causal link between smoking and lung and laryngeal cancer in males (cited in Samet 1992).

Since 1964, the US Surgeon General has released 23 reports on smoking and its effects on health, the health risks of environmental tobacco smoke (ETS), and groups of smokers for special consideration, such as adolescents (US Surgeon General's Report 1994).

An immense amount of research has been conducted both for epidemiological evidence linking smoking and disease, and for the search for causative factors of illness within tobacco-smoke (Bennicke et al. 1995; Yach 1995). This has been largely spurred on by the Tobacco Industry's assertion that there is still no evidence to conclusively associate smoking with disease, and that nicotine is an habituating, not addicting drug (Slade et al. 1995; Todd et al. 1995).

Huge amounts of money are raised by most Governments by means of tobacco taxes (Wilkinson 1986:67; Dean 1995) and the Tobacco Industry spends billions of dollars on advertising and promotion, specifically in countries where these practices are not restricted or banned (Tye et al. 1988). The financial aspects associated with the tobacco industry have been a powerful tool in limiting the effect of the knowledge gained by the scientific community regarding the health risks of smoking (Wilkinson 1986:68).

2.2 ADDICTION

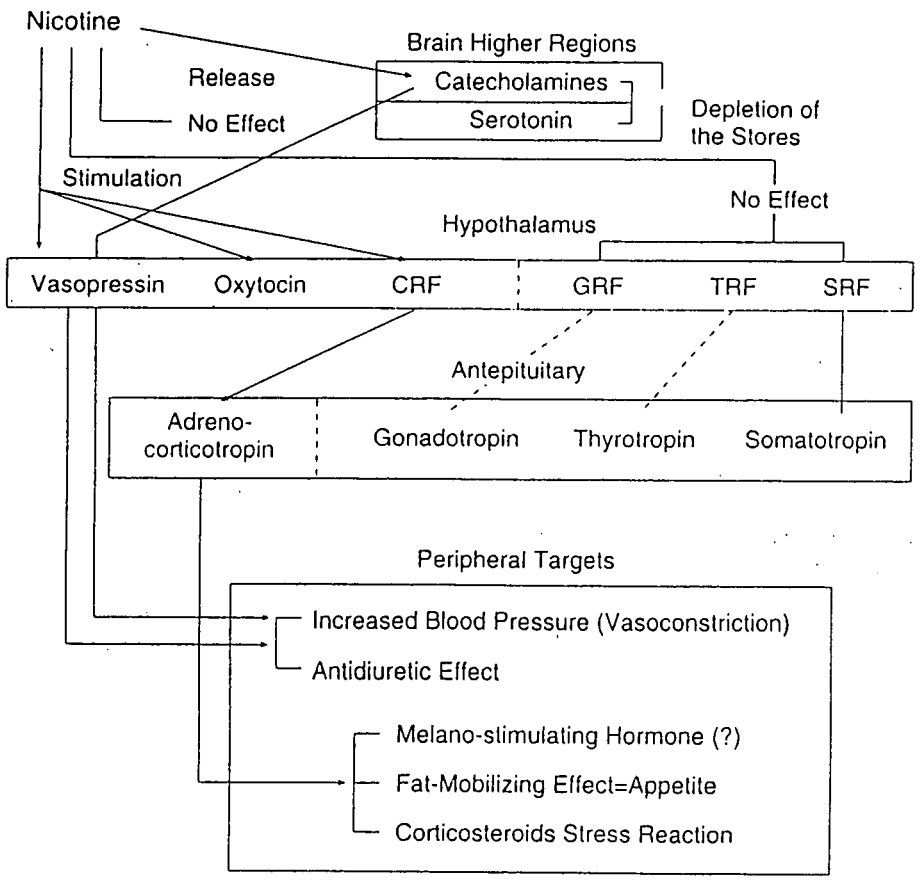
Another decisive factor preventing the reduction of smoking prevalence is the effect of nicotine - the principal constituent of cigarettes. Found exclusively in tobacco products, it is the most addictive substance that is used legally in most societies today (Henningfield and Benowitz 1995).

Although the mechanism of addiction of nicotine was known by the scientists of the Tobacco Industry (Figure 2.1) as early as 1962 (Slade et al. 1995), further studies have elaborated on the pharmacological effects of nicotine as the addictive factor in tobacco products (Benowitz 1988; Henningfield and Benowitz 1995).

Nicotine dependence is now a medical diagnosis and smoking has been declared a paediatric disease, because of the large number of adolescents who find it difficult to stop smoking (Roberts 1995).

The American Psychiatric Association has included details of the behaviour of both nicotine dependence disorder and nicotine withdrawal disorder in their Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)(Henningfield 1995).

MECHANISM OF NICOTINE ADDICTION



CRF = corticotropin-releasing factor

GRF = gonadotropin-releasing factor

TRF = thyrotropin-releasing factor

SRF = somatotropin releasing factor

Figure 2.1: Mechanism of Addiction - Diagrammatic Representation of the effects of Nicotine on the Hypothalamopituitary Functions (adapted from Slade et al. 1995:227).

2.3 HEALTH RISKS OF SMOKING

2.3.1 CANCER

2.3.1.1 LUNG CANCER (Trachea, bronchus and lung)

Smoking causes 85% of all cases of lung cancer in males, and 46% of cases in females, world-wide (Yach 1995). The risk of developing lung cancer is dependent on the duration of smoking (Lubin et al. 1984) and it may take decades before the presence of the disease is established in individual persons (Yach 1995).

The incidence pattern of different histological types of lung cancer also follows changing trends of smoking over time: the increased use of low-tar and filter cigarettes since the 1970's has led to an increased incidence of adenocarcinoma, especially among women (Zheng et al. 1994).

In South Africa, lung cancer accounts for 24% of all deaths from cancer in men (Yach 1995) and is the most common cancer in coloured males (Sitas and Pacella 1994). The five-year survival rate from lung cancer is less than 10%: a rate that has not changed in 30 years, and which is not appreciably improved by early diagnosis and treatment (Carbone 1992).

Reducing the number of cigarettes smoked or changing to filter brands does lower the risk of developing lung cancer, but not

to the extent associated with complete cessation of smoking. The shorter the duration of smoking, the greater the protective effect of giving up becomes. (Lubin et al. 1984.)

2.3.1.2. ORAL CANCER (Mouth, larynx, pharynx and oesophagus)

Smokers experience a significantly higher risk of developing oral cancer than do non-smokers, especially if smoking is combined with habitual drinking. Cancer can produce a thickening anywhere on the oral mucosa, causing cratering or bulging of tissue, with or without ulceration or bleeding. Usually painless in the early stages, these red lesions may appear benign. Leukoplakia, a white patch on the oral mucosa which occurs six times more frequently in smokers than in non-smokers, has a 2-6% risk of malignant transformation. (Christen 1992.)

2.3.1.3. BREAST CANCER

Breast cancer is the most common cancer among women in the world, and its incidence is increasing. As the prognosis after treatment has not improved greatly during the past few decades, identifying possible risk factors is essential. Recent studies have shown a pronounced increase in breast cancer among women who have smoked for more than 20 years compared to non-smokers, and a significant increase in women who have smoked for more than 30 years.(Bennicke et al. 1995.)

2.3.1.4. OTHER CANCERS

Bladder Cancer - The relative risk of bladder cancer has been found to be approximately doubled in smokers, compared with non-smokers. The degree of risk has been correlated with the duration of smoking history, number of cigarettes smoked, and extent of inhalation. There is recent evidence of a causal, dose-dependent relationship between smoking and cancer of the pancreas, renal cancer and certain types of leukemia.(Carbone 1992.)

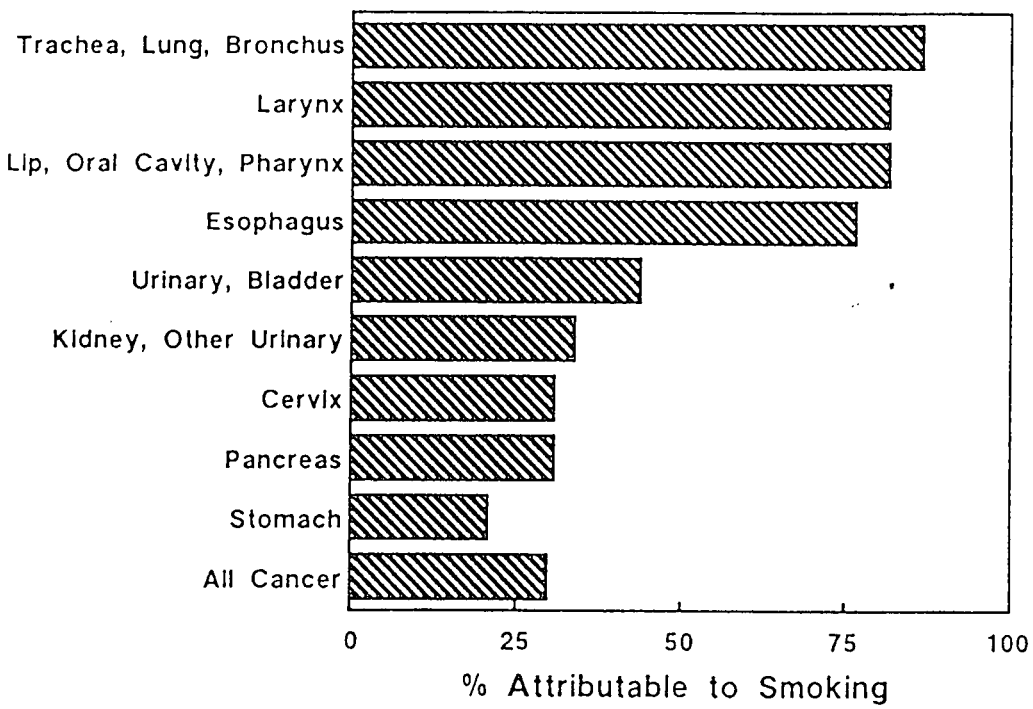


Table 2.3.1: Proportion of cancer deaths attributable to smoking in the United States in 1985 (Newcomb and Carbone 1992:306).

2.3.2 CARDIOVASCULAR DISEASE

Cigarette smoking is a major cause of atherosclerotic disease, which is one of the three major risk factors (along with hypertension and cholesterol disorders) for coronary vascular disease. Tobacco smoking is also a well-established risk factor for cerebrovascular disease, abdominal aortic aneurysm, and peripheral vascular disease. (McBride 1992.)

Nicotine and other constituents of tobacco smoke have multiple effects on the cardiovascular system, leading to pathological changes and disturbances of metabolic and physiologic processes. Smoking has both acute and chronic effects on the haematological system, greatly increasing the risk of thrombosis, and reducing the effectiveness of hypertension treatment. (McBride 1992).

The risk of developing coronary artery disease is associated with the intensity (not duration) of smoking, and even low-tar cigarettes still greatly increase the rate of myocardial infarction. This risk factor is much more extreme in early adult life (30-49 years) than in old age (60-79 years). (Parish et al. 1995).

Quitting provides immediate progressive benefits at all ages, decreasing the risk of acute myocardial infarction and sudden death (Commerford 1995).

2.3.3 RESPIRATORY DISEASE

Since the 1964 US Surgeon General's Report (cited by Samet 1992) cigarette smoking has been recognized as a significant risk factor for the development of both respiratory symptoms and disease. Symptoms such as chronic cough and phlegm production, wheeze and dyspnoea are directly associated with the number of cigarettes smoked per day. (Sherman 1992.)

Tobacco smoking has significant detrimental effects on both the structure and function of the lung. This is the single most important risk factor of chronic obstructive pulmonary disease (COPD), such as chronic bronchitis and emphysema. The effects of smoking include changes in central and peripheral airways, the alveoli and capillaries, and the immune system. This results in a blunted immune response among smokers to influenza vaccinations, and increased mortality from influenza and pneumonia. (Sherman 1992.)

2.3.4 OTHER HEALTH RISKS

2.3.4.1 ORAL DISEASE

Smoking has been shown to lead to an increased incidence of stomatitis nicotina (smoker's palate), diffuse palatal keratosis, chronic periodonitis, acute necrotizing ulcerative gingivitis (trench mouth), dental calculus, halitosis and dental staining (Christen 1992).

2.3.4.2 DIABETES MELLITUS

Rimm *et al*. (1995) suggest that cigarette smoking may be an independent modifiable risk factor for patients with non-insulin dependent diabetes mellitus. This is based on the results of their study which showed that, independent of body-size, people who smoke have a higher transient increase in blood glucose concentration after an oral glucose challenge, and an increased resistance to insulin.

2.3.4.3 THYROID FUNCTION

Components of tobacco smoke interfere with thyroid function and hormone action. This noxious effect becomes apparent when thyroid function is slightly compromised, such as in hypothyroidism. (Muller *et al*. 1995.)

2.3.4.4 OXIDATIVE DAMAGE

Smoking generates about 10^{15} free radicals in each puff. These cause tissue damage which initiates an inflamatory response, resulting in further tissue damage. (Margetts and Jackson 1993.)

Smokers have significantly lower plasma concentration levels of the antioxidants ascorbic acid and vitamin E (Giraud *et al*. 1995). Studies conducted by Morrow *et al*. (1995) found that

after only two weeks' abstinence from smoking, there was a significant drop in the circulatory products of lipid peroxidation, indicating a decrease in oxidative damage.

2.3.4.5 PEPTIC ULCER DISEASE

Cigarette smoking has been causally associated with peptic ulcer disease. The evidence on smoking cessation is strongest in relation to the clinical course of ulcer disease. Smokers have slower healing of duodenal ulcers and are more likely to have recurrences of both duodenal and gastric ulcers. (Samet 1992.)

2.3.4.6 FERTILITY

Nicotine inhibits steroidgenesis, resulting in a lower concentration of endogenous oestrogen in female smokers. This is possibly the mechanism whereby female smokers have been shown to take longer to conceive after stopping contraception (Rosevear et al. 1992), and to reach menopause an average of two years earlier than non-smokers (Wallis 1995).

2.3.4.7 FOETAL DISORDERS

Nicotine transverses the placental barrier quite rapidly, targeting the adrenal glands, heart and kidney of the foetus. The effects on the mature foetus include a rise in systemic blood pressure, acidosis, hypoxia and changes in the

excitability of the central nervous system. Foetal haemoglobin also has a much stronger affinity for CO, raising the foetal carboxyhaemoglobin levels to 10-15% higher than those of the mother, causing a drop in foetal arterial oxygen-pressure. (Shephard 1982:136-9.)

Smoking during pregnancy leads to an increased risk of bearing low birth-weight infants, spontaneous abortion, and bearing live babies with congenital abnormalities (Shephard 1982: 142-9).

2.3.4.8 HIV INFECTION

Recent studies have shown a dose-dependent effect on CD4 lymphocyte counts and an increased risk of developing bacterial pneumonia in smokers with HIV infection compared to non-smoking HIV-seropositive patients, and smoking cessation is encouraged as a short-term health benefit (Chaisson 1994).

2.3.4.9 PSYCHOGENIC

Glassman et al. (1990) found that smokers rate higher on symptomatic measures of both anxiety and depression: these are also the most common antecedents of smoking relapse after abstention.

2.4 HEALTH RISKS OF ENVIONMENTAL TOBACCO SMOKE (ETS)

2.4.1 CONSTITUENTS OF ENVIRONMENTAL TOBACCO SMOKE

Environmental tobacco smoke (ETS), which results in the condition known as passive smoking, has been graded as a Class A carcinogen (a substance known to cause cancer in humans) by the US Environmental Protection Agency (cited by Controlling the weed in public 1993).

ETS is composed of mainstream smoke, which is exhaled by the smoker, and sidestream smoke, which is emitted from the burning cone of the cigarette in-between puffs. Sidestream smoke has greater concentrations of carbon monoxide (CO) than mainstream smoke and forms 95% of ETS (Shephard 1982:34). Carbon monoxide exposure causes increased blood carboxyhaemoglobin levels which have an immediate adverse effect on vascular disease (Shephard 1982:58).

Sidestream smoke contains smaller particles than mainstream smoke, and these are deposited in the most distant alveolar portions of the lung (Byrd 1992). Nitrosamines (powerful organ-specific carcinogens) are present in concentrations 50 times higher than those of mainstream smoke: no industial exposure of these compounds is permitted (Shephard 1982:96).

The principal factors affecting the health risks presented by ETS are room size, ventilation, temperature and humidity,

number of people in the room, amount and type of tobacco smoked, and volatility of agents. Common symptoms of exposure to ETS are eye irritation, headache, coughing, running nose, phlegm, wheezing, nausea and dizziness. (Shephard 1982; Byrd 1992.)

Exposure to tobacco smoke via passive smoking or foetal transmission can be accurately measured by the concentration of nicotine and its metabolite, cotinine, in the body fluids (Wall et al. 1984; Jarvis et al. 1988). Cotinine is the preferred marker as it has a longer half-life (20 hours) than nicotine and indicates conclusively that there has been exposure to tobacco products (Fielding and Phenow 1988). It can be traced in the saliva (Strachan et al. 1988), urine (Greenberg et al. 1984) and breast milk (Klonoff-Cohen et al. 1995) as non-invasive methods of measuring ETS exposure.

2.4.2. HEALTH RISKS IN EARLY CHILDHOOD

Passive smoking in the same room as an infant increases the risk for Sudden Infant Death Syndrome - the sudden, unexpected death of an apparently healthy infant (Klonoff-Cohen et al. 1995).

Many studies have shown a direct association between parental smoking status and the incidence of upper and lower respiratory tract illness such as bronchitis, pneumonia, tracheitis and bronchiolitis in young children (Greenberg et al. 1984; Fielding and Phenow 1988). Chronic middle-ear

effusion (Strachan et al. 1989), chronic otitis media, and increased incidences in tonsillectomies and adenoidectomies have also been reported (Fielding and Phenow 1988).

Studies conducted in China (Chen et al. 1986) have implicated paternal smoking as an important source of air pollution at home. Tager et al. (1983) found that maternal cigarette smoking significantly lowered the expected average increase in the FEV 1 (forced expiratory volume in one second) of children and adolescents, indicating impaired pulmonary function.

Tobacco smoke can raise the total IgE serum concentration leading to an increase in the frequency of allergic disease, particularly eczema, in the offspring of women who smoke (Newman-Taylor 1995).

2.4.3 HEALTH RISKS IN ADULTS

Fielding and Phenow (1988) report studies which have shown a significant association between passive smoking and lung cancer. Passsive smoking has also been associated with ischaemic heart disease, acute cardiovascular effects and worsening of angina pectoris (Byrd 1992).

Passive exposure to tobacco smoke leads to an increased risk of developing acute respiratory infections, adverse reactions to industrial dusts, and chronic bronchitis (Shephard 1982:73).

2.5 NEGATIVE EFFECTS OF SMOKING CESSATION

2.5.1 MAJOR DEPRESSION

A history of regular smoking is more frequent among individuals who have suffered from a major depressive disorder at some time in their lives, and they are less successful in their attempts to quit. Clinical experience has shown that those few depressed smokers who do succeed in stopping are at increased risk to develop another episode of major depression. (Glassman et al. 1990.)

2.5.2 ULCERATIVE COLITIS

Ulcerative colitis is largely a disease of non-smokers and patients who are ex-smokers have usually acquired the disease within a few years after stopping smoking. Patients who smoke intermittently often experience improvement in their colitis symptoms during periods when they are smoking. Transdermal nicotine patches have been used in trials to treat active colitis and for maintenance therapy. (Thomas et al. 1995.)

2.5.3 WEIGHT GAIN

Weight gain and fear of weight gain are two of the five most common reasons given for smoking relapse after abstinence (Orleans et al. 1994).

A 10 year follow-up study in the United States by Flegal et al. (1995) found a weight gain of 4.4kg for men and 5kg for women after smoking cessation. Most of this weight gain occurred shortly after smoking cessation, with a subsequent decline in weight gain.

Smoking cessation has even been suggested as a possible contributory factor to the increase in the prevalence of overweight in the United States during the period 1976-1991. (Flegal et al. 1995.)

2.6 METHODS OF CESSATION

Although most people who stop smoking do so without the use of professional help or an organized programme, many smokers are unable to stop on their own and seek assistance in quitting (Schwartz 1992).

2.6.1 NICOTINE REPLACEMENT THERAPY

Nicotine replacement strategies have developed dramatically during the last decade (Tang et al. 1994; Mendelsohn and Richmond 1995). As the American Psychiatric Association has recognized nicotine withdrawal as essentially a nicotine induced organic mental disorder, and nicotine dependence as a psycho-active substance use disorder, nicotine replacements

have been shown to alleviate withdrawal, with long-term quit rates at between 10% and 30%. (Gritz 1994.)

Nicotine replacement techniques (NRT) do not treat the behavioural aspects of smoking, however, and they may result in a variety of undesirable side-effects (Gritz 1994). Furthermore, it is advisable that smoking should cease before the commencement of any form of NRT, or an accidental overdose of nicotine may result (Gordon 1995).

Nicotine taken orally may produce indigestion and other side-effects, and is largely metabolized in the liver before reaching the systemic circulation. Direct absorption into the systemic circulation through the buccal or nasal mucosa, the alveoli, or the skin can, however, produce sufficient concentrations of nicotine in the blood to partially allay withdrawal symptoms. (Tang et al. 1994.)

The products presently available in South Africa, namely the nicotine polacrilex gum and the transdermal nicotine patch, do not provide the rapid 'surge' of plasma nicotine produced by cigarettes. The nicotine nasal spray (only available in the USA) more closely reproduces the effect of smoking. (Tang et al. 1994.)

Nicotine preparations are not only costly (Howard and Hughes 1995), but they are also contra-indicated in many of the

patients most at risk from the continuation of smoking, such as pregnant women, mothers who are breastfeeding, and patients with recent myocardial infarction or cerebrovascular accident, unstable angina and severe arrhythmia. Patients suffering from hypertension, coronary artery disease, peripheral vascular disease, peptic ulcer disease and diabetes mellitus are also warned against the use of NRT. (Simpson and Polson 1995.)

2.6.1.1 NICOTINE POLACRILEX GUM

Nicotine chewing gum was the first type of NRT to become available, but oral and gastric side-effects, impaired absorption when taken with coffee or acid beverages, and a risk that some smokers might transfer their dependency to the gum have limited its usefulness (Hughes et al. 1986; Silagy et al. 1994).

In South Africa a 2mg chewing gum is available over the counter at pharmacies, while the 4mg treatment is supplied on prescription only. The gum contains nicotine resin and intermittent chewing releases about 90% of the available nicotine after 20 minutes, most of which is absorbed through the buccal mucosa (Tang et al. 1994).

The effectiveness of nicotine gum in reducing withdrawal symptoms associated with smoking cessation is greatly increased with the addition of intervention programmes. The

4mg gum has been found to be more effective than the nicotine patch in 'high dependence' smokers with an approximate 30% success rate. (Tang et al. 1994.)

2.6.1.2 TRANSDERMAL NICOTINE PATCH

The transdermal nicotine patch is a sticking plaster which is available over the counter in various sizes and strengths of nicotine. The nicotine is incorporated into the adhesive layer and delivered into the blood system over 16 hours. A new patch is applied each morning to the upper arm, trunk, buttock or thigh and removed before going to bed. (Russell et al. 1993.) However, use of a 24 hour patch may result in disturbed sleep and vivid dreams (Mendelsohn and Ricmond 1995).

In a randomised, controlled trial of transdermal nicotine patches, Russell et al. (1993) reported a reduction in the severity of craving and adverse mood changes in the first weeks of withdrawal, and double the initial rate of cessation compared to the placebo group. There was however a 16.4% incidence of moderate to severe local irritation or itching at the patch site.

It is recommended that during a course of treatment, several weeks' use of full strength treatment be followed by a weaning period of weaker strength patches (Russell et al. 1993). A 22.6% abstinence rate using nicotine patches was reported at 6

months by Mendelsohn and Richmond (1995), compared to a placebo group rate of 11%.

2.6.1.3 NICOTINE NASAL SPRAY

Nicotine nasal spray is the most recent form of NRT to become available, and was developed to provide a more rapid form of nicotine absorption, compared to the transdermal patch and chewing gum (Henningfield 1995).

Although relatively few studies have been conducted using the nicotine nasal spray, it has been shown to reduce tobacco withdrawal symptoms, craving for cigarettes and weight gain in abstinent subjects. Side-effects associated exclusively with this form of NRT are sore nostrils, blocked nose, nasal blood spotting, minor epistaxis, nasal ulceration, vomiting, sneezing, throat irritation, watering eyes and coughing. (Sutherland et al. 1992.)

2.6.2 HYPNOSIS

Hypnosis is a popular method of smoking cessation, yet the reports regarding its effectiveness as a smoking cure are contradictory (Schwartz 1992).

Hypnosis is limited in the number of smokers that can be treated, although it can be delivered during individual and

group sessions. Quit rates range from 0% - 68% for individual hypnosis and from 8% - 88% for group hypnosis. (Lewith 1995.)

Schwartz (1992) concluded from his review of hypnosis treatment for smoking cessation that it is most successful when combined with educational advice and counselling. He also emphasized that the skill and experience of the therapist were important determinants for the efficacy of hypnosis.

2.6.3 BEHAVIOURAL METHODS

The average smoker has three failed attempts to stop smoking before achieving success. Because of the complexity of the nicotine addiction, psychologic concerns as well as physiologic processes must be addressed in order to improve the chance of success. (Simpson and Polson 1995.)

Ninety-two percent of teenage smokers in the USA say that they don't plan to be smoking a year later - and yet only 1.5% manage to quit (Lee and Lee 1994). Simpson and Polson (1995) report that half of all smokers are contemplating change within the next 6 months. These facts have led to the concept of a `smoking career', from initial use through experimentation to habituation.

There are several stages of smoking cessation. Figure 2.6.3 illustrates these stages from precontemplation to contemplation, preparation to action, then possible relapse,

with eventual maintenance of cessation (Simpson and Polson 1995). Gordon (1995) suggests a classification of smokers into those who are either unrepentant, ambivalent or determined to stop, or finally as ex-smokers or non-smokers.

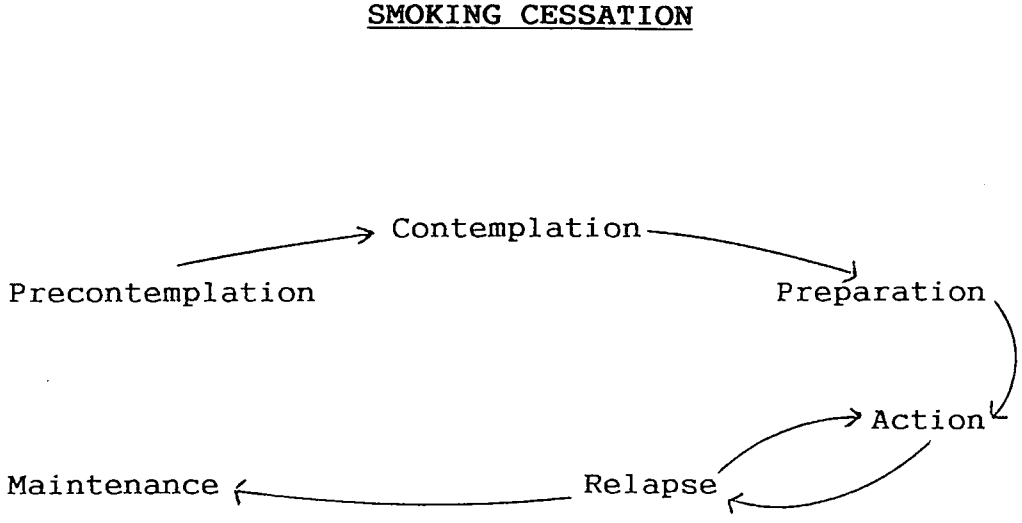


Figure 2.6.3: Patterns of smoking cessation (Simpson and Polson 1995).

These innovations are representative of the various methods which have developed over the last decade to improve intensive individualised approaches to smoking cessation (Gritz 1994). These methods of targeting the exact stage of smokers' intention to quit are prominent in recent Medical Journal articles on smoking cessation (Taylor 1994; Gordon 1995; Mendelsohn and Richmond 1995; Simpson and Polson 1995).

The system of the four A's was devised as a simple method of physician intervention: to ask patients about their smoking; to advise them to stop; to assist them choose between various methods; and to arrange follow-up visits. Intervention by health professionals is seen as essential, as all methods to induce cessation have shown an improvement in quit rates if combined with counselling. (Schwartz 1992).

Prevention is the number one priority of smoking intervention policies (Gritz 1994). Studies conducted near Cape Town have shown that promoting children's beliefs in their ability to perform health-enhancing actions led to an increase in self-confidence and a corresponding decrease in the use of tobacco (Hunter et al. 1991).

High intensity intervention in rural communities in the Western Cape also led to a 30.6% drop in smokers among women, and an 8.4% drop in male smokers (Steenkamp et al. 1991).

2.6.4 ACUPUNCTURE

Acupuncture is increasing in popularity as a method of smoking cessation (Schwartz 1988). Studies which have been conducted used various types of acupuncture such as nasopuncture, auriculopuncture and electroacupunture - including the use of laser on acupuncture points (Schwartz 1992). Very few trials have used the Traditional Chinese Medicine acupuncture method (Staebler et al. 1994).

Although acupuncture is an ancient method of treatment, its method of action is uncertain. Successful electroacupuncture has been associated with a rise in cerebrospinal fluid met-enkephalin levels (endogenous opiate peptides). (Clement-Jones et al. 1979.)

Research into the efficacy of acupuncture has often dealt with the concept of placebo treatment by comparing `sham' points with real acupuncture needling (Margolin et al. 1995). The lack of significant difference between the needling of `sham' and conventional acupuncture points may be due to endorphin release after acupuncture at any site (Schwartz 1988).

Acupuncture has been used to treat many types of drug addiction, including heroin addiction (Clement-Jones et al. 1979) and cocaine addiction (Margolin et al. 1995).

The results of acupuncture treatment for smoking cessation vary according to different studies: from 18-61% at 6 months to 16-40% at one year (Schwartz 1988). Fuller (1982) reports a 41% success rate at six months with auricular acupuncture, but emphasizes that if the patient's motivation is weak, subsequent relapse will occur.

2.6.5 HOMOEOPATHY

Homoeopathy is a system of medicine founded by a German physician, Samuel Hahnemann (1755-1843). His foundation of a fundamental law of healing, called the law of similars, states that a patient will be cured by a medicinal substance producing the same disease symptoms in a healthy person (Hahnemann 1986). In his Organon of Medicine (Hahnemann 1986:paragraph 7) he states that the exciting or sustaining cause (**causa occasionalis**) of a disease should first of all be removed to allow the indisposition to clear on its own.

Thus the treatment of smoking cessation using homoeopathy appears to aid with both the alleviation of withrawal symptoms and promotes a healthier lifestyle as a form of disease prevention.

Homoeopathic remedies were recorded in only one study of smoking cessation (Labadie et al. 1983) in which they were used as an adjunctive therapy to tranquilizers and acupuncture treatment. The treatment of another form of addiction by homoeopathy, namely alcoholism, has been described by Saine (1990), including the treatment of delirium tremens.

A case of seborrhoeic dermatitis in a patient allergic to tobacco leaves was treated with good results using various potencies of **Tabacum** (Sudan 1990).

2.5.5.1 ISOTHERAPY

Homoeopathic treatment was based on a form of isotherapy or isopathy. The French Pharmacopoeia defines isotherapy as a "biotherapy - all remedies are obtained from substances of microbic composition, secretion or excretions, animal tissues or vegetable elements or allergenic substances" (Di Nepi 1990).

There are 2 main categories of isotherapy: auto-isotherapy and hetero-isotherapy. In hetero-isotherapy the source of the remedy is external to the patient and may include dust, pollens, different foods *etc*. (Di Nepi 1990.)

Many clinical trials in homoeopathy have used isotherapeutic remedies because it simplifies experimental design by standardizing both the pathological condition and the remedy (Ives 1983).

Reilly *et al*. (1986) successfully used **Mixed Grass Pollen 30CH** for treating hayfever, with a significant reduction in symptoms when compared with placebo. One of the earliest double-blind clinical trials using homoeopathic remedies was reported by Dr Paterson in 1944. The study used **Mustard Gas 30CH, Rhus toxicodendron 30CH** and other remedies and showed unequivocal results from isotherapy. Since 1983, the Boiron Institute in France has been investigating the use of

Histaminum 7 CH in allergic patients, with promising results. (cited by Cook 1989:98,101.)

Scofield (1984) also supports the use of isopathic preparations in relevant cases in experimental work. Cook (1989:98) points out that by using homoeopathic remedies which are near specific for the treatment of a chosen condition, one minimizes the holistic dimension, even though the experimental design is less complicated.

No studies could be traced which compared the effectiveness of Traditional Chinese Acupuncture and Homoeopathic treatment in the cessation of smoking.

CHAPTER THREE MATERIALS AND METHODS

3.1 STUDY DESIGN

The study was a clinical trial, comparing the results of an acupunture treatment group with a homoeopathic treatment group in people anxious to stop smoking.

A total of 30 participants were each treated for 12 weeks (Henningfield 1995), over a period of 9 months. 15 participants received acupuncture treatment and 15 received homoeopathic treatment.

At the start of the study, advertisements were placed in the daily KwaZulu-Natal newspapers by the Homoeopathy Department, Technikon Natal, regarding free treatment for volunteer participants in various research programmes, including treatment for stopping smoking. Posters were also displayed on noticeboards on Technikon Natal's Berea Campus and local shopping centres and libraries, advertising free smoking cessation treatment.

All consultations and treatments took place at the Homoeopathic Day Clinic, Technikon Natal, Durban. The initial appointments with respondents to the advertisements were utilized to determine their eligibility in terms of the criteria for admissability to the study. All respondents fulfilled these criteria (section 3.2).

Participants were then asked to complete an informed consent document (Appendix A) stating that they were participating in the study of their own free will and could withdraw at any time. A smoking history (Appendix E) was obtained, with a brief medical, surgical and family history. Vital signs were measured which included blood pressure, pulse rate, respiratory rate, temperature, height and weight.

During the initial consultation, participants were requested to complete a questionnaire under the researcher's supervision. The questionnaire was compiled of 3 parts (Appendices B, C and D) and any queries regarding the questions were clarified as the questionnaire was answered.

Participants were informed that they would be randomly assigned to the acupuncture or homoeopathic treatment group. The method for assignment was the simple random number generator, which assigned each subject according to a random numbering chart to one of the treatment groups. They were also advised that actual cessation of smoking should take place 1 week to 10 days after the initial consultation.

Participants were given daily smoking logs (Appendix G) which they were required to fill in each time they smoked a cigarette during the interim period (i.e. 1 week to 10 days between the initial consultation and commencement of treatment) (Goldstein 1988). They were also encouraged to make a note of the time and activity associated with each

cigarette smoked. They were not asked to reduce the number of cigarettes smoked each day during this interim period.

A copy of `Coping with Withdrawal' (Appendix F) was given to each participant. This is a simple guide to basic measures which can be taken to reduce the severity of nicotine withdrawal symptoms. (Medical Association of South Africa [s.a.].)

Each participant was informed whether they would receive acupuncture or homoeopathic treatment, and an appointment was made for the day of the start of smoking cessation.

Follow-up appointments were made for 1, 4, 8 and 12 weeks after commencement of treatment. During follow-up consultations, the daily smoking logs were submitted and smoking cessation monitored. Daily smoking logs were then issued for use during the following weeks. If the participant had quit smoking, the daily logs remained blank.

At the 1-, 2- and 3-month follow-up appointments, participants were requested to return their daily smoking logs and report any improvement or worsening of withdrawal symptoms.

At the end of 3 months following the start of treatment, the daily smoking logs of each participant were totalled, and the mean and median values for each group were statistically analyzed.

3.2 SUBJECTS

All participants in the study were respondents to the advertisements in the daily newspapers or posters. 39 people were accepted to participate in the trial: however only 37 subjects started treatment and 7 withdrew during the period of the trial (3 from the acupuncture group and 4 from the homoeopathic group).

All respondents fulfilled the criteria of admissabilty to the study. These criteria stated that participants should be over 18 years of age, smoke more than five cigarettes a day for more than a year, and be literate to the extent of being able to understand and complete questionnaires.

There was no significant difference between the groups at the start of treatment, according to the number of cigarettes smoked per day, and the level of nicotine tolerance (Appendix C). Details of the composition of the groups and their smoking history are illustrated in Table 4.2.

3.3 INTERVENTION

3.3.1 ACUPUNCTURE TREATMENT

The acupuncture treatment consisted of one session of Traditional Chinese Acupuncture and moxibustion, based on the 'smoking formula ' of Lavier (1975). The treatment was performed by the researcher's supervisor.

The acupuncture needles, moxa cigars and plum-blossom needle (7 star) which were used in this study were obtained from Acumed Supplies, Johannesburg. The needles were pre-sterilzed disposable Hwato Traditional Chinese needles, with a copper coil handle and stainless-steel shaft. Both the 40mm and 25mm needles were used.

The treatment consisted of one 40 minute treatment. The 40mm needles were inserted in the acupuncture points E4 (Figure 3.3.1) and H3 (Figure 3.3.2). The 25mm needles were inserted in the acupuncture points E20 (Figure 3.3.3) and B8 (Figure 3.3.4).

These needles remained in the subject for 20 minutes. After this period had elapsed, the needles were removed and the points E4, H3 and E20 were allowed to bleed.

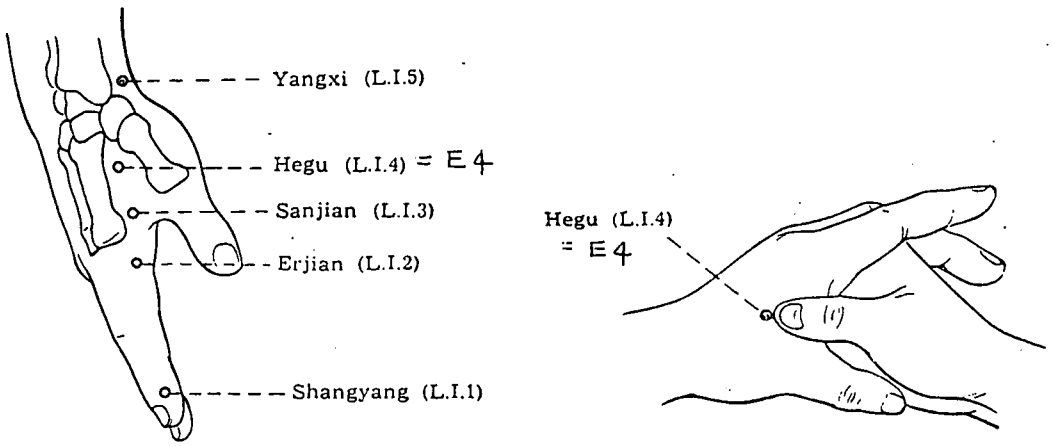


Figure 3.3.1: Illustration of the acupuncture point E4 (L.I.4) (Beijing College of Traditional Chinese Medicine 1980:116).

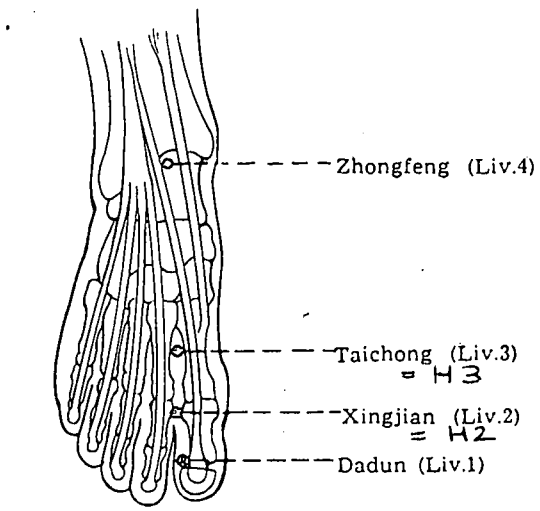


Figure 3.3.2: Illustration of the acupuncture points H3 (Liv.3) and H2 (Liv.2) (Beijing College of Traditional Chinese Medicine 1980:251).

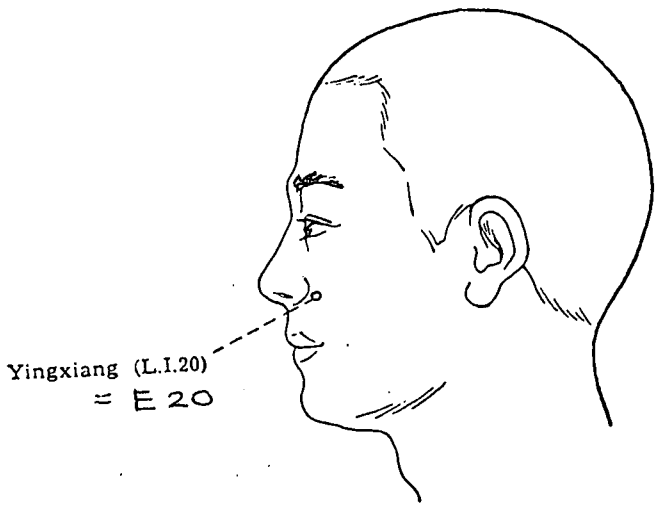


Figure 3.3.3: Illustration of the acupuncture point E20 (L.I.20) (Beijing College of Traditional Chinese Medicine 1980:122).

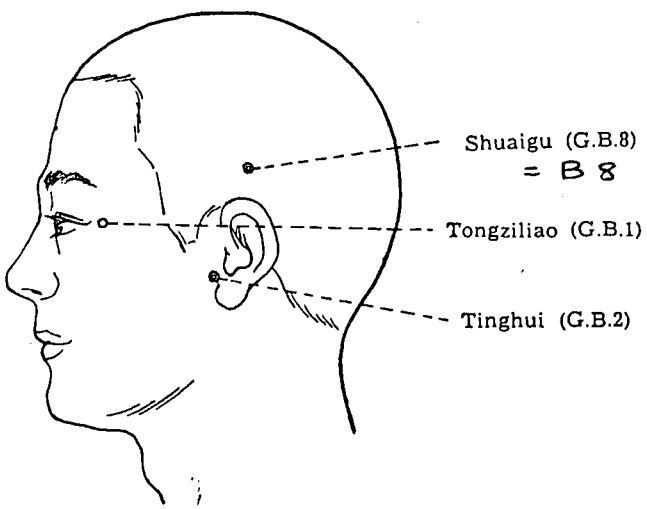


Figure 3.3.4: Illustration of the acupuncture point B8 (G.B.8) (Beijing College of Traditional Chinese Medicine 1980: 231).

The plum-blossom needle (Figure 3.3.5) was then used bilaterally, with a superficial tapping method, avoiding bleeding, on points on either side of the base of the thumb nail.

Moxibustion (heating with moxa) was applied bilaterally on the point H2 (Figure 3.3.2) and in the middle of the palmar crease of the big toe.

Moxa cigars are made of dry moxa, or mugwort leaves (**Artemisia vulgaris**), ground finely, with the coarse stems removed. Lighted moxa cigars were applied over the selected points from a distance so as to cause a mild warmth to the local area. The moxa cigar was moved up and down on the point three times, as illustrated in Figure 3.3.6.

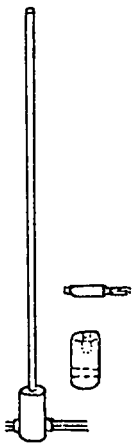


Figure 3.3.5: Illustration of the cutaneous plum-blossom needle (Beijing College of Traditional Chinese Medicine 1980:313).

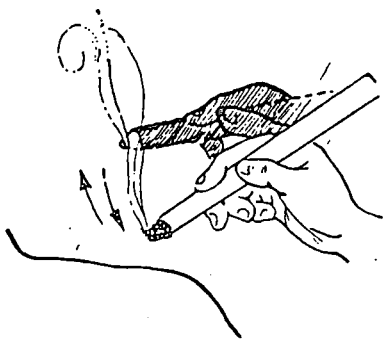


Figure 3.3.6: Illustration of moxibustion using the moxa cigar (Beijing College of Traditional Chinese Medicine 1980:316).

3.3.2 HOMOEOPATHIC TREATMENT

The remedies which were utilized in this study were a form of hetero-isotherapy. Participants in the homoeopathic treatment group were each given potentized medication prepared from the particular brand and strength of cigarette which they smoked.

The remedies were prepared by the researcher under the supervision of a pharmacist. The paper and filter were removed from the cigarette and the mother tincture prepared from the tobacco according to the preparation of **Nicotiana tabacum** in the German Homoeopathic Pharmacopoiea (British Homoeopathic Association 1993:693).

The shredded tobacco of the cigarette was weighed on an electronic scale and 10 parts by weight of 60% ethanol was added to the tobacco in a glass vial. This was labelled and stored for a minimum of one week, with regular succussion of the contents.

The filtrate was then used as the mother tincture of that particular brand and strength of cigarette, and potentized to 9CH. Successive potencies were achieved by adding one drop of the lower potency to 100 drops of 70% alcohol and succussing the remedy 100 times against the palm of the hand.

Lactose pillules were triple impregnated with the 9CH potency ready for dispensing. All remedies were prepared and stored in the Homoeopharmaceutics Laboratory at Technikon Natal.

Participants were instructed to take one dose (approximately 5 pillules) every morning and evening, or when they felt a craving for a cigarette. The pillules were not to be taken with food or drink, and were to be stored away from direct sunlight or intense heat. Camphor products (e.g. Vicks) were to be avoided during the period of treatment to prevent antidoting the remedies (Clarke 1925 3:1359).

Each participant was given one month's supply of their remedy at the start of treatment. Repeated one month supplies were given at the 4- and 8-week follow-up consultations. All remedies were dispensed in glass vials.

3.4 MEASUREMENTS

3.4.1 DAILY SMOKING LOG

(Appendix G)

Each participant was supplied with copies of the daily smoking log at the initial consultation (i.e. prior to smoking cessation). Further copies were given at the start of treatment and sufficient copies were given to each participant at follow-up consultations to cover the 3-month trial period.

The daily smoking logs were bound into packs of 7 (1 week's supply) and the participant's name and the sequential dates were filled in on each copy by the researcher.

The daily smoking log was used as the basis for monitoring the number of cigarettes smoked during the trial period for both the acupuncture and homoeopathic treatment groups. If the patient had stopped smoking from the start of treatment, the logs remained blank. If the subject continued to smoke, even at a reduced rate, each cigarette smoked was recorded on the log.

3.4.2 TOLERANCE DEPENDENCE QUESTIONNAIRE (THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE) (Appendix C)

There is a general correlation between the level of dependence as determined by the American Psychiatric Association criteria for nicotine dependence, scores on the Fagerstrom test, and the probable severity of withdrawal symptoms, degree of difficulty in achieving abstinence, and speed of relapse (Henningfield 1995).

The Tolerance Dependence Questionnaire is the Fagerstrom Test for Nicotine Dependence, formulated by Fagerstrom in 1978 and modified in 1991 (Tang et al. 1994). It consists of a series of questions with a maximum score of 10.

A high score indicates considerable pharmacological tolerance to and dependence on nicotine (Goldstein 1988). Scores of more than 6 are generally associated with more severe withdrawal symptoms and greater difficulty in quitting (Henningfield 1995).

3.4.3 QUESTIONNAIRE ON THE HEALTH HAZARDS OF SMOKING (Appendix B)

This questionnaire was developed by Keutzer in 1968 (cited by Goldstein 1988:2-1). It consists of two parts: Part A and Part B. In Part A, participants' estimate of the risk of reduced life expectancy from continuing smoking is assessed. A score of less than between 5 to 10 years is regarded as an under-estimate of the health risks of smoking.

Part B consists of 18 statements which are frequently given by people as a reason to continue smoking. If the participant agreed with or endorsed more than 2 items, they were again assessed, as it was argued that they did not realize the full impact of smoking on one's health. An underestimation of the health hazards of cigarette smoking may be linked to a lack of motivation to abstain from smoking (Goldstein 1988).

3.3.4 QUESTIONNAIRE ON TYPES OF SMOKING

(Appendix D)

The Questionnaire on Types of Smoking was devised by Horn and Waingrow in 1969 (cited by Goldstein 1988:11-8). It was intended to distinguish smokers according to their main reason for smoking.

Three Types of smoker are distinguished:

- those who obtain pleasurable relaxation or stimulation from cigarettes (positive-affect smoker),

- those for whom cigarettes relieve tension, anxiety, hostility, and depression (negative-affect smoker),

- those with a predominantly addictive mode of smoking, with a good deal of automatic smoking behaviour (habitual-addictive smoker).

The questionnaire consists of 23 questions with graded answers ranging from 'never', 'seldom', 'occasionally', 'frequently' to'always'. Various questions are allocated to the different types of smoker and the scores are totalled and then averaged. Three scores are obtained: the category with the highest average score is regarded as indicating the respondent's main reason for smoking.

Glassman et al. (1990) describe negative affect as being the most common reason for the prevention of smoking cessation, and the recurrence of smoking relapses after abstinence.

3.5 STATISTICS

The numerical data obtained from the various tasks and observation scales were statistically analyzed using the programme Statgraphics Plus Version 6, supplied by Manugistics Inc.. The hypotheses were tested using the analysis of variance technique and the least significance difference method of analysis (Bowerman and O'Connell 1990).

The Mann-Whitney U test was used to determine the statistical difference between the two groups, before treatment and after treatment. The Wilcoxon signed rank test was used to determine the effectiveness of each group by comparing values from before and after treatment.

The alpha value of significance was set at 0.05 (Daniel 1978). The null hypothesis was that there would be no difference between the two groups at the end of the study. If the statistical values were to be greater than 0.01, the null hypothesis would be rejected and the alternative hypothesis would be accepted (i.e., that a significant difference would exist between the two groups). The results were analyzed and inference was made as to their significance.

CHAPTER FOUR THE RESULTS

4.1 INTRODUCTION

All the primary data were obtained at the Homoeopathic Day Clinic, Technikon Natal, over a 9 month period. The data comprised the participants' daily smoking logs, and the questionnaires which were completed under the researcher's supervision.

4.2 DAILY SMOKING LOG

(APPENDIX G)

The format of the daily smoking log was adapted and abbreviated from Goldstein (1988:10-1 - 10-11).

The participants started completing the logs the day after the initial consultation. For the week before initiation of treatment, the participants ticked or made a cross next to the relevant number on the log each time they smoked a cigarette.

The number of cigarettes smoked each day over this period was totalled and the mean was calculated for the average daily cigarette consumption for each participant both in the acupuncture treatment group and the homoeopathic treatment group (Table 4.2.1; Figure 4.2).

Characteristics	Acupuncture (n=15)	Homoeopathy (n=15)
Percent male	73	40
Percent female	27	60
Mean age (years)	37.2 (10.8)*	42.4 (12.3)
Mean weight (kilograms) women (n=13) men (n=17)	 53.0 (5.9) 72.4 (4.8)	 65.0 (6.3) 76.5 (18.4)
Mean years smoking	18.6 (11.8)	23.9 (10.9)
Mean no. cigarettes smoked daily	17.9 (7.8)	18.0 (4.2)
Mean age of smoking commencement (years)	17.9 (3.8)	17.3 (2.9)
Mean nicotine content (mg)	1.12	1.14

* Standard deviation in parentheses.

Table 4.2.1: Subject characteristics on entry into the study.

The Mann-Whitney U test was used to test whether the median number of cigarettes smoked daily was the same for the two groups before treatment started. A two-sided alternative was used, i.e., that they smoked the same amount of cigarettes or that they did not. The null hypothesis was that the subjects in the two groups had the same daily cigarette consumption before treatment (Table 4.2.1.).

The calculated value for the exceedance probability (z) was 0.559869 which was > 0.05. The null hypothesis was therefore accepted at a 5% level of significance. The two groups therefore smoked the same amount of cigarettes before treatment.

All participants were supplied with daily smoking logs for the 3 months of the trial period. If they abstained from smoking after treatment, the logs remained blank.

On the last day of the study the mean daily cigarette consumption of the participants over the entire treatment period was calculated, for both the acupuncture treatment group and homoeopathic treatment group. The results of these calculations are presented in Figure 4.2 and Table 4.2.2.

	Acupuncture (n=15)	Homoeopathy (n=15)
Mean number of cigarettes smoked daily after 3-month trial period.	9.5 (9.6)*	7.2 (8.7)

* Standard deviations in parentheses

Table 4.2.2: Mean number of cigarettes smoked daily at the end of the 3-month trial period.

The Mann-Whitney U test was also used to test whether the median number of cigarettes smoked daily was the same for the two groups after treatment. A two-sided alternative was used, i.e., that they smoked the same amount of cigarettes or that

they did not. The null hypothesis was that the subjects in the two groups had the same daily cigarette consumption before treatment. (Table 4.2.2.)

The calculated value for the exceedance probability (z) was 0.685996 which was > 0.05. The null hypothesis was therefore accepted at a 5% level of significance. The two groups therefore smoked the same amount of cigarettes after treatment.

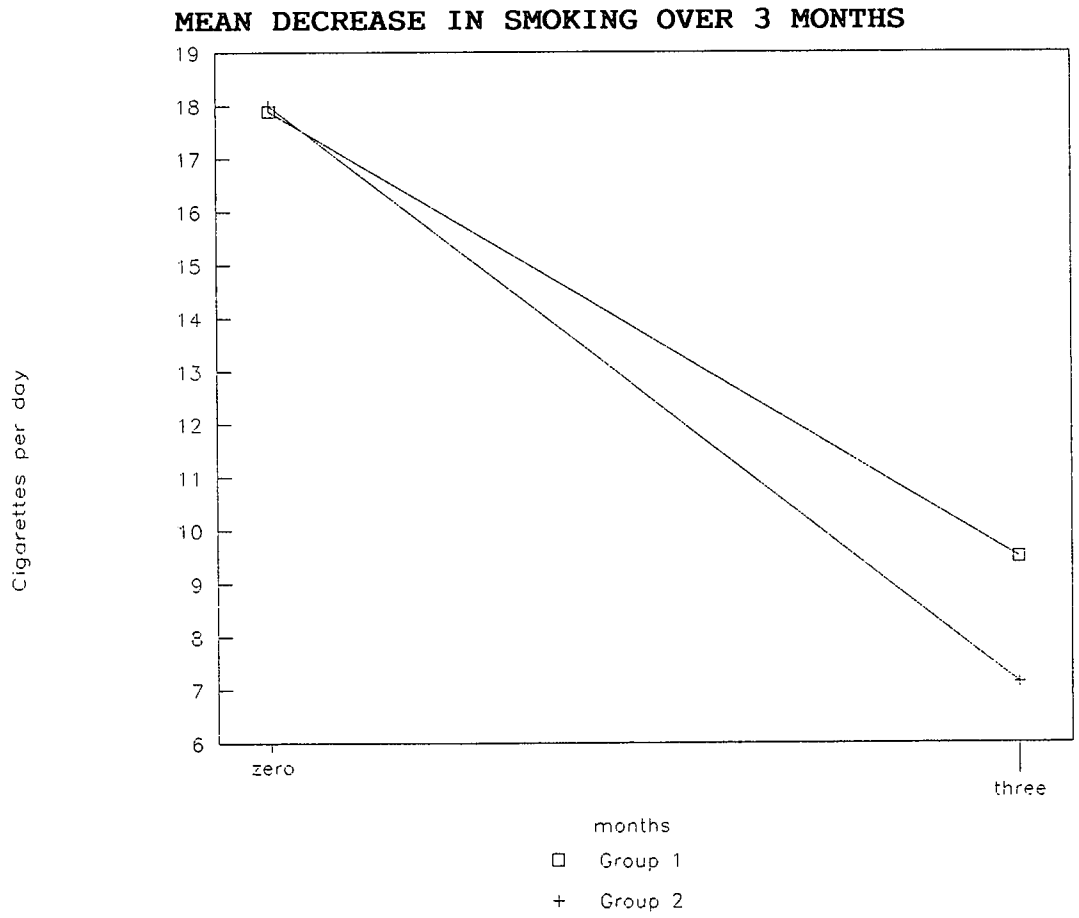


Figure 4.2 : Comparison of the daily cigarette consumption of the acupuncture treatment group (group 1) and homoeopathic treatment group (group 2) before and after treatment.

This figure compares the mean daily number of cigarettes smoked by the acupuncture and homoeopathic treatment groups before and after treatment, as recorded in the daily smoking logs over the 3-month trial period.

Eighteen participants received acupuncture treatment. Three subjects subsequently withdrew from the study, due to non-compliance. Of the remaining 15 participants, 5 quit smoking after treatment and remained abstinent for the entire 3-month trial period (33.3% quit rate at 3 months).

The other 10 participants continued to smoke at some stage during the 3-month study. Daily cigarette consumption was noted by these subjects in their daily smoking logs. Periods of smoking abstinence or reduction of daily cigarette consumption were therefore reflected in the logs.

The acupuncture treatment group consisted of 11 men and 4 women. Sixty-six percent of the group had parents who smoked (either the mother or father or both). Many subjects reported previous attempts to quit using nicotine gum (40%), transdermal patches (13%), or hypnosis (13%).

Several subjects were receiving medical treatment for hypertension, hypercholesterolaemia, coronary artery disease, recurrent ear infection or bronchitis. One reported a history of pulmonary embolism, while 3 subjects experienced recurrent influenza. One subject had hypotension.

The participants of the acupuncture group who achieved total abstention for the entire trial period had medical histories which included pulmonary embolism, recurrent ear infection and hypertension.

The Wilcoxon signed rank test was used to test the null hypothesis that there would be a decrease in the number of cigarettes smoked by participants in the acupuncture group after treatment. As half of the exceedance probability ($z=0.000805385$) was < 0.05, the treatment was effective with a significant difference between the number of cigarettes smoked before and after acupuncture treatment, at a 5% level of significance.

Nineteen participants received homoeopathic treatment. Four subjects subsequently withdrew from the study, due to non-compliance. Of the remaining 15 participants, 6 quit smoking after treatment and remained abstinent for the entire 3-month trial period (40% quit rate at 3 months).

The other 9 participants continued to smoke at some stage during the 3-month study. Daily cigarette consumption was noted by these subjects in their daily smoking logs. Periods of smoking abstinence or reduction of daily cigarette consumption were therefore reflected in the logs.

The homoeopathy treatment group consisted of 9 women and 6 men. Fifty-three percent reported parents who smoked (either

the mother or father or both). Of those subjects who reported previous attempts to quit, 26% had tried nicotine gum, 20% had used the transdermal patch and 7% had tried hypnosis.

Among the medical conditions experienced by at least one subject in the group were atopic dermatits, hyperthyroidism, thalassaemia, emphysema, chronic bronchitis, diabetes mellitus and hypotension. Two subjects suffered from both hypertension and hypercholesterolaemia. Two participants had previously experienced myocardial infarction, and one was receiving medication for breast cancer, following surgery. One participant was 7 weeks pregnant at the start of treatment.

The participants in the homoeopathic group who quit totally included those suffering from atopic dermatitis, hypertension and hypercholesterolemia, hypotension and duodenal ulcer: one was receiving treatment for breast cancer and one was pregnant.

The Wilcoxon signed rank test was used to test the null hypothesis that there would be a decrease in the number of cigarettes smoked by participants in the homoeopathic group after treatment. As half of the exceedance probability ($z=0.000893013$) was < 0.05, the treatment was effective with a significant difference between the number of cigarettes smoked before and after homoeopathic treatment, at a 5% level of significance.

4.3 TOLERANCE DEPENDENCE QUESTIONNAIRE

(APPENDIX C)

The subjects in both the acupuncture and homoeopathic treatment groups completed the Fagerstrom Test for Nicotine Dependence. The minimum score for this test is 1 and the maximum score is 10. A high score (> 6) shows considerable pharmacological dependence (Goldstein 1988).

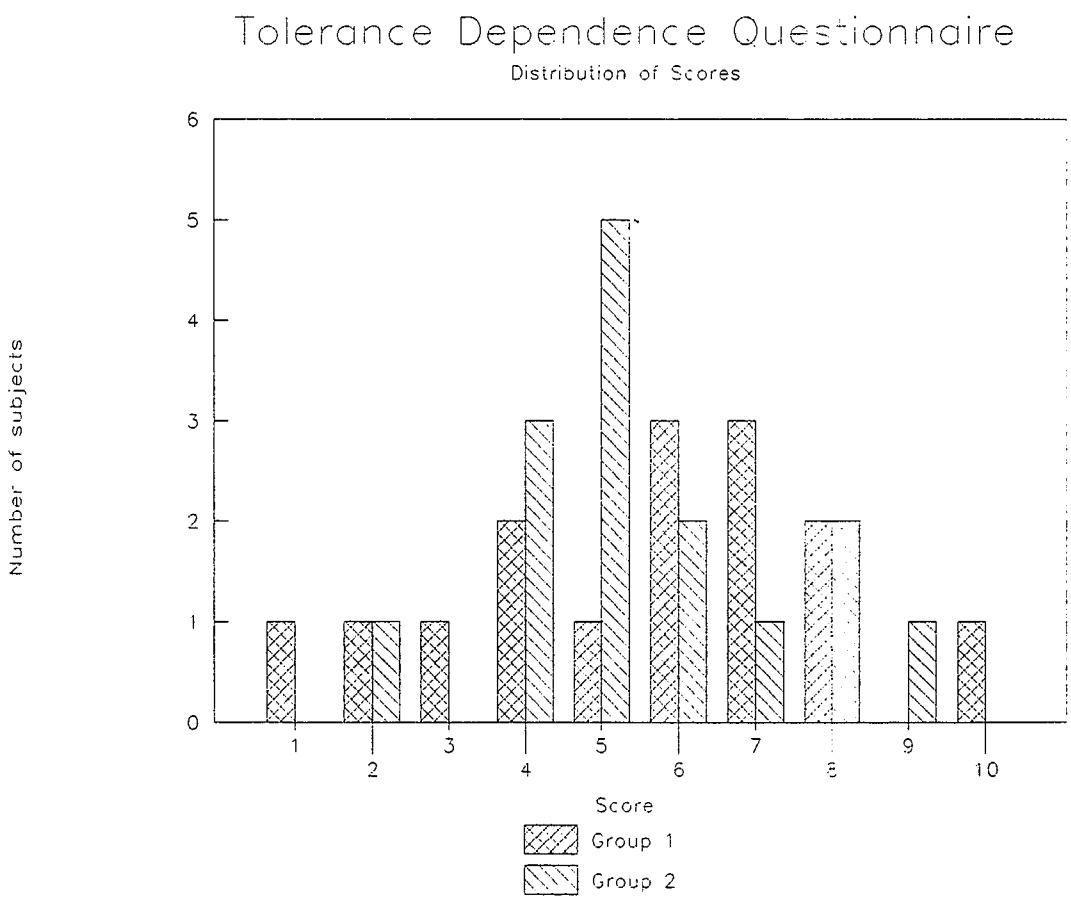
Figure 4.3 shows the distribution of scores obtained by the subjects in the acupuncture and homoeopathic treatment groups in the Tolerance Dependence Questionnaire, before treatment commenced.

A zero score for either group in a particular category is shown as a blank on the graph.

The graph shows that a greater number of participants from the acupuncture treatment group achieved a score of 6 or over, indicationg a greater dependence on and tolerance to nicotine.

TOLERANCE DEPENDANCE QUESTIONNAIRE

Figure 4.3: Comparison of scores obtained in the Tolerance Dependence Questionnaire by subjects in the acupuncture treatment group **(Group 1)** and the homoeopathic treatment group **(Group 2).**



4.4 QUESTIONNAIRE ON TYPES OF SMOKERS

(APPENDIX D)

Participants in both the acupuncture and homoeopathic treatment groups completed a questionnaire on types of smokers. Three types of smokers were distinguished by this questionnaire according to the main reasons for smoking:-

- habitual-addictive
- reduction of negative affect
- positive affect

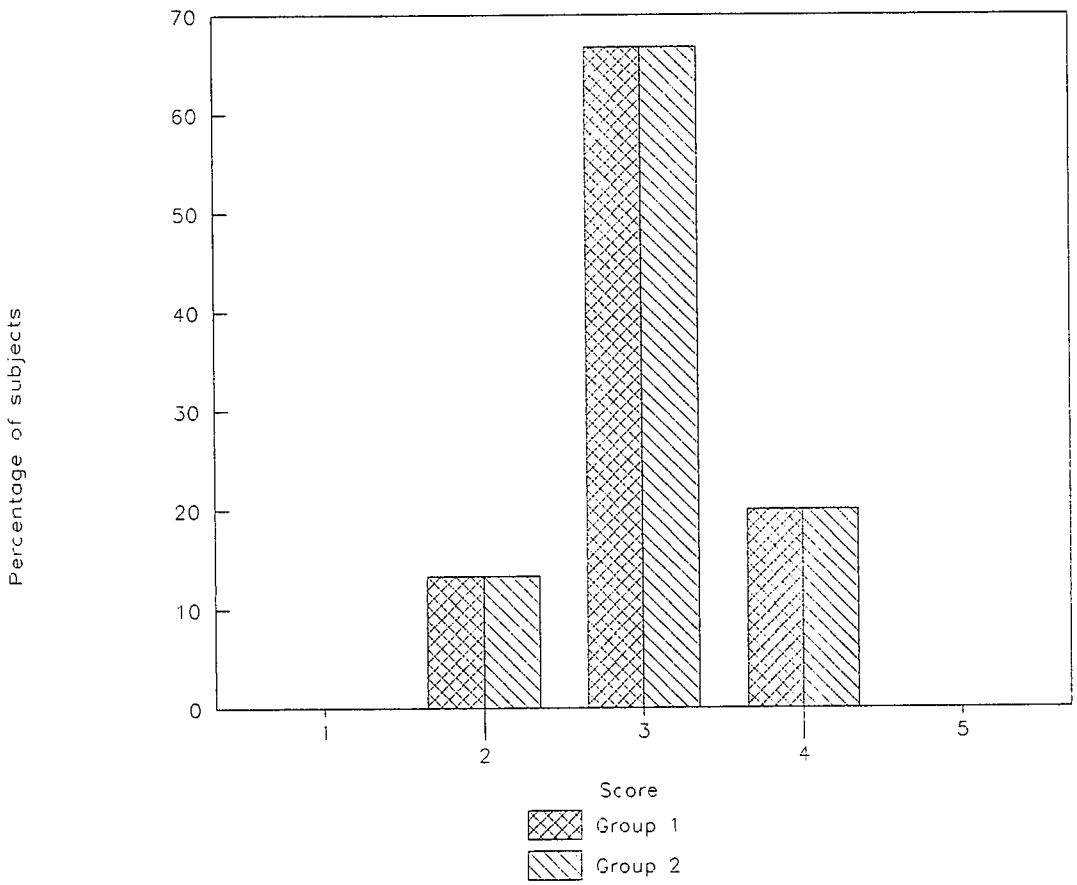
Each category had a possible maximum average score of 5 and a minimum average score of 1. A high score indicated a greater tendency to smoke for that particular reason (Figures 4.4.1, 4.4.2 and 4.4.3)

A zero score for either group in a particular category is shown as a blank on the graph.

QUESTIONNAIRE ON TYPES OF SMOKERS

Habitual-Addictive

Figure 4.4.1: Comparison of the scores obtained in the Habitual-Addictive category by the subjects in the acupuncture treatment group (Group 1) and the homoeopathic treatment group (Group 2).



SCORING: ALWAYS=5 FREQUENTLY=4 OCCASIONALLY=3

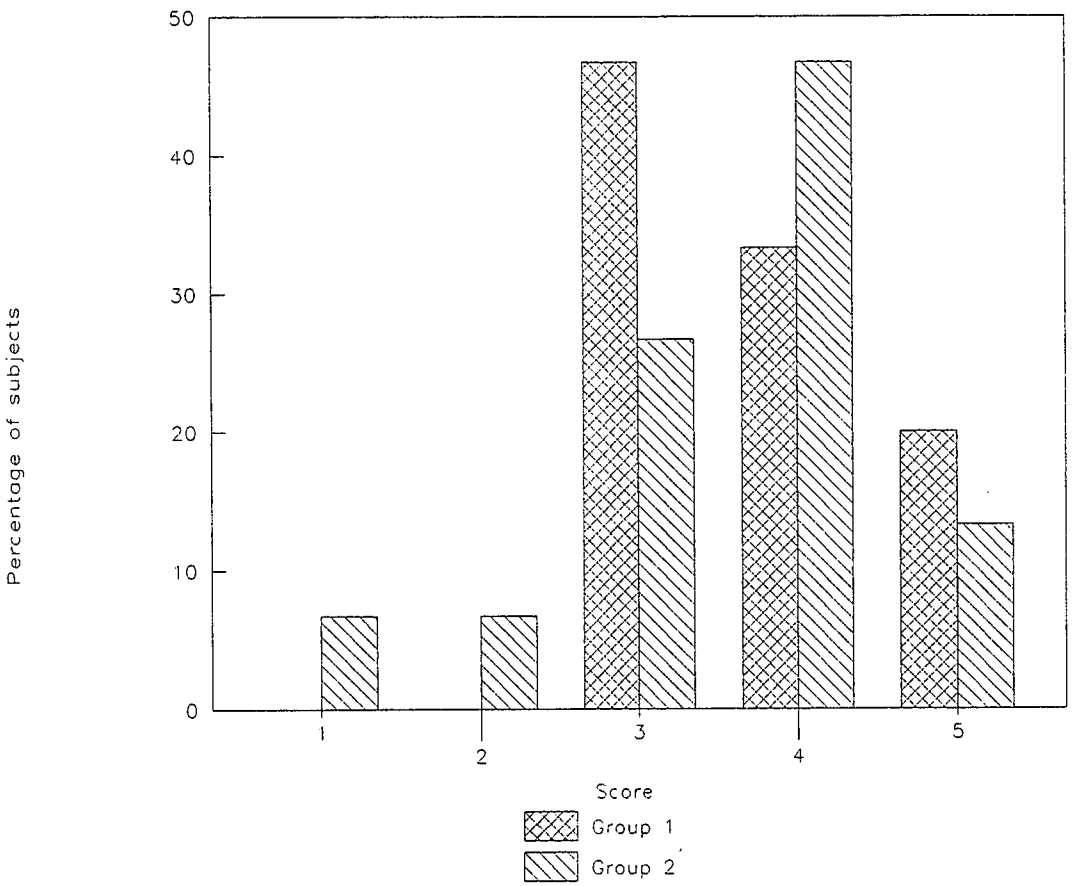
SELDOM=2 NEVER=1

The distribution of scoring between the two groups was identical, showing that there was an equal usage of cigarettes out of habit within the groups.

QUESTIONNAIRE ON TYPES OF SMOKERS

Reduction of Negative affect

Figure 4.4.2: Comparison of the scores obtained in the Reduction of Negative Affect category by the subjects of the acupuncture treatment group (Group 1) and the homoeopathic treatment group (Group 2).



SCORING: ALWAYS=5 FREQUENTLY=4 OCCASIONALLY=3

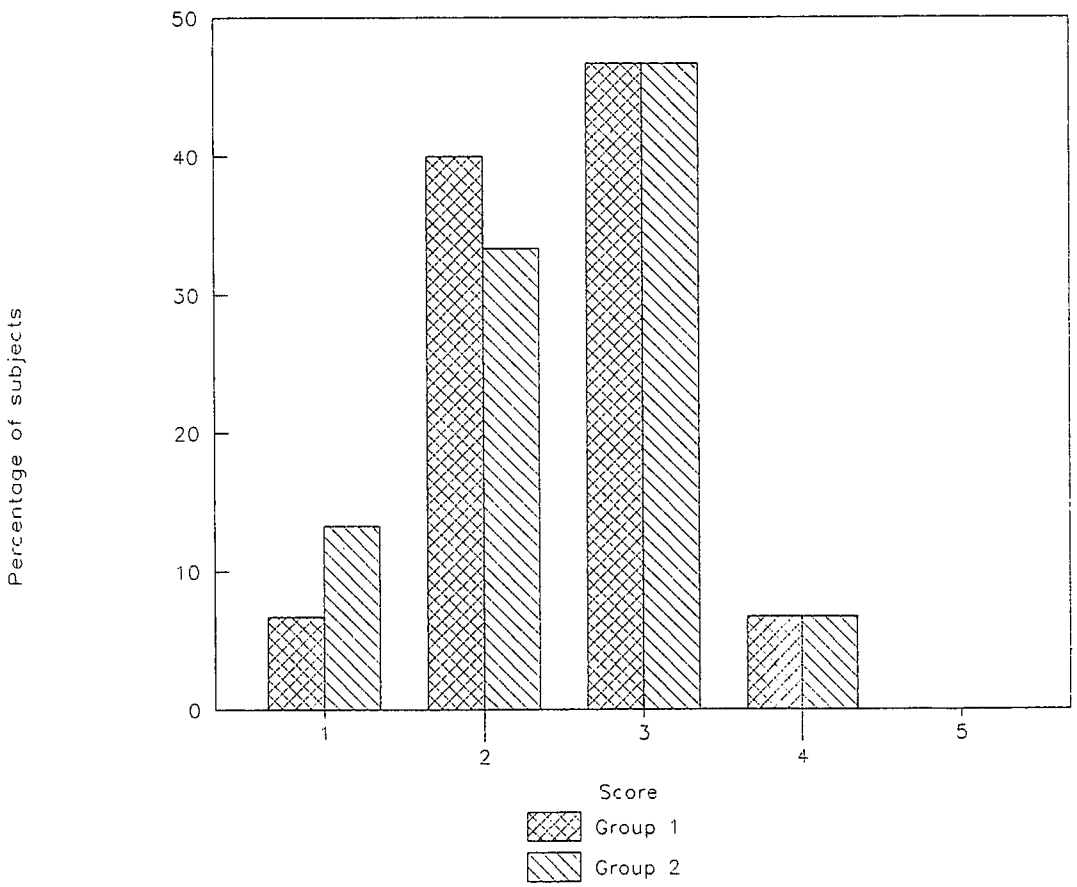
SELDOM=2 NEVER=1

The distribution of scoring between the two groups shows a greater tendency of the participants in the acupuncture treatment group to smoke in order to reduce negative affect.

QUESTIONNAIRE ON TYPES OF SMOKERS

Positive affect

Figure 4.4.3: Comparison of the scores obtained in the Positive Affect category by the subjects of the acupuncture treatment group (Group 1) and the homoeopathic treatment group (Group 2).



SCORING: ALWAYS=5 FREQUENTLY=4 OCCASIONALLY=3

SELDOM=2 NEVER=1

This graph shows that there is little difference between the scoring of the two groups in the desire to smoke for pleasure or positive affect.

4.5 QUESTIONNAIRE ON THE HEALTH HAZARDS OF SMOKING (APPENDIX B)

Participants in both the acupuncture treatment group and the homoeopathic treatment group completed a questionnaire on the health hazards of smoking.

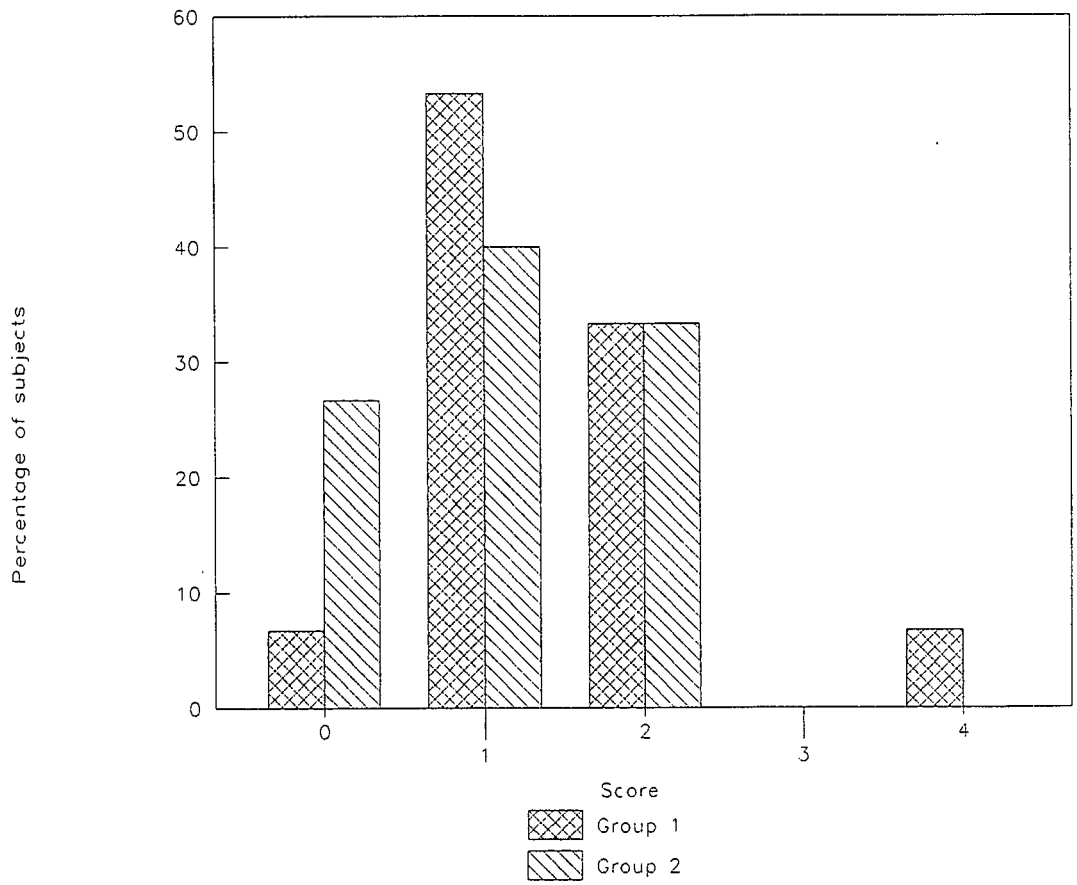
Part A of the questionnaire assessed the subjects' estimate of reduced life expectancy due to the health risks of smoking. They were asked to choose between 5 categories (0-4) with each point representing 5 years. They answered 2 questions on their estimated life-expectancy: one if they should continue to smoke and the other if they stopped smoking immediately.
A low score of less than 2 points, i.e., an estimate of less than 5 - 10 years, indicated an underestimation of the health risks of smoking.

The different scores obtained for Part A of the questionnaire by the subjects of the acupuncture and homoeopathic treatment groups are compared in Figure 4.5.1.

QUESTIONNAIRE ON THE HEALTH HAZARDS OF SMOKING

Part A

Figure 4.5.1: Comparison of the estimated decrease in life expectancy due to smoking as reported by the subjects of the acupuncture treatment group (Group 1) and the homoeopathic treatment group (Group 2).



SCORING: 0 = 0 years 1 = 5 years 2 = 10 years

3 = 15 years 4 = 20 years

The distribution of scores between the two groups revealed that the participants in the homoeopathic treatment group showed a greater tendency to underestimate the risk of reduced life-expectancy from smoking.

In Part B of the questionnaire, subjects responded to 18 statements which are frequently given as reasons why a person continues to smoke. The minimum total score was 0 and the maximum total score 18. A total score higher than 2 indicated an underestimation of the health risks of smoking.

SCORING: NO = 0 (if you disagree with the statement or feel that it does not apply to you.)

Yes = 1 (if you endorse or go along with the statement.)

The results of Part B of the questionnaire are shown in Figure 4.5.2. A high score (> 2) reflects an underestimation of the health risks of smoking.

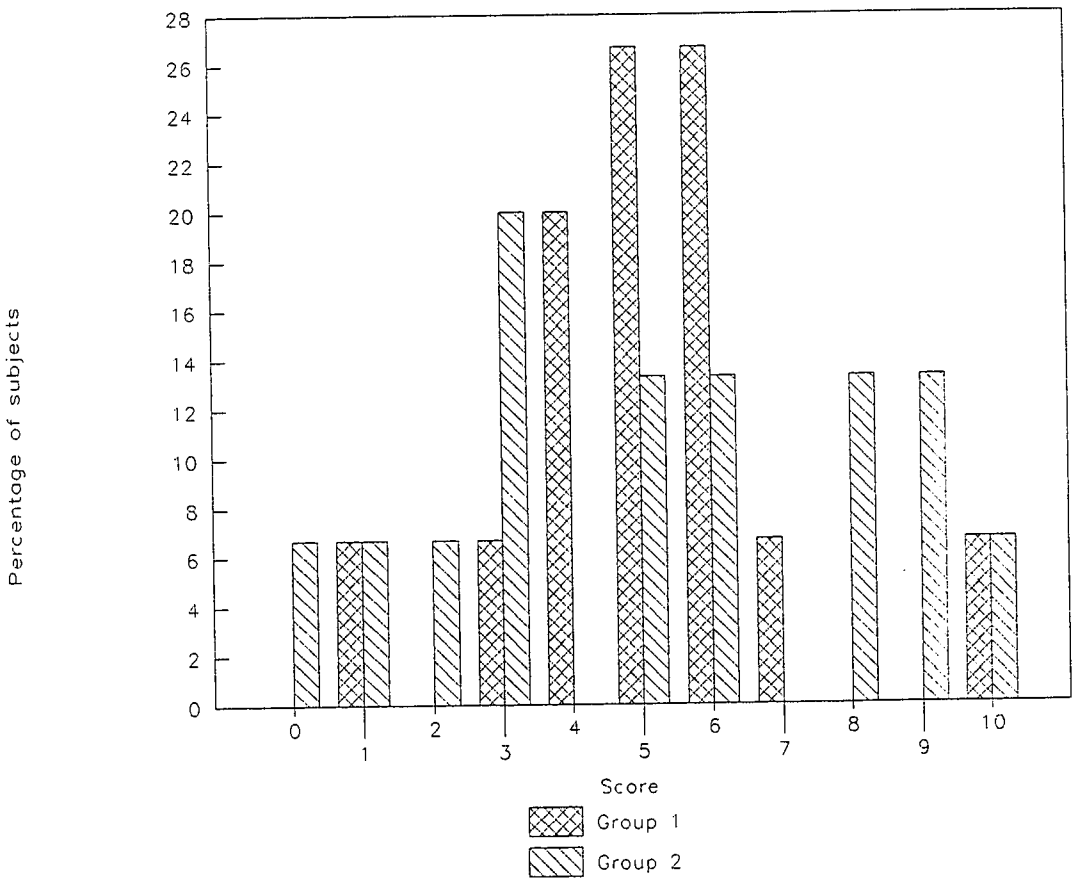
The distribution of scoring between the two groups shows that the participants in the homoeopathic treatment group manifested a greater underestimation of the health risks of smoking.

A zero score by either group in a particular category is shown as a blank on the graph.

QUESTIONNAIRE ON THE HEALTH HAZARDS OF SMOKING

Part B

Figure 4.5.2: Comparison of the estimation of health risks of smoking between the subjects of the acupuncture teatment group (Group 1) and the homoeopathic treatment group (Group 2).



CHAPTER FIVE DISCUSSION

The study was designed to evaluate and compare the efficacy of acupuncture treatment and homoeopathic treatment in helping people to stop smoking.

5.1 DAILY SMOKING LOGS

The daily smoking logs provided the principal data used to calculate the efficacy of each form of treatment and to provide a basis of comparison between the groups. The logs provided a self-reported quantification of the number of cigarettes smoked each day.

The results showed that there was no significant difference between the median daily consumption of cigarettes by the subjects in the acupuncture group and of that by the subjects in the homoeopathic group prior to treatment. This implied that any change subsequent to treatment could be statistically evaluated, and that an association would exist between the results and the particular methods of treatment.

5.1.1 ACUPUNCTURE GROUP

The results showed that there was a significant decrease in the number of cigarettes smoked by the subjects of the acupuncture group at the end of the 3-month trial period when compared to the cigarette consumption of the same group prior

to treatment. The acupuncture treatment was therefore effective in treating smoking cessation.

The overall quit rate at 3 months was 33.3% for the acupuncture group. The mean change of cigarette consumption before and after treatment is presented in Figure 4.2.

The acupuncture quit rate at 3 months (33.3%) was consistent with other studies of acupuncture treatment for smoking cessation as reviewed by Schwartz (1992).

Fuller (1982) reported a 41% success rate at 6 months after 3 sessions of auricular and electroacupuncture treatment and concluded that although 85% of his subjects reported an easing of withdrawal symptoms, relapse would still occur if motivation was weak.

Gillams et al. (1984) compared auricular acupuncture and group therapy as methods of smoking cessation. While there was a large drop-out rate from the group therapy, with only a 11% success rate at 3 months, acupuncture remained a popular choice with the participants. The results of the acupuncture treatment were an 18% quit rate after 3 months after piercing the lung point of the ear, and 30% when treating a 'sham' point on the ear.

These findings were consistent with those of other studies on 'sham' points (Margolin et al. 1995). In this regard, Fuller

(1982) suggests that acupuncture at any site causes endorphin release which in turn alleviates the symptoms of smoking withdrawal.

A French study (Labadie et al. 1983) compared the effectiveness of acupuncture treatment with conventional medical treatment (tranquilizers, lobeline substitute and Guronsan - a detoxicant). Seven acupuncture points were used, including E4 (L.I.4), H3 (Liv.3) and E20 (L.I.20) (which were also used in the researcher's study). Homoeopathic remedies and Nicogum were added to both forms of treatment. The quit rates after one year were 30.6% for the medically treated group and 31.5% for the acupuncture group.

The difficulties in researching Traditional Chinese acupuncture have been dealt with extensively by Staebler et al. (1994). They include the problem of treating a single complaint with a form of medicine which is based on the whole person approach and the difficulty of using a control group for acupuncture treatment.

5.1.2 HOMOEOPATHY

The results showed that there was a significant decrease in the number of cigarettes smoked by the subjects of the homoeopathy group at the end of the 3-month trial period when compared to the cigarette consumption of the same group prior

to treatment. The homoeopathic treatment was therefore effective in treating smoking cessation.

The overall quit rate at 3 months was 40% for the homoeopathy group. The mean change of cigarette consumption before and after treatment is presented in Figure 4.2.

No studies were traced which reported the exclusive use of homoeopathic treatment in smoking cessation. The French study by Labadie et al. (1983) included the use of homoeopathic remedies as adjunctive therapy to acupuncture and orthodox medicine. **Tabacum 5CH** was given to all participants in the study to take whenever they had the desire to smoke and **Nux Vomica 12CH** was prescribed to alleviate nervousness and anxiety during withdrawal. The excellent overall results (31.1% quit rate at one year) could in part reflect the effectiveness of the homoeopathic remedies.

The 33% cessation rate of the acupuncture treatment group over a 3 month period during the present study was achieved with a single session of acupuncture at the beginning of the period.

In practice, the acupuncture treatment may be repeated after 3 weeks (Lavier 1975) should the subject not have achieved complete cessation of smoking at this time, or if the subject is still experiencing distressing withdrawal symptoms.

The restriction of the acupuncture treatment to one initial session was a requirement for research purposes of the current study, and a satisfactory cessation rate was still attained.

The homoeopathic treatment was limited to one isotherapeutic remedy (in 9CH potency) per subject for the duration of the 3 month trial period, and a cessation rate of 40% was attained within this group. These results are satisfactory, as they were achieved within the restricted conditions of the study. In practice a variety of remedies, in differing potencies, could be prescribed according to the individuality of the patient and the progression of their symptoms of withdrawal.

Both the homoeopathic treatment and the acupuncture treatment were shown to independently result in a significantly reduced daily cigarette consumption among the subjects over a three month trial period. The combination of the 2 forms of treatment in practice could lead to a reinforcement of the effects of each form of treatment, thereby possibly resulting in an even more effective method of assisting with smoking cessation.

5.1.3 Factors affecting cessation - Comparison between the Acupuncture treatment group and the Homoeopathic treatment group.

Although there was no significant difference between the cigarette consumption of the subjects of the two groups before treatment, several other factors may have influenced smoking cessation.

5.1.3.1 AGE

There are conflicting reports regarding the effect of age on motivation to quit smoking. Orleans et al. (1994) stated that older smokers (50-74 years) were far less likely to accept smoking health hazards and more likely to view smoking as a beneficial coping and weight control tactic. Yet Cummings (1994) reported that cessation rates were higher and the percentage of non-smokers greater among persons older than 55 years of age. Cummings also suggested that older persons understood the health consequences of tobacco use best of all, as although most had started smoking as teenagers, life-threatening health consequences were not evident until the 5th or 6th decade of life.

The Report of the US Surgeon General (1994) cited difficulties with the recruitment and retention of adolescents in formal cessation programmes. Rimer and Orleans (1994) found in their study that older smokers (65 years and over) were interested in quitting and would respond to a programme especially tailored to their needs.

Gritz (1994) suggested that smokers making use of assisted methods of cessation would most likely be female, white, older, more educated, have made more than 3 previous quit attempts and would smoke more than 25 cigarettes a day.

Table 4.2 shows that the homoeopathic treatment group had a higher mean age when compared to the acupuncture treatment group. Each group had, inter alia, 3 participants each of 25 years or younger, of which one in each group managed to quit for the entire 3-month trial.

5.1.3.2 GENDER

Gritz (1994) reported that the quit ratio in the US was higher among men (51.6%) than among women (44.7%). Table 4.2 shows that more women (60%) than men (40%) participated in the homoeopathic treatment group which could have reduced the quit rate. However, the overall quit rate in the present study was 53% for the women and 23% for the men.

5.1.3.3 HEALTH STATUS

Studies have shown that the fear of imminent death due to serious disease appears to be a strong motivator for smoking cessation. Patients with recent myocardial infarction achieved success rates of 60% with assistance in stopping smoking. (Manley et al. 1992.). The results of the present study showed a quit rate which was higher among those with

less serious illnesses, such as atopic dermatitis, recurrent ear infections or peptic ulcer, rather than recent myocardial infarction or emphysema.

5.1.3.4 PREGNANCY

A previous trial on smoking cessation among pregnant women found that despite extensive education on the health risks of smoking on the foetus, only 57% of the respondents managed to reduce their smoking, while 40% tried to decrease but failed. Condon and Hilton (1988) argued that the psychological and physiological dependence on nicotine was stronger than the emotional attachment to the foetus.

However, the one participant of the present study who was pregnant during the period of the trial, achieved total abstention with the homoeopathic treatment.

5.1.3.5 EVALUATION OF HEALTH RISKS

The intention to quit smoking is strongly linked to beliefs in the health risks of smoking and in the health benefits of stopping smoking (Orleans et al. 1994). Despite a higher median age, the homoeopathic group showed a greater appreciation of the reduced life-expectancy associated with continued smoking (Figure 4.5.1).

Figure 4.5.2 does however show a greater underestimation of the health risks of smoking in a larger percentage of the homoeopathic treatment group, when compared with the acupuncture group.

5.1.3.6 NICOTINE DEPENDENCE

The Fagerstrom Test for Nicotine Dependence (Tolerance Dependence Questionnaire) is regarded by many reseachers as having the greatest correlation with smoking cessation results (Sutherland et al. 1992; Russell et al. 1993; Henningfield 1995). A high level of dependence is associated with more severe withdrawal symptoms, greater difficulty in achieving abstinence and a quicker rate of relapse.

Figure 4.3 shows that the homoeopathic treatment group had a higher concentration of scores in the mid-range of the tolerance dependence questionnaire, while the scores for the acupuncture group ranged from the maximum to the minimum scores.

5.1.3.7 SMOKING OUT OF HABIT OR FOR POSITIVE AFFECT

The Questionnaire on Types of Smokers showed an interesting correlation between the two groups. As shown in Figure 4.4.1, the spread of subjects smoking out of habit was identical for both the acupuncture and homoeopathic treatment groups. A slight variation between the two groups is illustrated in

Figure 4.4.3 which shows the number of subjects smoking for positive affect.

5.1.3.8 SMOKING FOR REDUCTION OF NEGATIVE AFFECT

The greatest variation between the acupuncture and homoeopathic treatment groups was the number of subjects smoking for reduction of negative affect (Figure 4.4.2). Eighty percent of the homoeopathic group reported that they smoked to reduce anxiety and stress, either occasionally, frequently or always, compared to 100% of the acupuncture group. Smoking to reduce negative affect is one of the most common causes of lack of abstinence or frequency of relapse (Glassman et al. 1990).

5.1.3.9 AGE OF COMMENCEMENT OF SMOKING

The homoeopathic and acupuncture groups showed a similar mean age at commencement of smoking (17.9 years and 17.3 years respectively), but the homoeopathic group smoked for a greater mean number of years, as could be anticipated due to their greater mean age.

The factors affecting cessation varied between the two groups. However, as both groups exhibited positive and negative factors which influenced cessation, it would be difficult to associate the results of quit rates directly with any of the factors.

5.2 SUGGESTIONS FOR FUTURE TRIALS

Future trials could be designed to include homoeopathic remedies which are commonly used to treat psycho-affective disorders and other addictions. These may be used in conjunction with isotherapy or be compared with placebo in double blind trials.

Di Nepi (1990) mentions that isotherapy is often used as a complement to other homoeopathic or conventional treatments, especially in chronic conditions, to achieve a better and deeper action. By adding deeper acting homoeopathic remedies one may take into account the whole range of subjective elements such as fears, depressions and anxieties which play a key role in the successful outcome of smoking cessation treatment (Lederman 1985).

The length of the study could be increased to include a 1 or 2 year follow-up, for greater accuracy and reliabity of smoking quit rates. Only complete cessation need be monitored at 3, 6 and 12 month periods.

Self-reported smoking cessation should be validated at the end of the trial period by a biological marker. The marker most commonly used is the carbon monoxide (CO) monitor. Although expensive, it accurately measures the CO in exhaled air. A non-smoker has CO levels up to 3 ppm (parts per million) while the CO levels of smokers range between 10 and 30 ppm, even if

the last cigarette was smoked several hours before monitoring. (Gordon 1995.)

CHAPTER SIX CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

Both the acupuncture treatment and homoeopathic treatment were found to be effective in helping people to stop smoking. The overall quit rate for the homoepathic treatment group was 40% at 3 months, while the quit rate for the acupuncture group was 33% over the same period.

There was no significant difference between the groups before treatment, based on the mean daily cigarette consumption. There were also no large variations in scores on the Fagerstrom Tolerance Test between the groups before treatment.

Other factors affecting cessation such as age, sex, illness, estimation of health risks of smoking and variability of types of smokers, showed a variety of positive and negative factors between the groups. No one factor showed sufficient variation between the groups to affect the outcome of the treatment.

Both the acupuncture treatment group and the homoeopathic treatment group showed a significant difference in the number of cigarettes smoked daily after treatment. The substantial decrease exhibited by both groups was further illustrated by a cessation rate in the homoeopathic group of 40% and a cessation rate in the acupuncture group of 33%. Although this

illustrates a 7% difference between the outcome of the two groups, this did not constitute a significant difference.

Both forms of treatment may therefore be considered to be effective methods of assisting smoking cessation.

6.2 RECOMMENDATIONS

As the isotherapeutic form of homoeopathy has been shown to be effective in the treatment of smoking cessation, future studies could incorporate the use of homoeopathic remedies which are commonly used to treat psycho-affective or addictive disorders, to provide a deeper and more complete action. Remedies with known effects on subjective elements such as fears, anxiety and depression could be tested in future studies on smoking cessation, and compared with placebo treatment.

Such studies could also include the use of biological markers to validate self-reported smoking cessation. Longer periods of abstinence could be monitored (1 to 2 years) with smoking cessation only at the end of the trial period being considered as the criterion for efficacy of treatment.

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APPENDIX A

PARTICIPANT INFORMED CONSENT DOCUMENT

I have volunteered to participate in a study to evaluate and compare the efficacy of Acupuncture treatment and Homoeopathic treatment in the cessation of smoking. The research will be of three months duration and is to be conducted free of charge at the Homoeopathic Day Cinic (Technikon Natal).

I understand that I am required to complete questionnaires at each consultation and that the information in the questionnaires will be regarded as strictly confidential and will be used for research purposes only.

I understand that I may withdraw from the study at any time by informing Alexandra de la Rouviere in writing of my desire to do so.

I agree to participate in this study.

....

Name of participant (please print) Witness

....

Signature Date

APPENDIX B

QUESTIONNAIRE ON THE HEALTH HAZARDS OF SMOKING

DIRECTIONS: WRITE DOWN THE NUMBER ALLOCATED TO THE AGE GROUP THAT SEEMS MOST APPROPRITE TO EACH QUESTION.

PART A

SCORE

1. If you <u>stopped</u> smoking right away, at what age (barring unforseen accidents) might you honestly predict you would die?

1	2	3	4	5
< 59	60-64	65-69	70-74	75+years

.....

2. If you <u>continued</u> to smoke (and barring unforseen accidents), at what age might you honestly predict you would die?

1	2	3	4	5
< 59	60-64	65-69	70-74	75+years

.....

TOTAL SCORE: .....

PART B

DIRECTIONS; Below are some statements which are frequently given as reasons why a person continues to smoke. Please write down the number allocated to your response to each statement:

YES = 1, if you endorse or go along with the statement;

NO = 2, if you disagree with the statement or feel that it does not apply to you.

1. The relationship between smoking and cancer has not really been proven.

SCORE

1	0
Yes	No

.....

2. Smoking probably won't shorten my life by more than five years, and it's better to enjoy life than to live five years longer and be unhappy.

1	0
Yes	No

.....

3. I've been smoking so long that the damage, if any, has already been done.

1	0
Yes	No

.....

4. I'm truly addicted and therefore unable to stop.

1	0
Yes	No

.....

SCORE

5. We don't stop the use of alcohol or motor vehicles, yet they are more dangerous than cigarettes.

1	0
Yes	No

.....

6.I have to smoke to relieve my nerves.

1	0
Yes	No

.....

7.I smoke filter tips; the harmful material has been largely removed.

1	0
Yes	No

.....

8. When I stop smoking I gain weight and that is just as bad.

1	0
Yes	No

.....

9. Anything, including cigarettes, is good in moderation and bad in excess.

1	0
Yes	No

.....

SCORE

10. I personally know of a very old person who has smoked most of his life yet who continues to be in fine health.

1	0
Yes	No

.....

11. Cancer comes with age and heredity. There is no cancer in my family so therefore I need not worry about it much.

1	0
Yes	No

.....

12. Hydrogen bombs, highway accidents, murders, alcoholism, suicide-there is no safety anywhere, so why worry?

1	0
Yes	No

.....

13. The pleasure I get which is certain, outweighs the health hazard which is uncertain.

1	0
Yes	No

.....

14. The emotional effects of my going without cigarettes are more detrimental to me than is smoking.

1	0
Yes	No

.....

SCORE

15. Scientific research will develop a "safe" cigarette before too long, and the effects of my smoking between now and then are probably insignificant.

1	0
Yes	No

.....

16. Under present conditions, who wants to live long?

1	0
Yes	No

.....

17. God wouldn't have put the tobacco plant on earth if He didn't have some nonharmful purpose in mind.

1	0
Yes	No

.....

18. So smoking proves I'm weak-willed. Everybody's entitled to one weakness.

1	0
Yes	No

.....

TOTAL SCORE:	

APPENDIX C

QUESTIONNAIRE ON TOLERANCE DEPENDENCE

DIRECTIONS: WRITE DOWN THE NUMBER ALLOCATED TO THE ANSWER THAT YOU FIND MOST APPROPRIATE FOR EACH QUESTION.

1. How soon after you wake up do you smoke your first cigarette?

	Score
Within 5 minutes	3
6 - 30 minutes	2
31 - 60 minutes	1

.....

2. Do you find it difficult to refrain from smoking in places where it is forbidden (eg in church, cinema, library etc.)?

1	0
Yes	No

.....

3. Which cigarette of the day would you most hate to give up?

	Score
First cigarette of the morning	1
Any other	0

.....

4. How many cigarettes a day do you smoke?

	Score
31 or more	3
21 - 30	2
11 - 20	1
10 or less	0

.....

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?

1	0
Yes	No

.....

6. Do you smoke if you are so ill that you are in bed most of the day?

1	0
Yes	No

.....

TOTAL SCORE:	

APPENDIX D

QUESTIONNAIRE ON TYPES OF SMOKING

DIRECTIONS: WRITE DOWN THE NUMBER ALLOCATED TO THE ANSWER YOU FIND MOST APPROPRIATE TO THE QUESTION. THE SCORING IS AS FOLLOWS:

ALWAYS=5 FREQUENTLY=4 OCCASIONALLY=3 SELDOM=2 NEVER=1

1. I smoke cigarettes to stimulate me, to perk me up.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

2. I've found a cigarette in my mouth and didn't remember putting it there.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

3. When I am trying to solve a problem, I light up a cigarette.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

4. When I smoke a cigarette, part of the enjoyment is watching the smoke as I inhale it.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

5. I am very much aware of the fact when I am not smoking a cigarette.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

6. Part of the enjoyment of smoking a cigarette comes from the steps I take to light up.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

7. When I feel "blue" or want to take my mind off cares and worries, I smoke cigarettes.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

8. I smoke cigarettes automatically without even being aware of it.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

9. I smoke cigarettes in order to keep myself from slowing down.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

10. I get a real gnawing hunger for a cigarette when I haven't smoked for a while.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

11. When I feel uncomfortable or upset about something, I light up a cigarette.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

12. Handling a cigarette is part of the enjoyment of smoking it.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score .....

13. Between cigarettes, I get a craving that only a cigarette can satisfy.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

14. I light up a cigarette when I feel angry about something.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

15. I light up a cigarette without realizing I still have one burning in the ashtray.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

16. I find cigarettes pleasurable.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

17. When I feel ashamed or embarassed about something, I light up a cigarette.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

18. When I have run out of cigarettes I find it almost unbearable until I can get them.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

19. Few things help better than cigarettes when I'm feeling upset.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

20. I smoke cigarettes just from habit, without really even wanting the one I'm smoking.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

21. Smoking cigarettes is pleasant and relaxing.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

22. I do not feel contented for long unless I am smoking a cigarette.

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

23. I smoke cigarettes to give me a "lift".

5	4	3	2	1
ALWAYS	FREQUENTLY	OCCASIONALLY	SELDOM	NEVER

Score ....

TOTAL SCORE:	

METHOD OF SCORING

Add scores for items and divide as indicated for AVERAGE SCORE:

	HABITUAL-ADDICTIVE	REDUCTION of NEGATIVE AFFECT	POSITIVE AFFECT
	2. _____	3. _____	1. _____
	5. _____	7. _____	4. _____
	8. _____	11. _____	6. _____
	10. _____	14. _____	9. _____
	13. _____	17. _____	12. _____
	15. _____	19. _____	16. _____
	18. _____		21. _____
	20. _____		23. _____
	22. _____		
TOTAL	÷9	÷6	÷8
AVERAGE SCORE	=	=	=

Questionnaire on Types of Smoking.

SMOKING HISTORY

APPENDIX E

DATE: _____ M/F

NAME: _____

ADDRESS: _____

_____

_____

PHONE NO: _____

AGE: _____

OCCUPATION: _____

ALLERGIES: _____

MARRIED: _____

CHILDREN: _____

MEDICAL HISTORY

PAST SURGICAL HISTORY: _____

_____

_____

_____

_____

PAST MEDICAL HISTORY: _____

_____

_____

_____

FAMILY HISTORY: _____

_____

_____

MEDICATION: _____

_____

_____

SPORTING ACTIVITIES:_____

_____

ROH:_____

SMOKING HISTORY

NUMBER OF YEARS:_____

AGE OF COMMENCEMENT:_____

PRESENT BRAND OF CIGARETTES:_____

_____

NUMBER OF CIGARETTES SMOKED PER DAY:_____

NICOTINE CONTENT:_____

CONDENSATE:_____

HOW MANY TIMES HAVE YOU TRIED TO GIVE UP SMOKING?

_____

WHAT MADE YOU START AGAIN?_____

_____

MEMBERS OF YOUR FAMILY WHO SMOKE:_____

_____

DO MOST OF YOUR FRIENDS SMOKE?_____

DO YOU SMOKE MORE AT WORK OR IN SOCIAL SITUATIONS?

_____

WHY DO YOU WANT TO GIVE UP SMOKING?_____

_____

_____

VITALS:

BP:_____mmHg

RR:_____breaths/min

PR:_____beats/min

TEMP:_____$^{\circ}$C

HEIGHT:_____m

WEIGHT:_____kg

COPING WITH WITHDRAWAL

You may notice a few physical and mood changes after you stop. These will last a few days after quitting and are perfectly normal.

SYMPTOM	REASON FOR SYMPTOM	COPING ACTIVITY
Craving	Your body is used to getting regular 'fixes' of nicotine	The strong urge to smoke usually lasts 2 - 5 minutes before fading away. Do something to occupy yourself until the feeling passes - drink water, deep breathe, etc.
Light Headedness & Loss of Concentration	Probably caused by lack of nicotine	Take things more slowly. Don't push yourself too hard for the next few days. Get regular exercise. Work for short periods and then take a break. Make sure you eat properly.
Coughing	Your lungs are clearing out the tars and excess mucous	Sip warm water. The coughing will soon clear up by itself.
Tension, irritability	Low blood nicotine levels	Take a walk, soak in a hot bath, try relaxation techniques. Talk to someone about your feelings.
Depression	Feeling helpless, incompetent and worthless due to emotional confusion	Modest exercise (a five or ten minute brisk walk) can help lift your mood. And your problems can be solved. Just tackle them one by one - or bit by bit.
Hunger	Your body's metabolism is returning to normal	Eat pop-corn, carrots, prunes and other low calorie snacks. Try to eat 6 small meals a day. Drink lots of water!
Trouble sleeping		Soak in the bath and have a glass of hot milk before going to bed. If unable to sleep, get up and read - or listen to the radio. Exercise before going to bed can also help.

Other common symptoms: Dry mouth, sore throat, headaches, digestive problems, fatigue, bouts of tearfulness and mouth ulcers. ➢

APPENDIX G

DAILY SMOKING LOG: Day of the Week.....Date.....

No.		No.	
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Acupuncture - raw data

Patient	1	2	3	4	5	6	7	8	9	10	11	12
A1	5	4	5	5	5	5	5	4	5	2	3	4
A2	4	4	4	4	3	3	1	3	4	1	1	3
A2-A1	1	0	1	1	2	2	4	2	1	1	2	1
B1	0	0	0	1	0	0	1	0	0	0	0	1
B2	1	0	0	1	0	0	0	0	1	1	0	0
B3	0	1	1	1	0	0	0	0	0	0	1	0
B4	0	0	1	0	0	1	0	0	0	0	0	1
B5	0	1	0	1	1	0	0	0	0	1	1	0
B6	1	0	1	0	1	0	0	1	1	0	1	1
B7	0	0	1	0	1	0	0	0	0	0	0	0
B8	0	0	1	1	0	0	0	0	0	0	1	0
B9	1	1	0	0	0	0	1	1	1	0	1	0
B10	0	1	1	0	1	0	0	1	0	1	0	1
B11	0	0	0	0	0	0	1	0	0	0	0	0
B12	0	0	0	0	0	0	0	0	0	1	0	0
B13	1	0	0	0	0	0	0	0	0	0	0	0
B14	0	0	0	1	1	0	1	0	1	1	0	1
B15	0	0	0	0	0	0	0	0	0	0	0	0
B16	1	0	0	0	0	0	0	0	0	0	0	0
B17	0	0	0	0	0	0	0	0	0	0	0	0
B18	0	0	0	0	1	0	1	0	1	0	1	1
B TOTAL	05	04	06	06	07	01	05	03	05	05	06	06
C1	2	1	3	3	0	3	2	3	2	2	2	2
C2	0	0	1	0	0	0	0	0	0	1	0	1
C3	0	1	1	0	0	1	0	1	0	1	1	0

Acupuncture

Patient	1	2	3	4	5	6	7	8	9	10	11	12
C4	1	1	3	3	1	1	2	1	2	1	1	3
C5	0	1	1	1	0	1	0	1	0	0	1	0
C6	0	0	1	1	0	1	0	0	1	1	1	1
TOTAL C	03	04	10	08	01	07	04	06	05	06	06	07
D2	1	3	3	3	1	1	1	1	1	1	2	2
D5	3	3	3	3	1	5	5	3	3	3	2	1
D8	2	2	4	4	2	1	1	1	2	3	2	3
D10	3	4	5	4	3	4	3	4	4	4	3	5
D13	3	3	5	5	1	4	3	3	3	4	2	4
D15	1	1	3	3	2	1	1	1	1	2	1	1
D18	4	3	5	4	2	5	5	4	4	4	3	5
D20	3	3	4	5	4	4	4	4	2	5	4	4
D22	3	3	5	5	3	3	3	3	3	4	3	4
HABITUAL-x	3	3	4	4	2	3	3	3	3	3	2	3
D3	5	3	5	4	3	3	3	3	4	4	4	5
D7	4	3	5	4	3	4	3	3	2	2	4	4
D11	4	3	5	4	4	3	5	4	4	4	4	5
D14	4	4	5	4	2	5	3	4	4	3	2	5
D17	4	2	5	2	4	2	3	1	3	3	3	4
D19	4	3	5	4	2	3	3	4	4	3	4	5
NEGATIVE-x	4	3	5	4	3	3	3	3	4	3	4	5
D1	4	2	1	2	3	1	3	1	3	2	4	4
D4	1	2	1	3	2	1	1	1	4	4	2	1
D6	2	1	1	2	3	1	5	1	2	2	2	1
D9	2	1	1	2	3	1	1	1	3	2	4	2

Acupuncture

Patient	13	14	15
A1	4	5	4
A2	2	3	3
A2-A1	2	2	1
B1	0	0	1
B2	0	0	1
B3	0	0	1
B4	1	0	1
B5	0	1	0
B6	1	1	1
B7	0	0	1
B8	0	0	0
B9	0	0	1
B10	1	0	1
B11	0	0	0
B12	0	0	0
B13	0	0	0
B14	1	1	1
B15	0	0	0
B16	0	0	0
B17	0	0	0
B18	0	1	1
B TOTAL	04	04	10
C1	2	1	1
C2	1	0	1
C3	1	0	1

Patient	13	14	15
C4	3	1	2
C5	0	0	1
C6	1	0	1
TOTAL C	08	02	07
D2	3	1	2
D5	3	4	3
D8	4	2	2
D10	5	4	5
D13	4	5	4
D15	2	1	2
D18	4	2	5
D20	5	4	3
D22	3	3	5
HABITUAL-$\bar{x}$	4	3	3
D3	5	2	5
D7	5	3	5
D11	5	4	5
D14	4	4	5
D17	3	1	5
D19	4	3	5
NEGATIVE-$\bar{x}$	4	3	5
D1	1	4	5
D4	1	1	1
D6	1	1	1
D9	1	3	5

Acupuncture

Patient	1	2	3	4	5	6	7	8	9	10	11	12
D12	4	3	2	2	1	1	5	1	2	3	4	1
D16	5	4	4	2	3	4	4	2	3	4	4	4
D21	4	4	4	2	4	4	4	3	4	4	3	5
D23	3	2	1	2	3	1	4	1	3	1	4	1
POSITIVE-$\bar{x}$	3	2	2	2	3	2	3	1	3	3	3	2
SMOKED:-												
BEFORE:	09	12	17	33	09	12	18	08	27	15	19	22
AFTER:	00	00	00	00	00	10	14	06	15	12	13	21

Patient	13	14	15
D12	1	3	3
D16	4	4	5
D21	3	3	5
D23	2	4	5
POSITIVE-$\bar{x}$	2	3	4
SMOKED:-			
BEFORE:	31	15	21
AFTER:	32	02	17

Homoeopathy

Patient	1	2	3	4	5	6	7	8	9	10	11	12
A1	3	5	4	3	3	3	4	5	2	4	4	4
A2	1	3	4	2	3	2	2	3	1	4	4	2
A2-A1	2	2	0	1	0	1	2	2	1	0	0	2
B1	0	1	1	0	0	0	1	0	1	1	1	0
B2	0	0	1	0	0	0	0	0	0	0	0	0
B3	0	1	0	0	0	0	0	0	1	0	0	0
B4	0	0	0	0	1	0	1	0	1	1	0	0
B5	0	1	0	0	1	1	1	0	0	1	1	1
B6	0	1	0	0	0	1	1	0	1	0	1	1
B7	0	1	0	0	0	0	1	0	0	1	0	0
B8	0	1	0	0	0	0	0	1	1	0	1	0
B9	0	1	0	0	0	1	1	0	0	0	1	0
B10	0	0	1	0	1	0	1	0	0	1	1	1
B11	0	0	0	0	0	0	0	0	0	1	0	0
B12	0	0	0	0	0	0	0	0	0	0	1	0
B13	0	0	0	0	1	0	0	0	0	0	0	0
B14	0	1	0	0	1	0	1	0	1	0	1	1
B15	0	0	0	0	1	0	0	0	0	0	0	0
B16	1	1	0	0	1	0	0	0	0	0	0	0
B17	0	1	0	0	0	0	0	0	0	0	0	0
B18	1	0	0	0	1	0	1	0	0	0	0	1
B TOTAL	02	10	03	00	08	03	09	01	06	06	08	05
C1	2	2	2	2	3	3	3	3	3	0	3	2
C2	0	0	1	0	0	0	0	0	1	0	0	0
C3	1	1	0	0	1	0	0	1	1	0	0	1

Homoeopathy

Patient	1	2	3	4	5	6	7	8	9	10	11	12
C4	2	1	1	2	2	1	2	2	2	2	2	1
C5	1	1	0	0	1	1	0	1	1	0	0	1
C6	1	0	0	1	1	1	0	1	1	0	0	1
TOTAL C	07	05	04	05	08	06	05	08	09	02	05	06
D2	3	1	1	4	2	1	2	2	1	1	1	1
D5	2	5	1	3	3	3	4	2	3	1	5	4
D8	3	4	1	5	4	3	3	5	4	2	2	2
D10	5	5	3	4	3	4	5	5	5	3	5	4
D13	4	5	3	2	4	4	5	4	5	2	1	4
D15	1	1	2	1	3	1	3	3	3	1	1	1
D18	4	1	5	3	5	4	5	5	5	3	5	3
D20	5	2	3	5	3	4	3	3	4	2	1	3
D22	4	3	2	2	3	3	5	5	5	3	3	4
HABITUAL-$\bar{x}$	3	3	2	3	3	3	4	4	4	2	3	3
D3	4	4	2	4	5	5	5	3	5	4	5	4
D7	4	5	1	4	2	5	5	1	4	4	5	2
D11	5	5	4	5	4	3	5	3	5	3	5	4
D14	5	5	2	4	5	4	5	1	5	4	5	4
D17	3	5	5	2	3	4	3	1	2	2	1	3
D19	5	5	5	2	5	4	4	1	5	2	1	3
NEGATIVE-$\bar{x}$	4	5	3	4	4	4	5	2	4	3	4	3
D1	2	4	1	3	1	5	4	1	4	3	1	3
D4	1	1	1	1	1	2	1	1	1	1	4	3
D6	2	5	1	1	1	3	2	1	1	1	5	2
D9	2	2	1	1	1	1	3	1	1	1	1	2

Homoeopathy

Patient	13	14	15
A1	3	4	3
A2	2	3	2
A2-A1	1	1	1
B1	1	0	0
B2	1	0	0
B3	1	0	0
B4	0	0	0
B5	1	1	1
B6	0	1	0
B7	0	0	0
B8	1	0	0
B9	0	1	1
B10	1	1	0
B11	0	0	1
B12	0	0	0
B13	0	0	0
B14	1	0	0
B15	0	0	0
B16	0	0	0
B17	1	1	0
B18	1	0	0
B TOTAL	09	05	03
C1	3	2	1
C2	0	0	0
C3	0	0	0

Patient	13	14	15
C4	1	1	3
C5	0	0	0
C6	0	1	1
TOTAL C	04	04	05
D2	1	1	3
D5	1	4	1
D8	5	2	4
D10	3	4	2
D13	1	2	1
D15	4	1	1
D18	3	3	5
D20	5	3	5
D22	2	3	3
HABITUAL-$\bar{x}$	3	3	3
D3	1	4	4
D7	1	2	5
D11	1	3	5
D14	1	4	3
D17	1	1	2
D19	1	2	5
NEGATIVE-$\bar{x}$	1	3	4
D1	1	3	1
D4	1	3	1
D6	1	2	1
D9	1	3	1

Homoeopathy

Patient	1	2	3	4	5	6	7	8	9	10	11	12
D12	4	5	1	2	1	2	2	1	1	4	2	3
D16	4	5	5	3	5	4	5	4	5	4	5	4
D21	4	5	5	2	4	4	5	1	5	3	5	4
D23	4	5	1	1	2	4	2	1	4	2	1	2
POSITIVE-$\bar{x}$	3	4	2	2	2	3	3	1	3	2	3	3
SMOKED:-												
BEFORE:	16	19	11	19	22	10	24	21	18	19	22	12
AFTER:	00	00	00	00	00	00	03	18	13	02	21	07

Patient	13	14	15
D12	1	3	1
D16	1	4	5
D21	1	4	4
D23	1	2	1
POSITIVE-$\bar{x}$	1	3	2
SMOKED:-			
BEFORE:	17	19	21
AFTER:	03	18	22