DETERMINING THE ROLE CHIROPRACTIC PLAYS IN THE MANAGEMENT OF TENSION-TYPE HEADACHE

A Dissertation presented to the School of Life Sciences in partial fulfilment of the requirements for the Master's Diploma in Technology : Chiropractic.

BY

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"I, Christopher Sean Penter, declare that this work is my own work, both in conception and execution."

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ABSTRACT

The effectiveness of chiropractic management of tension-type headache was evaluated in a single blind, randomised, placebo controlled trial using a patient population of thirty (30) individuals who were suffering from tension-type headache.

The patients who were accepted into the program had to have been suffering from tension-type headaches. Any other headache types were not accepted. The sample group was drawn from a population of the greater Durban area and was randomly divided into two groups; namely, treatment group and placebo group.
The treatment group received massage of the upper thoracic and cervical areas as well as chiropractic adjustments to fixations found in the cervical and thoracic spines while the placebo group received only massage to the above-mentioned areas.

The patients in both groups received nine treatments over a period of three weeks, and were then re-evaluated one month after the ninth treatment. Only subjective measurements were used; namely, a pain questionnaire looking at the intensity, frequency and duration of the tension-type headache as well as a disability index which graded how disabling the tension-type headache was to the patient's lifestyle. Eleven readings were taken of the pain questionnaire and the disability index (initial consultation, the nine treatments and the one month follow-up). Demographical data concerning the tension-type headache were also obtained from a General Questionnaire.

The results were analyzed using the Unpaired T-Test and the Paired T-Test with the confidence level set at 95%. The results were also plotted on graphs with the treatment and placebo results superimposed on one another. The results of the tests were: the Unpaired T-Test showed that there was no statistically significant difference between the placebo and the treatment groups at the initial consultation, treatment 1, treatment 9 and the one month follow-up. The Paired T-Test showed that there was a statistically significant difference between the initial consultation and the ninth treatment and the initial consultation and the one month follow-up in both groups. The treatment group fared slightly better than the placebo group after one month with regard to the disability and pain intensity of the tension-type headache, while the placebo group fared better than the treatment group with respect to the frequency of the headaches (number of headaches a month). Both groups fared equally well with a reduction in the duration of the headache per day.
The graphs showed that both groups had a decrease in the pain intensity, duration, frequency and disability of the tension-type headaches.

The results indicated that both treatment and placebo group fared equally well, and that the hypothesis that the treatment group would have a greater improvement was rejected. The results suggested that massage could be an effective short-term treatment for tension-type headache. The results cautiously suggest that tension-type headache and cervicogenic headache may be interlinked, however, further research is required to support or refute this.

UITTREKSEL

Dertig pasiente met spanninghoofpyne is in 'n gekontroleerde studie geevalueer om die effektiwiteit van chiropraktiese behandeling te bepaal. Slegs pasiente met spanninghoofpyne is aanvaar. Pasiente uit die Durban gebied is in twee groepe verdeel - 'n eksperimentele en 'n plasebogroep. Die eksperimentelegroep is aan servikale en dorsale massering en chiropraktiese regstellings van werwelfiksasies onderwerp. Die plasebogroep het slegs masserings ontvang.

Pasiente in albei groepe het nege behandelings oor 'n tydperk van drie weke ontvang en is een maand na die laaste behandeling herevalueer. Slegs subjektiewe bevindings is in aggeneem - dit wil se 'n vraelys oor die intensiteit, duur en frekwensie van die hoofpyn, asook 'n gegradueerde stremmingsindeks om die effek van die hoofpyn op die pasient se leefwyse te bepaal.
Elf stremmingsindeks en pynvraelyslesings is geneem (eerste konsultasie, nege behandelings en die opvolgbesoek na een maand) - 'n algemene vraelys het demografiese inligting in verband met die hoofpyn verskaf.

Die uitslae is ontleed deur middel van die gepaarde en ongepaarde T-Toetse wat op 'n 95% vertrouensvlak gestel is. Die uitslae is verder grafies ontleed en die resultate is as volg:
Die ongepaarde T-Toets het gevind dat daar statisties geen noemenswaadige verskil tussen die twee groep tydens die eerste konsultasie, die eerste behandeling, die 9de behandeling en die opvolgbesoek na een maand was nie. Die gepaarde T-Toets uitslag

het 'n noemenswaardige verskil tussen die eerste en negende behandeling, asook die eerste en een-maand opvolgbesoek getoon. Die behandelingsgroep het effens beter as die plasebogroep na een maand gevaar met betrekking tot stremmings en pynintensiteit van die hoofpyn, terwyl die plasebogroep beter gevaar m.b.t. die hoeveelheid hoofpyn ondervind het.
Beide groepe het gelyk gevaar m.b.t. 'n vermindering in die duur van die hoofpyn (per dag). Die grafieke toon dat beide groepe 'n afname in intensiteit, duur, frekwensie en stremmingsvlakke van die hoofpyn ondervind het.

Die resultate dui aan dat beide groepe ewe goed gevaar het en dat die stelling dat die behandelingsgroep beter sou vaar dus onvanpas is. Massering as 'n korttermynbehandeling mag effektief wees.

Die uitslae stel voor dat spanningshoofpyne en hoofpyne van servikale oorsprong dalk in verband mag wee, maar verdere navorsing om so 'n stelling te staaf af te verwerp is nordig.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF GRAPHS

PAGE

CHAPTER FOUR

LIST OF ABBREVIATIONS

RX 1	Treatment one
RX 9	Treatment nine
OMF	One-month follow-up
T-TH	Tension-type headache

CHAPTER ONE

1.1 PROBLEM STATEMENT

The purpose of this study is to evaluate the effectiveness of chiropractic treatment of tension-type headache with reference to the patient's perception of the effects of the treatment, in order to determine the role chiropractic treatment plays in the management of tension-type headache.

1.2 HYPOTHESIS

It is hypothesised that those tension-type headache patients who receive chiropractic treatment will have a greater improvement than those who receive massage (placebo) treatment only.

1.3 THE DELIMITATIONS

1) This study will not be conducting any experiments that show the exact physiological mechanisms of the chiropractic treatment on patients with tension-type headache.

2) This study will not attempt to explain the mechanisms of how the drugs given by the medical practitioners operate.

3) This study will not consider the homoeopathic treatment for tension-type headache.

4) This study will not attempt to explain the psychotherapy treatment used by the medical profession for the treatment of tension-type headache.

5) This study will delimit all other treatment protocols from the treatment except massage and manipulation. (Should the patient take any analgesics during the course of the treatment, the patient will inform the researcher of the type of analgesic and the dosage.)

6) For the purpose of this study, only the cervical and thoracic spines will be examined and treated, and no consideration will be afforded the lumber spine and pelvis in the treatment of tension-type headache.

7) Only patients suffering from tension-type headache will be accepted into the study. Any patient who suffers from tension-type headache as well as other conditions that have no biomechanical relationship to tension-type headache will be accepted, but will be treated for the tension-type headache only.

8) Only patients above the age of 14 years old will be accepted into this study.

1.4 ASSUMPTIONS

1.4.1 The first assumption

It is assumed that tension-type headache is a recognisable pathological entity.

1.4.2 The second assumption

The patients will co-operate as far as the treatment programme is concerned.

1.4.3 The third assumption

That tension-type headache in the Natal area is the same elsewhere and that the results from the treatment will apply elsewhere.

1.4.3 The fourth assumption

It is assumed that any recovery from tension-type headache will be due to the treatment given.

1.5 DEFINITIONS

1) Chiropractic intervention

This refers to manipulation of spinal vertebrae to remove fixations in the facet joints and restore normal movements to these joints.

2) Chiropractic treatment

For the purpose of this study, chiropractic treatment will be defined as vertebral manipulation and massage of the upper thoracic and cervical area.

3) Tension-type headache

Defined as a constant tight or pressing type sensation, nearly always bilateral, which may initially start as episodic and related to stress but can recur daily in its chronic form without regard to obvious psychological factors.

4) Medical profession

Refers to medical doctors and their scope of practice.

5) Drugs

Those chemical substances prescribed by medical doctors for the treatment and prevention of disease.

6) Motion Palpation

A palpatory diagnostic procedure performed on osseous structures in motion in order to determine if motion dysfunction exists.

7) Placebo

For the purpose of this study, placebo implies that group that will receive only massage to the cervical and thoracic areas, and no manipulation will be performed on this group.

8) Adjustment

The utilization of a short-lever, specific, high velocity, controlled, forceful thrust, by hand, which is directed at specific articulations as described by the Diversified Method of spinal manipulation.

9) Fixation

The alteration of the normal dynamic, anatomical or physiological relationship between contiguous articular structures.

10) Massage

Kneading of the muscles by means of long and deep strokes applied by hand, with the aid of Arnica oil, to relax and improve blood circulation to the muscles.

11) Patient perception

The subjective perception of the intensity, frequency and duration of the pain as well as the disability experienced by the patient owing to the tension-type headache.

1.6 IMPORTANCE OF THE STUDY

Background

Tension-type headache is the most common form of headache seen in modern society (Robinson 1980), and it can be quite debilitating with regards to pain and disability due to the tension-type headache. Owing to the multiple etiological factors, there are a several treatment protocols available from both the medical and the chiropractic professions for the management of tension-type headache.

Due to the abundance of treatment protocols utilised in the management of tension-type headache, it is important to determine the role vertebral dysfunction, and its correction, play in the management of tension-type headaches.

The need for a solution

As the incidence of tension-type headaches is high, and the cost of treatment is often exorbitant, it will be feasible to determine the role chiropractic can play in the management of tension-type headache. Chiropractic may offer a much faster and cheaper form of treatment by decreasing patient consultation and achieving longer lasting results in the management of tension-type headache.

Description of solution

The study consists of a placebo-controlled trial of a sample population. The sample population is randomly assigned to two groups, one which receives chiropractic treatment and the other placebo treatment. The data collected will consist of (1) the patient's perception of the tension-type headache in terms of the intensity, duration and frequency of the tension-type headache and (2) the disability experienced owing to the tension-type headache. The above data will be collected prior to the start of the treatment programme, during the treatment programme and one month after the last treatment.

The data will then be statistically evaluated and conclusions will be drawn about the effectiveness of chiropractic treatment in the management of tension-type headaches.

Other data that will be collected is demographical data which is collected before the treatment programme starts.

Benefits

Should the results favour chiropractic treatment, it may indicate that vertebral dysfunction may be a contributing causative factor of tension-type headache, and that chiropractic intervention may offer a cheaper form of treatment for the management of patients suffering from tension-type headache.

Feasibility

The proposed protocol does not require equipment of any nature.

The application of the treatment programme can be performed in the chiropractor's consultation rooms and does not take much time to administer.

CHAPTER TWO

2.0 LITERATURE REVIEW.

OVERVIEW

Tension-type headache is the most common form of headache. (Robinson 1980)

According to Diamond (1987), tension-type headaches constitute approximately 80% of all the headaches types seen by the medical family physician or general medical practitioner. The tension-type headache has an impact on lifestyle as well as regular activities. Edmeads et al. (1993) (Abstract) report that 29% of adult Canadians suffer from tension-type headache, of which 70% had their interpersonal relationships affected, while 38% of the tension-type headache sufferers had their regular activities limited. Most of the tension-type headache sufferers had taken over-the-counter drugs and only 45% of the tension-type headache sufferers had ever sought medical attention. Edmeads et al. (1993) (Abstract) emphasise that measures are required to reach the tension-type headache population, and that safe and effective treatment options are required.

The literature review that follows reflects the classification, clinical presentation, possible causes, various models and numerous treatment programmes available for the management of tension-type headaches.

2.1 CLASSIFICATION OF TENSION-TYPE HEADACHE

According to the New International Headache Classification, tension-type headache can be classified into the following categories. (Rasmussen et al. 1992))

1. Episodic tension-type headache
2. Chronic tension-type headache
3. Headaches of tension-type not fulfilling the above criteria

2.2 CLINICAL PRESENTATION

2.2.1 Incidence

Lance et al. (1965) report that the incidence of tension-type headache is as much or greater than that of migraine. Of the 1152 patients evaluated by them over a period of two and a half years, 612 suffered migraine and the rest (466) suffered from tension-type headache, that is 40,45% were tension-type headache sufferers.

2.2.2 Age

15% of the patients remembered symptoms starting from the age of 10 years, and many patients had suffered from tension-type headache for 10-30 years or more. (Lance et al. 1965)

Table 2.1: Summary of tension-type headaches reported in various age groups

AGE:(YEARS OLD)	PERCENTAGE:
0 - 10	16%
10 - 20	24%
20 - 30	19%
30 - 40	17%
40 - 50	15%
50 - 60	6%
60 - 70	2%
70 - 80	1%

(Source: Lance et al. 1965)

2.2.3 Male/ female Ratio

Friedman et al. (1954) report that about 65% of the patients suffering from chronic tension-type headache were female patients. Rasmussen et al. (1991) reported that the female : male ratio was 5 : 4 in the tension-type headache patients they examined.

2.2.4 Frequency and duration

Lance et al. (1965) report that of the 466 patients suffering from tension-type headache, 48 patients experienced tension-type headaches 10 times per month, 64 patients experienced tension-

type headaches 10 to 30 times per month and 354 patients experienced tension-type headaches every day of the month. Friedman et al. (1954) found that 50% of their patients diagnosed with tension-type headache experienced tension-type headache every day of the month.

Of the 466 patients seen by Lance et al. (1965), 25% report having suffered from tension-type headaches from 0 to 5 years, 18% from 5 to 10 years and 16% from 20 to 30 years.

Table 2.2: Duration of tension-type headache:

DURATION:(YEARS)	% PATIENTS:
0 - 5	25%
5 - 10	18%
10 - 15	11%
15 - 20	10%
20 - 30	16%
30 - 40	7%
40 - 65	13%

(Source: Lance et al. 1965)

2.2.5 Onset of the headache

The patient may develop the tension-type headache after or during a stress-related period. Patients sometimes develop tension-type headache owing to anticipated stress, for example, having to do something they dislike (Lance 1973).

2.2.6 Time of the day

Patients may wake up with a tension-type headache or notice it shortly after getting up. The tension-type headache may remain throughout the day (Lance 1982). It was reported that 10% of the patients are woken up by a tension-vascular headache between 01:00 and 04:00 in the morning (Lance 1982).

2.2.7 Family history

Friedman et al. (1954) reported that 40% of the patients suffering from tension-type headache had a family history of headaches.

2.2.8 Site and Quality of tension-type headache

The tension-type headache is found bilaterally in 90% of the cases (Friedman et al. 1954 and Rasmussen et al. 1991) and unilaterally in the other 10%. Lance (1973) suggests that the reason for this may be an imbalance of bite which results in excessive stress on the opposite tempero-mandibular joint, resulting in pain that is felt in front of the ear and which radiates to the temple.

Chronic jaw clenchers experience pain in the temple area and over the masseter muscle, while constant frowners get bi-frontal headache. (Lance 1973)

Patients with chronic neck stiffness get pain over the occipital area (Lance 1973). A patient with a combination of the above will experience a pain situated frontally, temporally and suboccipitally (Lance 1973).

The tension-type headache is described as a :

(1) dull persistent type of pain that fluctuates throughout the day (Lance 1973);

(2) heavy feeling of pressure or tightness rather than pain (Rasmussen et al. (1991) reported that about 78 percent of the patients experienced this feeling);

(3) band-like sensation around the head (Lance 1973);

(4) Some patients experience a sharp jab like pain situated over the temples and the occipital areas of the skull (Lance 1973);

(5) a quarter of the tension-type headache patients developed a severe pulsating type of pain (Lance 1973).

About 10% of all tension-type headache patients suffer from episodes of migraine (Lance 1973).

2.2.9 Associated phenomena found in tension-type headache patients

Tension-type headache patients may suffer from:

1. photophobia (Lance 1973);
2. symptoms of anxiety (Lance 1973);

3. slight nausea in the morning or when headache is severe (Lance 1973);

4. vomiting but is a rare occurrence in tension-type headache patients (Lance 1973);

5. Giddiness/light headedness (owing to a tendency to hyperventilate) (Lance 1973);

6. difficulty in concentrating, lack of interest in work and hobbies (Lance 1973);

7. depressive symptoms (one-third of the patients with tension-type headache have these symptoms) (Lance 1973);

8. Pain under left breast, back or coccygeal region (Lance 1973);

9. indigestion (Lance 1973); and

10. Patient may wake up with a bruised sensation in the mouth owing to bruxism (Lance 1973).

2.2.10 Aggravating and relieving factors

Tension-type headache is aggravated by super-added stress, anxiety, emotional conflict, noise, glare, vasoconstrictors and depression, while it is relieved by vasodilators, alcohol, aspirin or analgesics (Lance 1973).

Rasmussen (1993) reports that the most conspicuous precipitating factors were stress, mental tension, alcohol, weather changes and menstruation. He reported that smoking, coffee and alcohol consumption showed no significant association with tension-type headaches.

2.2.11 Differential diagnosis of tension-type headache

Migraine headache appears to be the most imminent clinical condition to that of tension-type headache (Raskin 1988). Raskin (1988) draws similarities between the two conditions, and suggests that they are somewhat related from a mechanistic point of view. Such similarities are:

1. Neck muscle contraction found in both.
2. Nuchal muscle contraction and pain are a prodromal feature in both.
3. Cephalic hyperaemia attends headache in both.
4. Increased prevalence of epilepsy occurs in both.
5. Low platelet serotonin occurs in both.
6. Psychological data for both are indistinguishable.
7. Responsiveness of both disorders to amitriptyline, ergonovine, and propranolol are similar.

Other differential diagnosis to consider when dealing with headaches are:

1. Organic disease:(A) Raised ICP a. brain abscess
   b. brain tumour
   c. subdural haematoma
   (ICP stands for Intracranial Pressure)
   (B) Meningeal irritation
   a. meningitis
   b. subarachnoid haemorrhage

(C) Cranial-changes in the skull from conditions like Metastatic neoplasms and Paget's disease

(D) Involved sensory nerves of the scalp.

(E) Vascular a. migraine

b. toxic states e.g. Infection, uremia, alcohol etc.

c. Hypertension.

d. Cluster headache.

(F) Extracranial

a. Lesions of the eye e.g. eyestrain, iritis, glaucoma etc.

b. Lesions of the middle ear e.g. otitis media, mastoiditis etc.

c. Lesions of the nasal sinuses e.g. sinusitis (Chronic & acute)

d. Lesions of the oral cavity e.g. Tongue, tooth and pharynx pathology.

2. Post-traumatic

3. Psychogenic (A) Conversion hysteria, anxiety states.

(Source: Merck Manual 1987)

Other differentials include Temperomandibular Syndrome and Myofascial Pain Syndromes (Travell and Simons 1983)

2.3 CAUSES OF TENSION-TYPE HEADACHE

There is controversy among many authors on the possible causes of tension-type headache. (Lance 1982, and Raskin 1988)
The possible causes of tension-type headache are:

2.3.1 Vascular factors

Lance (1973) reports that this is one of the main causes of tension-type headache and that vasoconstrictor agents aggravated tension-type headaches while vasodilator substances (like Amyl nitrate and alcohol) relieved the tension-type headaches.
Experiments by Tunis and Wolff (1954); Ostfeld et al. (1957); and Drummond and Lance (1981) show that there is vasoconstriction of the arteries in patients with tension-type headache, however, Martin and Mathews (1978) found that administration of Amyl nitrate (vasodilator) aggravated the tension-type headache 40% of the time.
Onel et al. (1961) injected radioactive sodium into patients suffering from tension-type headache and found that there was an increase in the clearance rate of radioactive sodium during the tension-type headache compared to after the tension-type headache. The significance of this is that the blood flow through the muscle was greater during the tension-type headache than after the tension-type headache. Onel et al. (1961) conclude that this did not exclude the possibility of relative ischaemia and that this increase clearance rate could be an effect or concomitant of the factor producing the tension-type headache.

The temporal muscle blood flow was measured in 40 chronic tension-type headache patients by Langemark et al. (1990) and it was found that "it is not likely that temporal muscle ischaemia is the cause of muscle tenderness and pain in patients with chronic tension-type headache."

Kabe et al. (1991) did thermographic studies on tension-type headache sufferers, and reported that there were possibly vasodilatory mechanisms (high temperatures recorded in the painful areas) occurring in patients who had tension-type headaches for less than six months, while after a long history of tension-type headache there appeared to be a change in the sympathetic nerve regulation by some psychogenic or reflex mechanism. (The patients who had had tension-type headaches for longer than 6 months had low temperature readings in the painful areas.)

Poganik et al. (1993) (Abstract) have reported that there may be an impairment of the sympathetic function in tension-type headache patients.

It can be shown that controversy exists about whether vascular factors play a role in the aetiology of tension-type headaches.

2.3.2 Muscle contraction as a cause

Muscle contraction was previously believed to be the cause of tension-type headache; hence the name "muscle contraction headache".

Patients who have psychological "problems" have been found to have a greater predisposition to sustained muscle contraction which, if prolonged, results in pain (Weisberg et al. 1989).

Weisberg et al. (1989) and Gobel et al. (1991) support the above assumption through experimental and clinical evidence. Gatterman (1990) suggests that tension-type headache is due to spasm, injury or inflammation of the muscles or myofascial connections to the cranial periosteum.

However, it is now believed to be as a result of, rather than a cause, of tension-type headache. (Kaganov, Bakal and Dunn 1981; and Haynes, Cuevas and Gannon 1982).

2.3.3 Psychological factors as a cause

It is reported through experimental and clinical observations that there are psychological factors that could be responsible, or partially responsible, for the development of tension-type headache (Friedman et al. 1953; Friedman et al. 1954; Martin 1972; Lance 1973; Diamond 1987; Weisberg et al. 1989; Hatch et al. 1991; Spinhoven et al. 1991; Dawans et al. 1991 and Rasmussen 1992).

Other authors such as Ziegler et al. (1972); Merskey and Boyd (1978) (as quoted by Raskin 1988); and Merikanges et al. (1993) have reported that there is no correlation between psychological factors and tension-type headache. Merskey and Boyd (1978) suggested that the "emotional turmoil" experienced by the tension-type headache patients may be as a consequence of living with chronic pain.

It has been reported that the psychological symptom measure may result in misleading data when used on individuals with pain disorders, and that the psychological symptom results were

elevated when the patient was experiencing pain at the time of assessment compared to when they had no pain (Holroyd 1993).

Dawans et al. (1991) reports that "chronic tension-type headache patients have sublimal psychological disturbances of the depressive type". They suggest that this might be responsible for "modifying" inputs to the brainstem and as a result reduce "segmental exteroceptive silent periods", as well as reduce pain thresholds.

2.3.4 Cervicogenic

Various authors have implicated the cervical spine as a possible cause of headaches throuh experimental and clinical data.
Skillern (1954) induced an alcohol block into the great occipital nerve resulting in relief of headache-like symptoms, which was located over the trigeminal and the great occipital nerve dermatomal area. He deduced that there may be a "functional contact between the great occipital nerve and the trigeminus".

After performing experiments on cats, Kerr and Olafson (1961) suggest that there may be a spread of hemicranial pain from the cervical to the trigeminal areas. They report from their experiments that "activation of interneurons by trigeminal volleys was obtained as far as the lowermost level of the C2 segment...".

Boake (1972) reports that at least 70% of the patients that consulted him have headaches that originate from the cervical

spine and its associated structures. He postulates that the pain arising from one afferent system to another may result in an overlap of pain. Furthermore, he elaborates on the close relationship between the posterior primary ramus and the apophysial joint, and reports that any irritative lesion in the apophysial joint (such as inflammatory reaction or trauma to the surrounding structures) could result in excitation of the nerve resulting in central interpretation of pain from the area in which the nerve terminates (a dermatome, myotome or ligament). He suggests that irritation would cause muscle spasm, which was often seen/associated with cervical joint dysfunction.

Bogduk (1979) suggests that two conditions which cause hypomobility of the cervical spine are osteoarthritis of the cervical spine and meniscoid entrapment, and states that "theoretically" , meniscoid entrapment could cause pain resulting in a headache from referred pain mechanisms.
Kovacs (1955) (as quoted by Bogduk 1979) suggests that headaches could result from irritation of the vertebral nerve by subluxated articular process (as detected on radiographs).

Bogduk et al. (1985) define the term cervical headaches as those "headaches due to a disorder in the neck which is associated with movement abnormalities in the cervical intervertebral segments". They report that such headaches are owing to referral of pain from the neck and that the neuroanatomical source of this referral is the "convergence of cervical and trigeminal afferents on the common trigemino-cervical nucleus".

They note that the ligaments and joints of the upper cervical spine could be damaged by trauma to the neck, as well as affected by inflammatory diseases such as rheumatoid arthritis (RA) and ankylosing spondylitis (AS). Another condition that can affect the cervical spine is degenerative joint disease according to Bogduk et al. (1985). They note that a common clinical phenomenon is the presence of a hypomobility lesion (restriction of movement in a spinal joint) that frequently accompanied spinal pain, and although the pathology of such a lesion had not been established, they suggest that it could be caused by intra-articular adhesions, capsular scarring and contracture or by local muscle hypertonicity.

They further reported that lesions of the muscles attaching to the occiput have acted as a cause of headache, and such lesions are called trigger points which could occur in any of the muscles innervated by the upper three cervical nerves. In concluding, Bogduk et al. (1985) reported that "there is no doubt that disorders of the upper neck could be a cause of headache...".

Diamond (1987) suggests that disorders of the cervical spine "may create localized pain but may also produce referred pain to the head". Diamond and Freitag (1992) report that "Muscle contraction headache are the most common form of headache that results from trauma to the cervical spine".

It has been found clinically that those patients who presented with upper cervical pain and headaches were relieved by blocking

of the zygapophyseal joint using 0,5% bupivacaine solution (Bogduk and Marsland 1988).

In certain situations such as congenital and acquired anomalies of the craniocervical junction, RA and AS of the upper cervical spine could result in headache owing to neck disease (Edmeads 1988). He suggests that more evidence would be required to accept cervicogenic headache as a separate entity to other headaches.

Edeling (1988) reports that tension-type headache is "derived from the upper cervical articulations", and that the cervical cause of tension-type headache are "by far the most common...". Edeling (1988) states that she "thinks that most so-called tension headaches arise primarily from an underlying painful condition of the upper cervical joints and that the pressure exerted on these joints by virtue of the sustained muscle contraction results in the pain which is referred into the head".

Bogduk (1992) reports that "The pain from cervicogenic headache can be similar to the pain of migraine, tension headache or that of intercranial lesions", and suggests that there is a possibility that a large proportion of the patients suffering from tension-type headache could in fact be suffering from cervicogenic headache.

After investigating the range of motion of the cervical spines in patients suffering from tension-type headache and finding more abnormal findings in the headache group compared to the control

group, Kidd and Nelson (1993) (Abstract) propose that musculoskeletal dysfunction of the neck is a contributing factor to the etiology of tension-type headache.

Vernon (1988) and Vernon et al. (1992) have done extensive research into the literature regarding cervicogenic dysfunction and headaches, and have found that a number of authors support a relationship between cervical dysfunction and headaches.

Sjaastad et al. (1985) (as quoted by Vernon et al. 1992) report on the overlap/potential overlap of the diagnostic categories of cervicogenic, migraine and tension-type headaches. It was noted that in cases where there was diagnostic confusion, the presence of cervical dysfunction decided whether the condition was cervicogenic headache, tension-type headache or migraine headache. In other words, if there was cervical involvement it was more likely to be diagnosed as cervicogenic headache.

Vernon et al. (1992) report that there was a high prevalence of hypomobility of the upper cervical spine in tension-type headache patients, and that there was an "overwhelming" number of these patients had at least one to three trigger points in the upper cervical area.

Vernon et al. (1992) also report that they supported the severity model and that on the basis of their profile of cervicogenic dysfunction, they suggested that "...the common ground of these two headache categories is a disorder in the cervical spine". However, the note that the findings "...should be extrapolated with some caution".

Vernon et al. (1992) have shown that various authors have noted both static and dynamic misalignments of the cervical spine on radiographs with respect to headaches.

Vernon et al. (1992) also note in there own investigations that there was a significant loss of normal cervical lordosis in most of the tension-type headache patients that they examined.

This fiding was supported by Nagasawa et al. (1993) (Abstract).

Gay (1993) suggests that the flattened cervical curve could be as a result of muscle spasm.

Sakuta and Sakuta (1989) report that patients with tension-type headaches radiographically showed "weak instability of the cervical spine".

However, Wober-Bingol et al. (1992) report that tension-type headache sufferers had more normal findings more often and that "radiographic assessable" changes of the cervical spine were unlikely to play an important role in the cause of tension-type headache.

2.3.5 Disruption of the central pain modulating systems as a cause

Schoenen et al. (1991) have hypothesised that general or diffuse disruption of the central pain modulating system is "pivotal in the pathophysiology of chronic tension-type headache". This could be as a result of modified limbic input to the brainstem. This is in keeping with the findings of Dawans et al. (1991).

It has been reported that chronic tension-type headache may be due to a disorder of an endogenous antinociceptive system that

results in a lowering of tone and recruitment/activation of descending inhibitory systems. (Langemark et al. 1993)

2.3.6 Posture

It has been suggested that flexed posture and instability of the neck can result in tension-type headache, and that those patients with long slender necks seem to be susceptible or predisposed to developing tension-type headache (Sakuta and Sakuta 1989).

2.3.7 All or some of the above causes contributing to tension-type headache

A combination of the various "causes" as reviewed above has been shown to cause tension-type headache. Weisberg et al. (1989) suggest that if a patient is under stress, this results in chronic muscle contraction which in turn leads to accumulation of lactic acid. Lactic acid causes vasodilation of the arteries leading to tension-type headache. The tension-type headache pain could come from the muscles or the arteries.

2.4 MODELS/ THEORIES ATTEMPTING TO EXPLAIN TENSION-TYPE HEADACHE

A number of models/theories have been put forward by various authorities in an attempt to explain or theorise what tension-type headache is and where it stands as a pathological entity. Some models look at the possible causes of tension-type headache and the possible mechanism that could occur (Vertebrogenic Model (Vernon 1988), Myogenic-Supraspinal-Vascular Model (Olesen 1991) and Chronic Muscle Spasm Model (Diamond 1987)) while others

attempt to place tension-type headache and migraine together (Continuum-Severity Model (Raskin 1988)).

2.4.1 Vertebrogenic muscle contraction headache model

Vernon (1988) puts forward a model which attempts to explain tension-type headache from an anatomical point of view. Furthermore, he takes the structures and looks at possible mechanisms that could result in pain from the anatomical structures. The model is divided into four sections, each section depicting certain anatomical structures.

The sections from an anatomical point of view are:

1. EXTRASEGMENTAL - looks at the regional muscles and fascial attachments.
2. INTERSEGMENTAL - looks at joint dysfunction (this includes looking at the capsule, the ligaments and the deep muscles) and the intervertebral disc.
3. INFRASEGMENTAL - looks at the foraminal area, the nerve root and the dorsal root ganglion.
4. INTRASEGMENTAL - looks at the reflex disturbances.

MECHANISMS

1. EXTRASEGMENTAL

All the muscles, especially the trapezius, the levator scapulae, the splenius capitis, the semispinalis capitis, and the occipitofrontalis muscles are subjected to chronic low-graded "accumulative stresses" which can alter the function of the muscle resulting in primary or/and secondary pain states.

The stresses arise from postural or occupational strain and can be aggravated in individuals with a slumped posture. (This posture causes cervical hyperlordosis and occipital extension.) Whiplash-type injuries can damage the muscles, and this may result in cervical joint derangement, which may as a result, produce muscle dysfunction by setting up or eliciting arthrogenic contraction.

Irritation of the tendoperiosteal junction produces chronic low-level areas of tenderness and pain that is interpreted as local occipital, suboccipital or nuchal pain.

Also of note is the development of trigger points (Travell and Simons 1983), which is a low-level hypertonicity found in muscle itself, consisting of an area of "focal " zone of pain and tenderness. These trigger points refer pain to various areas of the cranium and the neck, and the pain may mimic that of tension-type headaches.

Chronic muscle hypertonicity may cause entrapment of the greater occipital nerve, and also thoracic outlet syndrome that may refer pain which is interpreted as a tension-type headache.

2. INTERSEGMENTAL

Involving the joints and ligaments of the spine it is of note that these structures consist of articular and ligamentous nociceptors (Type 4 Receptors of Wyke).

Mechanical or chemical irritation of the nociceptors results in local pain that may result in arthrogenic muscle spasm at segmental levels.

Referred pain from the joint may result in activation of the convergent neurons. By irritating the facet joints, the referred pain is "sclerogenous" in nature.

C1 and C2 sclerogenous referred pain patterns are situated suboccipitally.

Joint derangements/fixations of the C0-C1, C1-C2, C2-C3 levels may result in sclerogenous referred pain patterns to the suboccipital area. The fixations may also result in arthrogenic muscle spasm of the suboccipital muscles that may lead to pain. Pain from the C0-C1, C1-C2 joints may activate second order neurons in the spinal tract of the trigeminal nerve, resulting in pain "which appears" to radiate to the frontotemporal region. (Dermatomal distribution of ophthalmic division of cranial nerve five.)

Osteoarthritis (OA) of the facetal joints of the cervical spine results in pain and stiffening of the joint producing pain that is interpreted as a tension-type headache. With advanced OA of the upper cervical facetal joints there results osteophyte formation on the lateral atlantoaxial joints which may irritate the C2 nerve root and the vertebral artery, and the posterior sympathetic chain that ascends with the artery. Irritation of these structures/ tissues may elicit reflex spasm or may result in the occlusion of the vertebral arteries.

Intervertebral disc lesions at C3-C4 and at C2-C3 levels could disturb the trigeminal nerve resulting in pain referring over the dermatomal distribution of cranial nerve five. (Trigeminal Nerve.)

3. INFRASEGMENTAL

C1 and C2 nerve roots are not protected by intervertebral foramen, resulting in increased susceptibility to irritation from the surrounding tissues. Any of the factors mentioned below may result in irritation of the nerves:

a. inflammatory reactions of the C0 - C3 joints;

b. combined hyperextension/torsional impingement of the C2 dorsal ganglion;

c. hypermobility between C1 and C2; or

d. osteophytic encroachments from posterolateral margins of C1-C2 and C2-C3.

All low-level chronic stresses can result in:

1. referred pain in the cranium;

2. myalgic tender points;

3. increased hypertonicity of the craniofascial muscles; or

4. Disturbances of the afferents into the spinal cord causing a "lowering" of the pain gate and facilitation of the motor pools.

Irritation of the vertebral artery results in irritation of the posterior sympathetic structures ("Vertebral Nerve") causing pain.

4. INTRASEGMENTAL

Any abnormal or increased intensity of sensory input may result in a modulating effect on the transmission of pain into the CNS (central nervous system). Somatic stimulation may affect the motor and autonomic pools by creating a central excitatory state

which may result in inhibitory/suppression mechanisms, causing inappropriate and persistent motor and autonomic discharge. (This is manifested as sustained muscle contraction, sustained vasoconstriction, hypersudation and persistent transmission of pain.)

These disturbances are considered to occur at the upper cervical area which is in the vicinity of the spinal tract of the trigeminal nerve.

First order neurons of trigeminal descend and terminate on second order neurons of C1, C2 and C3 neuromeres. These second order neurons also receive fibres from C1 and C2 nerve roots. Any stimulation of C1 or C2 nerve roots will result in nerve impulses which converge and facilitate the second order neurons of the spinal tract of trigeminal.

Therefore, central facilitation of the upper cervical spine by somatic input from joint dysfunction causes pain and muscle contraction in the cranial area. From this, it can be deduced that a neurogenic etiology of tension-type/ muscle contraction headache exist owing to upper cervical spine problems/ dysfunction.

Vernon (1988) further formulates a Chiropractic Model of Muscle Contraction Headache (Tension-type Headache).

He suggests that a stimulus from somatic or joint dysfunction could result in two possible pathways: one which affects the cervical muscles, resulting in muscle contraction; while the other could affect the nerve structures, resulting in head pain.

He suggests that somatic dysfunction could activate the motor horn cells resulting in local and regional muscle contraction which could lead to tension-type headache. Furthermore, the somatic dysfunction could result in a "pain gate" which causes pain could be local, or referred to the cranium. This pain could be interpreted as a tension-type headache.

2.4.2 Myofascial-Supraspinal-Vascular Model of tension-type headache (MSV Model) (Olesen (1991))

Olesen (1991) proposes a model based on the most recent data which show convergence of somatovisceral afferents on n. caudalis neurons. He applies the concept that inputs onto the same neurons exists from both the vascular and the myofascial components which travel up the same or similar nerve fibres, converging onto the brainstem neurons and causing facilitation that is integrated with the supraspinal effects. (Supraspinal effects could result, owing to psychological disturbances or/and drug abuse.) The tension-type headache model (MSV Model) emphasises the myofascial component, but never leaves out the vascular component. He suggests that the supraspinal facilitation plays a large, or dominant, role in the MSV Model. By applying the vascular component to the model, Olesen suggests that this could explain why certain tension-type headache patients may have migrainous like symptoms (such as a throbbing headache - implies/ suggests a vascular component). He states that increased vascular input could cause pre-existing myofascial inputs to be recorded as pain. The model consists thus of three axes. Individual axis may sometimes play a major role while the others play a minor role.

In tension-type headache, the myofascial and supraspinal axes play a greater role than the vascular component; however, in migraine headaches the vascular axis plays a dominant role.

2.4.3 Continuum-Severity Model for tension-type headaches

This has been a very popular model that places classical migraine on one side of a scale, tension-type headache on the other side of the scale, then puts common migraine in between. The reason for this approach is that tension-type headache and migraine headache have a lot in common. (Raskin 1988)

Various authors such as Kaganov et al. (1981); Raskin (1988) and Vernon et al. (1992) support the Continuum-Severity Model.

However, others (Rasmussen et al. (1992), Bovim and Sand (1992) and Cott et al. (1992)) have found that their clinical and experiemental data does not support this model, and regard tension-type headache and migraine headaches as different pathological entities.

2.4.4 Chronic Muscle Contraction Model

Diamond (1987) did not specifically highlight this as a model. He suggests that the mechanism of tension-type headache is similar to that of chronic muscle contraction in other parts of the body.

Diamond (1987) reports that there are three independent reflex arcs and four consecutive steps in the mechanism of chronic muscle spasm. They are:

1. Muscle spasm initiated by a multisynaptic reflex of withdrawal. The fibres are stimulated by pathological processes.

The impulses travel to the spinal cord and the ventral roots, where they pass over the efferent nerve, then travel to the neuromuscular junction that then causes the muscle to contract. The muscle contraction then spreads the painful stimulus.

2. The impulses that enter the spinal cord travel via the polysynaptic spinal pathways and the lemniscal system to the thalamic and central levels which perceive the impulses as painful.

3. The brain transmits impulses (via the reticulospinal system) to cause activation of the gamma-efferent neurons that causes contraction of the muscle spindle.

4. The contraction of the muscle spindle elicits a monosynaptic stimulus that travels to the ventral horn, which results in a discharge in the peripheral nerve, resulting in added muscle contraction.

The muscle contraction continues until the contraction of the muscle is actually painful.

2.5 TREATMENT OF TENSION-TYPE HEADACHE

There are several treatments available for the management of tension-type headaches. Two basic groups exist: the medical group and the chiropractic group. Both groups have a number of overlaps as far as treatment is concerned. The medical group has a number of approaches:

Pharmacological, biofeedback, massage, and relaxation therapy. Others include hypnotism and psychotherapy, which will not be discussed.

The chiropractic approach:

Manipulation of the spine, massage, trigger point therapy, ice and heat therapy.

Others are over-the-counter drugs (Gatterman 1990), which will not be discussed.

2.5.1 Medical Approach:

1. Pharmacological

There are various drugs available for the management of tension-type headache. Weisberg et al. (1989) list three approaches; namely, muscle relaxants (e.g. Methocarbomol), psychotropics (e.g. Amitriptyline) and analgesics (e.g. Meprobamate, diazepam). Raskin (1988) reports that the mainstay of therapy in tension-type headache sufferers is pharmacotherapy and that amitriptyline is the most beneficial. This is in keeping with the findings of Cerbo et al. (1991).

Sakuta and Takeda (1991) report that Tizanidine gave 90% relief of tension-type headache.

Martin (1972), howver, reports that drugs rarely give permanent relief.

2. Biofeedback

According to Haynes et al. (1982), this treatment is based on the assumption that the primary etiological component of tension-type headache is sustained muscle contraction about the head and the neck.

Diamond (1987); Wessely et al. (1989); Weisberg et al. (1989); Gatterman (1990); Cott et al.(1992) and Grazzi and Bussane (1993)

(Abstract) reports that biofeedback is beneficial for the treatment of tension-type headache.

Raskin (1988) however, reports that the results from biofeedback treatments of tension-type headache sufferers were somewhat disappointing.

3. Massage

A number of authorities have suggested that massage may help in the treatment of tension-type headache. Martin (1972); Weisberg et al. (1989); Gatterman (1990) and Puustjarvi et al. (1990) (Abstract) report that massage may be beneficial. Puustjarvi et al. (1990) (Abstract) have confirmed the clinical and physiological effects of massage on tension-type headache sufferers.

4. Relaxation therapy

Lance (1973, 1978 and 1982) has advocated the use of relaxation exercises for the treatment of tension-type headache. The patient does the exercises in an ordered sequence so as not to leave out any muscles. The patient has to contract the muscles and then suddenly relax them, starting from the legs, moving to the arms, then the neck, the forehead, the eyes and, finally, the jaw. When this has been completed, the patient is instructed to lie still for about five minutes with all the muscles totally relaxed. These exercises are to be carried out daily and are to become part of the patient's everyday life.

Ziegler (1985) supports this type of therapy.

2.5.2 Chiropractic Approach

1. Manipulation/Adjustments

Vernon (1988) has done extensive research into the literature with regards to the effectiveness of manipulation on tension-type headaches. Most have found that manipulation helps in the treatment of tension-type headache. The authors he quotes are Lewit (1971), Mannen (1980), Vernon (1983), Schimek and Mohr (1984), Miller et al. (1984), Jirout (1985), Droz and Crot (1985), Graff-Radford et al. (1987) and Turk and Rotkolb (1987) (All cited in Vernon 1988).

Others have also shown that manipulation helps in the treatment of headaches: Boake (1979) states that manipulation helps in the treatment of cervical headaches; Robinson (1980) suggests that skilful manipulation of the cervical spine may provide relief (transient or longlasting), and Gatterman (1990) reports that manipulation helps in the treatment of tension-type headache.

However, Balla and Iansek (1988) reports that "...manipulation.. has little place in the treatment of these headaches".

2. Massage

Look above at the medical treatment.

3. Trigger point therapy

Travell and Simons (1983) extensively researched the referred pain pattern of trigger points in muscles. They report that trigger points in the cervical muscles, the trapezius and the sternocleidomastoid muscles could refer pain into the head areas,

mimicking a tension-type headache. They report that by eliminating the trigger points there was a decrease in the referred pain. Elimination of the trigger point is done by injecting the trigger point or/as well as by stretching the muscle after spraying the muscle with a vaso-coolant.

3. Ice and heat therapy

Gatterman (1990) suggests this as a treatment for tension-type headache.

2.6 SUMMARY

It can be shown that tension-type headache has possible multiple causes and also multiple treatment approaches and that various authors have questioned its relationship to cervicogenic headaches.

CHAPTER 3

3 THE DATA, THE TREATMENT, AND THE INTERPRETATION

3.0 INTRODUCTION

This chapter deals with how this dissertation was performed, and it considers the following aspects:

- the methods, techniques and measurements;
- the type and nature of the data;
- the location of the data;
- how the data was captured; and
- the statistics used.

3.1 Methods, techniques and measurements

From August 1993 to June 1994 thirty-six patients applied to take part in the research project of which only thirty were accepted. The acceptance was on the basis of the diagnosis of tension-type headache from the history and also the physical examination. Only the patients above the age of 14 were accepted into the project. The patient group was randomly divided into two groups namely the treatment and placebo group.

Process of randomisation

Random allocation of the patients was as follows: Seven blocks of a size four were created in which there were two placebo (P) and two treatment (T) patients allocated to a block. There were effectively six possible combinations that could occur namely: PPTT, PTPT, PTTP, TPPT, TTPP, TPTP.

A dice was thrown and whatever number came up was applicable to the above boxes. The final two patients were decided on the toss of a coin where heads represented placebo group and tails represented treatment group. The following numbers occurred on the toss of the dice: 5; 3; 5; 6; 4; 3; 3; coin flip was tails then heads. The combinations used was: TTPPPTTPTTPPTPTPTPPTPTTPPTTPTP.

The patients were given a Patient Consent Form (Appendix A) that outlined the project, and that gave them various other forms of treatments available for their condition. They were informed that there were two groups, each receiving different types of treatment. (They were not told what the difference would be.)

The treatment group received chiropractic treatment that consisted of 10 minutes of massage of the thoracic and cervical areas, and adjustments to the fixations found in the cervical and thoracic spines. The adjustments were those outlined by the Diversified Method of adjusting.
The placebo group received only 10 minutes of massage over the cervical and upper thoracic areas, and no adjustments were performed on these patients.

Although no study to date has outlined the effective number of treatments for tension-type headache, it was decided to give nine treatments to all the patients. (As Vernon (1983), cited in Vernon (1988), did for his study.) If the patient was headache-free before the end of his allotted nine treatments, he was still

monitored for the remainder of his "treatments". After the nine treatments were completed, the patient was asked to return in one month for a re-evaluation of his condition to establish the long-term effectiveness of his treatment. During all the treatments the patient filled out a Pain Questionnaire (Appendix C1) and a Disability Index Questionnaire (Appendix C2). The patient also filled in the Pain Questionnaire and the Disability Index Questionaire on the initial visit and the one month follow-up. The patients were treated nine times over a period of three weeks, after which they were discharged for one month. They then reported back for a re-evaluation.

Detailed Patient Procedure

The patient called in and made an appointment to see the researcher. On the initial consultation the patient was given the General Questionnaire (Appendix B) which was filled in with the researcher present to ensure that there was no misunderstanding regarding the questions asked. The patient was given the "Patient Consent Form" (Appendix A) outlining the project and its rules, and was asked to fill in the Symptom Diagram (Appendix D). Then a full case history was taken (Appendix E1), after which the patient underwent a full physical examination (Appendix E2). This was followed by a regional examination (Appendix E3) of the cervical and thoracic areas where the researcher concentrated on the spine and the muscles of the cervical and thoracic areas.

After this, a diagnosis was derived and if the patient was suffering from a tension-type headache, he was allocated to a

group. The patient was asked to fill in the Pain Questionnaire (Appendix C1) and the Disability Index Questionnaire (Appendix C2). No treatment was given on the initial consultation.
The patients were scheduled for X-Rays of the cervical area to rule out conditions that contra-indicated manipulation. (Such as osteoporosis, ponticulus ponticus, fractures, osteomalacia and tumours). Following this, the patient was scheduled for nine treatments over a three week period. At each consultation, the patients were asked to fill in the Pain Questionnaire (Appendix C1) and the Disability Index Questionnaire (Appendix C2) before the start of each treatment.

One month after the last treatment the patient was given the Pain Questionnaire (Appendix C1) and the Disability Index Questionnaire (Appendix C2) to fill in.

3.2 Type and nature of the data

The two types are primary and secondary data.
The primary data was collected from the patients in the form of the Pain Questionnaire and the Disability Index. The Pain Questionnaire looked at the intensity of the tension-type headache, the duration of the tension-type headache and the frequency of the tension-type headache, while the Disability Index looked at the intensity to which the tension-type headache disabled the patient from doing certain activities. Other primary data included demographical data which was collected from the General Questionaire (Appendix B) on the initial consultation.

The secondary data was collected from a search of the related literature.

3.3 Location of the data and the sample

The location of the sample was the greater Durban area. The group was attracted to the clinic via advertising in two newspapers. The secondary data were collected from the Technikon Natal Library and other libraries in the country. Books, journal articles and a CD-ROM were used to scan for the related literature.

3.4 Criteria for the admissibility of the data

Only the data taken from the General Questionaire, Pain Questionnaire and the Disability Index were used. The data were checked at each treatment while the patient was in the room to ensure that there was no misunderstanding regarding the questions asked.

All primary data and secondary data were scanned to ensure that they were relevant to the topic.

3.5 Capturing and securing the data

The data was collected from the General Questionnaire (Appendix B) at the initial consultation. The patient were also given a Pain Questionnaire (Appendix C1) and Disability Index (Appendix C2) at the same visit. At treatment visits 1 to 9 they were given the Pain Questionnaire and the Disability Index (Appendix C1 and C2 respectively). One month after the last treatment the patients were given the Pain Questionnaire and the Disability Index

(Appendix C1 and C2 respectively) again. All this data was put onto "Progression Chart" (Appendix F) for each individual patient. This was then statistically analysed.

General Questionnaire: (Appendix B)

Various questions were asked in this questionnaire that were asked again in the history. The questionnaire was used to give the researcher a general outline of the case beforehand and also to allow the researcher to use the data as Demographical Data. Below is an outline of the questions asked in the General Questionaire:

Q 2 - how long the patient had had the tension-type headache;

Q 3 - when the tension-type headaches started;

Q 4, 10 - what aggravates the tension-type headache;

Q 5, 6 - where the tension-type headaches are situated;

Q 7 - the description of the tension-type headache;

Q 8 - the nature of the tension-type headache;

Q 9 - what time of the day the patient gets the tension-type headache;

Q 11 - what relieves the tension-type headache; and

Q 12 - associated symptoms experienced with the headache

Subsequent questions look at the general history of the patient with a couple of questions related to the tension-type headache.

Q 13 - whether the patient has allergies;

Q 14 - whether the patient smokes;

Q 15 - any family history of headaches;

Q 16 - whether the patient suffered any serious childhood diseases;

Q 17 - whether the patient has had any surgery;

Q 18 - general questions about general health;

Q 19 - whether the patient is taking any tablets for any condition other than the tension-type headaches;

Q 20 - whether the patient has seen any other practitioners about the tension-type headaches;

Q 21 - whether the above practitioner proved helpful;

Q 22 - the above practitioner's diagnosis of the headache; and

Q 23 - what the patient's stress level is at the time.

Pain Questionnaire: (Appendix C1)

This questionnaire looks at the patient's tension-type headache with respect to:

1. the frequency of the tension-type headache;
2. the duration of the tension-type headache; and
3. the intensity of the tension-type headache.

This questionnaire would show whether there is a drop in the frequency, the duration and the intensity of the tension-type headache during the treatment program and one month after the program. It would inform the researcher if any progress has been made with respects to the patient's headache.

Disability Index: (Appendix C2)

This questionnaire looks at the degree to which various aspects of the patient's lifestyle are disrupted by the tension-type headache.

The questionnaire looks at:

1. family/ home responsibilities;
2. recreation;
3. social activity;
4. occupation;
5. sexual behaviour;
6. self care; and
7. life-support activity.

The above Index would inform the researcher whether the treatment was having an overall affect on the patient's well-being and whether it was having a long-term impact. (One month after the last treatment.)

3.6 Statistics

Only two statistical test were applied, namely:

1. Paired T-Test, and
2. Unpaired T-Test.

The Paired T-Test was used within each group to determine whether there was a significant drop between the initial consultation and the ninth treatment and one month later with respect to the frequency, duration, intensity and disability index of the tension-type headache.

Only four pieces of data were used with this test: the initial consultation, treatment one, treatment nine, and one month follow-up. The statistical program used was the SGPLUS (Statgraphics Plus Version 6, supplied by Manugistics, Inc.)

The Unpaired T-Test was used to compare any differences between the two groups at the various stages of the treatment program.

It was decided to compare the initial consultation, treatment one, treatment nine and one month follow-up between the two groups with respect to the frequency, duration, intensity and disability of the tension-type headaches. The program used was the SGPLUS (Statgraphics Plus Version 6, supplied by Manugistics, Inc.).

The averages of the eleven pieces of data (initial, treatments one - nine, and one month follow-up) of the patients within each group were worked out, and four graphs were plotted with the treatment and placebo values superimposed on one another. The graphs were labelled: "Averages of tension-type headache intensity", "Averages of tension-type headache frequency/month", "Averages of tension-type headache duration" and "Averages of tension-type headache disability".
The program used to plot the graphs was Borland Quattro Pro 5.

3.7 Summary

This chapter has dealt with the methodology of the study. The process of patient selection and randomisation was outlined as well as the type of data that was collected. Finally, the methods of data collection and processing, and also the statistical formulas and the equipment used, were discussed.

CHAPTER FOUR

4 THE RESULTS

4.0 INTRODUCTION

This chapter looks at the results. It is divided into four sections, namely:

4.1. Unpaired T-Test (Two Sample Analysis);

4.2. Paired T-Test (One Sample Analysis);

4.3. graphs; and

4.4. demographical data.

Sample: 15 patients in placebo group, and 15 in treatment group.

Confidence interval: 95%

H_0 : There is no significant different between the data of the 2 groups

H1 : There is a significant different between the data of the 2 groups

4.1 Unpaired T-Test: (2 Sample Analysis)

The two groups were compared to one another with respects to the initial reading, treatment one (RX 1) reading, treatment nine (RX 9) reading and one month follow-up reading. There are four basic headings; namely, the disability, duration, frequency and pain intensity.

Table 4.1: 2 Sample Analysis (Unpaired T-Test) of the Placebo versus the Treatment Group. (Confident intervals)

	DISABIL.	DURATION	FREQUENCY	PAIN INT.
Ini	-20,5; 1,05	-3,4; 3,35	-0,57; 9,6	-1,37; 0,7
RX1	-6,11; 9,18	-2,75; 2,49	-1,77; 7,1	-0,40; 2,54
RX9	-2,27; 7,47	-0,51; 3,18	-3,23; 9,36	-0,32; 1,52
OMF	-9,64; 2,04	-0,45; 2,18	-5,17; 7,31	-1,9; 1,1

OMF represents one month follow-up. The significant levels of table 4.1 are shown in table 4.2 below.

Table 4.2: Shows the significant levels of the 2 Sample Analysis (Unpaired T-Test)

	DISABIL.	DURATION	FREQUENCY	PAIN INT.
Init.	0,075	0,984	0,079	0,514
RX 1	0,684	0,918	0,228	0,149
RX 9	0,283	0,150	0,327	0,194
1 Month	0,193	0,682	0,729	0,589

The 2 Sample Analysis test do not reject H_0. (At the 5% level of significance)

4.2 Paired T-Test: (One Sample Analysis)

This test was applied within the individual groups with respect to the differences between the initial consultation and the treatment nine, and between the initial consultation and one month follow-up. Four "subclasses" were used, namely disability, duration, frequency and pain intensity.

DISABILITY

Table 4.3: One Sample Analysis (Paired T-Test) comparing the initial consultation to the ninth treatment and the one month follow-up with respect to the disability (Confidence intervals)

	INIT. vs RX9	**INIT. vs 1 MONTH FOLLOW.**	**SAMPLE SIZE**
Treat	11,667; 23,933	11,837; 26,697	15
Placebo	21,126; 39,141	13,732; 36,668	15

Table 4.4: Significant levels of table 4.3

	INIT. vs RX9	**INIT. vs 1 MONTH FOLLOW.**	**SAMPLE SIZE**
Treatment	0,000022	0,00007	15
Placebo	0,000004	0,00033	15

Reject H_0 for disability at the 5% level of significance.

DURATION

Table 4.5: One Sample Analysis (Paired T-Test) comparing the initial consultation to the ninth treatment and the one month follow-up with respects to the duration (Confident Intervals)

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW.	SAMPLE SIZE
Treat	2,814; 7,186	2,646; 7,687	15
Placebo	3,709; 9,024	2,88; 8,254	15

Table 4.6: Significant levels of Table 4.5

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW	SAMPLE SIZE
Treatment	0,0002	0,0006	15
Placebo	0,0001	0,0005	15

Reject H_0 for duration at the 5% level of significance.

FREQUENCY

Table 4.7: One Sample Analysis (Paired T-Test) comparing the initial consultation to the ninth treatment and the one month follow-up with respect to the frequency (Confident Intervals)

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW.	SAMPLE SIZE
Treat	5,815; 17,785	8,752; 20,981	15
Placebo	5,130; 15,537	6,896; 15,904	15

Table 4.8: Significant levels of table 4.7

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW.	SAMPLE SIZE
Treatment	0,0008	0,0001	15
Placebo	0,0007	0,00008	15

Reject H_0 for frequency. (At the 5% level of significance)

PAIN INTENSITY

Table 4.9: One Sample Analysis (Paired T-Test) comparing the initial consultation to the ninth treatment and the one month follow-up with respect to the pain intensity (Confident Intervals)

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW.	SAMPLE SIZE
Treat	4,231; 6,302	4,088; 6,312	15
Placebo	5,259; 7,141	3,513; 6,753	15

Table 4.10: Significant levels of table 4.9

	INIT. vs RX9	INIT. vs 1 MONTH FOLLOW.	SAMPLE SIZE
Treatment	0,00000003	0,00000008	15
Placebo	0,000000001	0,00008	15

Reject H_0 for pain intensity at the 5% level of significance.

4.3 Graphs

Four graphs are plotted, with the treatment group and the placebo group on the same axes. The graph titles are as follows:

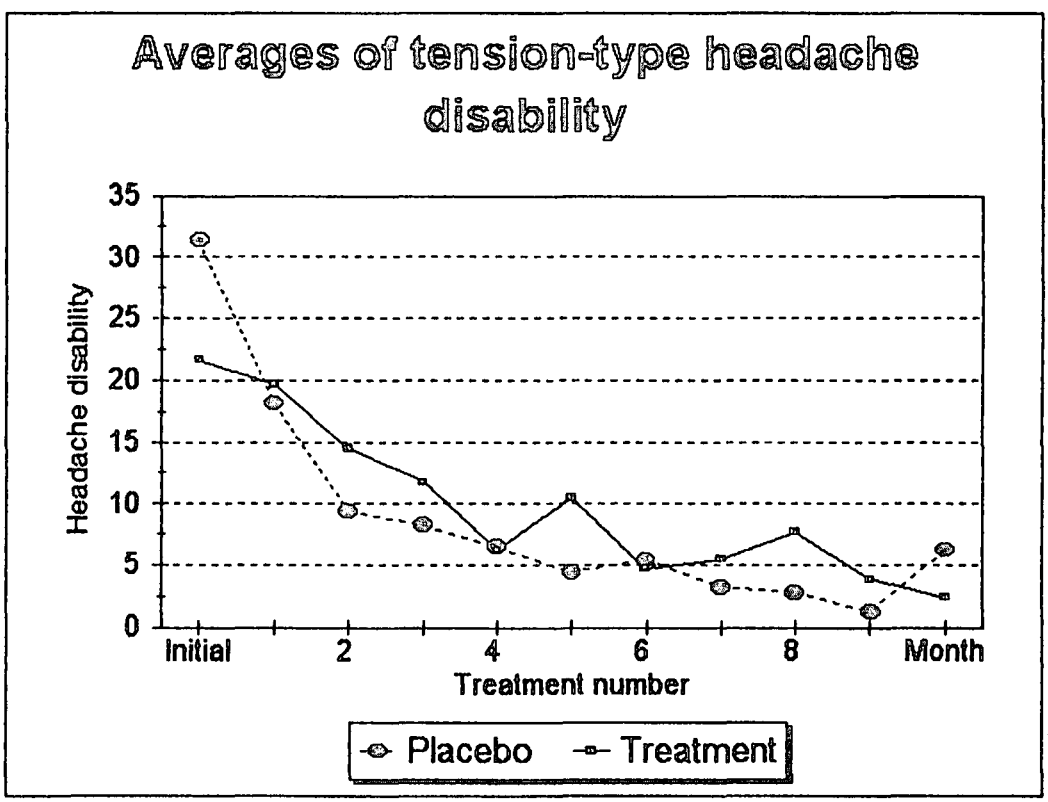
4.1. Averages of tension-type headache disability;

4.2 averages of tension-type headache duration;

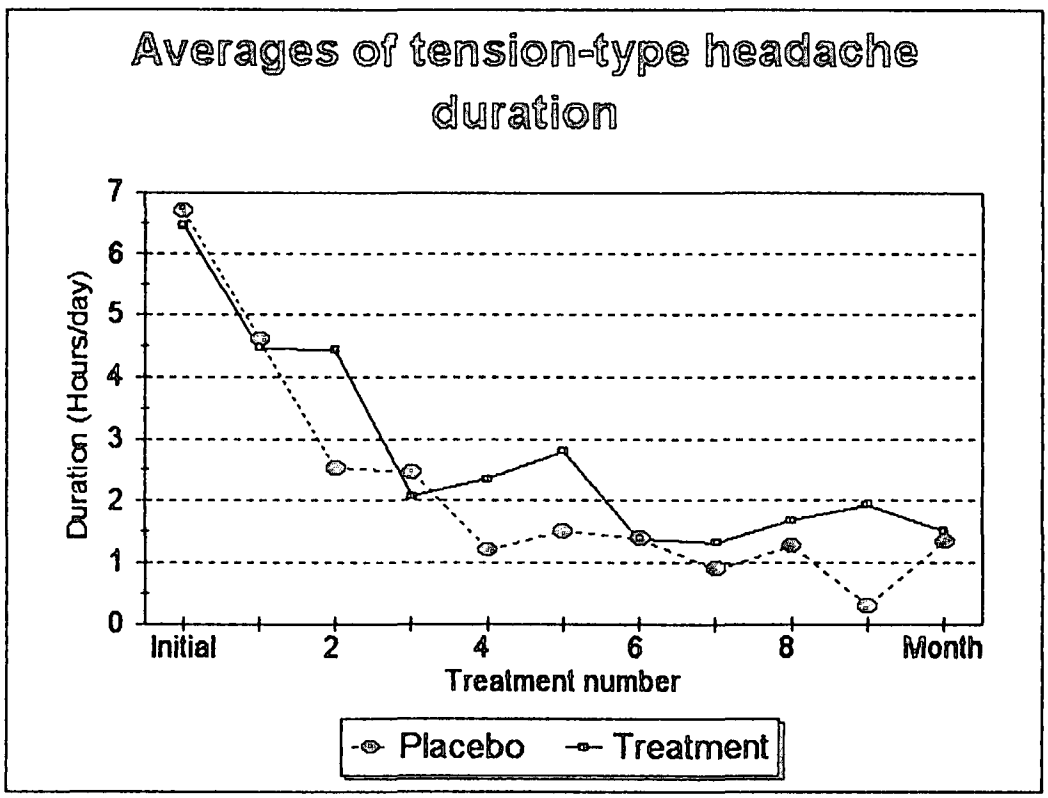
4.3 averages of tension-type headache frequency/month; and

4.4 averages of tension-type headache intensity.

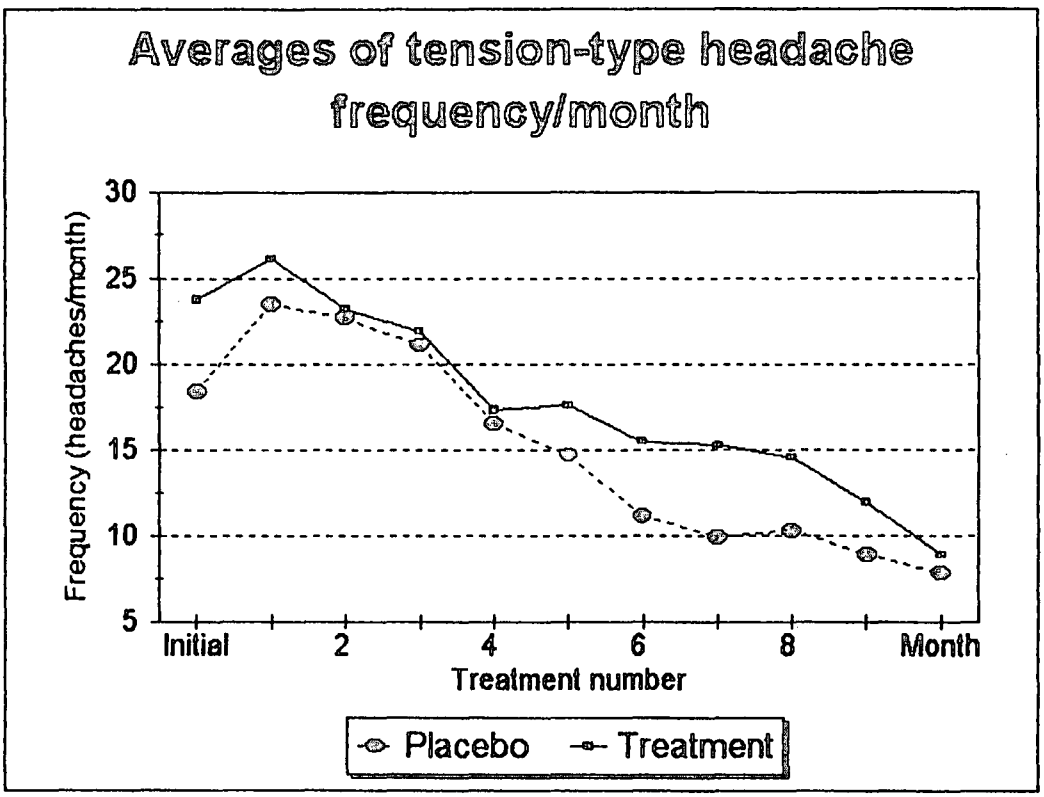
Graph 4.1: Averages of tension-type headache disability over the treatment program and one month later



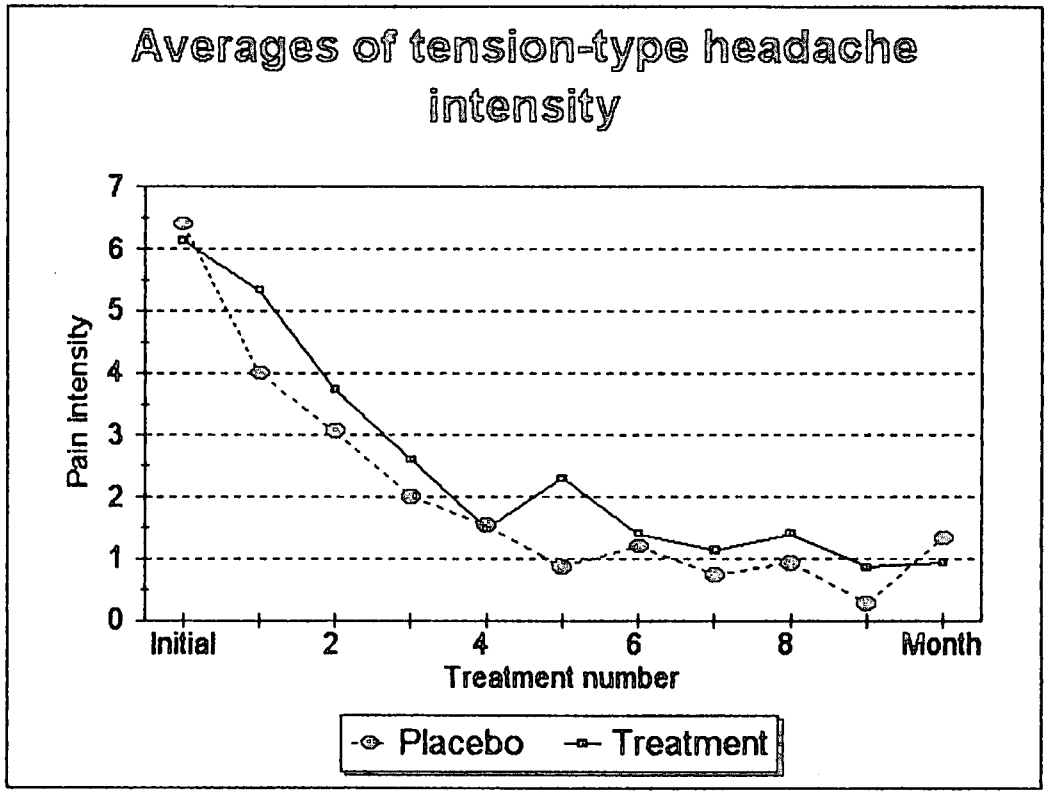
Graph 4.2: Averages of tension-type headache duration over the treatment program and one month later



Graph 4.3: Averages of tension-type headache frequency/month during the treatment program and one month later



Graph 4.4: Averages of tension-type headache intensity over the treatment program and one month later



4.4 Demographical data

The data collected from the General Questionnaire is given here. The data from the 30 tension-type headache patients accepted for the project is applied here.

The basic categories are:

- age of patients;
- duration of tension-type headaches;
- female : male ratio;
- start of tension-type headache;
- family history of headaches;
- aggravating factors;
- relieving factors;
- location of the tension-type headaches;
- description of tension-type headache;
- nature of tension-type headache;
- associated symptoms with tension-type headache;
- which practitioners the patient has seen and if they were helpful; and
- stress levels.

Age

Oldest patient: 63 years old

Youngest patient: 17 years old

Average age: 39 years old

Table 4.11: Summary of tension-type headache in the various age groups

AGE:(YEARS OLD)	PERCENTAGE:
0 - 10	0%
10 - 20	6,6%
20 - 30	23,33%
30 - 40	20%
40 - 50	26,6%
50 - 60	16,6%
60 - 70	6,6%
70 and up	0%

Duration of tension-type headache

Shortest duration: 6 months

Longest duration: 40 years

Average duration: 9,6 years

Table 4.12 on the following page gives a summary of the duration of tension-type headache.

Table 4.12: Summary of duration of tension-type headache

DURATION:(YEARS)	% PATIENT:
0 - 5	40%
5 - 10	23,33%
10 - 15	10%
15 - 20	6,66%
20 - 25	13,33%
25 - 30	3,33%
30 - 40	0%
40 AND UP	3,33%

Female : Male Ratio

Female: 63,33%

Male: 37,66%

The ratio of female to male is roughly 2 : 1

Start of the tension-type headache

1. From childhood 20%
2. Trauma 23,3%
3. Work 60%

Family history

1. Mother 43%

2. Father	6,6%
3. Brother	3,3%
4. Sister	16,6%
5. Grandparents	6,6%
6. Children	16,6%

Aggravating factors

1. Tension/stress	100%
2. Tiredness	50%
3. Hunger	23%
4. Noise	46,6%
5. Light	33,3%
6. Menstruation	16,6%

Relieving Factors

1. Medication	80%
2. Relaxing: lying down	66,6%
hot bath/shower	43%
massage	53,3%
hot	6,6%
cold	6,6%

Location of tension-type headache

HEAD AREA:

1. In front (forehead)	56,6%
2. On the sides (temple)	53,3%
3. On top of head (Parietal)	46,6%
4. At the back of head (Occipital)	80%

5. Bilateral	73,3%
6. Unilateral	20%

ELSEWHERE

1. Facial pain	13,33%
2. Eye pain	36,6%
3. Neck pain	73,3%
4. Upper back pain	40%

Description of tension-type headaches

1. Stabbing	26,6%
2. Dull-type ache	40%
3. Feeling of pressure	40%
4. Feeling of tightness	36,6%
5. Throbbing type sensation	43,3%

Nature of tension-type headaches

1. Localized	43%
2. Radiate to other areas	63,3%

Time of day experiences headache

1. In the morning	50%
2. In the afternoon	60%
3. At night	33%
4. All day	43%
5. All night	20%
6. Keeps patient awake at night	23,3%
7. Wake patient up at night	40%

Associated symptoms with the tension-type headache

1. Nausea	56,6%
2. Vomiting	26,6%
3. Dizziness	29,9%
4. Dislike for light	33,3%
5. Dislike for sound	43%
6. Neck pain	80%
7. Scotoma	3,3%

Practitioners seen with regards to the tension-type headache

1. Specialist	26,6%
2. GP (Medical Doctor)	46,6%
3. Physiotherapist	20%
4. Dentist	6,6%
5. Chiropractor	23,3%
6. Acupuncturist	0%
7. Homoeopath	6,6%

Practitioners that helped the patient's tension-type headache

1. Specialist	6,6%
2. Medical Doctor	6,6%
3. Physiotherapist	16,6%
4. Dentist	3,3%
5. Chiropractor	16,6%
6. Acupuncturist	0%
7. Homoeopath	3,3%

Stress levels

1. Nil	0%
2. Mild	13,3%
3. Moderate	33,3%
4. High	40%
5. Very high	13,3%

4.5 SUMMARY

This chapter has dealt with the application of statistical formulas to the data and the presentation of the demographical data taken from the thirty tension-type headache patients.

CHAPTER FIVE

5 DISCUSSION

5.0 INTRODUCTION

This chapter deals with the discussion of the results presented in chapter four as well as a look at the problems encountered in the running of the project and the data collection. The data will be discussed in terms of different subheadings; namely, the disability, the duration, the frequency and the pain intensity of the tension-type headache and conclusions will be made regarding the impact or the lack thereof of the overall results. The demographical data will be compared with that in the literature review in an attempt to determine if there are differences between the data in the literature review and the data collected in this project.

5.1 DISCUSSION OF THE RESULTS:

5.1.1 Disability of the tension-type headaches

The Unpaired T-Test was applied to the Disability Index results in an attempt to determine whether there was a significant difference between the two groups on the initial reading, the treatment one (RX 1) reading, the treatment nine (RX 9) reading and the one month follow-up. The results show that H_0 could not be rejected (Tables 4.1 and 4.2) meaning that there was no significant difference between the two groups. ($P>0.05$)

The Paired T-Test was used to determine whether there is a difference between the initial consultation and RX9, and the initial consultation and the one month follow-up in the same group. The results indicated that the H_0 must be rejected in both cases (Tables 4.3 and 4.4), indicating that there was a significant difference between the RX 9 and the one month follow-up in relation to that of the initial consultation in both the treatment and the placebo groups. ($P<0.05$)

The graph of the averages of tension-type headache disability (Graph 4.1) shows that both the treatment groups and the placebo group values dropped over nine treatments and one month later in relation to the starting values. It shows that the placebo started with a higher value than the treatment group but dropped at a faster rate than the treatment group.

At treatment number four and treatment number six the disability values of the treatment group and the placebo group were similar. At the ninth treatment, the average disability value of the placebo group was lower than that of the treatment group (1,27 in relation to 3,86 found in the treatment group). However, on month later, the treatment group disability average was lower than that of the placebo group (2,4 in relation to 6,2).

5.1.2 Duration of tension-type headaches

The Unpaired T-Test was performed to compare the different groups with respect to the duration of the tension-type headache. The results show that the H_0 cannot be rejected (Tables 4.1 and 4.2). There is thus no significant difference between the placebo group

and the treatment group with respect to the duration of tension-type headache. ($P>0.05$)

The Paired T-Test was used to determine if there was a difference between the initial consultation and the RX 9, and the initial consultation and the one month follow-up within each group. The results show the H_0 must be reject ($P<0.05$) indicating that there is a significant difference between the two values (Tables 4.5 and 4.6).

Graph 4.2 shows the treatment group and the placebo group superimposed on one another. The placebo group was generally below the treatment group except at treatment one and three where it was above the values of the treatment group. At the ninth treatment there was a difference between the value of the placebo group (0,33 hours/ day) and the treatment group (1,93 hours/ day). At the one month follow-up, the values were very close with the placebo group slightly below that of the treatment group (1,33 hours/ day and 1,5 hours/ day respectively).

Comparing the data collected in this study to that of Vernon's (1983), there is a difference in both the pre and post treatment values with respect to the duration of the tension-type headache. Vernon's (1983) pre and post treatment values were 10,8 and 2,08 respectively while this project's treatment group values were 6,47 and 1,5 respectively, and placebo values were 6,7 and 1,33 respectively. Although the pre-treatment values of Vernon's were higher, the post-treatment values are very similar (Table 5.1).

5.1.3 Frequency of tension-type headaches

Comparison between the two groups was made using the Unpaired T-Test. The results (Tables 4.1 and 4.2) show that H_0 is not rejected, indicating that there is no significant difference between the two groups with respect to the frequency of tension-type headache a month. ($P>0.05$)

The Paired T-Test results with respect to the frequency of tension-type headaches per month show that the H_0 is rejected in both groups, (Tables 4.7 and 4.8) demonstrating a significant difference between the initial values and the RX 9 as well as the one month follow-up values. ($P<0.05$)

Graph 4.3 shows that the treatment group started with a higher frequency than the placebo group (23,73 headaches per month in treatment group compared in relation to 18,4 headaches a month in the placebo group).

At treatment one there was an increase in the frequency of the tension-type headache in both the treatment and the placebo group (26,1 headaches per month and 23,46 headaches per month respectively) in comparison to the initial consultation. Both groups slowly reduced their frequency values with the placebo group dropping more rapidly after the fourth treatment. The placebo group at the ninth treatment had fewer headaches per month than the treatment group (8,86 headaches/month and 11,93 headaches/month respectively). The one month follow-up showed the placebo group having fewer headaches a month in comparison to the treatment group (7,8 headaches/month compared to 8,86 headaches/month in the treatment group).

Vernon's (1983) pre and post treatment values were 17,5 and 3 respectively. This project's treatment groups values were 23,73 and 8,86 while the placebo group values were 18,4 and 7,8 respectively. It can be noted that this project yielded greater pre and post treatment frequency values than that of Vernons (1983) (Table 5.1).

5.1.4 Pain intensity of tension-type headache

Comparison between the two groups pain intensity values using the Unpaired T-Test shows that H_0 is not rejected indicating no significant difference between the two groups (Tables 4.1 and 4.2). (ie. $P>0.05$)

The paired T-Test results (Tables 4.9 and 4.10) showed that H_0 is rejected in both the placebo and the treatment groups with respect to the pain intensity of the headache. This indicates that there is a significant difference between the initial consultation and the RX 9, and the initial consultation and the one month follow-up in both the treatment and the placebo groups with respect to the pain intensity of the tension-type headache in both groups. ($P<0.05$)

The graph (Graph 4.4) of the averages of pain intensity of tension-type headache shows that both the treatment and placebo groups started with similar values in the initial consultation, treatment value slightly lower than the placebo value (6,13 and 6,4 respectively). Both groups showed a steady decrease, with the placebo group dropping slightly quicker than the treatment group until the fourth treatment where both groups were similar in value. The treatment group then spiked up to 2,33 in the fifth

where it then slowly decreased to 0,86 in the ninth treatment and then increased to 0,93 on the one month follow-up.

The placebo group increased slightly in the sixth treatment, then dropped slightly in the seventh only to increase again in the eighth treatment to 0,93. The value then dropped to 0,27 in the ninth treatment only to increase again in the one month follow-up to 1,33.

Generally the values of the placebo group were lower than the treatment group except in the initial consultation, the fourth treatment and the one month follow-up.

Vernon's (1983) pain intensity pre and post treatment values were 3,70 and 1,79 respectively. This project's treatment group was 6,13 and 0,93, while the placebo group was 6,4 and 1,33. The post treatment values are similar in both studies, while the pre treatment values were greater in this project compared to Vernon's (1983).

Table 5.1: Summary of the findings of Vernon (1983) (cited in Vernon 1988) and this project's findings

	FREQUENCY Pre : Post	**DURATION** Pre : Post	**INTENSITY** Pre : Post
Vernon (1983)	17,5 : 3	10,8 : 2,08	3,79 : 1,29
Treat-ment	23,73: 8,86	6,47 : 1,5	6,13 : 0,93
Placebo	18,4 : 7,8	6,7 : 1,33	6,4 : 1,33

The data suggest that both the chiropractic treatment and the massage treatment helped in the management of tension-type headache. The data rejects the hypothesis that those patients who received chiropractic treatment would have a greater improvement than those who received massage (placebo) treatment only. The data also suggests that those patients who received massage only actually benefited more over the nine treatments than the treatment group did. However, looking at the long term impact (one month follow-up), it must be noted that in terms disability of the headache and pain intensity, the treatment group fared slightly better than the placebo group. The pain duration after one month was very similar in both groups, with the placebo group having slightly fewer headaches than the treatment group per day. (Placebo group suffered 1,3 hrs/day while the treatment group suffered 1.5 hrs/day.)

The pain frequency was less in the placebo group after one month than the treatment group. (Placebo group had 7,8 headaches/month while the treatment group had 8,86 headaches/month.)

With regards to the massage (placebo) group, this project confirms the reports by Martin (1972); Weisberg et al. (1989); Gatterman (1990): and Puustjarvi et al. (1990) that massage is beneficial in the treatment of tension-type headaches.

This project also supports the findings of Vernon (1983) (cited in Vernon 1988) and others who have reported that manipulation helps in the treatment of tension-type headache.

5.2 Demographical data

A comparison is made between the demographical data of this project and the demographical data seen in the literature review.

Age

The table 5.2 on the following page is an amalgamation of tables 4.11 and 2.1, which looks at the percentage of patients in the various age groups as shown by Lance et al. (1965) and this project.

Table 5.2: Comparison between Lance et al. (1965) and the demographical data of this project with respect to percentage of population in various age groups.

AGE: (YEARS OLD)	PERCENTAGE: LANCE ET AL. (1965)	PERCENTAGE: THIS PROJECT
0 - 10	16%	0%
10 - 20	24%	6,6%
20 - 30	19%	23,33%
30 - 40	17%	20%
40 - 50	15%	26,6%
50 - 60	6%	16,6%
60 - 70	2%	6,6%
70 - 80	1%	0%

The table 5.2 shows a difference between the two groups overall. However, a large percentage of the patients are found between the age groups of 20 to 50 years old. Lance et al. (1965) found approximately 51% in this age group, while this study shows approximately 70% of all patients as falling into this age group. A big difference between the groups occurred between the age groups of 0 to 20 years old where Lance et al. (1965) report that 40% of the population fell into this group while this project shows only 6,6% of the population as falling into this age category. One of the main reasons for this discrepancy that

nobody below the age of 14 years old were admitted into the project.

Duration

A comparison is made between the duration of tension-type headaches in a population with respect to Lance et al. (1965) and this project.

Table 5.3: Comparison between Lance et al. (1965) and the demographical data of this project with respect to the duration of tension-type headaches in a population.

DURATION: (YEARS)	% PATIENT: LANCE ET AL. (1965)	% PATIENT: THIS PROJECT
0 - 5	25%	40%
5 - 10	18%	23,33%
10 - 15	11%	10%
15 - 20	10%	6,6%
20 - 30	16%	16,6%
30 - 40	7%	0%
40 - 65	13%	3,33%

From table 5.3, it can be seen that in both groups the great bulk of the patients who have a tension-type headache, have had it for 0 to 15 years. Both groups had a greater percentage of the

patients having a tension-type headache between 0 to 5 years. (Lance et al. (1965) had 25% while this project had 40%.)

Female : male ratio

This project had 63,33% females and 37,66% males which is in keeping with the findings of Friedman et al. (1954) who found that 65% of the patients suffering from tension-type headache were female. This is not in keeping with the ratio reported by Rasmussen et al. (1991) where the ratio of female to male was 5 : 4 . In other words, approximately 55,5% of the patients suffering from tension-type headache were female.

Onset

The literature indicates that the tension-type headache occurs after or during a stress related period. 60% of the patients in this project stated that the tension-type headache started from work, while 20% stated that it had started as a result of trauma. This is in keeping with the findings of Diamond and Freitag (1992).

Family history

Friedman et al. (1954) reported that there is a family history of headache in 40% of all tension-type headache sufferers. However, they did not elaborate on which members of the family were affected. This study shows that 43% of the patients' mothers had had headaches, 6,6% of the fathers, 3,3% of the brothers, 16,6% of the sisters, 6,6% of the grandparents and 16,6% of the children of the patients had headaches.

Aggravating factors

100% of the patients in this project indicated that stress/tension aggravated the tension-type headache. 46,6% and 33,3% of the patients indicated that noise and light aggravated their tension-type headaches respectively. This is in keeping with Lance (1973).

50% stated that tiredness aggravated their tension-type headaches.

Relieving factors

80% indicated that medication was used for relief of the tension-type headache. (This is in keeping with Lance (1973).) 66,6% of the patients obtained relief from lying down, while 43% of the patients obtained relief from a hot bath or shower. 53,3% of the patients indicated that they received relief from massage.

Location

73,3% of the patients indicated that they suffered from the tension-type headaches bilaterally (this is contrary to the findings of Friedman et al. (1954) and Rasmussen et al. (1991) who found that 90% of the patients with tension-type headaches noticed the headache was situated bilaterally).

20% reported that they suffered from unilateral headaches. (Contrary to the findings of Lance (1973) who reported that 10% of the patients had unilateral headaches.)

Description of headache

40% of the patients in this project indicated that they experienced a dull-ache type of pain. 40% stated that they felt a feeling of pressure, while 36,6% of the patients indicated that they experienced a feeling of pressure. (This is contrary to the findings of Rasmussen et al. (1991) who reported that 78% of the tension-type headache sufferers suffered from a feeling of pressure or tightness rather than pain.)

43,3% of the patients in this project reported a throbbing type sensation with the tension-type headache (contrary to Lance (1973) who reported that 25% of the tension-type headache patients suffer from this type of sensation). These data tend to suggest a possible vascular cause; however, this sensation could also be as a result of the tension-type headache and not the cause of the tension-type headache.

26,6% of the patients reported that they suffered from sharp stabbing pains, which is in keeping with the findings of Lance (1973).

Associated symptoms

56,6% of the patients reported nausea with the tension-type headache, while 26,6% indicated that when the tension-type headache was severe they had vomited. 29,9% of the patients had dizziness with the headache. 33,3% and 43% had a dislike for light and sound respectively when they had the tension-type headache. 80% of the patients had neck pain with the tension-type headache. (This may suggest that the neck could be involved in the tension-type headache, which is in keeping with the findings

of Edelings (1988); Bogduk (1992) and Vernon et al. (1992), as well as Sjaastad et al. (1985) (cited in Vernon et al. 1992.)

5.3 PROBLEMS ENCOUNTERED IN THE PROJECT

As with most research projects involving patients, there was the problem of getting the patients and then ensuring that they followed the project through. Over a period of eleven months, thirty-six patients applied to take part in the research project of which 30 were accepted. Of the other six patients, two had Myofascial Pain and Dysfunction Syndromes as per Travell and Simons (1983) that were referring pain into the neck and head, one had a "headache" owing to sinus problems coupled with a polyps observed in the left nostril, one was non-compliant and two were accepted but did not start the project.

The two Myofascial Pain and Dysfunction Syndrome patients were referred to another researcher, and the sinus patient was referred to an ear, nose and throat surgeon.

The non-compliant patient and the two that did not start emphasised that there were work problems, problems with lifts to get to the clinic and also that the project was far too long (two months) and that they were looking for a quicker method to obtain relief.

A second problem was the patient's difficulty in answering the pain questionnaire with respect to frequency and duration of the tension-type headache. The problem here was that the patient had to recall when he/she had a tension-type headache and how long this had lasted. The problem was remedied when the patients were

told to diarise the time of the headache and how long it had lasted.

A third problem that was encountered occurred with respect to the General Questionnaire where question four and ten asked the same question, as did question five and six. It would have been best to amalgamate the questions. Also, the researcher would have liked to design a questionnaire to give the patients after they had completed the program and which would have looked at the further demographical data and the impact of the project on certain factors such as the "neurovegetative" symptoms highlighted by Vernon (1983), cited in Vernon (1988).

Although this project aimed at looking at the patient's perception of the headache before and after treatment, in retrospect it may have been of some benefit to include objective findings such as assessment of the range of motion of the cervical spine before and after treatment.

It is noted that the sample size is small in comparison to the general population.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS:

With respect to the data, it can be shown that the treatment group (receiving massage and adjustments) and the placebo group (receiving massage) both responded to the treatment given. The data rejected the hypothesis that the treatment group would have a greater improvement than the placebo/massage group. Indeed, the data suggested that massage in some cases was more beneficial than the group receiving massage and adjustments. The question that arises is, if no adjustments were given, then surely the treatment group would have responded in a similar fashion as the placebo (massage) group. And if such is the case, then what is the benefit of receiving adjustments? This might be an area where research is required, where it would be feasible to look at the impact of adjustments only versus adjustments and massage versus massage in a placebo-controlled trial to determine whether the adjustments alone would have a greater/similar/lesser impact on the patient's tension-type headache in comparison to the massage group and the massage and adjustment group. Vernon (1983) (cited in Vernon 1988) gave nine treatments consisting of adjustments to tension-type headache patients and had remarkable results (Table 5.1).

The data cautiously suggest that the adjustments might have a long-term impact as well as a short term impact on the patient's tension-type headache; however, further research would be

required to determine whether this is the case. Further research that follows up the patient at one month, three month, six month and one year intervals after the last adjustment is required.

This project attempted to determine the role chiropractic plays in the management of tension-type headache, and what role vertebral dysfunction and its correction plays in the management of tension-type headache. The project answered the former with the decrease in the pain intensity, frequency, duration and disability of the patient's tension-type headache in the treatment group (as well as showing that massage as a modality as well as a treatment in its own right is effective).
However, it would be of interest to compare chiropractic treatment to other treatments that are available, such as pharmacotherapy, biofeedback, relaxation therapy, and so on.

The question as to whether vertebral dysfunction and its correction play a role in the management of tension-type headache would have to be answered very cautiously. The treatment group showed a significant change in relation to the start of the treatment, however, as did the placebo group. Motion palpation of the cervical spine was done on all the patient's cervical and thoracic spines. Over 90% of the patients had C2 fixations as well as C3 fixations.

The response to the massage by the placebo group appears to support the role of muscles as a possible cause of tension-type headache, as reported Weisberg et al. (1987) and Gobel et al.

(1991). The "Vertebrogenic Muscle Contraction Model" by Vernon (1988), the "Myofascial-Supraspinal-Vascular Model" by Olesen (1991) and the "Chronic Muscle Contraction Model" by Diamond (1987) all support the role of muscles as a possible cause of tension-type headache.

The concept that tension-type headache could have a vascular cause cannot be ignored, as 43,3% of the patients reported a throbbing-type sensation with the tension-typeheadache. This could support the theory that the tension-type headache has a vascular origin; however, it is important to note that the throbbing sensation could be an effect of the tension-type headache rather than the cause. Olesen's Myofascial-Supraspinal-Vascular Model incorporates a vascular component as one of its three axes.

The researcher cannot comment on the Continuum-Severity Model as this project did not deal with patients suffering from migraines. However, of note, four patients did report that they suffered from migraines once every few months. The symptoms they described were in keeping with migraine. This may suggest that tension-type headache and migraine headaches could be part of a continuum. However, this project cannot validate this.

The possibility that the tension-type headache arises from psychological stresses cannot be refuted as a number of the patients had noticeable psychological stresses. Of note, three patients had undergone stressful divorces, seven patients had financial difficulties, two patients had marital problems at the

time and were contemplating possible divorces, and three had exam pressures at the time. Looking at the answers concerning the stress levels in question 23 of the General Questionnaire (Appendix B), it can be seen that 13,3% of the patients rated their stress levels as mild, 33,33% as moderate, 40% as high and 13,3% as very high.

It was for this reason that this researcher recommends that it would be beneficial to have given the MMPI to the patients to assess their psychological status.

In conclusion, it appears that all available tension-type headache models have a lot to offer with respect to the causes/mechanisms of tension-type headache. This project's data cautiously suggest that patients who have tension-type headache may have a cervicogenic problem, as a large percentage of the patients had fixations of the upper cervical spine. However, this does not explain the response of the placebo patients to massage only. It could be theorised that by relaxing the cervical and thoracic musculature, there would be a decrease in the nociceptive input from the muscles as this could break down any vicious reflex arcs that could be set up, according to Diamond (1987). Furthermore, any relaxation of the cervical and thoracic musculature could result in less pressure on the facetal joints of the cervical spine, thus resulting in a decrease in the nociceptive inputs from the Type four receptors of Wyke. It must be emphasised that what has been said is speculation on the researcher's part in an attempt to explain why the massage group

responded well, and that future research would be required to substantiate these claims.

The evidence in this project cautiously suggest that patients suffering from tension-type headache could in fact be suffering from cervicogenic headaches as suggested by Sjaastad et al. (1985) (cited in Vernon et al. 1992); Bogduk (1992) and Vernon et al. (1992); however, the researcher believes that further research is required to confirm or refute the validity of the various models/ causative factors of tension-type headache.

CHAPTER SEVEN

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CHAPTER EIGHT

8.0 APPENDICES

The table 8.1 below shows what the various appendix symbols represent:

Table 8.1:

SYMBOL	APPENDICE
A	Patient Consent Form
B	General Questionaire
C1	Pain Questionaire
C2	Disability Index
D	Symptom Diagram
E1	Case History Form
E2	Physical Examination Form
E3	Regional Examination Form
F	Progression Chart

APPENDIX A

PATIENT CONSENT FORM

Dear Patient

Please read the following form very carefully are it contains important information concerning the treatment you will receive at the Natal Technikon Chiropractic Clinic for Tension-type headache.

The treatment you will receive will be used for research purposes. Thus, your progress under our care will be monitored and the results used for research purposes in order to improve and further our understanding of tension-type headache, and to show us which treatment works best for tension-type headache.

The above research project has been accepted by the Higher Education Committee of Technikon Natal.

All patients participating in this project will remain anonymous and only the researcher (Chris Penter) will know your identity.

The benefits for you taking part in this project are:

(A) You will receive free treatment for your tension-type headache

(B) You will be fully examined and should you suffer from any condition that is outside the scope of this project you will be referred to the appropriate physician who can then treat your condition.

The benefit that the researcher/ chiropractic profession will be getting are the following:

(A) The project will give the profession a greater understanding with respect to tension-type headache and its management.

(B) Get greater recognition of chiropractic in South Africa and the world.

(C) Completion of the researcher's Masters Diploma

It must be pointed out that you may be X-Rayed, so please inform the researcher if you are pregnant.

The type of treatment you can receive from other practitioners are:

(A) Drugs from the medical profession

(B) Physiotherapy

(C) Acupuncture

(D) Manipulation from an Orthopaedic surgeon

The treatment will take place at the Technikon Natal Chiropractic Day Clinic in Ritson Road, and in will spread over about 2 months.

Rules for taking part in this project:

(A) You are not allowed to receive any other forms of treatment for your tension-type headache for the duration of this program. This includes massage, drug therapy, physiotherapy or any other forms of treatment.

(B) If you are currently taking medication for your tension-type headache or for any other conditio, it is imperative that you inform the researcher of the type of medication you are taking and the dosage. Should you start taking drugs for anything during the research program it is imperative that you inform the researcher.

(C) Treatment appointments must be kept as punctual and unchanged as far as possible in order to ensure that both you and the researcher gain as much as possible from this project. (The appointments are planned to ensure maximum benefit from this treatment for the patient.)

Your involvement in this project is entirely voluntary and you are under no obligations to join the program. Please feel free to ask the researcher any questions that you have concerning this study at any stage of the program.

Once the program is completed you will be asked to come in again about one month after your last treatment to be evaluated.

I,..... on this day....of the month..... of the year 19.. have read the above document and understand all that is contained therein and agree to abide to the rules as set down in the document above.

Signed:.....

Witness:.....

APPENDIX B

GENERAL QUESTIONAIRE

Patient name: DOB: Age:

Male / Female:

Race:

Occupation:

Marital Status:

Do you have children?

If so, please record their ages:

	YES	NO
1. DO YOU SUFFER FROM HEADACHES?	....	....
2. HOW LONG HAVE YOU HAD THESE HEADACHES?		
1. Days	....	....
2. Weeks	....	....
3. Months	....	....
4. Years	....	....
3. DO YOU KNOW WHEN THEY STARTED?	....	....
1. From childhood	....	....
2. From any illness that you have had	....	....
3. Trauma	....	....
4. Menstruation	....	....
5. Work	....	....
6. Excessive activity: Sport	....	....
Housework	....	....
7. Other causes?	....	....
Please specify.....		
.....		
4. IS YOUR HEADACHE AGGRAVATED BY?		
1. Tension/stress	....	....
2. Tiredness	....	....
3. Hunger	....	....

	YES	NO
4. Movement of: head	....	....
neck	....	....
body	....	....
5. Weather changes	....	....
6. Foods: chocolates	....	....
cheese	....	....

other foods(Please specify which ones)
.....
.....

5. <u>WHERE ARE YOUR HEADACHES SITUATED</u>?

(You can mark more than one area)

Head

1. In front(forehead)	....	....
2. On the sides(temple)	....	....
3. Next to your ears	....	....
4. On top of your head	....	....
5. At the back of your head	....	....

Elsewhere

1. Facial pain	....	....
2. Ear pain	....	....
3. Eye pain	....	....
4. Jaw pain	....	....
5. Neck pain	....	....
6. Upper back pain	....	....

6. <u>ARE YOUR HEADACHES</u>?

1. On both sides of your head	....	....
2. On one side of your head:left	....	....
right	....	....

3. Other(please specify where)
.....
.....

7. <u>HOW WOULD YOU DESCRIBE YOUR HEADACHE</u>?

1. Stabbing	....	....
2. Dull-type ache	....	....
3. Feeling of pressure	....	....
4. Feeling of tightness	....	....
5. Throbbing type sensation	....	....
6. Other(please specify)	....	....

.....
.....

8. <u>DOES YOUR HEADACHE</u>?

1. Sit in one place all the time	....	....
2. Does it radiate to other areas	....	....

	YES	NO
3. Is it spread throughout the head	....	....
Other(please specify)		
.....		

9. WHEN DO YOU EXPERIENCE YOUR HEADACHE?

1. In the morning	....	....
2. In the afternoon	....	....
3. At night	....	....
4. All day	....	....
5. All night	....	....
6. Does it keep you awake at night	....	....
7. Does it wake you up at night	....	....
8. Other(please specify)	....	....
.....		
.....		

10. WHAT MAKES YOUR HEADACHE WORST?

1. Noise	....	....
2. Light	....	....
3. Movement of :body	....	....
head	....	....
neck	....	....
4. Activity :exercise	....	....
work	....	....
5. Coughing	....	....
6. Sneezing	....	....
7. Blowing nose	....	....
8. Menstruation	....	....
9. Other(please specify)	....	....
.....		

11. WHAT MAKES YOUR HEADACHE BETTER?

1. Medication	....	....
If so,please specify which ones		
.....		
.....		
2. Relaxing :lying down	....	....
hot bath/shower	....	....
massage	....	....
hot	....	....
cold	....	....
yoga	....	....
meditation	....	....

Do you have other means of relaxation?
If so,what are they?
.....

	YES	NO
3. Exercise	....	....
4. Food	....	....
5. Other(Please specify)	....	....
.....		

12. WITH YOUR HEADACHE, DO YOU EXPERIENCE ANY OF THE FOLLOWING?

1. Nausea	....	....
2. Vomiting	....	....
3. Dizziness	....	....
4. Ringing in the ears	....	....
5. Sensation that something is going to happen	....	....
6. Visual disturbances :blurring vision	....	....
double vision	....	....
7. Dislike for light	....	....
8. Dislike for sound	....	....
9. Drop attacks	....	....
10.Neck pain	....	....
11.Chest pain	....	....
12.Abdominal pain	....	....
13.Back pain	....	....

X - X - X - X - X - X - X

GENERAL HISTORY

	YES	NO
13. DO YOU SUFFER FROM ANY ALLERGIES?	....	....

If so,please specify which ones

.....

.....

14. DO YOU SMOKE?	....	....

If so,how many do you smoke a day?

.....

15. FAMILY HISTORY: DO ANY OF YOUR FAMILY SUFFER FROM HEADACHE?

1. Mother	....	....
2. Father	....	....
3. Brother	....	....
4. Sister	....	....
5. Grandparents	....	....
7. Husband/wife	....	....

	YES	NO
8. Children	....	....

16. HAVE YOU SUFFERED FROM ANY SERIOUS CHILDHOOD DISORDERS?

1. Rheumatic fever	....	....
2. Rheumatic heart disease	....	....
3. Heart disease	....	....
4. Asthma	....	....
5. Polio	....	....
6. Other(please specify which ones)	....	....

.....
.....

17. HAVE YOU HAD ANY SURGERY?	....	....

If so,please specify where and what for.

.....
.....
.....

18. DO YOU SUFFER FROM?

1. Diabetes	....	....
2. Epilepsy	....	....
3. Cancer	....	....
4. Sinus discomfort	....	....
5. Pain over heart area	....	....
6. Irregular beat	....	....
7. High blood pressure	....	....
8. Low blood pressure	....	....
9. Chest pain	....	....
10.Breathing difficulty	....	....
11.Wheezing	....	....
12.Neurological problems	....	....
13.Urinary problems	....	....
14.Women only:Irregular cycles	....	....
Hot flushes	....	....
Menstrual cramps	....	....
Lumps in the breast	....	....
Excessive flow	....	....
15.Others(please specify which)	....	....

.....
.....

19. ARE YOU TAKING MEDICATION FOR ANY PROBLEM OTHER THAN YOUR HEADACHE?	....	....

If so please specify which ones:

.....

	YES	NO
20. HAVE YOU SEEN ANYONE ELSE ABOUT YOUR HEADACHE?....	....	....
If so, was it a:		
1. Specialist	....	....
2. GP	....	....
3. Physiotherapist	....	....
4. Dentist	....	....
5. Chiropractor	....	....
6. Acupuncturist	....	....
7. Homoeopath	....	....
8. Other	....	....
If so, specify.....		

21. WERE ANY OF THE ABOVE HELPFUL?

1. Specialist	....	....
2. GP	....	....
3. Physiotherapist	....	....
4. Dentist	....	....
5. Chiropractor	....	....
6. Acupuncturist	....	....
7. Homoeopath	....	....
8. Other	....	....

22. WHAT WAS THE ABOVE PRACTITIONER'S DIAGNOSIS?

.....

.....

23. HOW WOULD YOU RATE YOUR STRESS LEVEL AT THIS MOMENT?

1. Nil	....	....
2. Mild	....	....
3. Moderate	....	....
4. High	....	....
5. Very high	....	....

APPENDIX C1

PAIN QUESTIONAIRE:

PATIENTS NAME: VISIT NUMBER: P. Tx

FILE NUMBER:

Please answer the questions below:

1) HOW OFTEN DO YOU SUFFER FROM THESE HEADACHES? :

a) Daily

b) Weekly

c) Monthly

d) Yearly

If you suffer daily, please specify how often you get the headaches.

.....
.....

2) HOW LONG DO THE HEADACHES LAST?:

a) Minutes

b) Hours

c) Days

d) Weeks

e) Months

f) Years

Please specify exactly how long (eg 5 hours etc)

.....

3) PAIN SCALE:

If you were to rate your pain on a scale of 0 to 10 where 10 is the maximum pain and 0 is no pain, where would you stand? Please circle the relevant number.

0 1 2 3 4 5 6 7 8 9 10

APPENDIX C2

The rating scales below are designed to measure the degree to which several aspects of your life are presently disrupted by chronic pain. In other words, we would like to know how much your pain is preventing you from doing what you would normally do, or from doing it as well as you normally would. Respond to each category by indicating the <u>overall</u> impact of pain in your life, not just when the pain is at its worst.

For each of the seven categories of life activity listed, please circle the number on the scale which describes the level of disability you typically experience. A score of zero (0) means no disability at all, and a score of ten (10) signifies that all of the activities in which you would normally be involved have been totally disrupted or prevented by your pain.

1. Family/Home Responsibilities. This category refers to activities related to the home or family. It includes chores and duties performed around the house (eg. yard work) and errands or favors for other family members (eg. driving the children to school).

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

2. Recreation. This category includes hobbies, sports, and other similar leisure time activities.

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

3. Social Activity. This category refers to activities which involve participation with friends and acquaintances other than family members. It includes parties, theater, concerts, dining out, and other social functions.

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

4. Occupation. This category refers to activities that are a part of or directly related to one's job. This includes nonpaying jobs as well, such as that of a housewife or volunteer worker.

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

5. Sexual Behavior. This category refers to the frequency and quality of one's sex life.

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

6. Self Care. This category includes activities which involve personal maintenance and independent daily living (eg. taking a shower, driving, getting dressed, etc.).

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

7. Life-Support Activity. This category refers to basic life-supporting behaviors such as eating, sleeping, and breathing.

0	1	2	3	4	5	6	7	8	9	10
no disability										total disability

APPENDIX D

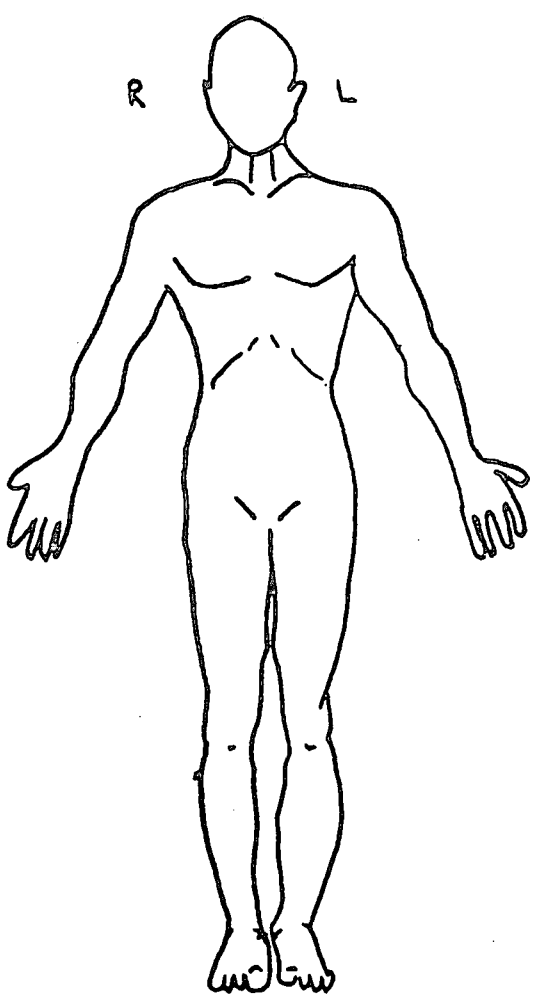
SYMPTOM DIAGRAM

PATIENT NAME:_____ FILE#:_____ DATE:_____

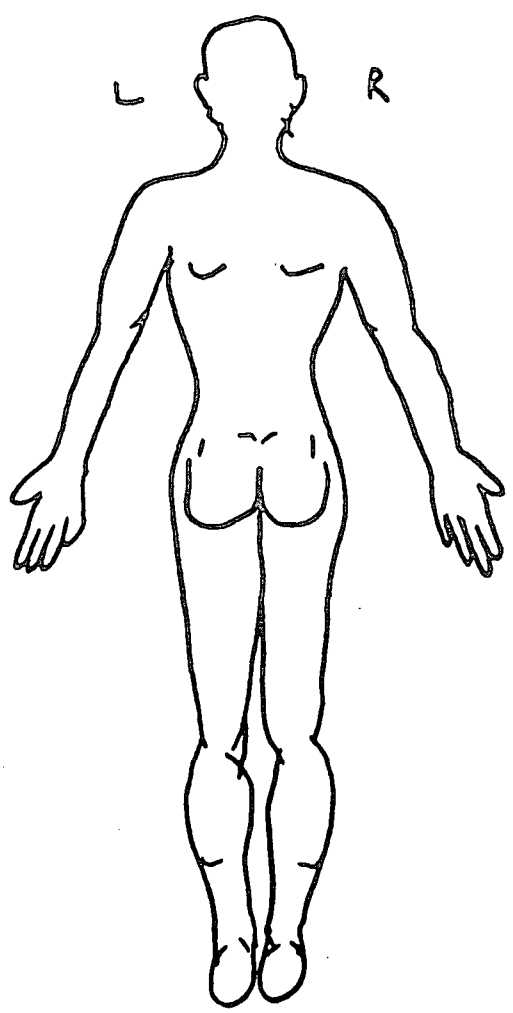
In the diagrams provided below, please mark the areas on your body which you feel best represent the pain(s) or sensation(s) you are experiencing. Please include all areas. Use the symbols provided below. Also, in order to complete the picture, please draw in your face.

SYMBOLS

numbness	===	pins & needles	.....
	===		.....
burning	xxx	stabbing & sharp	////
	xxx		////
dull & aching	+++	stiff & tight	222
	+++		222



FRONT



BACK

APPENDIX E1

TECHNIKON NATAL CHIROPRACTIC DAY CLINIC

CASE HISTORY

Patient:_____ Date # _____

File #:_____

X-ray #:_____

Age: _____ Sex:_____ Occupation: _____

Intern: _____ Signature: _____

FOR CLINICIAN'S USE ONLY

Initial visit clinician: Signature:

Case History:

Examination:

Previous:	TN	Current:	TN
	Other		Other

X-ray Studies:

Previous:	TN	Current:	TN
	Other		Other

Clinical path. lab.:

Previous:	TN	Current:	TN
	Other		Other

Case status:

PTT: Conditional: Signed off: Final sign out:

Recommendations:

Intern's case history

1. Source of history:

2. Chief complaint: (patient's own words)

3. Present illness:

Location

Onset

Duration

Frequency

Pain (character)

Progression

Aggravating factors

Relieving factors

Associated S & S

Previous occurrences

Past treatment and outcome

4. Other complaints:

5. Past history:

General health status

Childhood illnesses

Adult illnesses

Psychiatric illnesses

Accidents/injuries

Surgery

Hospitalizations

6. Current health status and life-style:
   - Allergies
   - Immunizations
   - Screening tests
   - Environmental hazards
     (home, school, work)
   - Safety measures
     (seat belts, condoms)
   - Exercise and leisure
   - Sleep patterns
   - Diet
   - Current medication
   - Tobacco
   - Alcohol
   - Social drugs

7. Family history:
   - Immediate family:
     - Age
     - Health
     - Cause of death
     - DM
     - Heart disease
     - TB
     - HBP
     - Stroke
     - Kidney disease
     - CA
     - Arthritis
     - Anaemia
     - Headaches
     - Thyroid disease
     - Epilepsy
     - Mental illness
     - Alcoholism
     - Drug addiction
     - Other

8. Psychosocial history:

   Home situation

   Daily life

   Important experiences

   Religious beliefs

9. Review of systems:

   General

   Skin

   Head

   Eyes

   Ears

   Nose/sinuses

   Mouth/throat

   Neck

   Breasts

   Respiratory

   Cardiac

   Gastro-intestinal

   Urinary

Genital

Vascular

Musculoskeletal

Neurologic

Haematologic

Endocrine

Psychiatric.

APPENDIX E2

TECHNIKON NATAL CHIROPRACTIC DAY CLINIC

PHYSICAL EXAMINATION

Underline abnormal findings in RED and elaborate on back of relevant page, if necessary.
Mark "NAD" if normal.

Patient:_____ File #_____

Last name First name

Clinician:_____ Signature:_____

Intern:_____ Signature:_____

Date:_____

Height:_____ Weight:_____ Temp:_____

Rates: Heart:_____ Pulse:_____ Respiration:_____

Blood pressure: Arms: L / R /

Legs: L / R /

General appearance:

STANDING EXAMINATION.

Minor's sign
Skin changes
Posture
  erect
  Adam's
Ranges of motion:

T/L spine: Flexion: 90 Fingers to floor
Extension: 50
R.lat.flex.: 30 Fingers down leg
L.lat.flex.: 30 Fingers down leg
Rot.to R.: 35
Rot.to L.: 35

Flex.

L.Rot. R.Rot.

L.lat flex. R.lat. flex.

Ext.

/ = pain-free limitation; // = painful limitation.

Romberg's sign.
Pronator drift.
Trendelenburg's sign.
Gait.
  rhythm
  balance
  pendulousness
  on toes
  on heels
  tandem
Half squat.
Scapular winging.
Muscle tone.
Spasticity/Rigidity.

Shoulder:
  skin
  symmetry
  ROM - glenohumeral
        scapulo-thoracic
        acromioclavicular
        elbow
        wrist
Chest measurement
  inspiration
  expiration
Visual acuity

Breast examination:
  Inspection:
    skin
    size
    contour
    nipples
    arms overhead
    hands against hips
    leaning forward.
  Palpation:
    axillary lymph nodes.

SEATED EXAMINATION.

Spinal posture
Head
  scalp
  skull
  face
  skin
Eyes
  conjunctiva
  sclera
  eyebrows
  eyelids
  lacrimal gland
  nasolacrimal duct
  alignment
  corneal reflex
  ocular movement

	L			R		
	III	IV	VI	III	IV	VI

  visual fields
  accomodation
  iris
  pupils
  red reflex
  optic disc

vessels
general background
macula
vitreous
lens

Ears:
auricle
ear canal
drum
auditory acuity
Weber test
Rinne test

Nose:
external
internal
septum
turbinates
olfaction

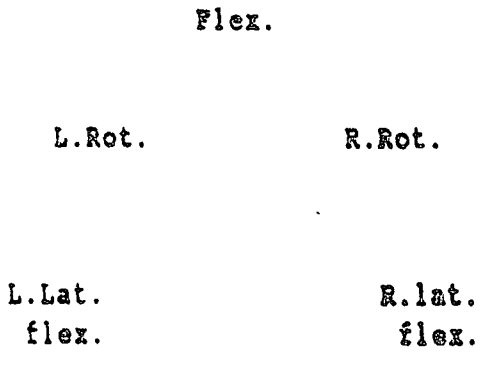
Sinuses (frontal & maxillary):
tenderness
transillumination

Mouth and pharynx:
lips
buccal mucosa
gums and teeth
roof
tongue
inspection
movement
taste
palpation
pharynx
inspection
CN X

Neck:
posture
size
swelling
scars
discoloration
hair line

ROM:

Plexion:	45	chin to larynx chin to sternum
Extension:	55	forehead parallel to floor
L.lat.flex:	40	
R.lat.flex:	40	
L.rot.:	70	
R.rot.:	70	



lymph nodes
trachea
thyroid
carotid arteries (thrills, bruit)

CN V
CN VII
CN VIII (nystagmus)
CN IX
CN XI

TMJ
- Inspection
  - ROM
  - deviation
- Palpation
  - crepitus
  - tenderness

Neurological:
- Dermatomes
  - C5
  - C6
  - C7
  - C8
  - T1
- Tendon reflexes
  - biceps
  - triceps
  - brachioradialis
- Muscle strength
  - C5
  - C6
  - C7
  - C8
  - T1
- Coordination:
  - point-to-point
  - dysdiadochokinesia

Thorax:
- Chest:
  - Inspection:
    - skin
    - shape
    - respiratory distress
    - rhythm (respiratory)
    - depth "
    - effort "
    - intercostal/supraclavicular retraction
  - Palpation:
    - tenderness
    - masses
    - respiratory expansion
    - tactile fremitus
  - Percussion:
    - lungs (posterior)
    - diaphragmatic excursion
    - kidney punch
  - Auscultation:
    - breath sounds
      - vesicular
      - bronchial
    - adventitious sounds
      - crackles (rales)
      - wheezes (rhonchi)
    - voice sounds
      - broncophony
      - whispered pectoriloquy
      - egophony

Cardiovascular:
auscultation (aortic murmurs)
Allen's test

SUPINE EXAMINATION

JVP
PMI
auscultation heart (L.lat.recumbent)
respiratory excursion
percussion chest (anterior)
breast palpation

The abdomen:

Inspection:
skin
umbilicus
contour
peristalsis
pulsations
hernias (umbilical/incisional)

Auscultation:
bowel sounds
bruit

Percussion:
general
liver
spleen

Palpation:
superficial reflexes
cough
light
rebound tenderness
deep
liver
spleen
kidneys
aorta
intra-/retro-abdominal wall mass
shifting dullness
fluid wave

Acute abdomen:
where pain began and now
cough
tenderness
guarding/rigidity
rebound tenderness
Rovsing's sign
psoas sign
obturator sign
cutaneous hyperaesthaesia
rectal exam
Murphy's sign.

Male genitals and hernias.
  Inspection:
    skin
    prepuce
    glans
    meatus
    nits/lice
    scrotum
    inguinal/femoral bulges
  Palpation:
    penis (tenderness/induration)
    testes
    epididymis
    inguinal canal
    femoral canal
    cremasteric reflex
  Auscultation:
    scrotal mass.
Peripheral vasculature:
  Inspection:
    skin
    nail beds
    pigmentation
    hair loss
  Palpation:
    pulses - radial, brachial, femoral, popliteal, post.tibial,
             dorsalis pedis
    lymph nodes - epitrochlear, femoral (horizontal & vertical)
    temperature (feet & legs)
   Manual compression test
   Retrograde filling (Trendelenburg) test
   Arterial insufficiency test

 Musculoskeletal:
    ROM
      hip
        flex. 90/120
        ext.   15
        abd.   45
        add.   30
        int rot 40
        ext rot 45
      knee
        flex. 130
        ext.   0/15
      ankle
        plantar flex   45
        dorsiflex   20
        inversion   30
        eversion   20
     leg length

ORTHOPAEDIC EXAMINATION :

Tenderness
Active MF Trigger Points :
SCM.
Trapezius.
Scaleni.
Levator Scapulae.
Posterior Cervical musculature.

Doorbell Sign
Kemp's Test
Cervical Distraction
Halstead's Test
Hyperabduction Test (Wright's)
Shoulder abduction Test
Dizziness rotation Test
Brachial Plexus Tension

Cervical Compression
Lateral Compression
Adson's Test
Costoclavicular Test
Eden's (traction) Test
Shoulder depression Test.
Lhermitte's Sign
O'Donoghue Manoeuvre

Remarks : _____

_____

_____

_____

NEUROLOGICAL EXAMINATION :

DERMATOMES: Left	Right.	MYOTOMES: Left	Right.	REFLEXES: Left	Right.
C2		C1		C5	
C3		C2		C6	
C4		C3		C7	
C5		C4			
C6		C5			
C7		C6			
C8		C7			
T1		C8			
		T1			

Neurological:
- dermatomes
  - L1
  - L2
  - L3
  - L4
  - L5
  - S1
- muscle strength
  - hip flexion
  - knee extension
  - ankle dorsiflexion
  - plantar flexion
- tendon relexes
  - patellar
  - Achilles
- plantar reflex

Rectal examination:
- Inspection
  - sacrococcygeal & perianal areas
- Palpation
  - sphincter tone
  - tenderness
  - induration
  - nodules
  - prostate
  - seminal vesicles

Mental status
- Appearance and behaviour:
  - level of consciousness
  - posture and motor behaviour
  - dress, grooming, personal hygiene
  - facial expression
  - affect
- Speech and language:
  - quantity
  - rate
  - volume
  - fluency
  - aphasia (prn)
- Mood
- Thought processes (logical, relevant, organised)
- Memory and attention:
  - orientation (time, place, person)
  - remote memory
  - recent memory
  - new learning ability
- Higher cognitive functions:
  - information and vocabulary (general & specialised knowledge)
  - abstract thinking.

APPENDIX E3

TECHNIKON NATAL

TECHNIKON NATAL CHIROPRACTIC DAY CLINIC.

REGIONAL EXAMINATION -- CERVICAL SPINE.

PATIENT:_____

FILE # :_____ DATE:_____

INTERN/RESIDENT:_____

SUPERVISING CLINICIAN :_____

OBSERVATION :

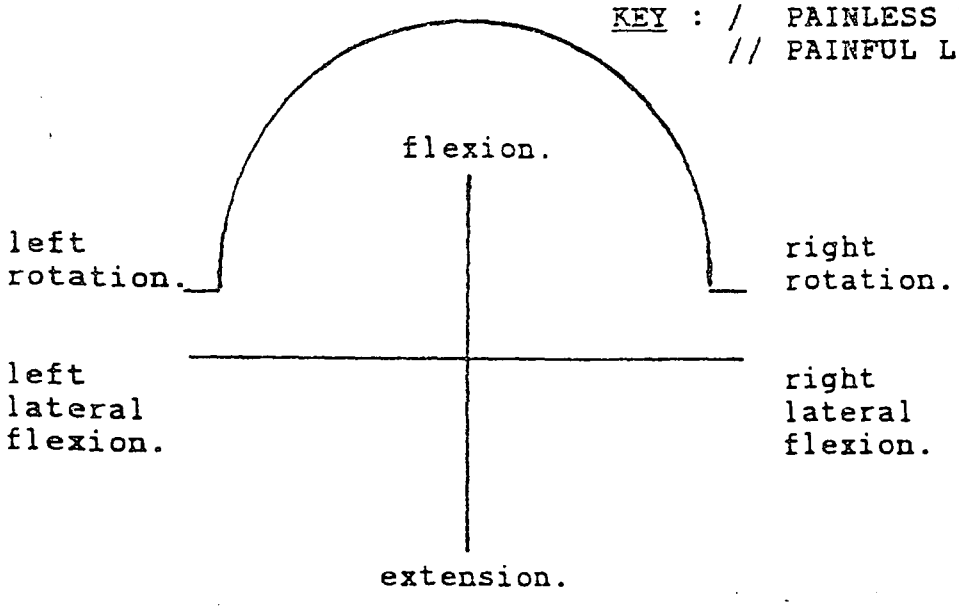
Posture
Swellings
Scars
Discoloration
Hair Line
Bony and soft tissue contours

Shoulder position:
Left =
Right =
Muscle spasm
Facial expression

RANGE OF MOTION:

Flexion = 45 degrees.
Extension = 70 degrees.
L/R Rotation = 70 degrees.
L/R Lateral flexion = 45 degrees.

KEY : / PAINLESS LIMITATION.
// PAINFUL LIMITATION.



PALPATION : lymph nodes.
trachea.
thyroid gland.

VASCULAR :

	LEFT.	RIGHT.
BLOOD PRESSURE.		
CAROTIDS.		
SUBCLAVIAN ARTERIES.		
WALLENBERG'S TEST.		

COMMENTS: _____

_____

_____

_____

_____

_____

MOTION PALPATION :

Jt.play		Left						Right					Jt.play	
P/A	Lat	Fle	Ext	LF	AR	PR		Fle	Ext	LF	AR	PR	P/A	Lat
							C0							
							C1							
							C2							
							C3							
							C4							
							C5							
							C6							
							C7							
							T1							
							T2							
							T3							
							T4							

APPENDIX F

PROGRESSION CHART

No'	Pain Intensity	Duration	Frequency	Dis-ability