The Use of Relaxation Therapy as an Adjunct to Traditional Psoriasis Therapy

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Abstract

This research investigated the impact of stress management and relaxation techniques on psoriasis. It had a dual purpose to see if stress management and relaxation techniques, as an adjunct to traditional medical treatment, would improve the skin condition of psoriasis. In addition it attempted to provide psoriasis patients with a sense of control over their illness by educating them about the connection between mind and body through learning stress management and relaxation techniques.

The former purpose was addressed quantitatively, while the latter was addressed qualitatively. Using an experimental design, the quantitative study tested the efficacy of stress management and relaxation techniques on 38 dermatological patients from St. John’s, Newfoundland. The study which lasted ten weeks, suggested a weak relationship between psoriasis and stress. These relationships were not statistically significant.

The qualitative data were gathered through unstructured interviews and descriptive/interpretative analysis was used to evaluate them. Patients in the experimental group believed in the mind body connection as it related to their illness and stress. The findings also showed that the patients believed that the stress reduction and relaxation techniques improved their quality of life, their level of psoriasis, and their ability to live with the condition.

Based on the contradictory nature of the findings, further research is needed. It is posited that replication of this study would be vastly improved by increasing the sample size to increase the possibility of significant findings. As well, increasing the length of time for the experiment would control for the possibility of a lag effect. Finally, the study
looked at linear relationships between stress and psoriasis. Further study should ascertain whether the relationship might be nonlinear.
Acknowledgements

I would first like to say that this study was probably the most fulfilling experience I have ever been involved in and I would like to acknowledge the patients who took part. Without their commitment and desire to improve their level of stress and psoriasis, this study would have never had the profound effect it did. I would like to thank my family for their patience and understanding and for their welcomed encouragement. I would also like to thank Dr.'s Gulliver, Parsons, and Landells for their help and guidance. Furthermore I would like to especially thank Dr.'s Farber and Gulliver for their trust and financial support during the study. The group of individuals to which I owe much thanks is the staff at the clinic of Dr Gulliver and Dr. Landells and also the Dermatology Clinic. Without their help, patience, and expertise this study never would have started. Specifically, I would like to thank Debbie, Darlene, Judy, Verna, Jackie, Diana, and Mary. They not only helped me in the study but they also provided the some times needed comic relief, so that I could get through the tough times. To all involved I hope the experience was enriching and useful and I hope it provides some optimism that a cure for psoriasis is just around the corner.
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CHAPTER ONE: INTRODUCTION TO THE PROBLEM

Introduction

There is agreement among health professionals that stress increases the severity of many skin diseases such as psoriasis and eczema (Farber & Nall, 1997). Past research has shown that anywhere between 40% - 80% of psoriasis patients identify stress as being a contributing factor to the onset of their illness, yet no form of stress consultation exists in the clinical setting (Farber & Nall, 1997; Seville 1989). This research attempted to provide support for alternative forms of therapy for patients who display physical manifestations of stress. Specifically, the study investigated how stress exacerbates, the skin condition, psoriasis. The study also attempted to investigate further the stress-psoriasis relationship and provide support for the use of stress management in a dermatological setting and also in the health education profession. As the orientation of this work is educational in nature, the driving focus was to teach the participants to have a positive impact on their psoriasis through the use of relaxation techniques. This educational framework required that the participants not only learn the stress reduction techniques, but also the connection between the mind and body and their ability to affect each other. It was anticipated that this would result in an improved form of management techniques for psoriasis patients.

Background to the Problem

There appears to be a common agreement that stress increases the morbidity of psoriasis yet stress management is seldom used in a medical setting. The question arises whether implementation of stress reduction techniques, such as meditation, is beneficial when trying to effectively manage psoriasis. One possible form of treatment is the use of alternative medicine.


The text is not clearly visible due to the low resolution and orientation of the image. It appears to be a page from a book or a document, but the content is not legible enough to transcribe accurately.
Alternative forms of medicine encourage individuals to assume a more active role in their illness prevention and management while at the same time implementing standard medical techniques that are beneficial. The holistic approach requires that doctors and health care professionals place more emphasis on preventive techniques as a viable approach to health care. In doing so the patient must be educated about the body, the illness, and the interactions between them.

This study investigated the use of stress management techniques to improve psoriasis. In a study by Farber and Nall (1993), approximately 35% of the psoriasis patients being studied felt that both the onset and exacerbation of the illness was influenced by stress. Previous studies have examined psoriasis and how it is affected by stress, but up to this point the research has consisted mostly of questionnaires and surveys. Furthermore, there has been an absence of experimental designs that investigate the relationship between stress and psoriasis. Past research has also not investigated the importance of education for patient care, illness management, and quality of life.

Statement of the Problem Situation

The objectives of the study were:

1. To examine the relationship between stress management and psoriasis.
2. To monitor the relationship over time.
3. To determine the effectiveness of stress management.

The primary research question was: "Does the use of stress management effectively improve present medical practices for psoriasis patients?"
Purpose of the study

The central purpose of the study was to assess relaxation techniques, in conjunction with medical treatments, as an approach to reducing the morbidity of psoriasis and to examine the magnitude of the stress-psoriasis relationship. By doing so the study was designed to illustrate the importance of stress management as an additional technique for psoriasis patients. The overall assumption was that stress management techniques such as relaxation therapy will induce earlier clearing (i.e., fewer scales and flattening of plaques) and longer remissions (i.e., absence of psoriasis), than are observed in conventional treatments that omit stress reduction techniques.

The second purpose was to provide a body-illness component that educates each patient about the body, the illness, and how they affect each other, thereby attempting to help patients improve their quality of life while at the same time improving their ability to prevent and manage their illness. The study’s third purpose was to illustrate to the medical profession the potential of alternative therapies when dealing with common or chronic diseases; that is, to instill confidence in alternative therapy as an adjunct to the traditional methods of medical practice. Furthermore, the study tried to instill the belief that proper medical care and appropriate education about the body and mind will encourage each patient to accept more responsibility for his/her health, and thereby become a part of the solution.

Related Research Questions

The focus and structure of the work presented is underpinned by certain questions that guided the formulation of this study. These questions are as follows.
#1 Was the stress level of the psoriasis patients, at the time of entry to the study, related to age or gender?

#2 Was the stress factor of psoriasis patients, at the time of entry to the study, in any way related to their participation in the experiment?

#3 Was the length of time that the research subjects remained under treatment related to their age or gender?

#4 Was the length of time that the research subjects remained under treatment related to their initial stress or psoriasis levels?

#5 Was the length of time that the research subjects remained in the treatment program related to the rate of recovery or remission of the illness?

#6 In terms of change in stress, were subjects in the experimental group more likely to receive benefit than subjects in the control group?

#7 In terms of change in level of psoriasis, were the experimental subjects more likely to benefit than the control subjects?

#8 In terms of residual gains in stress and psoriasis, were experimental subjects more likely to benefit over the control subjects?

#9 In terms of the change in stress and psoriasis, over the time of the treatments, were there age and gender effects?

Rationale

In Canada and the United States a more holistic approach to medicine is becoming accepted. This is evidenced by the emergence of different forms of therapy such as acupuncture, herbal, and relaxation therapy. Consequently, clinics and wellness centers are emerging to implement holistic forms of medicine. With regard to illness
treatment and prevention, one consistent theme across alternative practices is stress management. The relationship of constant stress and its physical manifestations appears to be a common theme in illness and chronic conditions. One particular manifestation that has received research support and investigation is psoriasis. A number of studies have investigated the role of stress in exacerbating psoriasis. For example, Farber, Lanigan, and Rein (1990) hypothesized that a neuropeptide is released from the brain in stressful situations and that this same substance is found in the psoriatic lesions. It has been proposed that stress affects psoriasis, but there is an absence of stress reduction techniques within the clinical setting. Through an examination of stress management techniques and psoriasis treatment, this experimental investigation attempted to strengthen the relationship between stress and psoriasis and to uncover a more effective treatment regimen.

In Newfoundland there is an extremely high incidence of psoriasis (W. Gulliver, personal communications, August 10, 1997). One possible explanation could be the extremely high level of stress resulting from high unemployment with its attendant financial difficulties. This study investigated possible common forms of stress and attempted to produce more effective forms of stress management that are personalized for each patient. This was attempted through the use of an educational framework, (i.e., teaching the participants about the connections between stress and psoriasis and then teaching methods to address them.) In doing so, a more effective form of health care and an increased level of personal awareness were created.

Stress management gave patients the opportunity to assume a more active role in their illness management and prevention. Moreover, by implementing techniques that
encouraged a preventive approach towards health care, patients could reduce dependency on medication as the only form of treatment. More generally, the study was designed to demonstrate the value of stress management within preventive health care and, specifically, to show whether it constitutes an effective form of treatment for psoriasis. Past research has investigated the relationship between psoriasis and stress using questionnaire surveys. These forms of assessment have proven to be vital with regard to establishing a relationship between stress and psoriasis, but survey research cannot establish causality because not all the factors affecting psoriasis are under investigative control. By formulating an experimental design, this study attempted to further investigate the relationship and also to generate findings that support relationships between stress and psoriasis directly. Furthermore, experimental design and its attendant system of data analysis strove to describe a more accurate pathology of the disease and how it could be better managed through forms of stress management. Past investigations have not been able to determine whether psoriasis causes an increase in stress or stress causes an increase in psoriasis.

Importance of the study

As previously noted, anywhere from 40 - 80% of psoriasis patients believe that stress is affecting their illness, yet very little is being done to address the importance of stress reduction in medical practices. Canadians have always known that the health care system is in place when it is needed, and this has lead to a dependency on the medical profession alone in preventing and managing illness. Recently in North America, the holistic medicine movement has provided evidence that nontraditional approaches to health care can provide a viable form of health management worthy of investigation. This
proactive approach along with traditional medical care tends to allow patients to take a more active role in their health care while at the same time modifying the full responsibility of the medical care system. These advantages not only make sense financially but also put ownership back with the patient, thereby allowing him/her to become a part of the solution. Presently there are many connections between stress and illness that indicate the need for further research.

Delimitations

The study was delimitated by the following:

1. Patients must have chronic plaque psoriasis involving 10% - 30% of the body surface area and require UVB phototherapy.

2. Only 38 patients

3. All patients came from St. John’s, NF

4. Data collection was for 10 weeks.

5. Patients receive either UVA or UVB phototherapy.

6. Patients selected should not have received any systemic therapy (i.e., oral or injectable medications) for psoriasis in the last three months.

7. Patients selected should not have received any relaxation therapy in the previous three months.

8. Patients selected should not have received any form of ultraviolet therapy in the previous six weeks.

Outline of the remainder of the thesis

Chapter two consists of a literature review that illustrates the need for further investigation into the use of stress management and alternative forms of therapy. This
chapter also provides the foundation for the study and illustrates the connection between stress and psoriasis. It supports the need for stress management when trying to manage psoriasis.

Chapter three consists of the methodology. It includes the variable definitions and outlines how the experiment unfolded. Furthermore, a detailed explanation of the forms of data analysis is provided in order to support the worthiness of this study.

Chapter four consists of a description of the results and tables. This chapter provides a discussion and interpretation of the findings under each research question. It also provides a summary of the findings and addresses the key research question.

Chapter five provides a summary and presents the conclusions of the study. The conclusions elaborate on the results presented in chapter four and address the implications of the study. This section also provides recommendations for further study and how the study design can be improved.
CHAPTER TWO: LITERATURE REVIEW

Introduction

Two theories provided the foundation upon which this study is based. The first was the Stress-Illness Relationship and the second was the General Adaptation Syndrome described by Hans Selye.

The Stress-Illness relationship (Cassidy & Long, 1996) states that, in terms of stress, all individuals have a genetic predisposition, and under the proper circumstances the genetic propensity can be manifested. Cassidy and Long (1996) explain that exposure to stress yields a physiological and psychological wear and tear on the body’s system. It is this depletion of the body’s defense system that exhausts the ability to contain any genetic problems that exist. As a result of these physical and mental stresses, people are forced to make substantial life adjustments in an attempt to reduce the intensity and frequency of the stress. These adjustments deplete the body’s defense reserves and lay the groundwork for an illness to emerge.

As reported in Greenberg (1990), Hans Selye described stress as a three phase process which he called the General Adaptation Syndrome. Each stage illustrates the processes that the mind and body go through. In Phase 1, Alarm reaction, the body shows the changes characteristic of the first exposure to a stress. At the same time, the body’s resistance to illness is depleted. Phase 2, Stage of resistance, ensues if continued exposure to the stress were compatible with the coping strategy. If not, the patient enters Phase 3, Stage of exhaustion, in which the bodily signs characteristic of the alarm reaction have virtually disappeared and resistance rises above normal. Following long-continued exposure to the same stress to which the body has become adjusted, eventually
adaptation energy is exhausted. The signs of the alarm reaction reappear and the genetic problem manifests itself.

The pathogenesis of psoriasis suggests that the onset or exacerbation of the illness takes place 1-6 months following a major stressful life event (Farber & Nall 1997). During the alarm stage the patient is confronted with the stress and the body attempts to resolve and remove the stress. Patients use all possible strategies within their arsenal to resolve the problems and to remove the stress. If the stress were not resolved, patients enter the stage of exhaustion, where depletion of the body’s defense reserve ensues and results in the manifestation of a genetic problem.

Psoriasis

Psoriasis was first described by Celsus (25 BC-45 AD), but it was not until the 19th Century that Willan, as cited in Farber and Nall (1997), classified psoriasis as the clinical entity that is recognized today. Psoriasis is an illness that may lead to depression and/or low self-esteem. These and other responses to life situations may prove stressful, which in turn can precipitate or exacerbate psoriasis (Ginsburg and Link 1989).

Psoriasis is a cutaneous disease that affects males and females alike and has its onset at any age. It occurs in nearly all races and ethnic groups throughout the world. This is an inheritable disease with as many as 30% of all psoriasis patients reporting that one or more members of their families have psoriasis. In Newfoundland this percentage is 86% (WP Gulliver, personal communication, August 25, 1997). Psoriasis can also result from trauma to the skin; this is known as the Koebner Reaction (Farber & Nall 1984, 1997). This can be an external trauma to the skin such as a burn, scratch, or cut
which can result in the appearance of a lesion. Internal factors like emotional stress and certain drug use, such as lithium, can also precipitate an outbreak of psoriatic lesions.

The reddish, scaly lesions of the disease can occur on any part of the body, scalp, upper and lower extremities, hands and feet, intertrigenous areas, and the nails. Psoriasis is a noncontiguous illness that is often accompanied by other medical problems, such as arthritis (Farber & Nall 1997). It is labeled the modern day leprosy. Psoriatic skin is subject to a greater rate of alteration in its structure than are the cells of normal skin. In normal skin the cell cycle takes 28 days to go from the dermis to the top of the epidermis and mature. In psoriatic skin this time is greatly decreased, taking 3-4 days. This rapid growth and movement is called hyperproliferation and is a major characteristic of psoriasis (Farber & Nall 1997). In the past, psoriasis was confused with other diseases, such as leprosy or tuberculosis. People were ostracized for their skin diseases, including psoriasis, even in biblical times (Leviticus 13: 45-46). This feeling of being stigmatized and outcast from society is still experienced by psoriasis patients today.

Psychoneuroimmunology

In 1870, Serge Botkin, a Soviet neurophysiologist, looked to the central nervous system and its relationship with the autonomic nervous system to explain a number of diseases, such as high blood pressure. More recently, the emerging field of psychoimmunology, has proposed evidence that the central and peripheral nervous systems play a role in a variety of diseases, including psoriasis. Based upon a hypothesis proposed by Farber and Nall (1993), a major role of the central and peripheral nervous system, as well as the immune system, is played in the mind/body relationship in the presence of emotional stress.
Although there is strong evidence of the influence of stress in psoriasis, there has been little basic research to establish a biochemical basis of stress as an aggravating factor. It is hypothesized by Farber, Rein, and Lanigan (1991) that stress-related compounds affect primary sensory nerve fibers, leading to a release of neuropeptides, and that these chemicals affect the modulation of immunologic and inflammatory processes. Farber et al. (1991) further add that neurogenic inflammation is most influenced by the neurotransmitter, substance P. The release of this substance from the sensory nerves into the blood and skin may cause local inflammatory responses, which may also trigger psoriasis (Farber & Nall, 1997). Furthermore, substance P causes hyperproliferation of the skin, which is another characteristic of psoriasis.

Another possible neurogenic explanation that supports the use of stress reduction in a dermatological setting is the effect that psychological stress has on the components of the immune system. Levitan (1991) found that psychological stress had significantly suppressed the number of total T cells, helper T cells, and the percentage of natural killer cells in the body. These three components are vital with regard to activation of the immune system, which detects and fights any foreign bodies within the body.

Winchell and Watts (1988 a) also supported this hypothesis. Similarly, they contended that the central nervous system probably alters the immune system and, as a result, causes enhanced susceptibility to disease. This hypothesis has received some support but requires further research to determine the effects of stress on the immune system.

The central and peripheral nervous systems, as well as the endocrine system, play important roles in the pathogenesis of psoriasis. Endogenous factors, such as stress, and
exogenous factors, such as trauma, cause an increased release of neuropeptides such as
substance P. Thus, as a result of stress playing such a prominent role in psoriasis, it
seems evident that stress reduction programs should be considered when trying to treat
the condition. Furthermore, in view of a lack of long-term, safe, and effective treatment
of psoriasis it would seem prudent to explore new and innovative forms of treatment.

Psoriasis and Stress

Most clinicians and research investigators agree that stress plays an important role
in the onset and course of psoriasis. Kantor (1990) delineated three primary sources of
stress: environmental (e.g., noise pollution, air pollution, overcrowding), physiological
(e.g., disease, injury), and psychological (e.g., anxieties, depression, work-, family-, or
friend-related dysfunction). Any of these can activate the relevant neurological pathways
that account for the expression of a genetic predisposition.

As early as the 1960s, Farber, Bright, and Nall (1968) initiated an interest in the
impact of emotional stress on psoriasis. In a questionnaire survey of 2,144 patients, 40% of
the respondents indicated that their psoriasis appeared at a time of worry. When asked
if their psoriasis flared with worry, 37% stated “yes.” These findings were underscored
with a subsequent questionnaire survey of 5,600 psoriasis patients (Farber & Nall, 1974).
In this survey, the investigators reported that in answer to the query, “At times of worry,
do new patches of psoriasis appear?” 1/3 responded affirmatively, 1/3 stated it had no
effect, and 1/3 were uncertain.

Farber and Nall (1993) found further support for the stress-psoriasis relationship
in the study of 607 psoriasis patients. The patients reported that 31% at onset and 46%
during an outbreak, believed that emotional stress was a provoking factor.
Seville (1977) followed 132 patients for three years. This research found that 39% recalled stress having preceded their flare-up by less than one month before its appearance. The stresses included death, accidents, exams, and sexual assault. Of the 39% noting such a relationship, 53% were free of psoriasis at the end of three years of follow-ups as opposed to 17% of those who had not associated flare-ups with stress-related factors. Seville also concluded that those who noted the association with stress and exacerbation of their illness might have had better insight into their disease and consequently had longer remissions. On a follow-up of 61 patients, Seville (1978, 1989) reported that 74% of patients who recognized the stress-flare relationship were clear of their psoriasis at Year 3, while only 19% of those not accepting the stress-flare association concept were clear of their lesions over the same time frame.

Walter (1987) further supports the stress-psoriasis relationship. He presented the case history of a 36-year-old male with severe psoriasis and high level of stress and anxiety due to the death of his son. Dr. Walters believed that the patient's failure to release his anger and pain was exacerbating his psoriasis. After two successful uses of stress reduction to release his anger towards the cause of his son's death, the man's psoriasis went from very severe to very mild. Even though it was not a controlled experiment, it supports the need for further research in the area of stress reduction and how it can affect psoriasis.

Ginsburg and Link (1989) recruited 100 adults with psoriasis to investigate whether the feeling of being stigmatized was related to patient's perceptions of themselves. The protocol used an exploratory factor analysis to determine clusters of items related to stigmatization of psoriasis patients. The analysis produced six
dimensions of stigma; anticipation of rejection, feelings of being flawed, sensitivity to the 
opinion of others, guilt and shame, positive attitudes, and secretiveness. All of these 
feelings contribute to a person’s overall stress level. In theory, the implementation of any 
activity to reduce these stigmas could possibly reduce a person’s stress and consequently 
improve his/her psoriasis.

Gupta and Gupta (1996) provided an overview of psychodermatology 
concentrating on psychological therapies for cutaneous disorders. In a survey of 179 
patients, 72% recalled a major stressful life event one month prior to their onset. 
Furthermore, Polenghi, Molinari, Gala, Citeri, et al. (cited in Farber & Nall, 1993) 
reported that stress was observed to be a provocative factor among 90% of 245 children 
with psoriasis. Also, Arnetz, Fjellner, Eneroth, and Kallner (cited in Gupta & Gupta, 
1995) found that patients with psoriasis reported significantly higher strain and urinary 
epinephrine levels than healthy controls when exposed to a stress provoking situation.

Al’Abadie, Kent, and Gawkrodger (1994) investigated the relationship between 
stress and the onset and exacerbation of psoriasis. One hundred thirteen psoriatic patients 
were recruited from a dermatological clinic to complete a questionnaire probing the 
relationship between stressful events and how they perceived onset and exacerbation of 
psoriasis. The results showed that 70% of the psoriatic patients felt that stress preceded 
their onset, while 66% felt stress preceded their flare-ups. The questionnaire also 
produced six major categories of stress: family upset, work or school demands, personal 
ilness, financial worries, hormonal changes, and a miscellaneous category.

Farber and Nall (1993) further investigated the role of stress as a triggering factor 
in psoriasis. The study used two case studies to support this view. The first was an
eighteen year old male with localized psoriasis, who got caught on his roof during an earthquake even though he had a terrible fear of heights. One month after that event, his psoriasis spread and covered 70% of his body. In another case history, an 82-year-old female with stable psoriasis was moved into a retirement home due to tension with her daughter-in-law. After the move the woman experienced much depression due to the separation from her family. Shortly after, she developed wide spread psoriasis, covering most of her body.

Gaston, Lassonde, Bernin-Buzzanga, Hodgins, & Crombez (1987) further strengthened the relationship between stress and psoriasis. Their study was a prospective examination over 20 weeks that recruited five psoriasis patients from a dermatological clinic. The study’s measuring instruments looked at level of psoriasis, the impact of adverse life events, and psychological distress. The results of the study yielded a statistically significant correlation between psoriasis and the impact of adverse life events, as well as between psoriasis and level of psychological distress. The research once again supported the belief that stressful factors contribute to the severity of psoriasis and should become a part of psoriasis management.

Alternative Therapies

Alternative therapies are generally understood to be those therapies outside of the usually accepted medical treatments for certain disease processes such as cancer or psoriasis (Moyers 1993a, 1993b). In the United States the National Institutes of Health established the Office of Alternative Medicine (OAM) to investigate a wide range of treatments, including therapies such as Chinese herbal medicine, acupuncture, and biofeedback. The OAM defines alternative medicine in terms of alternative therapies that
cover a broad range of healing philosophies and approaches. The following is a list of alternative therapies: Acupuncture, Aromatherapy, Biofeedback, Chinese medicine, Guided Imagery, Dance Movement Therapy, Herbal Medicine, Homeopathy, Massage Therapy, Meditation, Music Therapy, Progressive Relaxation, Tai Chi, Therapeutic Touch, and Yoga.

Weaver and McGrady (1995) investigated the use of biofeedback to reduce selected psychophysiological variables in 23 unmedicated hypertensive patients. Measurements of muscle tension, heart rate, and peripheral temperature were monitored for 20 weeks. During the treatment sessions, biofeedback and relaxation training were administered. The results showed a statistically significant decrease from pre-test to post-test with regard to muscle tension and heart rate. The study suggested that hypertensive patients could benefit from biofeedback and relaxation techniques due to the lowering of certain variables that are associated with psychological stress.

Glaser and Kiecolt-Glaser (cited in Levitan, 1991) investigated a population of Alzheimer’s patient caregivers. The study found the caregivers had significant immunologic suppression of total T cells, helper T cells, and percentage of natural killer cells. These three cells are vital with regard to activation of the immune system that detects and combats any viruses within the system. Depletion of the immune system was believed to be due to the stress of watching a loved one go from a caring partner to an “empty shell”. After psychotherapeutic intervention (i.e., hypnosis), there was a detectable increase in the percentage of natural killer cells present. Furthermore, Glaser et al. also investigated a population of widows and widowers after death of a spouse. They found that relaxation training resulted in an increased percentage of natural killer
cells and T cells. The suppression of the immune system is another potential explanation for the exacerbation of an illness. As a result, the use of relaxation training to improve the immune system is another possible treatment that could improve the progress of any illness such as psoriasis.

Alternative Therapy and Psoriasis

Some groundbreaking studies have given credence to the efficacy of alternative therapies. In 1993, the director of the Preventive Medicine Research Institute in Sausslito, California, published a study showing that techniques such as yoga and meditation, when used in conjunction with a low-fat diet, could reverse coronary heart disease. Spiegel (1990), a psychiatrist at the Stanford University School of Medicine, demonstrated that women with metastatic breast cancer who received medical care as well as “psychosocial treatment” including support groups and self-hypnosis survived twice as long as patients who received only medical care. These studies have added significantly to the evidence that emotions and behaviors can influence physical health (Spiegel, 1990, 1993).

Recently, a research group at the University of Massachusetts began a study to assess the utility of meditation and visualization techniques as adjuncts to phototherapy in the treatment of psoriasis (Bernhard, Kristeller, & Kabat-Zinn, 1988, Winchell & Watts, 1988a, 1988b). The investigators proposed that the isolation of an ultraviolet treatment unit could be ideal for patients to learn and engage in meditation and visualization strategies under the guidance of instructional audiocassette tapes. They hypothesized that if stress were a factor in psoriasis, patients actively engaged in practicing stress reduction techniques might achieve more rapid clearing than patients receiving the same treatment
without employing stress reduction techniques. A comparison of the two treatment groups showed that clearing in the group that practiced the relaxation/visualization techniques in conjunction with phototherapy occurred significantly earlier than it did for the group who did not receive the relaxation techniques. Seven of the eight patients in the treatment group achieved 95% clearing in an average of 19 treatment sessions, while only one patient in the control group achieved clearing in less than 40 sessions. The investigators concluded that their results were consistent with the hypothesis that stress reduction techniques, including visualization of the therapeutic process and relaxation, may be helpful in the treatment of psoriasis. Nonetheless, they admitted a need for more studies with larger samples of patients as essential to yield support to the efficacy of adjunct therapy when treating psoriasis.

Zachariae, Oster, Bjerring, and Kragballe (1996) investigated the effects of psychological interventions on 51 psoriatic patients. The results showed that more subjects improved in the treatment group than in the control. The study measured levels of psoriasis and blood flow. The results compared scores at the baseline and the post intervention stage. The findings indicated that the treatment group had significant reductions in all areas and supported the belief that psychological intervention was effective in treating psoriasis, but also indicated a need of more research.

Gaston, Crombez, Lassonde, Bernier-Tuzzanga, and Hodgins (1991) attempted to investigate the efficacy of psychological techniques to treat psoriasis. The study, which lasted for 20 weeks, involved 18 subjects with psoriasis on the scalp. The intervention was meditation and imagery training for 12 weeks, with a 4 week pre- and post- treatment period for taking measurements. The results revealed that there was no difference
between the mean scores of the experimental and control groups at the pretreatment measures, but there was a difference at the post treatment measures, indicating an overall treatment effect.

Hughes, England, and Goldsmith (1981) hypothesized that biofeedback and psychotherapy could improve psoriasis by a cooling of the plaque areas. The subject was a 31 year old male with chronic multiple plaque psoriasis. Up to this point all types of topical therapy had been unsuccessful. The study attempted to reduce skin temperature and in turn reduce the rate of cellular proliferation. Although the study was not effective in cooling the psoriatic area, there was an improvement in psoriasis from (5.17) severe to (2.76) mild. This suggests that there could have been a reduction in stress associated with the illness that consequently led to a reduction in psoriasis. Another possible explanation was the role of the patient's expectations and his acceptance of more responsibility for illness management.

Goodman (1994) investigated the use of biofeedback as a means of improving psoriasis for a 56-year-old female after 7 years of standard medical treatment had failed. After 13 weeks of 1-hour biofeedback and relaxation training sessions, there was an increase in extremity peripheral blood circulation. After the 13 weeks of training, the patient had clearing in all 11 psoriatic patches. The findings suggested that increased temperature due to biofeedback and relaxation training was the reason for the clearing.

The research that is available supports the need for a psychological component in dealing with illnesses such as psoriasis. The findings support the use of stress management as an adjunct to traditional psoriasis treatment. Furthermore, the findings suggest that the use of relaxation techniques educate the patient about the body, the
illness, and the relationship between them. The findings also suggest that relaxation

techniques provide effective strategies that allow the patient to better manage his/her

ilness more effectively. An important motivation is the belief by patients that relaxation

therapy is a viable form of treatment that can improve their level of psoriasis and quality

of life. Studies in the past have relied mostly on surveys and case studies to establish the

relationship between stress and psoriasis. This necessary step produced high inference

findings. There is a need for more experimental designs in order for researchers to
demonstrate to the medical profession that the psychological aspect of illness is important

and that stress management is an effective way to improve a patient's condition. This

approach addresses illness management and prevention, and looks for long-term

solutions.

Due to the lack of experimental designs, I used a protocol that controls as many

variables as possible and attempted to illustrate that differences exist between the control

and experimental groups due to the treatment effect. Furthermore, this study attempted to

provide sound research that would illustrate the need for stress management techniques

combined with traditional psoriasis therapy. Unfortunately, the moderate belief in

holistic medicine and the lack of experimental research supporting the stress-psoriasis

relationship may have led to the omission of a vital dimension of psoriasis therapy and

inhibited the patients from accepting more responsibility with regard to their skin

management.

On the basis of the foregoing assessment of the related research literature, three

hypotheses were postulated to address the purposes of this investigation.
Hypothesis 1.
The use of relaxation techniques will improve the level of psoriasis.

Hypothesis 2.
The use of relaxation techniques will reduce the level of stress.

Hypothesis 3.
The reduction of stress level will reduce the level of psoriasis.

Component Models.
The following figures provide a visual representation of individual dimensions inherent to the hypotheses. Figures 1 and 2 represent the components of the first hypothesis. Specifically, they address the treatment effect on level of psoriasis. Figures 3 and 4 represent the second hypothesis. They address the treatment effect on level of stress. Figure 5 incorporates hypothesis 1 and 2. It investigates whether or not reduction of stress will result in comparable reduction in the level of psoriasis. Figures 6 and 7 also investigate the connection between reduction of stress and subsequent reduction in psoriasis. Instead of looking at whether or not reduction occurred, these models address the amount or degree of change in the reduction of stress. Figures 8 and 9 provide a visual representation of all hypotheses and attempt to show the effect of the treatment on level of stress and on the level of psoriasis.
Figure 1. Basic experimental model of psoriasis.
Figure 2. Treatment effects on psoriasis, controlling for psoriasis at time 1.
Figure 3. Responsiveness of stress to treatment condition.
Figure 4. Responsiveness of stress to treatment controlling for stress at measure 1.
Figure 5. Stress model of psoriasis.
Figure 6. Residual gain score model of stress.
Figure 7. Residual gain score model of psoriasis.
Diagram of hypotheses.

Figure 8. Hypothesis 1 & 2.
Figure 9. Hypotheses 2 and 3.
CHAPTER THREE: RESEARCH DESIGN

This chapter outlines the methods and procedures used to carry out the study. It contains a description of the research methodology, research design, sample, instrumentation, procedures, data collection, analysis, procedures, assumptions, and limitations.

Description of Research Designs

This study was a blended quantitative/qualitative design involving 38 psoriasis patients. The qualitative design was an experimental investigation and the qualitative design was a case study. The study took place in St. John’s, NF, and involved patients from two dermatologists, Dr. Gulliver and Dr. Parsons. Both doctors are specialists in dermatology. Due to the relatively small number of dermatologists in St. John’s, all patients requiring a dermatological consultation would be referred to one of these doctors. Patients may be seen in both hospital and private clinic settings.

Research Design: Quantitative

There were nine basic variables in the study: age, gender, group, first Psoriasis Area Severity Index (PASI) score, final PASI score, first stress rating, final stress rating, change PASI score, and residual gain measure of stress. The dependent variable was the level of psoriasis following the first PASI measure. The level of psoriasis was assessed using the PASI (see Appendix A). The index required that each physician rate the patient’s psoriasis using a 0 - 6 rating scale. A rating of 0 signified skin that was “normal” and a rating of 6 signified a level of psoriasis that was “very severe”. The patient’s psoriasis was rated according to erythema (i.e., redness), infiltration (i.e., amount of scaling), desquamation (i.e., thickness of plaques), and area percentage. The
scale was divided to represent four sections of the body. The four sections including the head, trunk, upper limbs, and lower limbs. A score for each area was calculated and the four sums were totaled to produce a final PASI score that represented the patient’s level of psoriasis.

The first independent variable was the level of stress experienced by the patient at the beginning of the study. To measure the level of stress, the Psoriasis Life Stress Inventory (PSLI) was implemented (see Appendix B). The PSLI consists of 15 statements that probe psychological stress as a result of the patient’s psoriasis. These statements are presented in the Appendix. The index has been used in the past by Gupta and Gupta (1995) in a study that investigated the psychosocial impact of psoriasis and how it may have resulted in significant daily stress for psoriasis patients. In their study, psoriasis was the independent variable and stress was the dependent. This is directly opposite to the specification in the present study. The PLSI had a reliability rating of .90 using Crobach’s alpha (Gupta & Gupta, 1995). The patients were asked to rate each statement, as it related to the past week, with a number from 0 – 3, representing the amount of stress perceived. Within the scale, 0 signified “little stress” while 3 signified a “great deal of stress.” From the 15 statements a score was calculated and the number represented the patient’s level of stress for the past week. A number from 0-9 indicated “low stress” while a score of 10 or greater indicated “high stress.”

The second independent or control variable was the pre-test level of psoriasis. The level of psoriasis was ascertained using the same Psoriasis Area Severity Index and was taken upon enrollment into the study.
The third independent variable was the treatment variable, whether each patient was in the experimental or control group. A subject number of 40 was predicted and a control and experimental list were generated. At enrollment each patient was assigned an identification number. This number had already been randomly assigned to the treatment or control group using a random assignment table. This was completed before the recruitment started.

Methodology: Quantitative

This was a blind design in which Dr. Gulliver and Dr. Parsons, the medical caregivers, did not know which of the patients were in the experimental or control groups. Conversely, the patients did know their group assignment. The study involved three people apart from the patients. Dr. Gulliver or Dr. Parsons performed all medical details, while the Clinical Holistic Health Educator (CHHE), Christopher Baker, performed all other duties. The study was a pre-test-post-test experimental design with a random sample being recruited from Dr. Gulliver’s and Dr. Parsons’ clinics in St. John’s. The design attempted to investigate the effect of a treatment condition on the onset and exacerbation of psoriasis while controlling for two potentially confounding factors, stress level and the degree of psoriasis before enrollment. The design involved 38 subjects with moderate to severe psoriasis covering 10% - 30% of their body. The study lasted for a ten week period.

The level of psoriasis was assessed at enrollment by using the Body Area Severity Index (PASI) and the level of stress was assessed using the Psoriasis Life Stress Inventory (PSLI). The 38 recruited patients were then divided into two groups of 19. The treatment group received Ultra Violet B (UVB) or Ultra Violet A Light Therapy
(UVA) and topical treatment on a daily basis from Monday to Friday along with relaxation therapy once a week. The control group received UVB or UVA therapy and topical treatment from Monday to Friday and no form of relaxation therapy. The UVB, UVA, and topical treatments are standard for this degree of severity and are commonly used by dermatologists.

The research study involved three phases: pre-treatment, treatment, and post-treatment. At the pre-treatment phase, Dr. Gulliver and Dr. Parsons assessed the patient using the PASI index and the CHHE assessed the patient’s stress level using the PLSI and implemented the stress reduction techniques.

The treatment phase involved daily UVB or UVA and topical treatment, for the control group, while the experimental group received the same traditional treatment plus one weekly stress management session. The protocol continued until the patient’s psoriasis had cleared, the 10-week study period ended, or the doctors felt it was in the best interest of the patient to end the light therapy. The PASI and PLSI assessments were assessed once a week.

The CHHE performed a weekly assessment to review and ensure that the most suitable relaxation technique was being implemented. During each weekly session the CHHE kept field notes that were generated from questions from the CHHE and comments or examples provided by the patient. Each session began with the CHHE investigating how the techniques affected the patient’s life in the past week. The patients were also instructed to follow a stress management routine that involved daily implementation and practice of the relaxation techniques, by tape, for at least 15 minutes a day on their own.
The post treatment phase involved a final assessment using the PASI and the PSLI for both the control and treatment groups. Upon completion of the study, each participant in the experimental group completed a questionnaire (see Appendix C). This was used to get an understanding of what the stress management sessions added to the overall therapy. The questionnaire was not given to the control group because the questions would have not been relevant to the treatment they received. The questionnaire probed the patients’ feelings about the use of stress management techniques as an adjunct to the traditional psoriasis therapy. All procedures where conducted in Dr. Gulliver’s or Dr. Parsons’ clinics in St. John’s.

Research Design: Qualitative

In this particular application of the case study approach, the “case” being investigated was a common phenomenon across an otherwise diverse sample. The phenomenon was, the relationship between stress management and psoriasis. The design features, prolonged engagement, one on one contact and rapport, deep involvement, informant centered field note data, indigenous typologies (informants’ language used to describe the experience), and empathetic neutrality (i.e., being sensitive to the interpersonal needs of the informant without comprising the focus of the stress management techniques). These design features further attest to the appropriateness of a case study approach within a blended design.

Methodology: Qualitative

Three relaxation exercises were used in the study: diaphragmatic breathing, rhythmic breathing, and progressive muscle relaxation. These exercises were the same for both the individual sessions and the taped exercises. The process began by the CHHE and the patient establishing the relationship between stress and psoriasis and how stress
can exacerbate the condition. This was established by investigating the patients individual situation and making the connection between everyday stresses and the possible role they play in the severity of psoriasis. At this time the patient and CHHE established the premise that stress management and body awareness could improve his/her condition. At this point a personalized stress profile (see Appendix D) was completed and a contract noting the connection between stress and psoriasis was signed. The personalized profiles allowed the patient to list all major and minor stresses, the mental and physical symptoms of stress, and establish realistic goals that could be achieved. The CHHE and the patient discussed the techniques and how they would theoretically reduce stress and improve psoriasis. The first session involved practicing all relaxation techniques in an attempt to determine the most suitable and effective technique for each patient. The rest of the sessions involved a short debriefing session in which the CHHE addressed any patient concerns that arose during the past week. The debriefing allowed the patient to vocalize his/her thoughts about the use of techniques over the past week and how they affected his/her quality of life and level of stress. The rest of the treatment sessions followed the same protocol and were the same for all patients in the experimental group.

**Diaphragmatic Breathing.**

This technique uses breath awareness to control the breathing, provide focus, and reduce body and mind tension. Patients are given the following instruction: “Focus your awareness on your breathing noticing whether your breathing is fast or slow, deep or shallow, easy or uneasy, and relaxed or not relaxed. Breathe in through the nose and allow the breath to descend into the throat, chest, diaphragm, and stomach. Let the breath
ascend from the stomach into the diaphragm, chest, throat, and out the nose. Focusing your awareness on slowing your breathing down and letting the mind clear of any negative thoughts or mind chatter. Try to slow your breathing down taking 3-5 seconds for each inhale and exhale. Continue this for the next few minutes breathing in through the nose, throat, chest, diaphragm, and stomach, letting each breath then ascend from the stomach, diaphragm, chest, throat, and nose. Continue to let the mind go free not focusing on any external thoughts or sounds. Focus your awareness on the rising and falling of the chest and stomach. Try to slow your breathing down more taking 5-7 seconds for each inhale and exhale. Continue doing this for the next few minutes. Let your breathing soothe your entire body and lull you into deep relaxation.”

Rhythmic Breathing.

This technique uses breath and body awareness to generate deep respiration and to relax the body and mind. Patients are given the following instructions: “Place feet flat on the floor, straighten the back and fix gaze directly ahead. Close eyes or keep eyes open, if more comfortable. Take a breath through the nose. Let the breath descend through the throat, chest, diaphragm, and stomach. As you exhale, let the breath ascend from the stomach, diaphragm, chest, throat and nose. Allow the stomach and chest to rise and fall as you inhale and exhale. Continue breathing this way. Focus your awareness on the nose. Allow the muscles and tissues in and surrounding the nose to become loose, long, and flexible. Notice how the area in and surrounding the nose feels. Notice how it feels as air travels in and out of the nose. Acknowledge any thoughts, feelings or images that should arise and gently let go of them. While breathing rhythmically, relax the following parts, doing the same as you did with the nose. Do one at a time: Throat,
lungs, diaphragm, and stomach. Upon completion, notice how your breathing is slow, deep, and relaxed and how the body and mind feel energized and relaxed. Notice how you feel.”

**Progressive Muscle Relaxation.**

This technique attempts to slows down the body and mind and release physical tension. Patients are given the following instructions: “Lie on your back. Allow all the muscles of the body to relax. Allow yourself to take in full deep breaths. Breathe in through your nose, chest, diaphragm, and stomach. Feel your stomach and chest rhythmically rising and falling as you inhale and exhale. Place your awareness on the top of your head. Tense the top of the head, hold for a count of five, and then let go. Allow the muscles in the top of your head to become long, loose, and flexible. As your muscles relax, feel your body being totally supported by the surface you are lying on. Feel the top of your head sinking into the surface and how the head feels relaxed and comfortable. Let go of any negative thoughts or mind chatter and focus on letting the mind go free. Focus on your breathing and the rising and falling of the chest and stomach. Do the same for the following body parts: Face, neck, shoulders, chest, upper back, stomach, lower back, right and left arm, buttock, right leg, left leg, right foot, and left foot. The muscles in your entire body are loose, long, and flexible. Your entire body is deeply relaxed. You entire body is expanding in relaxation so that it sinks into the surface you are lying on. The state of relaxation has soothed your entire body and lulled you into deep relaxation. When you feel ready, gently open your eyes. Allow the stimuli in the room to awaken the senses and get ready to embrace the next activity of the day.”
Sample and Population

The study implemented random assignment for selection of the groups. The patients were recruited from the clinics of Dr. Gulliver and Parsons. The patients were regular or new and received either UVA or UVB light therapy. After a positive diagnosis for psoriasis and all selection criteria were met, the patients were referred to the CHHE. The study was described, questions were addressed, and consent forms were signed, (see Appendix E). A subject number of 40 was predicted and a control and experimental list were generated using a random numbers table. At enrollment each patient was assigned an identification number which had already been randomly assigned to a particular group. The study consisted of 38 patients, 19 in the control group and 19 in the treatment group. The age ranged from 19 to 74 years of age with 58% being male and 42% being female.

Instrumentation

The level of psoriasis was assessed using the Body Area Severity Index (PASI). The level of stress was assessed using the Psoriasis Life Stress Inventory (PSLI). A qualitative questionnaire was given to the experimental group following the treatment phase of the study. The questionnaire was constructed by the author and consisted of five open-ended questions. The questions probed the patient’s feelings about the study, what changes occurred due to the techniques and sessions, and how the use of stress management did or did not improve their psoriasis. Furthermore, field notes, based on discussions were recorded during the beginning of each session. The field notes can be found in Appendix F.
Methodological Assumptions

1. It is assumed that the population is representative of the adult psoriasis population in Newfoundland.

2. It is assumed that the assessment tools used were valid measurements of psoriasis and perceived stress level.

3. It is assumed that the research investigator gave the same instructions and conducted the data collection process in the same manner with all participants.

4. It is assumed that all participants were candid and accurate when answering the stress questionnaire.

Limitations

1. Patients selected had to be able to meet the time and course of participation.

2. Patients were asked to assess their perceived level of stress. Thus, the patients' level of self-awareness was a factor and potentially could have proven to be a limitation.

3. Having a researcher present when being assessed may have altered the patients' responses about their level of stress.

4. Relaxation techniques were diaphragmatic breathing, rhythmical breathing, and progressive muscle relaxation only. Thus, other potentially beneficial relaxation techniques may have been excluded.

Data Entry

The quantitative data were transferred to a computer based statistical analysis file using the Statistical Package for Social Sciences (SPSS). The qualitative data from the questionnaires and the field notes were transcribed into a Microsoft Word document.
Quantitative Data Analysis

The study's design attempted to control for the potentially confounding effects of the two covariates, which were the level of psoriasis before treatment and the level of stress felt by the patient. The independent variable was the experimental condition or treatment. By using analysis of covariance, the study was attempting to insure that the psoriasis level after the initial measurement was a result of the treatment and not the level of psoriasis before enrollment. This was done in an attempt to support the statement that the treatment had an effect on the level of psoriasis over and above the effects of all other variables.

The quantitative data were examined using an analysis of covariance procedure. General descriptives and frequencies of the variables were calculated. All bivariate investigation consisted of correlation analysis. All multivariate investigation consisted of analysis of covariance (ANCOVA) using a general linear model procedure. A correlation matrix of all the study variables was also presented.

Qualitative Data Collection

The qualitative data consisted of questionnaires and field notes from each session. In preparation for the qualitative portion of this research, decisions were made for answering the question, "Does relaxation therapy in conjunction with traditional therapy improve psoriasis?" In attempting to answer this question, a secondary and more difficult analytical question arose, "What is it about the process that allowed the techniques and sessions to have a positive or negative effect on the patient's level of stress and psoriasis?" The field notes were recorded in a notebook during conversations between the patient and the CHHE during each session. The CHHE would probe the patient's
feelings about the techniques, by starting each session with some simple questions (e.g., "How do you feel?" "How did you find the techniques and sessions this past week?" "How have the techniques and sessions affected your psoriasis and quality of life up to this point?"). Through this form of questioning and analysis the major trends that emerged were validated at each session through note checking and patient evaluation. A common theme that was discussed in the past would be brought up as a probing question, so that a patient could reflect on previous statements. Through this process the patients were given the opportunity to adjust or change comments about their experiences that had taken place. Through this process, major themes and trends that were present at the conclusion of the study had been validated by the patients and the investigator throughout the study.

Qualitative Analysis

Upon reviewing the questionnaires in their raw form, each response was transferred into a word document. The analysis began by doing content analysis of each questionnaire to get a sense of it as a whole. After reading the responses numerous times there appeared to be certain common patterns present. The second step involved cross case analysis by question to insure that no common patterns had been overlooked. The analysis involved looking for key words, repeating patterns, and common thoughts from each patient’s response. The next level of analysis involved field note assessment. For the field notes, individual patient content analysis and cross case analysis were used. This approach of looking for common words and repeating patterns in the patients’ responses once again showed similar patterns in the field notes. The next step involved looking for consolidation of patterns across the two data sources.
As descriptive/interpretive analyses were being used, immersion in the qualitative data was required. This means that the analyses supported the emergence of unique themes that might have been over-looked through the use of quantitative research. According to Patton (1991) qualitative approaches to inquiry are grounded in the experiences of the informant and as a result are the most appropriate methods for providing this type of intensive description and analysis. Consequently, the insights and recommendations emerging from the case study can help to advance the knowledge base of existing research. This is important considering that there is limited information available about the phenomenon being investigated. The data analysis also attempted to illustrate the process that each patient went through and how the sessions attempted to improve their level of awareness and ability to cope with psoriasis.

In looking at the field notes and questionnaires I tried to find common themes amongst all the responses that would further address the main research question, while at the same time providing some insight for the secondary question. As I sifted through the questionnaires and field notes there appeared to be many patterns that were present in all of the patients’ responses.

The following provides a list of the patterns and key words that emerged from the patients’ questionnaires.

1. Education
2. Control
3. Knowledge
4. Positive attitude
5. Awareness
null
6. Discussion of psoriasis  
7. Management skills  
8. Stress reduction  

The following lists many of the key words and patterns that emerged from the patients' field notes.  

1. Improvement  
2. Relationship between stress and psoriasis  
3. Positive attitude  
4. Ability to relax  
5. Control  
6. Increased knowledge  
7. Notice signs of stress  
8. Progress  
9. Education  
10. Responsibility  
11. Prevention  

In looking for consolidation across both sources of data it seemed that all patients felt they had been educated about many aspects of stress and psoriasis. Hence the main theme of education emerged. The concept of education by itself was too vast and therefore had to be sub divided. Once again interpretation and immersion in the data produced two sub-themes, control and responsibility. As a result of this educative process and the acquisition of new skills, there was a common outcome that summed up
how the patients felt about the study. This outcome was the development of a positive attitude about psoriasis, stress, and life management.

Restatement of the Problem

Using the previously mentioned procedures, this study examined the use of stress management techniques as an adjunct to traditional psoriasis therapy. The primary research problem being investigated was: "Does the use of stress management effectively improve present medical practices for psoriasis patients?"
CHAPTER FOUR: RESULTS

Previous sections have attempted to establish the need for holistic medicine within the management of psoriasis and other stress related conditions. The need for relaxation therapy within a dermatological setting is not disputed. What is questioned, is the extent to which this form of therapy will help the patient. The outlined methodology attempted to allow maximum input from each individual patient, while still providing coping strategies that would enhance present forms of psoriasis management.

This study used two forms of analysis. The first, quantitative analysis, provided statistical results within an experimental design. In this section conclusions are drawn on the basis of the experimental findings. The second, qualitative analysis, looked at the patient's perceptions of how the study affected their psoriasis and well being. This form of analysis facilitated interpretation, thereby adding details which otherwise might have been overlooked. It is the combination of these two forms of analysis that allowed the researcher to make valid conclusions.

Descriptive Results

A process of model building structures each component of this section. First, a series of tables displaying descriptive information and correlations are presented. This section will address each univariate separately. The bivariate section will interpret the correlations between the variables. Finally, the multivariate section will use the analysis of covariance to investigate how variables affected each other, while controlling for the effect of potentially confounded variables.
Univariate analysis.

Descriptive statistics give an indication of the variables and their distribution characteristics. The means, standard deviations, kurtosis, skewness, and the total number of cases are shown in tables 1, 2, and 3 while comparisons between study variables can best be made by direct reference to table 4.

The demographic statistics reveal that the final sample consisted of 31 patients with 7 patients failing to complete the study. The sample consisted of 18 male (58%) and 13 female (42%) patients, with 14 (45%) representing the control group and 17 (55%) representing the experimental group. These results are presented in tables 1 and 2. Table 3 displays the kurtosis and skewness for all variables. All variables were normally distributed with the exception of one, the last stress variable (lstress). This variable was positively skewed and had a peaked distribution.
70
Table 1.

Frequencies for Gender

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<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>58%</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>42%</td>
</tr>
</tbody>
</table>
Table 2.

Frequencies for Treatment Group

<table>
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<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
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</tr>
<tr>
<td>Experimental</td>
<td>17</td>
<td>55%</td>
</tr>
</tbody>
</table>
### Table 3

**Descriptive Statistics, Continuous Variables**

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<th>Variable</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std.Dev.</th>
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</thead>
<tbody>
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<td>74</td>
<td>42.94</td>
<td>11.54</td>
</tr>
<tr>
<td>Stress 1</td>
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<td>2</td>
<td>36</td>
<td>16.06</td>
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</tr>
<tr>
<td>Pasi 1</td>
<td>14.2</td>
<td>2.4</td>
<td>16.6</td>
<td>7.748</td>
<td>3.532</td>
</tr>
<tr>
<td>Weeks</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>7.74</td>
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<td>6.00</td>
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<td>1.63</td>
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</tr>
<tr>
<td>Change Pasi Score</td>
<td>11.80</td>
<td>-13.20</td>
<td>-1.40</td>
<td>-6.10</td>
<td>2.73</td>
</tr>
<tr>
<td>Residual Pasi</td>
<td>5.01</td>
<td>-2.37</td>
<td>2.64</td>
<td>-1.82</td>
<td>1.18</td>
</tr>
</tbody>
</table>

N = 31
Table 4.

Skewness and Kurtosis of Continuous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Skewness Statistic</th>
<th>Skewness Std. Error</th>
<th>Kurtosis Statistic</th>
<th>Kurtosis Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.270</td>
<td>.421</td>
<td>.664</td>
<td>.821</td>
</tr>
<tr>
<td>Stress 1</td>
<td>.565</td>
<td>.421</td>
<td>-.510</td>
<td>.821</td>
</tr>
<tr>
<td>Pasi 1</td>
<td>.903</td>
<td>.421</td>
<td>.580</td>
<td>.821</td>
</tr>
<tr>
<td>Weeks</td>
<td>.021</td>
<td>.421</td>
<td>-.935</td>
<td>.821</td>
</tr>
<tr>
<td>Last Stress Score</td>
<td>2.040*</td>
<td>.421</td>
<td>4.182**</td>
<td>.821</td>
</tr>
<tr>
<td>Last Pasi Score</td>
<td>1.412</td>
<td>.421</td>
<td>1.088</td>
<td>.821</td>
</tr>
<tr>
<td>Change Stress Score</td>
<td>-.922</td>
<td>.421</td>
<td>.802</td>
<td>.821</td>
</tr>
<tr>
<td>Change Pasi Score</td>
<td>-.652</td>
<td>.421</td>
<td>.404</td>
<td>.821</td>
</tr>
<tr>
<td>Residual Change Pasi Score</td>
<td>.547</td>
<td>.421</td>
<td>.169</td>
<td>.821</td>
</tr>
</tbody>
</table>

*Indicates a positive skew

**Indicates peaked distribution
Bivariate analysis.

The correlation matrices among each of the study variables are presented in tables 5-10. Because this research was exploratory and the sample size was small, a p value of less than or equal to .10 was used. Nonetheless, the correlation coefficients between group, age, and gender were weak. The relationship between group and age was not statistically significant, ($r = .069, p > .10$). The relationship between group and age was also not significant, ($r = .114, p > .10$), and the correlation between gender and age was not significant, ($r = .126, p > .10$). Due to the weak relationships between group, age, and gender, one can assume that the population was random. There were also weak correlations between the group variable (experimental and control patients) and stress and pasi scores, ($r = .164, p > .10$, $r = .147, p > .10$ respectively). These findings can be interpreted to mean that the study design was based on a random sample, and any changes in pasi levels could be attributed to the treatment effect.

A reliability analysis was performed on both the Psoriasis Life Stress Inventory and the Psoriasis Area Severity Index. The stress index had an alpha value of .75 and the pasi index had an alpha index of .84. Both these alpha values fall within an acceptable range.

An examination of the matrices shows some moderate correlations that produce some interesting findings, (e.g., between age and last stress score, $r = .247, p > .10$). These results indicated a low positive correlation between age and last stress score this was not statistically significant. Gender and first stress score had a statistically significant correlation, ($r = .409, p < .01$). This indicated that female subjects had statistically higher levels of stress. There was also a statistically significant difference
between women and men for the last stress measure, ($r = .332, p < .10$). This indicated that women had a higher stress score upon entry and also after completion of the study.

In looking at the group variable and the initial measurements, some important results were found. Even though it was not statistically significant there was a low positive correlation between group and duration in the study, ($r = .276, p > .10$). There was also a low negative correlation between group and last stress score. Once again this was not statistically significant, ($r = -.258, p > .10$). In terms of the treatment effect on pasi scores there was no evidence that the experimental group benefited any more than the control group. The relationship between group and last pasi score was not significant, ($r = .156, p > -.10$), and the relationship between group and change in pasi score was also not significant, ($r = -.096, p > .10$).

The pretest measure for stress was significantly correlated with the last measure for stress, ($r = .422, p < .05$). This finding indicates that the higher the pre-test measure, the higher the last measure of stress. Also there was a strong negative correlation between pre-test stress and the change in stress level, ($r = -.750, p < .01$). This suggests that the most successful attempts to lower stress levels over the treatment period were with those who had the lowest stress levels on entry into the program. There was a statistically significant relationship between pre-test pasi score and weeks of treatment, ($r = .488, p < .01$). There was also a statistically significant association between the highest pasi pre-score and the highest end of treatment score, ($r = .644, p < .01$). These results indicated that those with the highest pasi pre-score also had the highest end of treatment scores.
The strongest correlation was between pasi#1 and the change pasi score. There was a negative significant correlation, \( r = -0.894, p < .01 \). This indicated that those patients with the highest pasi#1 scores were the least responsive to the treatment. With regard to last pasi score, those with higher last pasi score stayed in the program the longest, \( r = 0.474, p < .01 \). This finding was statistically significant. The longer the length of treatment the lower the pasi change scores, \( r = -0.347, p < .10 \). This finding was also significant.

Interestingly, there was only one statistically significant correlations with the last stress variable. The findings were statistically significant between gender and last stress score, \( r = 0.332, p < .10 \). Indicating that women had higher last stress levels than men. Another non significant correlation was between group and final stress score, there was however a low positive correlation, \( r = -0.258, p > .10 \). There was also a low positive correlation between the final stress score and the change in stress score, once again this was not statistically significant, \( r = 0.284, p > .10 \).

The correlation matrix for all variables implied that further statistical treatment was warranted. For example, while the coefficients showed some association and direction of the relationship between the independent and dependent variables, they offered limited information on the differences between the control and experimental groups. Further analysis may provide more valuable information about the study if possible confounding variables were controlled.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Age</th>
<th>Gender</th>
<th>Group</th>
<th>Stress1</th>
<th>Pasi#1</th>
<th>Weeks</th>
<th>Last Stress Score</th>
<th>Last Pasi Score</th>
<th>Change Stress Score</th>
<th>Change Pasi Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Gender</td>
<td>.126</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress1</td>
<td>.113</td>
<td>.409**</td>
<td>.164</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pasi#1</td>
<td>-.028</td>
<td>.007</td>
<td>.147</td>
<td>.121</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weeks</td>
<td>.008</td>
<td>.190</td>
<td>.276</td>
<td>.125</td>
<td>.488***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Stress Score</td>
<td>.247</td>
<td>.332*</td>
<td>-.258</td>
<td>.422**</td>
<td>-.129</td>
<td>-.140</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Pasi Score</td>
<td>-.235</td>
<td>.023</td>
<td>.156</td>
<td>.049</td>
<td>.644***</td>
<td>.474***</td>
<td>-.143</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Stress</td>
<td>.061</td>
<td>-.191</td>
<td>-.362**</td>
<td>-.750***</td>
<td>-.222</td>
<td>-.235</td>
<td>.284</td>
<td>-.156</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Pasi Score</td>
<td>-.105</td>
<td>.005</td>
<td>-.096</td>
<td>-.126</td>
<td>-.894***</td>
<td>.347*</td>
<td>.081</td>
<td>-.259</td>
<td>.193</td>
<td></td>
</tr>
</tbody>
</table>

* significance at .10 level  
** significance at .05 level  
*** significance at .01 level  

Note. Two-tailed test
Multivariate analysis.

Regression parameters were estimated for all specified relationships in the study. The order of the analysis was congruent with the research models hypothesized in Chapter 2. Regression analysis was implemented to show how the exogenous variables affected each of the intervening variables while controlling for potentially confounding variables.

The results of the simple regression analysis for last pasi score and group identification are presented in table 6. Group accounted for 2.4% of the variance and the analysis demonstrated that group was a non-significant predictor of psoriasis level at the last pasi measure, ($\beta = .156, t = .851, p > .10$). Table 7 illustrates the analysis of the variable's last pasi score, group, and first pasi score. This analysis suggested that even when controlling for the first measure of psoriasis, group was still a non-significant predictor of the final pasi score. Between group and final pasi, ($\beta = .060, t = .420, p > .10$), while between group and first pasi, ($\beta = .665, t = 4.60, p < .01$). Group and first pasi score accounted for 44% of the variance in final PASI score.

Table 8 depicts the effect of group on the final level of stress. Group alone was a non-significant predictor of final stress level and accounted for 6.7% of the variance, ($\beta = -.258, t = 1.43, p > .10$). However an analysis of group and final stress level, while controlling for the level of stress before treatment, showed that group was indeed a significant predictor of final stress level and accounted for 28% of the variance. For the group variable, ($\beta = -.336, t = 2.081, p < .05$; first stress score, $\beta = .477, t = 2.953, p < .01$). Both relationships were significant.
Table 10 represents the effect of group on final stress level and final PASI score. From the regression analysis already completed, the findings suggested that group was not a significant predictor for level of psoriasis or level of final stress. This model further investigated the variables group, final stress level, and final PASI score. The analysis suggested that the variable group, while controlling for final stress level, was also a non-significant predictor of final PASI score. (group and final PASI: $\beta = .128$, $t = .665$, $p > .10$; group and last stress: $\beta = -.258$, $t = 1.438$, $p > .10$; last stress score and final PASI: $\beta = -.110$, $t = .572$, $p > .10$).

Another variable implemented to investigate the effect of stress on final PASI score was the variable change in stress level. This represented the change from the first measure to the final stress measure. Table 11 deals with the effect of group on change in stress. The analysis indicated that group was a significant predictor of change in stress, ($\beta = -.362$, $t = 2.091$, $p < .05$). Furthermore, group accounted for 13% percent of the variance in the change in stress level.

Table 12 investigates the variables group, change in stress, and final PASI score. The above analysis showed the relationship between group and change in stress. This model further investigated group and change in stress and also included the variable, final PASI score. In an attempt to examine the relationship between stress and psoriasis, this alternate model was used. The analysis indicated that group, when controlling for change in stress level, was also a non-significant predictor of final PASI score (group and last PASI: $\beta = .115$, $t = .576$, $p > .10$; group and change in stress: $\beta = -.362$, $t = 2.091$, $p < .05$; change in stress and final PASI: $\beta = -.115$, $t = .577$, $p > .10$). Within this alternate model,
group accounted for 3.6% of the variance for the variable last pasi and 13% of the variance within the variable change in stress.

From the quantitative analysis it can be assumed that the study did have a random sample and that any changes in psoriasis could be attributed to the treatment effect. The results indicated that females had higher stress levels than the males at the beginning and also at the completion of the study. The analysis also produced finds that suggested that those patients with higher levels of stress at the beginning of the study also had the highest level of stress at the end. Interestingly, the patients with the higher level of stress at the beginning also had the biggest reduction in stress level. With regard to the level of psoriasis, those with more severe psoriasis tended to stay in the study longer but also had a more severe level of psoriasis at completion of the study. Patients with more severe psoriasis at the beginning were also the least responsive to the treatment and the longer a patient stayed in the study the smaller the amount of change in their psoriasis.
Table 6.

Regression Analysis, Responsiveness of the Last Pasi Score to the Treatment Condition

<table>
<thead>
<tr>
<th>Independent</th>
<th>Last Pasi Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>b</td>
</tr>
<tr>
<td>Group</td>
<td>.505</td>
</tr>
</tbody>
</table>

Multi R = .156  
R Square = .024  
Adjusted R Square = -.009
Regression Analysis, Responsiveness of the Last Pasi Score to the Treatment Condition.

Controlling for Initial Pasi Score

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>B</th>
<th>Std. Error (se b)</th>
<th>Beta</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.194</td>
<td>.461</td>
<td>.060</td>
<td>.420</td>
<td>.677</td>
</tr>
<tr>
<td>Pasi #1</td>
<td>.303</td>
<td>.066</td>
<td>.655</td>
<td>4.600</td>
<td>.000</td>
</tr>
</tbody>
</table>

Multi R = .667, R Square = .444, Adjusted R Square = .405
Table 8.

**Regression Analysis, Responsiveness of the Last Stress Score to the Treatment Condition**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>B</th>
<th>Se b</th>
<th>Beta</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>-3.097</td>
<td>2.153</td>
<td>-0.258</td>
<td>-1.438</td>
<td>0.161</td>
</tr>
</tbody>
</table>

Multi R = .258  R Square = .067  Adjusted R Square = .034
Table 9.

Regression Analysis, Responsiveness of the Last Stress Score to the Treatment Effect:

Controlling for Initial Stress Score

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>B</th>
<th>Se b</th>
<th>Beta</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>-4.037</td>
<td>1.940</td>
<td>-.336</td>
<td>-2.081</td>
<td>.047</td>
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<td>Stress #1</td>
<td>.329</td>
<td>.112</td>
<td>.477</td>
<td>2.953</td>
<td>.006</td>
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</table>

Multi R = .537  R Square = .288  Adjusted R Square = .237
Table 10.

**Regression Analysis, Responsiveness of the Last Pasi Score to the Treatment Effect**

Controlling for Last Stress Score

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Last Pasi Score</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Se b</td>
<td>Beta</td>
<td>T</td>
<td>Sig.</td>
</tr>
<tr>
<td>Group</td>
<td>.413</td>
<td>.621</td>
<td>.128</td>
<td>.665</td>
<td>.511</td>
</tr>
<tr>
<td>Last Stress Score</td>
<td>-2.96</td>
<td>.052</td>
<td>-.110</td>
<td>-.572</td>
<td>.572</td>
</tr>
</tbody>
</table>

Multi R = .189

R Square = .036

Adjusted R Square = -.033
Table 11.

Regression Analysis, Responsiveness of the Change in Stress Score to the Treatment Effect

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Change Stress Score</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>b</td>
<td>Se b</td>
<td>Beta</td>
<td>T</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>-5.95</td>
<td>2.845</td>
<td>-0.362</td>
<td>-2.091</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Multi R = .362  
R Square = .131  
Adjusted R Square = .101
Table 12.

Regression Analysis, Responsiveness of the Last Pasi Score to the Treatment Effect

Controlling for the Change in Stress Score

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>B</th>
<th>Se b</th>
<th>Beta</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.371</td>
<td>.644</td>
<td>.115</td>
<td>.576</td>
<td>.569</td>
</tr>
<tr>
<td>Change Stress Score</td>
<td>-2.26</td>
<td>.039</td>
<td>-.115</td>
<td>-.577</td>
<td>569</td>
</tr>
</tbody>
</table>

Multi R = .189  R Square = .036  Adjusted R Square = -.033
Figure 10. Group psoriasis comparison.
Figure 11. Group stress comparison.
Figure 12. Gender psoriasis comparison.
Figure 13. Gender stress comparison.
Qualitative Results

Qualitative data were collected to get insight into the patient’s experiences, quantitative analysis by itself would not have given a depth of understanding of how the patient was truly affected. The following section uses descriptive/interpretive content analysis to investigate common themes from the questionnaires and field notes recorded from each study patient. This section consists of one major theme, education, two sub-themes, control and responsibility, and one outcome, positive attitude. Following this section there is a patient profile that attempts to illustrate what psoriasis can be and its various levels of severity.

The responses illustrated an educative process where the patients received useful information about the relationships between stress and psoriasis and also between the body and the mind. The one underlying pattern that was present in all of the patients’ responses was the notion of education and how it improved their treatment experience during the study. According to the patients, there were two areas that improved as a result of the study. These areas were the degree of control each patient had with regard to their illness and the amount of illness responsibility each patient accepted. As a result of this educative process and the acquisition of new skills, there was a common outcome that summed up how the patients felt about the study. This outcome was the creation of a positive attitude about psoriasis, stress, and life management.

Psoriasis Patient Profile

The following profile attempts to illustrate how psoriasis can influence a person’s life. The degrees of severity and consequences that follow involve specific examples that attempt to capture a glimpse of what a psoriatic patient has to deal with in everyday life.
The psoriatic profile was developed from many observations and experiences at the dermatology clinic, and conversations with psoriasis patients and other health care professionals.

Psoriasis is labeled as the modern day leprosy and is normally characterized by flaky skin, somewhat similar to dandruff. Unfortunately, the condition is much more than a case of bad dandruff. Psoriasis can fall somewhere on the spectrum between scaly skin that is merely irritating to severe flaking that would mean having to vacuum the house several times a day. It can also involve psychological counseling to deal with the shame and despondency and a desire not to be seen. An example of severe psoriasis was evident in one patient who came to the light therapy center once a day to receive light therapy. Her condition was so severe that with each step psoriatic skin fell to the floor, which had to be vacuumed immediately. This patient preferred to come to the clinic when there were few other patients so that others would not see her. This state of affairs continued for three to six months each year.

Psoriasis patients alluded to a high level of secretiveness with regard to their condition. Patients refrained from many activities, such as swimming or sun bathing, that require wearing revealing clothing. Furthermore, their clothing was meant to cover up visible plaques so that people would not stare. Patient #3 mentioned that in the past, people had asked her if she had been in a fire or burned because of her psoriasis. It was surprising to see how little patients actually knew about their condition and how they appeared to have had limited opportunity to ask questions about it. Many patients explained how their lifestyle revolves around their level of psoriasis and their attempts to hide it from the rest of the world. Patient #26 said, "My life is normal except when
involved in situations where I have to expose my body, such as swimming, sun bathing, or summer sports.” These examples suggest that psoriasis is not just a skin condition but also a mental state and a social condition that must be addressed for an optimal level of management to occur. The following section illustrates what patients believed to be a necessary part of psoriasis treatment.

Education

The treatment sessions provided an opportunity for the experimenter to discuss the relationship between stress and psoriasis. Among other things they attempted to educate the patients about various related topics. From the questionnaires 100% of the patients reported that they had acquired valuable information from the study that in some way improved their psoriasis and level of stress. This conclusion was drawn from the responses and also the fact that each patient at various times posed multiple questions about various topics related to their condition. Education is addressed using various examples from the questionnaires and field notes.

In the study there was a large amount of information provided, many questions posed, and numerous comments made about the relationship between psoriasis and stress. It is important to note that the receiving of information alone was not considered education. Education refers to the implementation of the information in an attempt to improve one’s condition. The most important level of awareness involved the patient’s body. Farber and Nall (1997) believed that before any improvement could be made each patient had to get in touch with his or her body and be able to read the signs that the body was providing. This preventive approach in many ways is the necessary component upon which all other approaches are built. The approach tried to illustrate the connection
between stress and psoriasis and how they influence each other. Patient # 14 summarized his experience by saying, “I think the sessions helped me manage my stress better which in turn helped my psoriasis improve.” Patient # 6’s summary: “I learned to relax more, size up the situation, and put everything into perspective so that I can carry on”. These examples illustrate how, through education, the patients were better able to deal with the condition. Patient # 7 commented on how the education had affected his particular case. He said, “I have been educated through my awareness of the stress factors in my life and how they can be eliminated through awareness and attitude.” This comment sums up what the educative process was and how the transfer of knowledge alone was not enough. Patient # 7 further illustrated this point by saying, “I had always known the connection between psoriasis and stress but I never knew how it affected my situation...now I better understand the relationship and how I can improve my level of stress and psoriasis.” These examples illustrate that, even if the patient knew about the relationship between stress and psoriasis, they still did not know how the relationship affected their own situation. Thus, this prevented patients from achieving their best possible level of psoriasis management. The sessions provided the patients with valuable information and, as a result, the patients became better able to manage their psoriasis.

Control

The sub-theme of control concerns the attempt to achieve both mental and physical control with regard to stress and psoriasis. Upon completion many patients felt that the mental control of stress could lead to an increased sense of physical control, which in turn decreases the level of stress and improves their level of psoriasis.
Through conversations with patients, many alluded to a pattern they felt controlled their lives. It was a cycle they went through each year with regard to their psoriasis. Patient #21 stated, “Each year I wait for my psoriasis to break out and then I go to the light therapy center for three to six months, hoping my psoriasis will go into remission. ...After my psoriasis clears I wait for new patches to appear and then I start the process again.” She felt as if she had no control and no matter what she did the cycle would continue.

Data indicated that patients did achieve control as a result of this study. Physically, patients felt they could now better relax and reduce their level of stress. Patient #31 noted, “The therapy has made me see that it is up to me to take control mentally and physically and learn how to control my body and relax.” Patient #18 stated, “Although my psoriasis has not completed cleared I feel I have been able to control any more outbreaks.” Also patient #21 noted, “I felt very proud that I could handle my emotions...I am handling my problems better and providing time for myself.”

The study provided patients with alternative strategies for coping with their illness. For example, patient #18 and #35 both reduced the amount of medication they used for controlling the itch associated with the condition. Patient #35 said, “I feel great about not having to use medication to control the itch. I find that the relaxation techniques control it.” Another remarkable outcome was with patient #3. In trying to complete her stress profile we explored her signs of stress and how she copes with it. After one week she discovered that her reaction to stress was the consumption of food. Through successful stress awareness she started using the techniques as a substitute for her normal response to stress. After completing the study in six weeks, not only had her
psoriasis cleared, but she had also lost five pounds, which she attributed to the use of the techniques. She commented, "I made the connection between stress and eating, so now I try to practice the techniques when I get the urge to eat...not only has my psoriasis improved but I also lost five pounds as well." One other surprising result was with an older gentleman (patient # 2) who had never used this form of therapy in the past. During his daughter's pregnancy, when he was under a lot of stress, he used the tape and techniques numerous times to relieve the stress. Towards the end of the treatments, he commented, "I used the techniques to relax while my daughter was giving birth...I found that the exercises made me concentrate on something else and it allowed me to feel better and not let the stress get to me." These comments indicate that the study had a direct influence on other dimensions of their lives and resulted in positive changes. However, the patients' ability to control their condition, varied from patient to patient.

Responsibility.

One dimension of an illness that is sometimes neglected, is that of expecting the patient to assume responsibility for their illness management, and thus to become less dependent on the health care system. This study put patients in the health equation by expecting them to become a part of the solution. Through acceptance of greater responsibility for their illness, patients might reduce their stress level and ameliorate their psoriasis. The desire to become more responsible was evident by the willingness to participate in the study. The study involved more treatments and a greater amount of commitment than the normal treatment. Thus, if the patients did not want to accept more responsibility they would have not completed the study.
Their responses to the questionnaire demonstrated that not only were the patients compliant, but that the study allowed them to improve their ability to manage their psoriasis and stress. The following will illustrate how the patients became more active participants in their psoriasis management and felt that their condition improved as a result.

Patient #21 noted that in the past she accepted the condition and its effect on her lifestyle but now as a result of the study she had a new sense of hope and optimism about her role and how she could better manage her condition as a result. She illustrated this point by saying, “I now believe that stress plays an important part in psoriasis and that by managing my stress I’m doing something active to help my condition.” Patient #18 said, “I can now control my body instead of my body controlling me.” For all the patients this was the first time that they were taking an active role in their health care and not being a passive patient who does little, other than following medical advice, to improve their condition. Patient #7 also commented that for many years, he just accepted his condition and felt there was nothing he could do to improve it. Now as a result of the study, he believed in the stress-psoriasis relationship and he thought he could now better manage his psoriasis in the future. He explained that his psoriasis had cleared in many parts for the first time in 16 years and he attributed this to the successful implementation of the relaxation techniques. These examples provide support for the belief that the techniques and sessions allowed each patient to accept more of an active role and to become a major part of the solution. By doing so their level of stress and psoriasis improved, and the patients felt that they had a vital role in their recovery. It was this role that allowed the patient’s psoriasis to improve and that, in turn, promoted a better quality of life.
Attitude

One outcome that was present among all patients was an improved attitude towards stress and psoriasis. The patients felt this improved attitude was a major contributor to all other factors of the condition. Furthermore, it was encouraging to see the transformation that took place as each participant in the study began to improve his/her own illness and well-being. The patients felt it was this improved attitude that affected all components of their well-being, not only stress and psoriasis, but also family life, and professional life.

Each session began with patients describing the past week. On many occasions the patient’s comments and body language was negative. Patients were tired, talked in a tone that had no enthusiasm, and used body language that was negative, but by the end of each 25 minute session they had an optimistic attitude and a positive outlook on their condition. A good example of this change was patient #8. Often he would come in and explain how he feels dejected and as a result can never sleep or relax. Following the exercises he would smile and become somewhat more positive thanking me for my effort and in one particular he fell asleep and told me after that this was the one place where he could truly relax. One comment he made summarized his experience in the study. He said, “The study has improved my psoriasis and also other aspects like happiness and self-esteem...as a result I have more inner peace.” Patient #33 also explained how the relaxation techniques allowed him to forget about the problems and worries and allowed him to remember one particular time when he was fishing with his son. He said, “this makes me remember when I used to paddle around with my son years ago.” He could not explain how this thought came about, but for some reason this particular thought allowed
him to relax and take more time for himself. He also commented that for the first time he was taking better care of himself and not putting his work ahead of everything else. He concluded by saying, “I’ve done many stress management courses in the past 15 years, but this is the first one I found that really works.”

All of these are examples of how the study contributed to an improved attitude, but the most dramatic example was with patient #21. When she concluded the study she hugged me and said, “I feel great...My psoriasis has completely cleared and I can start doing things I haven’t done in years, like swimming.” Her willingness to go swimming for the first time in 10 years indicated that the study was adding a needed dimension to the traditional form of psoriasis treatment. There were many examples that further illustrate this point (see Appendix F), but this one example highlights how the study improved one patient’s condition.

**Synthesis of Results**

In synthesizing the findings of this study, there are two degrees of relevance to consider. The first is whether the findings produced results that were statistically significant and met all criteria called for by the experimental design. The second is whether the findings produced results that were practically significant and affected the patient’s condition in a positive way.

The purpose was to investigate the use of relaxation techniques as an adjunct to traditional psoriasis therapy. The quantitative form of analysis used an experimental design in an attempt to show causal relationships between psoriasis and stress. The results showed that the relationship was in the same direction as the proposed hypothesis. Specifically, the treatment effect improved the level of psoriasis, but this relationship was
This is a sample page of text. It contains several paragraphs of continuous prose, likely discussing a specific topic or providing information. The text is formatted in a standard manner with paragraphs separated by line breaks. There are no visible headings or bullet points, indicating a straightforward narrative style.

The content appears to be focused on a particular subject matter, possibly related to a field such as science, history, or another discipline. However, without additional context, the exact nature of the discussion cannot be accurately determined.

Overall, the page serves as an example of a page from a larger document, emphasizing the importance of clear and organized writing in conveying information effectively.
tentative. These findings, although not statistically significant (see Table 7 and Figure 10), were similar to Zachariae et al. (1996), who suggested that subjects involved in some form of psychological intervention improved more rapidly than did those not receiving any psychological intervention. Unfortunately, the findings were not at a level where conclusive causal statements could be made. These findings provide further evidence that supports the work of Farber and Nall (1993) suggesting that there is a link between stress and psoriasis and that a reduction in stress is the key to a better overall form of management. Within this experimental design the only hypothesis that was statistically significant was that the treatment effect reduced the level of stress for each patient and further supported the theory that relaxation techniques reduce stress level. This finding was similar to studies by Gaston et al. (1991) and Hughes et al. (1981), in which both studies showed that the use of psychotherapy reduced the level of stress and as a result improved the level of psoriasis.

The second level of significance refers to the practical application and how the study affected the individual patient’s quality of life. Within the quantitative design the study attempted to answer the question, “Do stress reduction techniques improve the traditional form of psoriasis therapy?” Using that form of analysis the findings indicated that the relationship did exist but that it was very weak. Fortunately, this study also incorporated a qualitative section that investigated each patient and his/her perceptions about the study. The most remarkable finding from the qualitative data was that 100% of the experimental group felt that they had acquired something “extra” as a result of the study and that this helped them to improve their overall condition. The analysis also suggested that the stronger the patient’s belief in the stress-psoriasis relationship, the
greater the level of improvement. This was similar to the findings by Seville (1977), proposing that, even after several years, those who realized the stress-psoriasis relationship had a lower level of psoriasis than those not accepting the relationship. Furthermore, Walters (1987) explained that the patient’s ability not to release anger and anxiety was an exacerbating factor that must be considered. The present study supported this view and attempted to provide a therapeutic environment where patients could talk and release their frustration and anxiety. According to many patients this was a necessary part of the process that is often forgotten. It may have been this dimension that not only reduced the level of stress but also gave many patients the ability to talk about their pain and concerns for the first time in a therapeutic environment. This was identified as having improved their condition.

As the study progressed, it became evident that there were other dimensions of the condition that must also be considered when trying to improve a patient’s psoriasis. Ginsburg et al. (1989) investigated the psychological aspect of psoriasis and found other emergent dimensions such as depression, attitude, and shame. The questionnaire used in this research study (Appendix C) also uncovered other dimensions of psoriasis and provided evidence to support the belief that psoriasis is not something which is independent of other conditions. Rather, it is a condition that is personalized and incorporates various confounding dimensions that must be addressed before the condition can be improved.

In this particular study the quantitative analysis proved restrictive in that it attempted to look solely at psoriasis and not at the other involved factors. By doing so, other relevant dimensions of psoriasis were being over-looked, and the true effect of the
stress management techniques was minimized. The qualitative analysis, on the other hand, allowed the researcher to investigate the various factors and how they improved or exacerbated the patient's condition. By taking other potentially confounding factors into consideration the qualitative research probably came closer to interpreting the research findings than the quantitative research. At the beginning, the study was attempting to investigate the condition psoriasis by itself, but as a result of the qualitative data several other dimensions emerged that needed to be addressed.

The patient's point of view emphasized that the stress management factor accounted for a bundle of interrelated outcomes that include psoriasis. The patients felt that these other dimensions were also contributors to the condition and that, for the first time, their psoriasis treatment was attempting to address them. These outcomes came about from the qualitative analysis, and attempt to understand each individual case and let the theory emerge from the field notes and questionnaires. In contrast to formal theorizing, grounded theory is grounded in data obtained by case study followed by qualitative analysis. It is a complement to abstract empiricism. This grounded theory introduced many other dimensions of psoriasis that formulate a multiple feedback model (see figure 14). Within this model there are many interrelated dimensions that affect the level of psoriasis, such as depression, self-esteem, anxiety, stress level, and self-image. This model introduced a variety of other sides of psoriasis that could benefit from stress reduction techniques. This multiple feedback model contends that before the condition, psoriasis, can improve, the individual components must be improved. Furthermore, as one dimension improves, all others benefit as well. As this snowballing effect continues, the overall condition improves. The important point is getting the process started, and
that is what the study achieved. This multiple feedback model began as a result of an increased level of knowledge about the condition and its effects on the body. This level of knowledge is referred to as the psychiatric model and involves the understanding of both the organic and psychological factors of an illness in an attempt to produce a better form of psoriasis management. Within this study the psychiatric model came about as a result of the process of education that each patient experienced. This model involved the investigation of each patient’s condition, the factors that contribute to their level of stress and psoriasis, and how they can be improved. In other words, it involved the breaking down of the condition into its several dimensions and the attempt to improve each one, in hope of improving the overall level of psoriasis.
Figure 14. Synthesized Model of Qualitative Results.

Figure 15. Improved Synthesized Model of Qualitative Results.
CHAPTER FIVE: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This study investigates whether stress management is a useful adjunct to traditional psoriasis therapy. The research design implements both quantitative and qualitative data collection and analysis in examining the physical and psychological dimensions of psoriasis in hopes of producing a better treatment.

The quantitative assessment suggests a weak relationship between psoriasis and stress. These tentative results are not statistically significant, and therefore, the hypothesis, that the use of relaxation therapy improves the level of psoriasis, is rejected according to guidelines established for the experimental design. The qualitative analysis does not limit the condition to just a skin illness, but also investigates associated psychological and neurological dimensions and how they affect psoriasis. These findings present a different picture of the relationship between stress and psoriasis and how they can improve through successful implementation of stress reduction techniques. The analysis shows that many patients believe in the stress-psoriasis relationship and feel that their psoriasis therapy improves through the implementation of the stress management techniques. Most patients feel that the techniques not only improve their psoriasis but also other factors that were associated with the condition. The multiple feedback model, in chapter four, illustrates the various other dimensions of psoriasis and how these factors can improve or exacerbate psoriasis. Through education about the other dimensions and implementation of stress reduction techniques, the patients feel that the study improves their quality of life, level of psoriasis, and more importantly their ability to live with the condition. Furthermore, the study strengthens the view that even though psoriasis may
not have a cure, stress management techniques can improve the patient’s perception of psoriasis.

In addressing the research question for this study, some contradictory findings were evident. The study uses relaxation therapy in conjunction with traditional therapy in an effort to produce a more effective form of psoriasis treatment. The quantitative analysis slightly supports this purpose, but not at a significant level. Conversely, the qualitative analysis findings strongly support the study’s research hypothesis. This apparent contradiction begs the question, “How do we use both forms of analysis to help us understand the condition and the proposed model?” Both forms may present an accurate picture, but the differences in the analysis provide different points of reference for looking at the condition. Furthermore, the quantitative results could have been somewhat misleading. The first explanation for the non-significant quantitative results is the number of subjects. Pedhazur (1991) refers to the relationship between a small sample size and significance level. Due to such a small number of patients it is difficult to produce findings that are significant. It is interesting to note that similar findings with a larger sample could have been statistically significant. The second possible explanation is that there may have been a lag with regard to the treatment effect. If there were a lag effect, the research would not have had enough time for the physical improvement to take place. Thus, the relatively short treatment period would not be long enough for the reduction in stress to produce a significant reduction in psoriasis severity. This is also supported by the multiple feedback model that shows the many dimensions that must improve before the overall condition improves. The third reason that could explain the misleading findings is the psoriasis area severity index (PASI) which had a modest
reliability coefficient of .75. This measurement of psoriasis is too conservative and possibly not a good form of psoriasis assessment. Given that the Stress-Psoriasis relationship is in the right direction, a more accurate measure of psoriasis could strengthen the findings and possibly yield statistically significant findings. The forth explanation concerns the shape of the stress-psoriasis relationship. The level of psoriasis would need a longer time for the effects of the stress reduction to reduce the level of psoriasis to a statistically significant level. The quantitative analysis, ancovas, and simple regressions are measures of linear, straight line relationships. The relationship could well be nonlinear or curvilinear. The early reduction of stress may not affect the psoriasis condition until a threshold level is reached, at which point the improvement in stress may have a significant ameliorative affect on the psoriasis condition. This would probably represent a logarithmic relationship and in this study it was not tested.

Theoretical Implications

Although the study produced somewhat contradictory findings, valuable information was generated with regard to contemporary theory. The quantitative assessment produced tentative findings that support the stress-psoriasis relationship but do not statistically support the hypothesis that stress reduction techniques improve the traditional form of psoriasis therapy. The qualitative assessment on the other hand does support this statement and contributes to the research already present on stress reduction and its association with psoriasis. The quantitative findings fail to support the stress-psoriasis relationship and are inconclusive. Effectively they are findings which seem to justify the necessity of further research in this area.
Through the process figure 14 emerged as a synthesis of the qualitative results. Through further evaluation and analysis figure 15 was developed as an improvement on the qualitative findings. This model displays the true centre of the research and the condition, the patient. Through the research, just as in the treatment, the patient is often forgotten, and as a result, the optimal form of treatment is never realized. In this revised model there are two additions. The first is the educator, the individual who promotes awareness and education about the condition and also introduces other dimensions that may be inter-related. The second addition is the patient, which is at the heart of every illness regardless of type and severity. These inclusions add a vital part to the equation and also to the theory for treatment. If all medical practices attempt to keep the patient dimension at the heart of the treatment and investigate factors that may improve or exacerbate the condition, then the patient’s needs are always been addresses, regardless of the condition. This approach would ensure that both the physical and nonphysical dimension of an illness are being treated. It seems evident that any treatment that keeps the patient at the centre would not only improve the treatment but also their quality of life. Surprisingly enough, that is what this study attempted to do and from the patients comments it appeared to be successful.

Practical Implications

The implications of this study challenge the present medical care system. Taking into account theories such as the illness-behavior model it is becoming more necessary to investigate the effects of stress on all medical conditions. The more studies that support the premise of stress as a triggering factor for genetically predisposed problems, the more important the holistic approaches will become. Furthermore, the need to address stress
and its effects brings about a more preventive approach to health care. This preventive approach incorporates dimensions of health care such as attitude and self-image, and attempts to put more responsibility in the hands of the patients. The implications of this study support a broader view of the role of medical practitioners. Greater emphasis needs to be placed on the psychological and neurological adjuncts of current medical practices.

This study not only gives patients more responsibility with regard to psoriasis, but also challenges the current attitude towards health care. In short it promotes the notion that human beings can control their level of health care through the body-mind connection. This approach attempts to promote the feeling that individuals can better control their health care through the successful integration of present medical practices and stress reduction techniques. Through this education, individuals learn about the connection between the body and mind, and the bodily signs and symptoms of illness. The approach promotes a form of health care with less financial strain on the medical system and gives more responsibility to the patient. The present study attempts to show that through holistic health care there could possibly be a reduction in medication, visits to the doctor, and less need for specialized treatment. In the study patients reduce their use of medication for itch and also reduce their number of weeks of light treatment.

This study also attempts to educate patients and the general public about psoriasis so that patients are no longer considered modern day lepers and begin to live more normal lives where they do not have to hide their skin from the rest of the world. This could be done through curricula in health education and health studies programs. The most important practical implication is that the participants herald the benefits of the relaxation techniques and feel they improved their condition and their ability to manage it
in the future. If all patients, regardless of their condition, had the opportunity to experience the power of the body-mind connection and the state of relaxation that could be achieved through stress management techniques, the present health care system as we know it could change forever.

Implications for Illness Education

This study is designed to investigate the use of holistic medical practices and to further support them as viable forms of treatment. These practices are grounded in the belief that the educative process is a central element of this form of treatment. For an individual to be able to address the psychological aspect of an illness he/she must first take the time to investigate his/her body and learn its reactions to the environment. This personal inquiry and acquisition of personal knowledge is the vital education that all individuals must receive before holistic medicine becomes an accepted form of medical practice. Once individuals realize they are a necessary part of the equation and that there is a need for a more preventive approach to health care, this process will become the most important step in present day health care.

The results from this study offer information to various groups and stress the need for more health education within our present medical and school system. This will not only provide a better form of treatment for patients but also establish a more preventive approach with regard to health care.

Recommendations for Further Research.

The present study provides tentative support for the use of stress management techniques, as an adjunct to traditional forms of medicine. As alluded to, there are a variety of possible explanations why the quantitative and qualitative findings do not
produce similar results. Further investigations could be improved by implementing some changes within the protocol. The study requires a larger patient sample to insure that more cases can be examined and more covariates investigated. The study must also be conducted over a longer period so that the lag effect would have time to improve the patient’s condition. Furthermore, a longer treatment period would provide the necessary amount of time for successful implementation of the techniques to improve the psychological aspects and then improve the physical condition of psoriasis. A longer treatment time would also allow the patient and counselor the opportunity to develop a more trusting relationship and therefore have a better chance at resolving the other problems associated with psoriasis. Also, more advanced forms of analysis must be implemented to investigate the potentially nonlinear relationship between stress and psoriasis. Another very important addition would be a more reliable form of psoriasis assessment. The present study used the Psoriasis Area Severity Index, which involves a degree of subjectivity. Thus if a more reliable form of assessment was implemented, the quantitative results may be more conclusive and support the need for stress reduction techniques within present medical practice. One question that must also be addressed is the notion of compliance. If the protocol could insure that all patients would receive the same number of treatments per week and also practice the techniques on their own time then the confounding variable, compliance, would be a removed from the study. This could be achieved by providing a fee or reward for each of the patients as long as they met the criteria set out by the researcher. One final suggestion would be to conduct follow up studies that investigate the use of stress reduction techniques after the patients have finished the treatment period. This would provide more valuable information about
the use of the stress reduction techniques when the patients do not have a break out. This would also provide needed information about the use of stress reduction techniques as a more preventative form of health care.

In conclusion, this study provides more evidence that stress reduction techniques are a form of therapy that must be investigated further. The fact that this study produces contradictory findings suggests that researchers still do not know the pervasive effect of stress on selected illnesses and quality of life. Before individuals can embrace this form of preventive health care more research is necessary so its influence can be better understood and used to its maximum benefit.
REFERENCES


The Psoriasis Life Stress Inventory (PLSI) (Gupta & Gupta, 1995b). Over the past week how much stress have you experienced as a result of the following? Using the following scale write down the number that best describes the degree of stress you experienced (if you did not experience the event, or the event is not applicable in your case, please give the event a rating of 0).

Rating scale: 0 = not at all, 1 = slight degree, 2 = moderate degree, 3 = great deal

<table>
<thead>
<tr>
<th>Psoriasis-Related Event</th>
<th>Over the past week how much stress did this cause you?</th>
<th>Write a number between 0 and 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Inconvenience by shedding of your skin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Feeling self-conscious among strangers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Feeling that you have to set aside a large part of your time to take care of your psoriasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Not going to a public place (i.e. swimming pool, health club, restaurant) when you would have liked to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) Wearing unattractive or uncomfortable clothes in order to cover certain regions of the body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Having to avoid sunbathing in the company of others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Fear of having serious side-effects from medical treatments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) People treating you as if your skin condition is contagious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Avoid social situations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Strangers (children or adults) making rude or insensitive remarks about your appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) Not enough money to pay medical bills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Feeling like an “outcast” or “misfit” a great deal of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) People making a conscious effort not to touch you</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14) Hairdresser or barber appearing reluctant to cut your hair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15) People implying that your skin condition may be due to AIDS, LEPROSY or a VENEREAL disease</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX B

**PATIENT NO.:**  
**INITIALS:**  
**Week No.:**  
**Date of Exam:**

---

### P.A.S.I. SCORE

**Scoring System Score**

<table>
<thead>
<tr>
<th>Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythema Infiltration Desquamation</td>
<td>none</td>
<td>slight</td>
<td>moderate</td>
<td>severe</td>
<td>very severe</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area %</th>
<th>0</th>
<th>1-9</th>
<th>10-29</th>
<th>30-49</th>
<th>50-69</th>
<th>.70-89</th>
<th>90-100</th>
</tr>
</thead>
</table>

#### HEAD (H)

**Score**

- Erythema
- Infiltration
- Desquamation
- Sum
- Area (specify %)
- Sum x Area =
  - x 0.1 =

#### TRUNK (T)

**Score**

- Erythema
- Infiltration
- Desquamation
- Sum
- Area (specify %)
- Sum x Area =
  - x 0.3 =

#### UPPER LIMBS (UL)

**Score**

- Erythema
- Infiltration
- Desquamation
- Sum
- Area (specify %)
- Sum x Area =
  - x 0.2 =

#### LOWER LIMBS (LL)

**Score**

- Erythema
- Infiltration
- Desquamation
- Sum
- Area (specify %)
- Sum x Area =
  - x 0.4 =

\[ \text{PASI} = H \ + \ T \ + \ UL \ + \ LL \ = \ ]
APPENDIX C

The Use of Relaxation Techniques as an Adjunct to Traditional Psoriasis Therapy

Qualitative Questionnaire

#1 How do you feel with regard to your psoriasis and your quality of life? (please ✓ one )
- Low  Explain
- Average
- Normal
- Good
- Excellent

#2 Has the therapy educated you about psoriasis and how it can be better managed, please explain?

#3 How could the treatment be improved to better educate you about stress and psoriasis?

#4 How will the sessions help you, in the future, manage your psoriasis?

#5 Briefly outline how your psoriasis has improved?
APPENDIX D

Patient’s Stress Profile

Name:

Stress

List all the major and minor problems and situations that cause you stress.

Bodily Signs

List all physical and mental symptoms that your body is under stress (Include all possibilities).

What Can I Realistically Change

Implement the Stress Management Techniques and remember you are not alone.

Signature of contract _______________ Date __________
APPENDIX E

PATIENT CONSENT FORM

A study investigating the implementation of stress management techniques as an adjunct to the traditional psoriasis treatment

You have been asked to participate in a research study. Participation is entirely voluntary. You may decide not to participate or you may withdraw from the study at any time without affecting your normal treatment. Confidentiality of this study will be maintained by the investigator.

This study is being conducted by Dr. Wayne Gulliver and Christopher Baker

PURPOSE OF STUDY

The primary purpose of this study is to assess stress reduction techniques when used with traditional types of treatment for psoriasis. The aim is earlier clearing and longer remissions than observed in current treatments without these stress management techniques. It is possible that the use of stress-reduction techniques in combination with traditional treatments will improve the level of psoriasis. It is hoped that through this study a more effective, safe, and economical treatment will be found to benefit those suffering from moderate to severe psoriasis.

DESCRIPTION OF PROCEDURES AND TESTS

You will be randomized (by chance, like flipping a coin) to receive either UVB and cream (topical) treatment or UVB, topical, and stress management therapy. At enrollment Dr. Gulliver will assess your level of psoriasis, using the Psoriasis Area Severity Index (PASI) and the Clinical Holistic Health Educator (CHHE), Chris Baker, will assess you to determine the most suitable stress management technique. All patient’s will receive UVB sessions from Monday to Friday and daily topical treatments. The study group will receive the same treatment plus one weekly stress management session. Once you have learned the stress management techniques you will be expected to practice the techniques daily for 20 minutes. The treatment period will end if your psoriasis has cleared or the 10 week period ends.

You will receive a weekly PASI assessment by Dr. Gulliver, Dr. Parsons, or Dr. Landells and a stress assessment by the CHHE. You will be checked weekly to ensure that the proper stress management techniques are being used. After treatment has finished you will be assessed for a final time using the PASI and the stress index.
FORESEEABLE RISKS, DISCOMFORTS AND INCONVENIENCES

The extra length of visits may be an inconvenience to the study group.

It is possible that the treatment will not decrease the level of psoriasis.

Extra time will be required to complete the personal stress reduction techniques at home.

BENEFITS

There is no guarantee that you will benefit from participating in this study.

CONTACTS/QUESTIONS

In the event of a research-related injury or if you have questions about the study, the study treatment, or if you desire to stop participating in the study, you should contact Dr. Gulliver or Christopher Baker at 753-5522. If you have any questions with regards to your rights as a research subject you may contact the Human Investigations Committee of Memorial University at 737-6974.

VOLUNTARY PARTICIPATION

Your participation in the study is entirely voluntary. If you choose not to participate or if you decide to withdraw from the study at any time, there will be no penalty or loss of benefits to which you are entitled. You are encouraged to contact the study physician if you decide to withdraw from the study.

Also, you will be notified of any significant new information relating to the study that may affect your willingness to continue participation in the study. You also have the right to see any of the results of the tests that have been done.

CONFIDENTIALITY

The results of this study may be included in scientific publications and presentations, but to the best of our ability the participants identity will be protected. The Health Protection Branch, a division of Health Canada, as well as Memorial University of Newfoundland, Faculty of Medicine Human Investigation Committee have the right to inspect the data. The medical records that reveal the participants identity will remain strictly confidential, except where they will be provided as noted above or as may be required by law. Your primary care physician will be notified of your participation in this study if you agree.
LIABILITY PARTICIPATION

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities.

Your participation in the study may be terminated by the study physician for any of the following reasons:

A. If the study physician determines that it is in the best interest of the participant's health and welfare.
B. A serious side-effect which may require evaluation.
C. If the level of psoriasis worsens to the point that UVB and topical treatment are no longer the effective form of treatment.
D. Failure to follow the study protocol.
CONSENT FORM

I, ______________________, the undersigned, agree to my participation in the research study described.

Any questions have been answered and I understand what is involved in the study. I realize that participation is voluntary and that there is no guarantee that I will benefit from my involvement. I acknowledge that a copy of this consent form has been given to me.

Signature of Participant

Date

To be signed by investigator

To the best of my ability I have fully explained to the subject the nature of this research study. I have invited questions and provided answers. I believe that the subject fully understands the implications and voluntary nature of the study.

Signature of Investigator: Christopher Baker

Date

Phone Number: 753-5522
APPENDIX F

Field Notes

#2
The sessions have been going really well. I find the techniques allow me to relax and not let the little things bother me.

Psoriasis is doing better and I feel better about myself.
I realize the connection between psoriasis and stress.
I used the technique to relax while my daughter was giving birth. I found the tape made me concentrate on something else and it allowed me to feel better and not let the stress get to me.

I really enjoy the sessions because it allows me to talk and learn more about the connection between stress and psoriasis.

I look forward to each session, it allows me to relax and forget my problems.

#3
I have made the connection between stress and psoriasis and I can now better control it.
I am doing well and my psoriasis is getting better.
I made the connection between stress and eating so now I try to practice the techniques when I get the urge to eat. My psoriasis has improved and I have lost five pounds as well.
I fell better about myself and I feel I can control my psoriasis better by using the techniques and being aware of my body.

#6
The techniques allow me to deal better with the smaller problems in life.
I do the techniques while I am driving and I don't get upset with our drivers like I did in the past. I start each day off now feeling good as opposed to being upset because I of the thirty minute drive to work. I am getting the little things done at work because the techniques are allowing me to concentrate better and not worry about the big things all the time.
I feel I have better control of my reactions by taking more time to think about how my body is affected. I am sleeping better. I am not as quick to react and I feel more positive.

#7
I have always known the connection between psoriasis and stress but I never knew how it affected me. Now I better understand the two and how I can improve them.
The techniques allow me to relax and not always get upset.
I better handle the way I deal with problems. For example when the grandchildren broke my picture I got upset but found myself saying why are you getting upset over something so small. The children did not try it so relax and calm down. I now find myself thinking before I react and that has made me much more calmer.
I feel like I have an improved ability to manage my psoriasis and reduce the triggers for an out break. I also am aware of other issues that will improve my psoriasis and life style due to talking with you. Strengthen previous beliefs toward stress and psoriasis.

I know how I can better deal with stress.
I have had the first clearing on one leg in 16 years.

The education of the body and how I can control my breathing was very helpful. The study motivated me to learn more about the illness and how it effects me. My attitude has changed toward dealing with stress with regard to illness.

I feel I can control it, I will not give in.

#8

The only time I can really feel relaxed is when I do the techniques. It allows me to forget about my problems for a little while. I normally do the exercises just before I go to bed and I find that the techniques allow me to get three or four good hours of sleep where as before I only got one or two hours and then I would wake up. The sessions have allowed me to relax and better deal with problems I have in my life. This has improved my psoriasis and also other aspects like happiness and self-esteem.

During the past couple of weeks I have had a real tough time but I have had no new patches and normally during rough times I get new patches. I feel better about myself and how I can improve my psoriasis and self-esteem.

I have more inner peace and accept more responsibility for illness management. I assume more of a preventative approach. I now realize the other dimensions of psoriasis.

#10Dec.20

I had a very difficult week and the techniques allowed me to sleep better and be more relaxed. Also I feel the techniques allowed me to better resolve some difficult work issues.

#12

It is very difficult to have faith in other forms of treatment because I have lived with this illness for such a long time. At first I knew the connection between stress and psoriasis but I did not know how the sessions would help me because I am not stressed. Now I have instilled in my mind the need for relaxation and how it can better management my psoriasis, also make me more relaxed around the house. I use to let little things bother me but now I seem to have better control of my reactions. Even my wife says she has noticed a difference in my behavior. I now believe the techniques and relaxation will improve my psoriasis and help me prevent it from reoccurring as badly next time.

#14dec8

I feel much better about myself and my psoriasis. I us the techniques to relax and clear my mind especially on Sunday nights when I have to plan for the week. I am much more organized and planned now and it appears to be because of the sessions and techniques. Even when moose hunting I found myself doing the exercises to relax. I now notice my body signs of stress before they actually influence my life. I can manage stress better and
my psoriasis is clearing. This is the fast I have ever cleared. I am more relaxed and I think before I act. I have no insomnia.

#31 dec2
I feel better and no new spots have appeared. The techniques and relaxation applies to all aspects of my life like driving, mornings were stressful but now I seem to have more control and they are not as hectic. Everything seems to have slowed down.

#27 dec1
I am sleeping better
I really believe the relationship between stress and psoriasis is strong. I am able to recognize my signs of stress and better deal with them. I feel better about myself.

#27Dec2
I am better dealing with the little problems so that I am more relaxed. The sessions and techniques provide relief for myself so that I can recharge and I feel this is better for my psoriasis.

#24Dec3
The sessions are a great way to relax and forget about my problems. My psoriasis is improving and I hope I can control it better.

#12Dec9
I have a positive attitude. The one on one conversations provide help, put me in a positive mode of thought, and give me a new approach towards management. I feel more positive about psoriasis and I have learned a lot. I have been educated about stress, I am more aware of stressful situations, I now know what triggers to look for. I am not as impatient or upset with driving. I am not totally dependent on the medical field for relief. Helpful in providing focus during the time I will not be receiving light therapy. Provide the assistance needed for the sessions and techniques to be a positive experience.

#27Dec10
I do not feel as embarrassed about my psoriasis. Even though I have some new patches it does not bother me as much because I can control it better using the techniques. Before I noticed my fist was always clenched and my shoulders were tight. Since the sessions have started I feel much more relaxed and my shoulders and fist are not so tight. I now can better control the amount of tension in my body by controlling my breathing.

#21dec8
I have better sleeping patterns. I work in a high stress job but since I have started the sessions I seem to be better able to handle the stress. An even my fellow employees have noticed a change in behaviour at work. I have more patients and my Psoriasis has not been this good in six years. I don’t feel helpless.

#18dec9
The sessions and techniques are helping me get through the tough times better. I am handling my daughter better and not getting upset at the littlest thing. I am better dealing with my anxiety by being much calmer. I can better deal with my body and improve my condition without medication. I control my anxiety and stress through the breathing techniques. I have a different attitude towards dealing with illness and my role in the whole process. I now play a important role. I have control over my body as opposed to my body controlling me.

#35Dec.12
During the past week one night I had extreme itching I used the techniques to try and relax and I did not have to use cremes. I now use the tape at night when the itching is its worst and I have dramatically reduced my dependency on the medication.

#34Dec12
All is going well I feel fine and I hope the sessions will improve my psoriasis. I am more relaxed in the sessions.

#17Dec12
I am very happy that my psoriasis is getting better. I seem to handling my stress better and not reacting with my boyfriend as much as in the past.

#31Dec12
I am now aware that I must get more control of my body and how it effects my illness. I recognize the stresses in my life and I implement the techniques and I feel much better about myself. Last week I broke my toe and I used the techniques to relax and try to control the pain. I found I was talking to myself a lot saying slow down and relax it is not that bad. The techniques allowed me to relax.

#18Dec16
I had a really stressful week and I found that I needed time out from the problems. The techniques allowed me to do that and make it through without taking medication. That makes me feel very good. After using the techniques I am calmer. I take a walk and do the breathing techniques and after that everything did not seem as bad. At the hospital I did the techniques to relax while waiting for the results. Usually I am very uneasy at the hospital. They helped me a lot.

#21Dec18
If something stressful happens the breathing techniques let me remove myself and relax. My psoriasis is doing better than it ever has. I believe I will be able to keep it under control by using the techniques. I am more tolerant. Ex. My boyfriend is not coming home for Christmas but instead of getting upset I remained calm and talked about it. Normally I would react and get very upset. After that situation I felt very proud that I could handle my emotions. I am handling my problems better and providing time for myself. I feel great.

#35Dec18
During stressful times I wanted to get away and the techniques allowed me to do that and feel better about myself. I feel great. I am sleeping better. My psoriasis is getting better. I notice my stresses and how my body reacts. My wife has noticed my change in behavior. Much calmer.

#34Dec18
I am much more relaxed.

#10Dec20
Got through a difficult work week without feeling to bad I used the techniques a lot and it helped me get through.

#27Dec24
I am doing very well and seem to be very relaxed for this time in Christmas. I am taking time for my self to relax and control my psoriasis and improve my quality of life. I have better control of my emotions and I realize that I am not that bad and I should enjoy life. I find I have a much more positive attitude.

#24Dec23
I automatically find myself relaxing by concentrating on my breathing. My sleeping has improved and I am more interested in trying to control my body and it’s reactions. During my brothers funeral I found myself doing the techniques to relax. They allowed me to slow down be more relaxed and take more responsibility with regard to my illness prevention.

#27Dec27
Nothing seems to bother me anymore. If I get in trouble, feel stressed, or feel overwhelmed I use the relaxation techniques and I feel much better.

#26Dec22
The techniques help me deal with my everyday problems. It is a positive learning experience that gives me a possible option with regard to my psoriasis and life style. I am being more educated about my body and how I can help it.

#31dec22
I sense that I am making an attempt to control my body even though everything is hectic and because of that I feel good. I am not letting the little things bother me. I am more conscious of the stress relationship to illness and I think about it a lot and how I can help. I notice my signs of stress before they multiply and decrease my life performance. I have an increased awareness.

#35Dec23
My wife feels that there is a change in my attitude and the way I react. This change is positive. I am sleeping better and able to focus better on work issues. I am more relaxed and not worried about everything. Yesterday I had a tough day so I did the exercises and
after I felt much better. I feel I can control my stress level better and that effects my skin in a positive way.

#18Dec23
I am able to get by without so much medicine and I find that I now need the time every day for myself to relax. I look forward to the sessions because I reduce my stress and tension.

#35Jan2
No drastic changes since the last time but I still feel good and my psoriasis is still improving. Trying to do the exercises at much as I possibly can. Wife still thinks there has been a major change in my attitude.

#34Jan2
Psoriasis is slowly getting better./ I still use the techniques to relax but I am not very stressed.

#27Jan5
Never been really clear with psoriasis and I have never finished lights this early. There is no doubt in my mind that this has impacted my psoriasis. I can better handle stress, I know my trigger points, I know what to do to relief my stress, I catch myself before I get upset too much. I have an overall better feeling. I can manage my stress and psoriasis better. I am no longer alone with my psoriasis I now have techniques to use that help me. I am going swimming tonight for the first time in 10 years. People notice a change in attitude, the old me is back. You showed me the connection between psoriasis and stress. Thank-you.

#24Jan5
This is very worthwhile and I feel much better about myself and the control I have. I am more relaxed.

#31Jan5
I was very nervous on the plane but the techniques allowed me to relax and reduce my tension level. Even though I could get light therapy I used the breathing techniques and I have no new patches.

#26Jan5
I used the techniques to relax and be able to concentrate more and it works. I feel better.

#27Jan6
I used the techniques during Christmas and they seemed to work because I was not really stressed over the whole time. I didn’t let the little things bother me. I find that I used the breathing techniques without the tape and it helped me relax especially when I found myself uptight or tense. I seem to calm down quicker then in the past.

#18Jan7
I am not disappointed that I did not clear because there is no new spots. The techniques allowed me to get in contact with my body. I now see the relationship between psoriasis and stress. I now control my body and its reactions. My anxiety is now controlled without medication. I feel great about that. You help reduce my temper, I now catch myself so that I don’t react. I enjoy that feeling. I feel very clear and relaxed while doing the exercises. My sister says I am more laid back. Things don’t upset me as much as before. The little things are not worth the bother so I use the techniques and control my reactions.

#35Jan9
During negotiations at work I did. The exercises and I was able to relax and it allowed me to forget about work and go home. To smell the roses. My wife and daughter comment on my change in attitude. I feel great about not use medication to control the itch and I feel great about the sessions. I don’t use the term quick in describing how I will shower or do something and I feel that is due to the fact that I am slowing down and taking more time for myself. I am putting myself before everything else.

#34Jan9
Status quo. I am still doing it on my own and I find it relieves me.

#26Jan12
I enjoy alternatives forms of therapy it gives me hope that I don’t need all the medication. I am learning alternative ways to cope with stress and psoriasis. It is helping me speed up the clearing process and helps me relieve everyday stresses. I have more concentration and cope better with my problems. I feel good about the therapy and the sessions.

#34Jan16
The relaxation is good. I fine myself doing the exercises during a stressful moment. I use the techniques to control my breathing and become more relaxed. In traffic I use the techniques and it helps me relax.

#24Jan16
My psoriasis is greatly improved and I feel a lot better. The sessions taught me to notice my signs of stress and control how they effect me. Makes me less trapped. I feel more in control with my body. Before I felt helpless and depressed but now I have hope. I had a role in my recovery and now i can play a role in the prevention. Techniques allow me to control my reactions. I know it helps me and it is worthwhile. I believe I am doing something, I am helping the physical and mental. I am not a passive patient I accepted a role and now I am better and I feel great.

#26Jan20
The techniques are still allowing me to relax. I am very patient not as irritate and more tolerant of stressful situations.

#31Jan20
The techniques allowed me to calm down in the emergency room. Driving home I used the techniques to relax before I got home so that I would be calmer. I automatically find myself using the techniques when I am stressed. I have much more control over my body and my psoriasis.

#35Jan23
This has been better than all seminars I have done. Because of the one on one I could voice my opinion and feel more confident about it. The techniques relieved the itch and worries. I feel I can better manage my psoriasis in the future. A great way to relax. I am more aware of my body stress symptoms. People have noticed a change in attitude and I am not as upset at work. I know myself better and I feel I can control my stress and psoriasis better. I think more of myself.

#27Jan21
This is fantastic. The methods help me to relax, not me so concerned about things that are not important, take myself away from the problem and better able to cope with stress. I assume that now I can better manage myself and not be so stressed out about psoriasis. I can now better handle the problems. I will continue to use the techniques to improve my quality of life. They have improved my family life by being able to take a step back and relax and not react. It has helped my professional life by giving myself the gift of time to concentrate and relax. Through the study I have lost the tension that was controlling me. Now I control my tension level and the psoriasis.

#26Jan26
The experience was good. I now value the use of a stress reliever for speeding up my recovery and improving my life. After the sessions I was more relaxed. After a stressful day at work I must assume the family role and the techniques allowed me to do that in a much more positive way. It gives me the edge to better control my psoriasis by not being stress, nervous, and uptight. I can now control those factors from my increased awareness of relaxation and how I can do that by myself. I have more control over my quality of life and illness prevention.

#31Jan26
This was great It helped me by getting control of my run away emotions, taught me to concentrate, clear my mind, and relax. It helped me to calm myself during work, home, and driving. I felt more organized and now understand the connection between stress and psoriasis. Sessions provided guidance and support and encouragement. I control my quality of life and the amount of mental control over my physical self. I can now better control the mental and physical and I feel better about it. I have never done anything like this before and now it allows me to clear my mind and body and relax. It was very informative and helped me improve myself. Helps me look at every thing in a better light with a better attitude. Allowed me to investigate myself and learn a lot to help in the future.