CHAPTER - V

SUMMARY AND CONCLUSIONS

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5.1. INTRODUCTION

The present study is based on the philosophical faith that healthy life is not restricted to physical health only. The recent trend is towards holistic health, which means, the whole being inclusive of physical, emotional, mental and spiritual self. As said by Sri Aurobindo:

> "Disease is needlessly prolonged and ends in death often than is inevitable, because the mind of the patient supports and dwells up on the disease of the body."

The mother adds to it, "An illness of the body is always the outer expression and translation of a disorder, a disharmony in the inner being; unless this inner disorder is healed, the outer cure cannot be total and permanent." Body mind interaction has been acknowledged since ancient days. Till date it remains a mystery. Hence it has become a subject matter for in-depth study.

5.2 PSYCHOSOMATIC PROBLEM

There is general agreement that a high percentage of diseases affecting mankind are psychosomatic and that their primary causes are our thoughts, attitudes and beliefs. When we speak of psychosomatic nature of disease, we basically mean that the major source of the disease lies in one's emotional, mental or perceptual and behavioural habits. Brown (1977) pointed out that which disease occurs and which internal process is involved, is the consequence of a very complex interaction of psychological, constitutional or genetic and environmental factors. The pattern will be unique for example one person may suppress anger and eventually develop the mental dysfunction of depression; another may suppress anger and eventually develop migraine headaches. However, even though the development of specific psychosomatic disease is unique to

each individual, the underlying principles are the same. Emotional stress leads to physiological stress and this results in an eventual breakdown (disease) of the target organ system. Udupa (1977) reported that psychosomatic diseases appear to progress through four distinct phases:

- **Psychic Phase:** This phase is marked by mild but persistent psychological and behavioural symptoms of stress such as irritability, disturbed sleep, loss of appetite, etc.
- **Psychosomatic Phase:** If the stress condition continues, these symptoms become more pronounced, along with the beginnings of generalized physiological symptoms such as occasional hypertension and tremors.
- **Somatic Phase:** This phase is marked by increased function of the organs, particularly the target, or involved organ. At this stage, one begins to identify the beginnings of a disease state.
- **Organic Phase:** This phase is marked by the full involvement of a so-called disease state, with physiological changes such as an ulcerated stomach or chronic hypertension becoming manifest.

There are many examples of psychosomatic diseases which are directly related to stress. They include ulcers, cancer, bronchial asthma, common cold, headaches, chest pains, spastic colons and constipation. The list is almost endless. It is still not known why one organ system is affected by stress and not another. Certainly, genetic factors, diet and conditioned learning are all involved, but the key lies in one's mental structure. In other words, it can be said that stress is at the root of all psychosomatic diseases regardless of the organ system involved.

Psychosomatic medicine emphasises the unity of mind and body and the interaction between them. The term "psychosomatic" was defined in 1978 by National Academy of Science as "the interdisciplinary field concerned with the development and integration of behavioural and biomedical science knowledge and techniques relevant to health and illness and the application of this knowledge and these techniques to prevention, diagnosis and rehabilitation."

In the revised third edition of Diagnostic and Statistical Manual of Mental Disorder (DSM-IIIR) the term "psychosomatic" has been replaced with the diagnostic category of psychological factors affecting physical conditions. In the fourth edition (DSM-IV) it is called psychological factors affecting medical condition.

The diagnostic criteria specifies the following conditions:

- First a general medical condition is identified.
- Secondly psychological factors adversely affect the general medical condition by affecting the course, treatment, precipitating or exacerbating the symptoms of general medical condition or by creating additional health problem for the individual.

5.2.1 ESSENTIAL HYPERTENSION

Essential hypertension is one of the general medical conditions affected by number of psychological factors. Mainly personality trait or coping style and stress related physiological responses. Hypertensive persons appear to be outwardly congenial, compliant, and compulsive, although their anger is not expressed openly, they have much inhibited rage, which they handle poorly. There appears to be a familiar genetic predisposition to hypertension; that is when chronic stress occurs in a genetically predisposed compulsive personality who has repressed and suppressed rage, hypertension may result. Supportive psychotherapy and behavioural techniques (for example, biofeedback, meditation, and relaxation therapy) have been reported to be useful in treating hypertension. Medically the patient must comply with anti-hypertensive medication regimen.

5.3 COPING BEHAVIOUR

The term "coping" refers broadly to efforts to manage environmental and internal demands and conflicts within these demands it has been increasingly acknowledged that health outcomes are a product of effective coping rather than simply a consequence of the

presence or absence of stress. Four general path ways are outlined through which coping affects health outcomes:

i. Coping affects health outcomes by influencing the frequency, intensity, and patterning of neuroendocrine stress responses by preventing stressful events from occurring or by enabling the individual to avoid or resolve difficulties that do occur.
ii. A second pathway through which coping can influence health outcomes comes into being when illness behaviour or actual physiological symptoms serve coping functions. Illness behaviour may serve stabilizing function in conflicted families, or be maintained by secondary gains or reinforcements.
iii. Thirdly coping may contribute to disease because it involves changes in health behaviour that expose the individual to injurious agents such as alcohol, tobacco smoking, or allergens.
iv. Finally, the individual copes with the treatment of acute illness (Moos, 1982) or with demands of chronic illness can be an important determinant of the course of the illness and of the medical care received.

At a gross level of analysis there appears to be again at least four fundamental prerequisites for effective coping:

i. Coping is (most often) likely to be facilitated by a veridical, or at least an adaptive appraisal of the world, oneself, and the commerce between the two. Efforts to cope may well be misguided to the extent that the "true" nature of things is misconstrued.
ii. Given a reasonable appraisal, effective coping presupposes an adequate repertoire of responses (or skills) for dealing with the on going demands of life.
iii. Given that the first two prerequisites are met, the person must actually deploy appropriate coping responses as required.
iv. Upon completion of a stress coping sequence, effective coping implies an efficient return to a baseline level of functioning rather than unnecessary protraction of the episode.

By identification and acceptance of body mind relationship and minds influence over bodily functions role of psychotherapist has been expanded to almost all areas of human existence. Training of effective coping skills through cognitive behavioural therapeutic approach has been proved to be beneficial in case of functional disorders.

Most brands of psychotherapy rely for their credibility on focusing on one or the other aspect of human functioning and making it central to their system. However, all psychotherapies are severely limited in the degree to which they are capable of modifying man's behaviour or enlarging the client's awareness. According to the transpersonal approach of psychotherapy therapeutic outcome can be more reliable when it is associated to a firm spiritual dimension. As it aims to restore the lost harmony between microcosm (individual) and the macrocosm (universe). In their meeting points psychospiritual discipline and psychotherapy could be considered as schools of self-knowledge; by removing ignorance the seeker is able to discover and reunify himself in order to become his real self. Self-knowledge is seen as the key to the discovery of the seeker's integrity.

The present study is an experimental psychospiritual intervention which aims to enhance coping skills of essential hypertension patients, through Alpha Biofeedback training and *Yoga Nidra* which would help them to control and modify their self defeating physiological and psychological reaction to stress.

5.4 BIOFEEDBACK

Biofeedback is a technique that uses various procedures and instruments to teach people how to voluntarily control involuntary activities, such as blood pressure, pulse rate, muscle activity, fluctuation in skin resistance but one can not voluntarily select to have one response at a time. However, with use of biofeedback it is possible to selectively alter each one of these physiological responses. Biofeedback simply creates a physiological state resembling any *yogic* state. It does not give any insight to mind.

In the present study Alpha Biofeedback was used to train the subject to sustain alpha state and then they were made to practice yoga nidra.

5.5 *YOGA NIDRA*

Yoga Nidra is a of *yogic* relaxation technique derived from *tantras*, which teaches the practitioner to relax consciously. It gives a systematic method of inducing complete physical, mental and emotional relaxation.

5.5.1 PURPOSE OF YOGA NIDRA

i. To progressively release the three kinds of tension.
   (a) **Muscular**: Related to body, nervous system and endocrinal imbalances.
   (b) **Emotional**: Stems, from dualities such as love/hate, profit/loss, success/failure, happiness/unhappiness. This is because we are unable to express our emotions freely, we repress them causing deep rooted tension.
   (c) **Mental**: Throughout our life, the experiences registered by our consciousness are accumulated in the mental body. From time to time these explode, affecting our physical and mental reactions to environmental demands.
ii. To restructure and reform our whole personality, from within.
iii. To show the seeds of change; through Sankalpa (resolution); a phrase that is a determination to become something or to do something in your life.

5.5.2 NATURE OF *YOGA NIDRA*

Yoga Nidra is a form of Raja Yoga which has eight stages.

Preparatory Or External Stages (*Bahirang Sadhana*)

i. *Yama* (Social Code)
ii. *Niyama* (Personal Code)
iii. *Asana* (Postures - state of being)
iv. *Pranayama* (Control of *prana*, life-force, cosmic energy).

Higher Or Internal Stages (*Antarang Sadhana*)

i. *Pratyahara* (withdrawal of the senses)
ii. *Dharana* (Concentration)

iii. *Dhyana* (meditation)

iv. *Samadhi* (transcendental consciousness).

Yoga nidra belongs to the higher stages of Patanjali's Raja Yoga, since it is essentially a method of *Pratyahara*. The mind becomes one pointed. The science of Yoga Nidra is based on the receptivity of consciousness. Yoga nidra is on the border line between state of being awake and asleep. In modern psychological terms it is known as hypnogogic state.

5.5.3 BENEFITS OF YOGA NIDRA

i. Relaxation
ii. Concentration
iii. Strengthens the will power/awakens memory
iv. Deepens the prayer mood
v. Body and mind get re-energized
vi. Helps in deep contemplation
vii. Stimulates creativity
viii. Facilitates mental flexibility
ix. Helps in self integration
x. Learning becomes effortless.

5.6 RELATED RESEARCH

Studies Conducted On Use Of Biofeedback On Essential Hypertension Patients

A large number of studies have dealt with hypertension. Moreover, it has long been held that "factors operating through the mind" play a role in the genesis of essential hypertension (Pickering, 1968) and the postulates has been supported by biochemical measurements (De Quattro and Miure, 1974).

Shapiro and his colleagues at Harvard developed a procedure for giving direct feedback of blood pressure on a beat-by-beat basis for short duration (approximately one minute). The system, described in some detail by Tursky, Shapiro and Schwatz (1972),

utilizes a cuff which is automatically held near systolic or diastolic blood pressure and has come to be the "standard" apparatus in the field.

With this defile, Shapiro and his colleagues (Shapiro, Tursky, Gershou, and Stern, 1969; Shapiro, Schwatz and Tursky, 1972) have demonstrated that direct feedback of blood pressure could enable normotensive volunteers to gain some degree of control over their blood pressure. These reports led to a fairly widespread efforts to apply biofeedback of blood pressure to the treatment of hypertension.

Studies of several levels of sophistication have been conducted, including one control-group outcome study (Elder, Reiz, Deably and Dillenkoffer, 1973). This study however, presents problems, including a very short baseline (one session) and very small N group (N = 6).

Though in most of the studies with direct feedback of blood pressure, however, small may be the sample size, a majority of patients showed clinically meaningful changes. Yet there were lacunas, such as lack of good follow-up data and deficit of data on transfer of training effects from the biofeedback laboratory to the patients natural environment. As a result to such disappointments direct biofeedback of blood pressure as a psychological treatment strategy has been abandoned, and psychologists have moved to explore some of the different relaxation techniques.

Biofeedback of other Responses to Reduce Blood Pressure

In addition to the studies of direct feedback of B.P., there have been several other attempts to treat hypertension through the use of biofeedback training with other responses. One of their most outstanding sets of studies in the whole field of clinical biofeedback by Patel and her associates (1973). She has reported three separate studies on groups of 17 to 20 patients each. All the patients were clearly hypertensive and the vast majority of them were on hypertension medications.

In her systematic work Patel shows that the combination of GSR biofeedback, passive relaxation training, and meditation is consistently effective in producing significant reduction in B.P. in hypertension.

The studies by Love and his associates (Moller and Love, 1974), Love, Montgomery, and Moller, 1974) while not as elegant as those of Patel, do seem to show that a combination of frontalis EMG biofeedback training and various other relaxation training procedures lead to moderate reductions in blood pressure. One interesting finding in the study by Love et. al. (1974) was that at an eight months follow-up, there had been further decrease in B.P. in the treated subjects who continued to regularly practice their relaxation, and no relapses had occurred among the 79 percent of subjects.

Studies Conducted On Alpha Feedback Training

As far as exploration of therapeutic use of Alpha enhancement is concerned it is at a primitive stage. Hence not ready for uncontrolled routine use. Yet, there are quite a few studies with clinically significant and long lasting results.

Alpha feedback training was first reported by Kamiya (1962, 1969), and was later investigated by Nowlis and Kamiya (1970) and Brown (1970). These investigations were directed towards understanding subjective experience, associated with EEG activity. When subjects were given alpha feedback and instructed to increase it, they reported feelings of relaxed alertness, passive attention, and mental relaxation. These subjective reports subsequently came to be termed as the "Alpha State." The reports were similar to those associated with autogenic training (Luthe, 1963) and meditation.

Cabral and Scott (1976) used 3 months of alpha feedback training and 3 months of relaxation training (Jacobson, 1938) to reduce anxiety in 3 patients whose seizures were associated with anxiety and phobic reactions. All subjects exhibited increase in alpha activity and 2 of them showed reduction in abnormal epileptiform activity. For all patients seizures were similarly reduced during both training procedures.

5.7 METHODOLOGY

5.7.1 TOPIC

An experimental study of the effectiveness of a therapeutic package on coping behaviour of psychosomatic patients."

5.7.2 OBJECTIVES:

i. To study the impact of yoga nidra on the coping behaviour in terms of changes in various physiological and psychological variables.
ii. To study the impact of Alpha enhancement training on the subjects coping behaviour in terms of changes in various physiological and psychological variables.
iii. To study the impact of combination of Alpha enhancement training and yoga nidra on the subjects coping behaviour in terms of changes in various physiological and psychological variables.
iv. To make a comparison between control and experimental groups to draw conclusions regarding effectiveness of the intervention techniques.
v. To assess the differential impact of intervention technique with respect to change in coping behaviour in terms of changes in various physiological and psychological variables.

5.7.3 HYPOTHESES

i. There will be no differential impact of the intervention techniques, on Blood Pressure (systolic and diastolic).
ii. There will be no differential impact of the intervention techniques on Pulse rate (Beats/min).
iii. There will be no differential impact of the intervention techniques on Respiration rate (cycles/min).
iv. There will be no differential impact of the intervention techniques on level of Anxiety.

v. There will be no differential impact of the intervention techniques on level of Depression.

vi. There will be no differential impact of the intervention techniques on Positive Task Oriented Coping Style.

vii. There will be no differential impact of the intervention techniques on Negative Task Oriented Coping Style.

viii. There will be no differential impact of the intervention techniques on Positive Defense Oriented Coping Style.

ix. There will be no differential impact of the intervention techniques on Negative Defense Oriented Coping Style.

x. There will be no differential impact of the intervention techniques on levels of Adjustment.

xi. There will be no differential impact of the intervention techniques on Self-Esteem.

xii. There will not be any significant intradimensional shift in personality, under the influence of different intervention techniques.

5.7.4 SAMPLE

The investigator contacted several physicians in the prominent hospitals and in private practice. The new treatment procedure was explained to them. Most of them cooperated and referred cases to the investigator. The premises of University Health Centre and Narhari Arogya Kendra were used for rendering treatment. The following inclusion and exclusion criteria were adopted to select the sample.

Inclusion Criteria

i. A minimum duration of 6 months of being detected as hypertensive patients.

ii. Both male and females were included.

iii. Age within 40-50 years.

iv. Stabilized drug dose.

v. Family history with nil or negligible influence over the diagnosis.

vi. Base line proforma showing adequate stress and copying difficulty.

Exclusion Criteria

i. Secondary hypertension.

ii. Any other associated medical condition.

iii. Obesity.

iv. Cardiovascular risk factors, such as excessive smoking and alcohol intake.

On the whole there were 48 subjects. 24 males and 24 females. They were further divided into 4 groups. There were 12 subjects in each group (i.e. 6 males and 6 females).

5.7.5 DESIGN

It is a 4 by 3 factorial mixed design study, where both between - subjects (inter-subject) and within-subjects (intra-subject) factors are being analyzed. The following table shows the factorial design.

Table 5(i) Design of the Study

Intervention	Pre-Assessment	Post-Assessment	Follow Up Assessment
Group I Training on *Yoga Nidra*	Physiological and Psychological assessment before training	Physiological and Psychological assessment immedia-tely after training	Assessment 2 months after completion of the training
Group II Training through Biofeedback on Alpha enhancement	- do -	- do -	- do -
Group III Combined Training on *Yoga Nidra* and Bio-feedback	- do -	- do -	- do -
Group IV No Training (Control)	Assessment not followed by any training	Assessment after an equivalent time gap	Assessment 2 months after the Post assessment

5.7.6 PROCEDURE AND TOOLS USED

After the screening test, subjects, those who were willing to participate were included in the intervention programme. Before therapeutic intervention a baseline data

was collected. Physiological measures, such as blood pressure, pulse rate, and respiration were recorded, considering average reading of 3 consecutive days. 18 therapeutic sessions were given to each subject by calling them on an average 3 times a week. Psychological factors were assessed through various psychological tests. Immediately after the intervention all the physiological and psychological assessments were repeated. Thereafter again a follow up assessment was done two months after completion of 18 therapeutic sessions. The subjects belonging to control group were assessed thrice over the same period of time as was done for the therapeutic group.

5.7.6.1 TOOLS

The following psychological tools were used to assess the therapeutic impact:

i. Hamiltons Anxiety Scale

ii. Hamiltons Depression Scale

iii. An open ended inventory consisting of 40 items was prepared by the investigator to identify subjects, coping style in terms of task oriented and defense oriented ways of coping with positive or negative effects.

iv. Bells Adjustment Inventory

v. Culture Free Self Esteem Inventory Form AD by Battle 1981

vi. Enneagram (A personality inventory)

vii. Ego State Inventory prepared by Prof. Keith C. D'Souza

viii. Personal style inventory by R. Cralg Hogan and David W., Champagne, was used to assess subject's typology.

5.7.7 THE VARIABLES

The present study being an experimental study consists of independent and dependent variables.

Independent Variable

Independent variable is the variable, which is manipulated by the investigator in order to determine subjects reaction. In the present study, the three treatment modalities, namely (1) Yoga Nidra; (2) Alpha enhancement training; and (3) Combination of Alpha enhancement training and Yoga Nidra are the independent variables.

Dependent Variable

Dependent variable is the one, which is dependent on other variables and describes what is measured in the experiment. Hence in the present study the dependent variable is subjects psychological and physiological states and reactions to stress.

Physiological Variables

- Blood pressure (systolic and diastolic)
- Pulse rate
- Respiration

Psychological Variables

- Anxiety
- Depression
- Self Esteem
- Adjustment
- Personality type
- Personal style
- Coping style
- Ego state profile.

5.8 STATISTICAL ANALYSIS

Nature of the collected data was quantitative, so it was desirable to carry out statistical analysis. The data obtained based on 4 by 3 factorial design i.e. four

interventions by three measures were analyzed by using the following statistical techniques:

Multiple Analysis of Variance for Repeated Measures (MANOVA-RM)

Pillai's Multivariate tests were carried out for each variable considered in the present study, on the three measures (Pre, Post and Follow-up) and four interventions (yoga nidra, biofeedback, combined and control) to study the overall impact. Univariate tests for the same were also done.

Paired t-test analysis for Repeated Measure

Paired t-tests were conducted on pairs of two measurements at three levels namely, pre-post, post-follow-up, and pre-follow-up, for each intervention for each variable. These tests establish the significance of the impact of each intervention at the three levels.

Analysis of Covariance (ANCOVA)

ANCOVA was also conducted at three levels, namely pre-post, post-follow-up and pre-follow-up, to study the differential impact of various interventions. Finally at each of the levels the ANCOVA was followed with a Post Hoc Comparison by Tukey's HSD Procedure at 0.05 level, after duly adjusting the measure being compared for the covariate. This comparison helps us to find out the qualitative impact of various interventions.

Sr. No.	Variables Psychological	Different Treatment Groups			
		Yoga Nidra	Biofeedback	Combined	Control
Personal Style:					
13(i)	Intro/extro	Increase in intro-version score and reduction in extro-version score	No change	No change	No change
13(ii)	Intu/Sens	Increase in intuition score and decrease in sensing score	No change	Increase in intuition score and decrease in sensing score	No change
13(iii)	Think/Feel	Slight increase in feeling score and decrease in thinking score	Slight increase in feeling score and decrease in thinking score	No change	No change
13(iv)	Per/Judg	Increase in perceiving score and decrease in judging score	Slight increase in perceiving scores and decrease in judging scores	No change	Erratic
Ego States:					
14(i)	Critical parent	Reduced; maintained at follow up	Less deduction; maintained at follow up	Reduced and continued to reduce at follow up	No change
14(ii)	Nurturing parent	Increases; and shows little regression at follow up	Increases and is maintained at follow up	Increases and goes up further at follow up	No change
14(iii)	Adult	Increased and little bit further increase at follow up	Mild increase and maintained at follow up	Increased and shows greater increase at follow up	No change
14(iv)	Natural Child	Increases and shows little regression at follow up	Increases and maintained at follow up	Increased and shows further increase at follow up	No change
14(v)	Little Professor	Increases and maintained at follow up	Slight increase and is maintained at follow up	Increases and shows mild further increase at follow up	Regressed
14(vi)	Adapted Child	Reduces and again goes up at follow up	Reduced and maintained at follow up	Reduces and shows further reduction at follow up	Reduces a little & again goes up at follow up

The quantitative and qualitative analysis reveals that:

- The intragroup comparison shows that after treatment in all the three treatment groups there was significant change indicating improvement in all the physiological and psychological factors those were considered for the study.
- In the control group either there was no change or else it indicated deterioration.
- Intergroup comparison shows, similarity in immediate impact of yoga nidra and combined intervention (Alpha enhancement with *Yoga Nidra*).
- Impact of biofeedback was comparatively weak, and carry over impact is less.
- More or less all the three treatment groups had significant positive impact on physiological and psychological factors taken into consideration in the study.
- Combined treatment shows maximum carry over effect of therapeutic impact, where as in all other groups there is a regressive tendency.
- No change in personality type was observed in any of the treatment groups as well as control group. But within the personality type accommodative shift was observed in treatment groups which is indicated by the balancing tendency observed in personal style, change in healthy ego states and increased scores in "moving around enneagram" scores, which is quite an indication of personality modification.

5.10 CONCLUSIONS

From the above findings, it can be concluded with conviction that for the selected group mechanical control over physiological state does not give much insight to the mind to brake the self defeating behaviour pattern.

Yoga nidra is highly effective a technique to control physiological and psychological stress reactions, when practiced sincerely. It also helps in developing coping skills.

Control of physiological state along with psycho-spiritual intervention helps in therapeutic impact being carried over to general life situations.

The quantitative and qualitative changes in intrapsychic changes observed in ego states, personality type and movement in enneagram indicates a balancing impact on personality.

In Chapter II a good number of studies have been mentioned which supports the findings of the present study. (e.g. Patel 1975, Susan Joy, and KP. Shreedhar). The greatest support comes from the recommendation of WHO which says, drug therapy is no longer the best method of treating patients with high blood pressure. New global guidelines for the treatment of high blood pressure recommended only life style modifications during the first year for most patients (Source - Times of India, Mumbai, 22nd Sept. 1999).

5.11 LIMITATIONS

In spite of all efforts the present study is not free from limitations. A few limitations which came to the investigators realization are as follows:

- Due to inconsistent lab facilities environmental effect was ignored.
- Due to lack of proper biomedical assistance - exact alpha count during alpha enhancement training was not available.
- Due to small sample size difference in response of males and females to intervention could not be assessed, and comparison of different dimensions of various tools could not be done.
- Lacks in long term follow up.

5.12 SUGGESTIONS FOR FUTURE RESEARCH

Bearing the limitations in mind the following measures are suggested to increase the degree of certainty in future research:

- Sample size to be increased.
- To keep therapeutic environment constant.

- Use of more sophisticated biofeedback instrument, which would give alpha count.
- Longer period of follow up to be taken up.
- A separate qualitative study in personality modification would hold more reliability on the impact of the intervention techniques.