

**EFFECTIVENESS OF HATHA YOGA ON STRESS
AND ANXIETY AMONG ADOLESCENTS
AT SELECTED COLLEGES, SALEM.**

BY

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ABSTRACT

A study was conducted to determine the effectiveness of Hatha Yoga on stress and anxiety among adolescents at selected colleges, Salem. The design adopted was True experimental pre test post test control group design. The settings of the study were Vinayaka Missions Kirupananda Variyar Engineering College, Salem and AVS Engineering College, Salem. 60 samples, (30 in experimental group and 30 in control group) were drawn through simple random sampling technique using lottery method. The level of stress and anxiety were assessed using Modified Perceived Stress Scale and Hamilton's Anxiety Rating Scale respectively. The investigator demonstrated Hatha yoga and the samples practiced it for 30 minutes every day in the morning for 21 consecutive days. Post test was done on the 29th day of intervention. The data gathered was analyzed with the help of descriptive and inferential statistics.

The findings revealed that in experimental group, the mean pre test level of stress decreased from 38.67 (SD=11.30) to 26.13(SD=6.74) at post test with a mean difference of 12.54 whereas the mean pre test level of anxiety decreased from 17.43 (SD=7.20) to 11.17(SD=4.20) at post test with a mean difference of 6.26. The paired 't' value at $p \leq 0.05$ level for stress and anxiety were 8.06 and 7.24 respectively which is significantly higher than the table value 2.05. Hence H_1 was retained. In experimental group, the mean post test level of stress was 26.13 ± 6.74 and in control group, it was 36.37 ± 11.01 with a mean difference of 10.24 whereas the mean post test level of anxiety was 11.17 ± 4.20 and that for control group was 16.37 ± 7.50 with a mean difference of 5.20. There is significant difference between the scores of experimental and control group computed through independent 't' test at $p \leq 0.05$ level ($t=4.341$ for stress and $t=3.312$ for anxiety). Hence H_2 was retained. No significant association was found between level of stress and anxiety with their demographic variables in experimental group. However, there was a significant association between level of stress and the demographic variable family income in control group ($\chi^2 = 8.82$ and table value = 7.82). Hence H_3 was retained only for the above mentioned variable. This study concludes that Hatha Yoga is a cost effective, easy to practice non pharmacological method in reducing the level of stress and anxiety in adolescents.

CHAPTER 1 INTRODUCTION

*“A boy becomes an adult three years before his parents thinks he does and
about two years after he thinks he does”.*

- Charles Luther

Adolescence is a period of human development between the age group of 10 – 20 years. Adolescence is derived from the Latin word “adolescere” which means “to grow into adulthood”. During this period, the adolescent passes through biological, cognitive, social and emotional changes.

Stress refers to the consequence of failure of an organism in responding appropriately to actual or imagined physical or emotional threats. Stress is unavoidable in every stage of human development. During adolescence, the individuals experience a variety of problems in their family, school and college.

Anxiety comprises of psychological and physiological state which is characterized by somatic, emotional, cognitive and behavioral components. Anxiety may be considered as a normal reaction in stressful situations and can actually be beneficial in some situations. During adolescence, the stressors like college work, unsatisfactory relationship with parents, problems with friends, romantic relationships and drugs cause the individual to have excessive anxiety. However, while the person suffering may realize it is excessive, they may also have difficulty in controlling it, which may negatively affect their day to day living.

Indian youth is one of the most vulnerable groups and most of them are suffering from many kinds of problems like alcoholism, unemployment, suicide, sex-related problems and other general adjustment problems. The groups, who on the one hand are expected to be leaders, expected to lead the nation, and determine the

destiny of our country are the most exploited due to demodulation, vulnerability and confusion.

Yoga is increasingly being used now-a- days to help people cope with stress. Yoga has been practiced for more than 1000 years. Many studies recommend yoga as a complimentary therapy in order to achieve a healthy state of mind. There are different types of yoga like Hatha Yoga, Kundilini Yoga, Sudarshan Kriya yoga, Iyengar Yoga etc. which are being widely practiced throughout the world.

Adolescents experience problems in somatic, emotional, cognitive and behavioral components. Some common symptoms of anxiety include feeling nervous, unrealistic fears, sleep disturbance, obsessive thoughts and or compulsive behaviors, trembling and shortness of breath. Most of the adolescents are able to deal with stress and anxiety, but some, however, are not able to cope with stress and anxiety and end up with psychological as well as physiological problems.

Sahoo S, Khess CR, (2008) conducted a cross-sectional study to determine the prevalence of current depressive, anxiety, and stress-related problems among young adults in Ranchi city of India. The lifetime prevalence of depression, anxiety, and stress among adolescents and youth all over the world is estimated as 5% to 70%. Ranging from mild to extremely severe, depressive symptoms was present in 18.5% of the samples. Anxiety was found to be 24% and 20% of the samples experienced stress. 12.1% had Clinical depression and 19% suffered from generalized anxiety disorder. Co morbid anxiety and depression was high, with about 87% of those having depression were also suffering from anxiety disorder.

Parshad O, (2004) noted that the state of the mind and that of the body are intimately related. The muscles in our body becomes relaxed when our mind is relaxed. Stress results in tension, both physical and mental. Yoga is accepted as a

mind-body medicine. The various postures and breathing techniques in yoga helps in strengthening muscles, improve flexibility, blood circulation and oxygen uptake as well as improve hormone functions. Moreover, the relaxation helps in stabilizing the autonomic nervous system with a tendency towards parasympathetic dominance. Physiological benefits which follow help yoga practitioners become more resilient to situations causing stress and helps in reducing risk factors for various diseases, especially cardiovascular and respiratory diseases.

Simaard AA, (2009) conducted a study on impact of a short yoga intervention on medical students' health. The study states that there are improvements in overall health, perceived stress and depressive symptoms following yoga therapy. Therefore, yoga intervention is effective in decreasing stress and improving general well-being in medical students.

Brown RP, (2005) states that yogic breathing is a unique method for balancing the autonomic nervous system and influencing psychologic and stress-related disorders. Sudarshan Kriya yoga which consists of a sequence of specific breathing techniques can reduce anxiety, depression, everyday stress, post-traumatic stress, and stress-related medical illnesses. Mechanisms contributing to the state of calm alertness include increased parasympathetic drive, creating calm in stress response systems, releasing hormones from the neuroendocrine system, and thalamic generators.

Treter CC, (2010) conducted a study on effects of yoga versus walking on mood, anxiety and brain GABA levels. A 12-week yoga intervention was associated with greater improvements in mood and anxiety than a metabolically matched walking exercise. This study demonstrated that increased thalamic GABA levels are associated with improved mood and decreased anxiety. It also shows that a behavioral

intervention (i.e., yoga postures) has been associated with a positive correlation between increases in thalamic GABA levels and positive outcomes in mood and anxiety scale.

Need for the Study

Adolescence is the period when individuals experience a variety of problems which may be related to their transition from child to an adult. They encounter problems related to their physiological changes, newly formed peer relations in schools and colleges, problems related to their family and sociocultural background. In addition, the academic requirements cause significant sources of problems to the adolescents. These factors along with many other problems contribute to the development of stress and anxiety in adolescents.

There are 200 million adolescents in India aged between 15 – 24 years. One fifth of this statistics is contributed by adolescents aged 15- 19years. It is expected that this group of population will reach 214 million by 2014.

Adolescents are the future generation of any nation. Stress and anxiety cause a large number of adolescents to decrease their capacities which in turn decreases the work force of the nation and putting a large burden on the health sector, families and the society.

Dong Hung Lee, (2005) conducted an exploratory study to assess the patterns of personal and academic stress reported by Korean college students. The survey items consisted of the various types of stress factors in academics, personal and demographic variables. 146 samples were drawn from a university. Samples were asked to write the two frequent personal and academic stressors. Results revealed that in personal stressors, 18.2% were concerned with future career plans, 17.91% had financial problems and interpersonal relationships constituted 11.15%. In case of

academic stressors, “grades and completion”(18.25%) and 13.89% were stressed about future success, 10.76% of the samples had problems regarding meeting the deadlines and too many demands, 9.03% had interpersonal problems at school.

Jackie, (2008) stated that yoga works to ease the tension in mind , body , and spirit. Hatha yoga is a calm, slow, physical type of yoga designed to calm the individual and can be structured to meet the needs of any one, of any age, or physical condition.

Acharya Anoop, (2007) stated that the main aim of Hatha yoga is creation of absolute balance of interacting activities and process of energy, mind and physical body. Hatha represents the forces of mind and prana or vitality that make up mind and body. Hatha yoga enables the fluctuations between these two energies to become harmonious. During the last 45 years, Hatha yoga has been accepted as a therapeutic science.

There are many techniques like progressive muscle relaxation, aerobic exercises and yoga which are being practiced by individuals to reduce stress and anxiety. Yoga has been found to be beneficial for stress and anxiety in many studies conducted around the world. Due to its feasibility, practicability and economical nature, the investigator felt the need to evaluate the effectiveness of Hatha Yoga to reduce stress and anxiety in adolescents.

Statement of the Problem

A Study To Evaluate The Effectiveness Of Hatha Yoga On Stress And Anxiety Among Adolescents At Selected Colleges, Salem.

Objectives

- To assess the level of stress and anxiety among adolescents in experimental and control group.
- To evaluate the effectiveness of Hatha yoga on level of stress and anxiety among adolescents in experimental group.
- To find out the association between the level of stress and anxiety among adolescents of experimental and control group and their selected demographic variables.

Operational Definitions

Effectiveness:

The significant reduction in the level of stress and anxiety in adolescents as measured by the difference between pre and post test scores.

Hatha yoga:

A type of YOGA in which the adolescents are required to practice breathing exercise and physical postures for 30 minutes daily for 3 weeks. Hatha yoga comprises of warm ups, stretches, suryanamaskar, asanas, pranayama and relaxation. There are six asanas: Ardhakati chakrasana, Padahastana, Trikonasana, Vakrasana, Bhujangasana and Sarvangasana. Pranayama includes Chin mudra pranayama, Chinmaya mudra pranayama, Aadi mudra pranayama and Brahma mudra pranayama. Relaxation is provided with the help of Shavasana.

Stress:

The feeling experienced when the individuals are not able to attain targets in college or due to problems in family, romantic relationships and peer groups.

Anxiety:

Feeling of fear, uneasiness, worry about effectively tackling the various situations encountered by the adolescents in normal day to day routines.

Adolescents:

The transitional period of human development occurring roughly between the ages of 17-20 years.

Assumptions

- Hatha yoga will have some effect on stress and anxiety among adolescents.
- There will be individual difference in experiencing stress and anxiety among adolescents.

Hypotheses

H₁: There will be significant difference in the level of stress and anxiety in experimental group before and after implementation of Hatha Yoga at $p \leq 0.05$ level.

H₂: There will be significant difference in the post test scores of stress and anxiety of experimental and control group at $p \leq 0.05$ level.

H₃: There will be significant association between the level of stress and anxiety among adolescents of experimental and control group and their selected demographic variables at $p \leq 0.05$ level.

Delimitations

- The study is delimited to selected colleges.
- Sample size is limited to 60 samples.
- The study period is limited to 4 weeks.

Projected Outcome

- The study will be able to identify the level of stress and anxiety in adolescents.
- The study will provide an opportunity for nurses to teach Hatha Yoga to the adolescents.

- At the end of the study, the adolescents will be able to understand and develop the practice of Hatha Yoga to reduce their level of stress and anxiety.

Conceptual Framework

A conceptual framework can be defined as a set of concepts and assumptions that integrate into a meaningful configuration (Fawcett, 1994). The conceptual framework facilitates communication and provides a systematic approach to nursing research, educational status, administration and practice. Conceptual models attempt to represent reality with a minimal use of words.

The conceptual framework selected for this study is Wiedenbach's Helping Art of Clinical Nursing Theory (1964). This theory has three factors.

1. Central purpose
2. Prescription
3. Reality

i. Central purpose:

It refers to what the nurse wants to accomplish. It is an overall goal towards which a nurse strives. The central purpose here refers to the reduction of stress and anxiety among adolescents.

ii. Prescription:

It refers to plan of care for a patient. It will specify the nature of action that will fulfill the nurse's central purpose.

The adolescents are made to practice Hatha Yoga for 30 minutes every day morning in the presence of the investigator for a period of 21 days.

iii. Reality:

It refers to the physical, psychological, emotional and spiritual factors that come into play in situations.

The five realities identified by Wiedenbach's are agent, recipient, goal, means and framework. The conceptualization of nursing practice according to this theory consists of three steps as follows,

Step-I: Identifying the need for help.

Step-II: Ministering the needed help.

Step-III: Validating that the need for help was not met.

Step-I: Identifying the need for help

The investigator identified the adolescents who need appropriate measure to reduce Stress and Anxiety.

Step-II: Ministering the needed help

After identifying the need, provide the intervention.

Agent : Investigator.

Recipient : Adolescents.

Goal : Reduction of stress and anxiety.

Means : Hatha Yoga

Framework : Vinayaka Missions Kirupananda Variyar Engineering College,
Salem.

Step-III: Validating that the need for help was met

It is accomplished by means of pre-test & post-test assessment on level of stress and anxiety in adolescents after the intervention. The level of stress is assessed with the help of Modified Perceived Stress Scale and level of anxiety is measured using Hamiltons Anxiety Rating Scale.

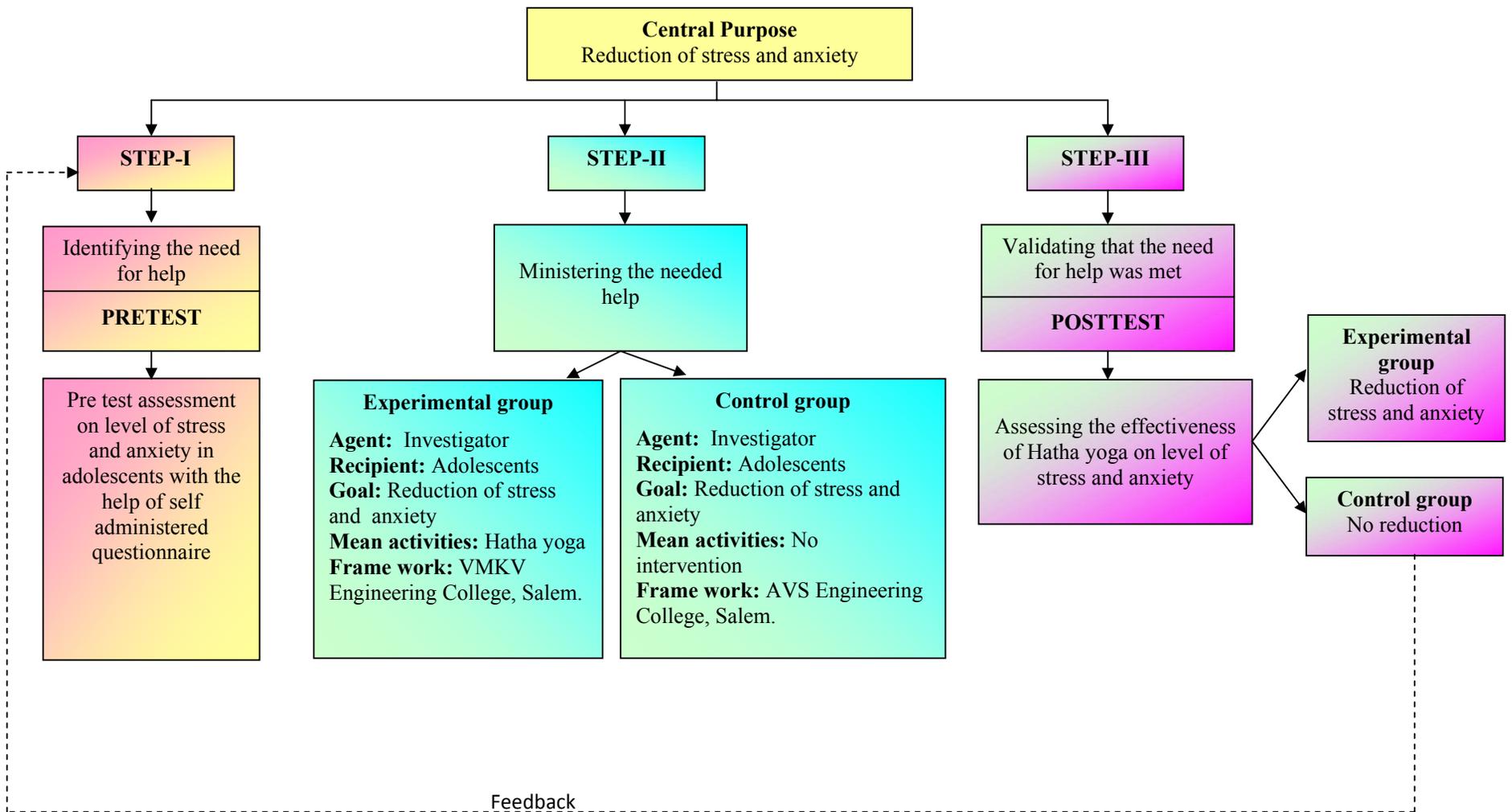


Fig-1.1: Conceptual Frame Work Based on Wiedenbach's Helping Art of Clinical Nursing Theory (1964).

Summary

In this chapter the investigator has discussed the background of the study, need for the study, statement of the problem, objectives, operational definitions, assumptions, hypothesis, delimitations, projected outcome and conceptual framework.

CHAPTER -II

REVIEW OF LITERATURE

The review of literature is a broad, deep, systematic as well as a critical review of scholarly publications, unpublished scholarly printed materials, audio visual materials and personal communications. **(B T Baswanthappa, 2010).**

Review of literature of the present study was arranged in the following headings:

1. Literature related to stress and anxiety in adolescents.
2. Literature related to effectiveness of Hatha Yoga on stress and anxiety.

Literature related to stress and anxiety in adolescents.

Cheng Kai-Wen, (2010) investigated the sources of stress among college students in Taiwan. In order to collect data, a questionnaire survey was used. 230 questionnaires were given and 201 responses were obtained. Research findings suggested that male students feel stronger stress from family factor (Mean=3.57) than female ones, students in higher grades feel more stress from physical/mental (Mean=3.04), school (Mean=3.39), and emotional factors; students who take educational loan felt comparatively high stress from physical/mental, school as well as emotional factors than those who do not ($t=-.594, p > .05$).

Vizata M. Sopian, et.al, (2009) conducted a study on the level of stress among students in urban and rural secondary schools in Malaysia. The study determined the relationships between stress level and academic achievement among students in urban and rural secondary schools in one of the districts in Malaysia. The study included normal adolescents. The objectives of the study included finding of the total percentage of students who suffered high stress, medium stress and low stress, compare the stress level between gender and also to compare the stress level between

students from urban and rural area. The samples consisted of 155 students from two secondary schools in Malaysia. Survey method was used in the study by administering the Students-life Stress Inventory questionnaires. The study showed that no students experienced high stress, 29% students experienced medium stress and 71% students experienced low stress. Using the t-test, the findings of the study also revealed significant differences in stress levels on gender male and female students have significant different in stress level which is $t(153) = 2.55, p < 0.05$. and between students in rural and urban secondary school urban students and rural students have significant different for stress level which are $t(153) = 4.19, p < 0.05$. From the results it was concluded that there are many factors influencing student's stress which includes parenting style, parent's education background and the environment in which they grew up.

Amit Kauts, 2009 conducted a study on the effect of yoga on academic performance in relation to stress. The study started with 800 adolescent students; 159 high-stress students and 142 low-stress students were selected on the basis of scores obtained through Stress Battery. Pre test given in experimental group and control group include three subjects, i.e., Social Studies, Science, and Mathematics. The yoga module consisted of asanas, pranayama, meditation. In experimental group, a value orientation program was implemented for 7 weeks. Post tests were conducted in experimental and control groups to assess the sample's performance on the three subjects mentioned above. The results indicated better academic performance in students who practiced yoga. The study also showed that students with low-stress performed better than students with high-stress students, meaning thereby that stress affects the students' performance.

The means and SDs of combined academic performance gain scores of three subjects, in which the mean of experimental group [$M_{exp}= 32.63$] is found to be greater than that of the control group [$M_c= 22.44$]. This indicates that students who experienced yoga performed better than those who never experienced it. F-ratio for the difference between means of high stress group and low stress group on the gain scores of combined academic performance was found to be significant at the 0.05 level, which shows that performance in academics differs among students with high stress and students with low stress. The group means of students with low stress [$M_{LS}= 30.24$] is greater than the group mean of the students with high stress [$M_{HS}= 24.83$]. This indicates that students with low stress performed better than the students with high stress. Thus, this study reveals that the high stress affects student's performance negatively. The means and SDs, depicts that the experimental group showed higher group mean [$M_{Soc. St.}=5.11$, $M_{Maths}=5.53$, $M_{Sc}=5.28$] than control group [$M_{Soc. St.}=2.82$, $M_{Maths}=2.83$, $M_{Sc}=3.37$]. This infers that the students who experienced yoga module performed better than those students who never experienced it.

Margarita Tartakovsky, M.S., (2008) states that depression and anxiety are prevalent problems in colleges across America. For many mental health conditions, the age of onset ranges from 18 to 24 years. According to the National Institute of Mental Health, USA, 75 percent of individuals suffering from anxiety disorder experiences symptoms before age 22. During college, adolescents deal with a variety of stressors. College calls for a significant transition, where students experience new ways of life, peers, roommates, culture and thinking in alternate ways. During college, feelings of inadequacy can stem from academic stressors, lack of familiarity also makes students disoriented and feel a loss of their self which contributes to depression

and anxiety. This may lead the students in making poor choices such as alcohol consumption and drug abuse.

Paul Jeery, (2007) in his study anxiety in children and adolescents, noted that behavioural inhibition, excessive reassurance seeking, that can be verbal questions about what to expect in future, and /or physical, strong emotional reactions to certain situations, behavioural problems such as oppositionality and non-compliance, somatic complaints school refusal were indicators of anxiety in individuals. Anxiety problems in children can be reduced by removing the source of stress. Anxiety disorders can be associated with other mental health, family, peer relationship, physical health and learning problems, and are one of the biggest risk factors for development of depression later in adolescence.

Nadia Rosli. et.al, (2004) conducted a study on prevalence of stress, stressors and coping strategies among secondary school students in Kota Bharu, Kelantan, Malaysia. The cross-sectional study was conducted on secondary school students and stratified random sampling method was used to select samples with a sample size of 505 students. The 12-item General Health Questionnaire, Secondary School Stressors Questionnaire and Brief COPE inventory were self-administered to measure the stress level, sources of stress and coping strategies among the participants. Results indicated that the prevalence of distressed secondary school students was 32.8%. The major stressors were academic-related issues. Among the most frequent coping strategies used by the students were: use of religion, reinterpreting positively, using instrumental support and coping actively. Also, relationships existed between intrapersonal and interpersonal related stressor, academic achievements, level of school and academic related stressor, attention from parent, behavioral

disengagement, self-blame and planning coping strategies with stress level of the students.

Lopez.N, (2000) conducted a study on social anxiety among adolescents: and to find relation between peer relations and friendships. She examined the utility of modifying the Social Anxiety Scale for Children-Revised (SASC-R) for use with adolescents, and examined associations between adolescents' social anxiety and their peer relations, friendships, and social functioning. 101 Boys and 149 girls in the 10th through 12th grades completed the Social Anxiety Scale for Adolescents (SAS-A) and measures of social support, number and quality of their best friendships and perceived competence. Factor analysis of the SAS-A showed a three-factor structure: Fear of being negatively evaluated, being avoided socially, general distress, and social avoidance specific to new situations or unfamiliar peers. Girls reported more social anxiety than boys and it was more strongly linked to girl's social functioning than boys. Specifically, adolescents with higher levels of SA reported poorer social functioning and girls with higher social anxiety levels reported fewer friendships, and less intimacy, companionship, and support in their close friendships.

Literature related to effectiveness of Hatha Yoga on stress and anxiety.

Chong CS, (2011) in the study effects of yoga on stress management in healthy adults. The study is a systematic review that provides an appraisal on the effect of yoga on stress management in healthy adults. A systematic literature search was performed to identify randomized controlled trials and clinical controlled trials that assessed the effects of yoga on stress management in healthy adults. The studies chosen were arranged in accordance to the type of interventions given, duration, outcome measures, and results. The systematic review was based on eight RCTs and CCTs which shows that yoga has a positive effect on lowering stress level or stress

symptoms. This also indicated that yoga reduces stress in healthy adult populations as well.

Sheila Thorn, 2011 conducted a pilot study on stress reduction for helping professionals using mini yoga intervention. The study examined the efficacy of a two-minute yoga intervention used during the working hours of helping professionals. It explores the benefits of self-care and stress reduction methods for helping professionals. Participants engaged in a two-week study in which they were asked to rank their stress before and after using of the yoga intervention during their workday. A paired t-test was run to determine if the mean stress rating was significantly different before and after the activity. The major finding, according to the paired t-test analysis, was that there is a significant difference found between the pre- and post-intervention stress ratings ($t(96)=-14.77$, $p=0.01$, two tailed). The mean stress reduction for the whole group of participants is 1.26 points. Participant's mean score on the stress scale before the intervention ($m=2.82$) and after, on the same scale, the mean score was lower ($m=1.57$), suggesting a correlation between the yoga intervention and a decreased stress level. Findings supported the stress reduction benefits of the yoga intervention for the participants.

Zoe Hewett, 2010 conducted a study on the effectiveness of an 8-week Bikram yoga program on physical fitness, mindfulness and perceived stress. The purpose of this study was to observe the changes in the levels of mindfulness, perceived stress and physical fitness due to participation in an 8-week Bikram yoga program. Fifty-one males and females between the ages of 20-54 years ($M=31.57$, $SD = 9.287$) were selected from the Boise State University. Participation was limited to those who had engaged in less than two years of long-term practice of Bikram yoga, and who had not attended Bikram yoga in the last three months. Participants had to

attend at least three Bikram yoga sessions/week for 8-weeks. Mindfulness was assessed during pre- and post intervention with the help of Five-Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006). Perceived stress was assessed with the help of Perceived Stress Scale. A MANOVA indicated that participating in the 8-week Bikram yoga program helps to increase levels of overall mindfulness, Hotelling's $T = 5.69$, $F(4, 47) = 66.8$, $p < .001$, $d = .89$. Paired t tests indicated that eight weeks of the yoga program lowered levels of perceived stress, $t(50) = 6.19$, $p < .001$, $d = -0.79$. Perceived stress was negatively correlated with mindfulness ($r = -.43$, $p = .002$) and also, resting heart rate ($r = -.30$, $p = .036$). The results indicated that Bikram yoga had positive affect on psychological and physical health in the sample population.

R. Ramadoss, 2010 conducted two pilot studies that demonstrate a comprehensive multimodality intervention of Transformative Life Skills (TLS) consisting of Yoga poses (asana), breathing techniques (pranayama), and meditation (dhyana) can reduce perceived stress and increase self-control and self-awareness in at-risk and incarcerated youth. He conducted daily 60-minute TLS programs at Alameda County Juvenile Justice Center (ACJJC). Additionally, a condensed 15-minute TLS protocol was implemented at El Cerrito High School, a large urban public high school. The effectiveness of TLS was evaluated using the Perceived Stress Scale (PSS-10) and Tangney's Self-Control Scale (TSCS-13). Paired samples t -tests were conducted to assess changes in pre- to post-test scores on perceived stress and self-control. Paired samples t -test of PSS-10 scores revealed a statistically significant decrease ($t = 2.061$, $p = .04$) in perceived stress from pre-test (mean = 32.59, SD = 6.1) to post-test (mean = 31.28, SD = 5.4). Paired t -test of TSCS-13 scores showed that there was a significant increase in self-control ($t = -2.3$, $p = .02$) from pre-test

(mean = 36.99, SD = 6.38) to post-test (mean = 38.67, SD = 5.19) between the samples. These statistical analyses indicate a significant improvement in stress resilience, self-control, and self-awareness among the youth.

Jacobs, 2009 conducted a study which investigated the relationship between aikido and yoga practice on anxiety levels. Both groups were given the State Trait Anxiety Inventory (STAI) and the Beck Anxiety Inventory (BAI) to assess the potential relationship between their respective practice and total anxiety scores. A questionnaire was included to obtain demographic information, length and extent of involvement with yoga/aikido, past and current involvement with psychotherapy, and use of anti-anxiety medication. The yoga group and STAI-State scores where $r(102) = -0.169$, $p < 0.05$ and BAI scores where $r(102) = -0.192$, $p < 0.03$, but not for STAI-Trait scores. While these correlations were statistically significant, analysis found that the proportion of variance accounted for by yoga practice and BAI scores was 3.6% and that the proportion of variance accounted for by yoga practice and STAI-State scores was 2.8%. No relationship was found between aikido practice and lower anxiety scores.

Kozasa EH, (2008) stated that a significant reduction in scores on anxiety, depression, and tension was obtained after practicing Siddha Samadhi Yoga in which meditation is associated with pranayama. The study consisted of twenty two volunteers with anxiety complaints (M age = 42.8 yr., SD = 10.3). They were divided into experimental group and control group. Samples were evaluated before the intervention and 1 month after it on the State-Trait Anxiety Inventory, The Beck Depression Inventory, Tension Feelings Self-evaluation Scales, and the Well-being Self-evaluation Scales. The results indicated reduced anxiety in yoga group, as well as an increase in well-being in comparison with the control group.

Ellen Serber, (2007) states that a host of studies points to the benefits of Yoga which has been recommended and studied in its relationship to stress. Several researchers claim that yoga practice is beneficial in reducing stress and its effects. The practices included intense, moderate and relaxed asana sequences plus pranayama and meditation. Yoga is a fruitful method to deal with the stress response.

Anette Kjellgren, 2007 conducted a controlled pilot trial on wellness through a comprehensive Yogic breathing program. Participants were recruited in a small university city in Sweden and were instructed in a 6-day intensive program of yoga which they practiced daily for six weeks. The participants in control group were asked to relax in an armchair each day during the same period. Subjects included a total of 103 adults, 55 in the intervention group and 48 in the control group. Hospital Anxiety Depression Scale was used to measure the degree of anxiety and depression, Life Orientation Test measured dispositional optimism and stress. The degree of anxiety reduced from 6.06 ($SD = 3.50$) before intervention to 5.19 ($SD = 3.01$) after intervention. The degree of anxiety in the experimental group reduced significantly from 7.60 ($SD = 3.71$) before intervention to 5.87 ($SD = 3.18$) after intervention. However, the control group did not exhibit any significant alterations (from 4.63, $SD = 2.59$ to 4.56, $SD = 2.72$). Degree of stress reduced from 2.64 ($SD = 0.92$) to 2.41 ($SD = 0.89$) during the intervention period. There was a significant reduction in stress for the yoga group where stress at pretest was 2.70 ($SD = 0.92$) and at posttest was 2.22 ($SD = 0.85$). The control group exhibited no significant difference during the treatment period (from 2.59, $SD = 0.92$ to 2.61, $SD = 0.89$). The data suggest that participants in the yoga group, but not the control group, lowered their degree of anxiety, depression and stress, and also increased their degree of optimism (ANOVA; $p < 0.001$).

Gupta N, (2006) conducted a study to evaluate the short-term impact of a comprehensive but brief lifestyle intervention, based on yoga, on anxiety levels in normal and diseased subjects. The intervention consisted of asanas, pranayama, relaxation techniques, group support, individualized advice, and lectures and films on philosophy of yoga and knowledge about the illness. Mean anxiety levels at the beginning and end of the course in males and females (Males (n=98) Females (n=77)). The outcome measures were anxiety scores which were taken on the first and the last day of the course. Anxiety scores when considered for each disease separately have significantly decreased in patients of psychiatric disorders (A, $P < 0.005$; S, $P < 0.005$; T, $P < 0.005$). The observations suggested that there was a remarkable reduction in the anxiety scores.

Michalsen, A. et al, (2005) performed a study to evaluate the effects of Iyengar Hatha yoga on perceived stress and their associated outcomes in mentally distressed women. A controlled prospective non randomized study was performed in 24 self-referred female subjects who perceived themselves as emotionally distressed. The participants were offered participation in yoga program for three months. Two groups were assigned where Group 1 participated in the first class while group 2 served as waiting list control. During the yoga program, participants attended two-weekly 90 minutes' Iyengar yoga classes. Outcome was evaluated on entry and after 3 months by Cohen Perceived Stress Scale, State Trait Anxiety Inventory, Profile of Mood States, CESD Depression scale, Freiburg complaint list and ratings of physical well being. Salivary cortisol levels were also measured before the study. Results showed improvements in perceived stress, State and Trait Anxiety Fatigue and depression and also significant difference in salivary cortisol after participation in yoga class.

West J, et.al, (2004) studied the effects of Hatha yoga and African dance on perceived stress, affect and salivary cortisol. The study says dance and yoga produce improvements in psychosocial well being. The study aims at examining psychological and neuroendocrine responses to these activities. 69 healthy college students took part in one of the three 90 minute's classes. 21 students participated in African dance, 18 students in Hatha Yoga and 30 students in Biology lecture on cortisol session. Before and after each condition, participants completed the Perceived Stress Scale, positive and negative assessment schedule and given sample of saliva for cortisol. There were significant reductions in PSS and negative affect ($p < .0001$) and Time x Treatment interactions ($p < .0001$) such that African dance and Hatha yoga showed significant declines. There was no significant main effect for positive affect ($p = .53$), however there was a significant interaction effect ($p < .001$) such that positive affect increased in African dance, decreased in biology lecture, and did not change significantly in Hatha yoga. It was found that both African dance and Hatha yoga reduced perceived stress and produced improvement in psychological wellbeing.

Micheal W Beets, (2004) conducted a study on effect of yoga on stress, depression and health related quality of life in a non clinical, bi-ethnic samples of adolescents. The aimed to assess the utility of yoga to improve stress, depression, and HRQL. A randomized crossover trial design was employed to assess treatment and carry over effects. The design included three measures: base line (wk=0), post -1 (wk 2) and post 2 (wk 4). A total of 55 students (13.9 ± 1.9 years, 50% girls, 49% Hispanic) enrolled in physical education were randomized to receive 2 weeks of yoga. The samples completed 4 or 5.45 minutes of yoga sessions. Three surveys, completed at each time point measured depression-center for epidemiological studies depression scale ,stress perceived stress scale and HRQL-KINDL. Significant ($p < .05$) treatment

effects were observed for PSS. Results shows that longer duration of yoga may prove beneficial in alleviating mental health problems of adolescents.

Summary

This chapter dealt with the review of literature related to stress and anxiety in adolescents and the effect of Hatha yoga on stress and anxiety in adolescents.

CHAPTER III

METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation. **(Polit, D.F., and Hungler, 2003)**

This chapter consists of research approach, research design, population, description of the setting, sampling, variables, description of the tool, validity and reliability, pilot study, method of data collection and plan for data analysis.

The present study aims to determine the effectiveness of Hatha Yoga on stress and anxiety in adolescents at selected colleges, Salem.

Research Approach

Quantitative evaluative approach was adopted for the study.

Research Design

True experimental design (pre-test post- test with control group) was adopted for this study.

RE	=	O ₁	X	O ₂
RC	=	O ₃		O ₄

R = Randomly selected samples.

E = Experimental group.

C = Control group.

O₁ = Pretest among experimental group.

O₂ = Post test among experimental group.

O₃ = Pre test among control group.

O₄ = Post test among control group.

X = Intervention.

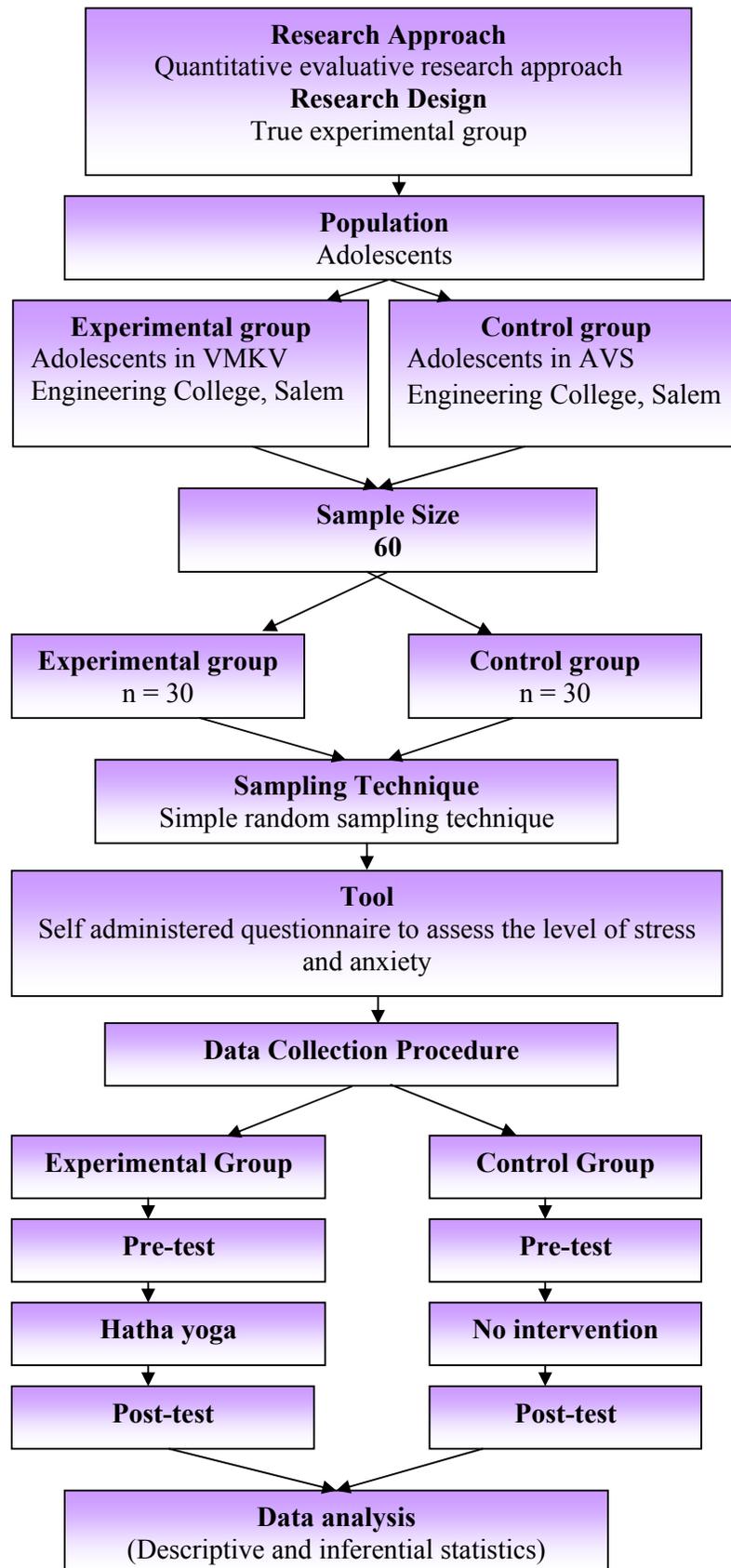


Figure-3.1: Schematic Representation of Research Methodology

Population

The population of the study included adolescents of age group 17-20 years.

Description of the Setting

The study was conducted at Vinayaka Missions Kirupananda Variyar Engineering College, located about 15 km away from Salem Bus Stand and AVS Engineering College located 10 km away from Salem bus stand. Vinayaka Missions Kirupananda Variyar Engineering College was chosen for experimental group and AVS Engineering College was chosen as control group. The investigator selected this setting for the availability of samples and for the feasibility of the study.

Sampling

➤ Sample

Adolescents studying in Vinayaka Missions Kirupananda Variyar Engineering College, Salem and AVS Engineering College, Salem and those who fulfilled the inclusion criteria for sample selection.

➤ Sample size

The investigator selected 60 adolescents (30 in experimental and 30 in control group).

➤ Sampling technique

Sampling Technique adopted was Simple Random sampling technique by using lottery method.

➤ Criteria for sample selection

Inclusion criteria:

- Only male samples.
- Those who are staying in hostel.
- Those who are able to read and write English.

Exclusion criteria:

- Those who are physically ill during time of data collection.
- Those who are physically challenged.
- Those who are already exposed to Hatha yoga and practicing any other relaxation techniques.

Variables

Independent variable: Hatha Yoga

Dependent variable : Stress and Anxiety

Description of the Tool

The tool comprised of 3 sections.

Section- A: Demographic profile

The demographic profile comprised 13 items such as age, academic year, place of residence, type of family, religion, order of birth, number of siblings, father's education, mother's education, father's education, mother's education, family income, previous experience of stay in hostel.

Section- B: Self administered questionnaire to assess the level of stress

Modified Perceived Stress Scale was used to assess the level of stress. It comprised of 26 items.

Scoring procedure for assessing level of stress

Each item had a score between 0-4 depending on the level of stress. The minimum and maximum scores were 0 and 104 respectively.

Reverse scoring was given for questions 4 and 5.

Table 3.1 Scoring procedure for stress

Level of stress	Score	Percentage
Low	0-34	0 - 33%
Moderate	35-70	34% - 66%
High	71-104	67% - 100%

Section-C: Self administered questionnaire to assess the level of anxiety

This section dealt with Hamilton Anxiety Rating Scale to assess the level of anxiety. It comprised of 14 items. Each item had a score between 0-4 depending on the level of anxiety and that could be interpreted as mild, moderate and severe. The minimum and maximum scores were 0 and 56 respectively. The score interpretation was done as follows:

Table 3.2 Scoring procedure for anxiety

Level of anxiety	Score	Percentage
Mild anxiety	0-18	0 - 33%
Moderate anxiety	19-37	34% – 66%
Severe anxiety	38-56	67% – 100%

Validity and Reliability

Validity of the stress assessment tool was established in consultation with experts from different fields like Yoga, Psychiatric Nursing and Medicine. The tool was found adequate and it was translated into Tamil.

Reliability was checked for the stress assessment tool by test-retest Method and the obtained r^1 value (0.89) indicated that the tool was reliable. Reliability for the anxiety assessment scale was not checked as it was standard inventory scale.

Pilot Study

The pilot study was conducted from 28.06.2011 to 03.07.2011 in VSA Engineering College, Salem and Mahendra Engineering College, Tiruchungode. Randomly, VSA College was selected as the experimental setting and Mahindra College was selected as the control setting. Four adolescents were selected for pilot study through simple random sampling technique. The samples chosen were similar in characteristics to those of the population under study. The pre-test was conducted on 28.06.2011 and the samples were taught Hatha Yoga. The samples were made to practice Hatha yoga daily, in front of the researcher. The post test was conducted on the seventh day. The data analysis was done with descriptive statistics. The tool was found feasible and practicable to conduct the study.

Method of Data Collection

Ethical consideration:

Prior to collection of data, written permission was obtained from the Head of the Institutions. Oral consent was obtained from adolescents.

Period of data collection:

The data collection was done for a period of 4 weeks from 12-07-2011 to 07-08-2011.

Data collection procedure:

There are about six Engineering Colleges in and around Salem. Through randomization, Vinayaka Missions Kirupananda Variyar Engineering College was selected as the experimental group and AVS Engineering College was selected as the control group. The pre test was conducted on 12-07-2011 and 13-07-2011 in Vinayaka Missions Kirupananda Variyar Engineering College and AVS Engineering College respectively. The samples in experimental group were taught Hatha Yoga.

The samples practiced Hatha Yoga for 30 minutes every day morning in the presence of the investigator for 21 days. Hatha yoga comprised of warm ups, stretches, suryanamaskar, asanas, pranayama and relaxation. The six asanas were Ardhakati chakrasana, Padahastana, Trikonasana, Vakrasana, Bhujangasana and Sarvangasana. Pranayama included Chin mudra pranayama, Chinmaya mudra pranayama, Aadi mudra pranayama and Brahma mudra pranayama. Relaxation was given through Shavasana. The students practiced two asanas each day and thereby practiced all six asanas twice a week. The post test was done on 07-08-2011 for both experimental and control group.

Plan for data analysis

The collected data was tabulated for its completion. Descriptive statistics like frequency, percentage, mean and standard deviation was used for categorical data. Independent 't' test was used to find out the effectiveness of Hatha Yoga on level of stress and anxiety. Chi-Square test was used to associate the level of stress and anxiety with the selected demographic variables.

Summary

This chapter dealt with research approach, research design, variables, population, description of setting, sampling, description of the tool, pilot study and method of data collection and plan for data analysis.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected from adolescents in selected colleges, Salem. This chapter also represents the findings of the study. The data collected from the samples were tabulated, analyzed and preserved in the tables and interpreted under the following sections based on the objective and hypotheses of the study. This chapter is divided into three sections.

Section - A:

Distribution of samples according to their selected demographic variables in experimental and control group.

Section - B:

- a) Frequency and percentage distribution of samples according to their level of stress and anxiety in experimental and control group.

Section –C: Hypotheses Testing

- a) Effectiveness of Hatha Yoga on level of stress and anxiety among adolescents in experimental group.
- b) Effectiveness of Hatha Yoga on level of stress and anxiety among adolescents.
- c) Association between the level of stress and anxiety among adolescents and their selected demographic variables in experimental and control group.

Section - A

Distribution of Samples According To Their Demographic Variables in experimental and control group.

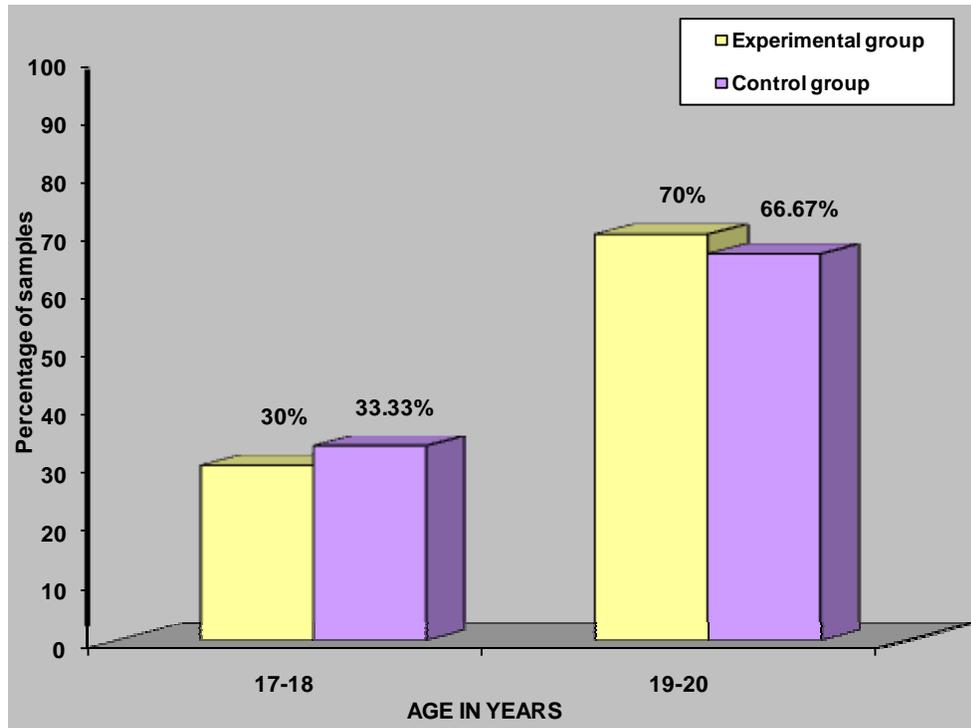


Figure-4.1: Percentage distribution of samples according to their age in years

Distribution of samples according to the age depicts that in experimental group, majority of them, 21 (70%) belong to 19-20 years of age. In control group, 20 (66.67%) of them belong to 19-20 years of age.

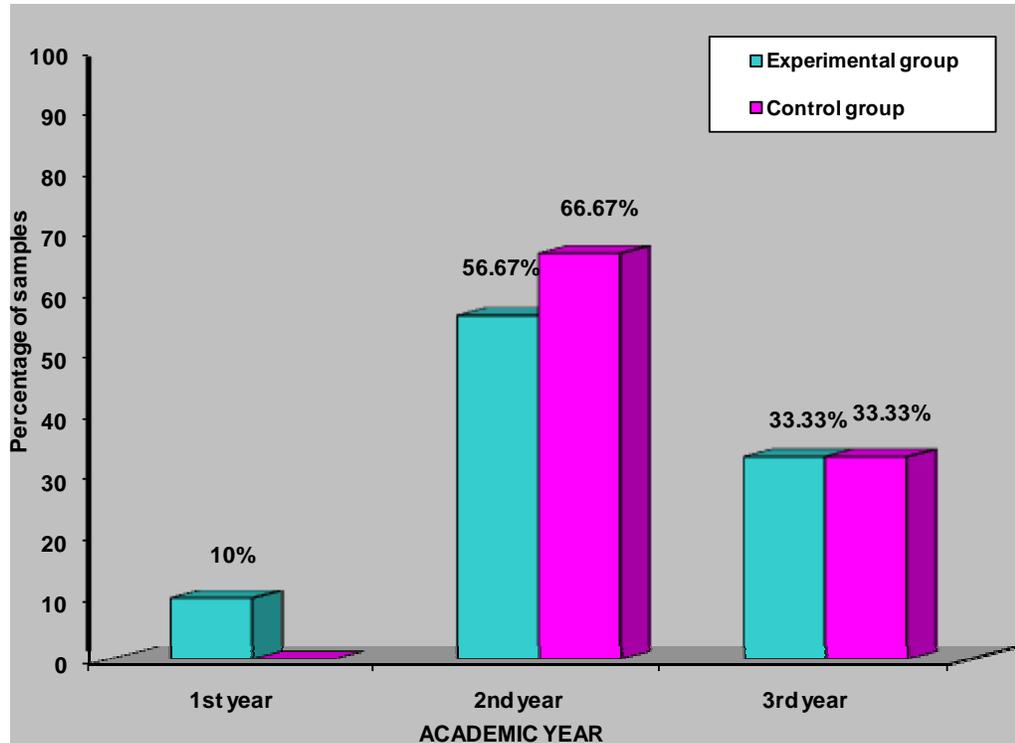


Figure-4.2: Percentage distribution of samples according to their academic year

Distribution of samples according to academic year shows that above half of them, 17(56.67%) belong to 1st year, 10(33.33%) belong to 2nd year in experimental group. In control group, 20(66.67%) belong to 2nd year and 10(33.33%) in 3rd year.

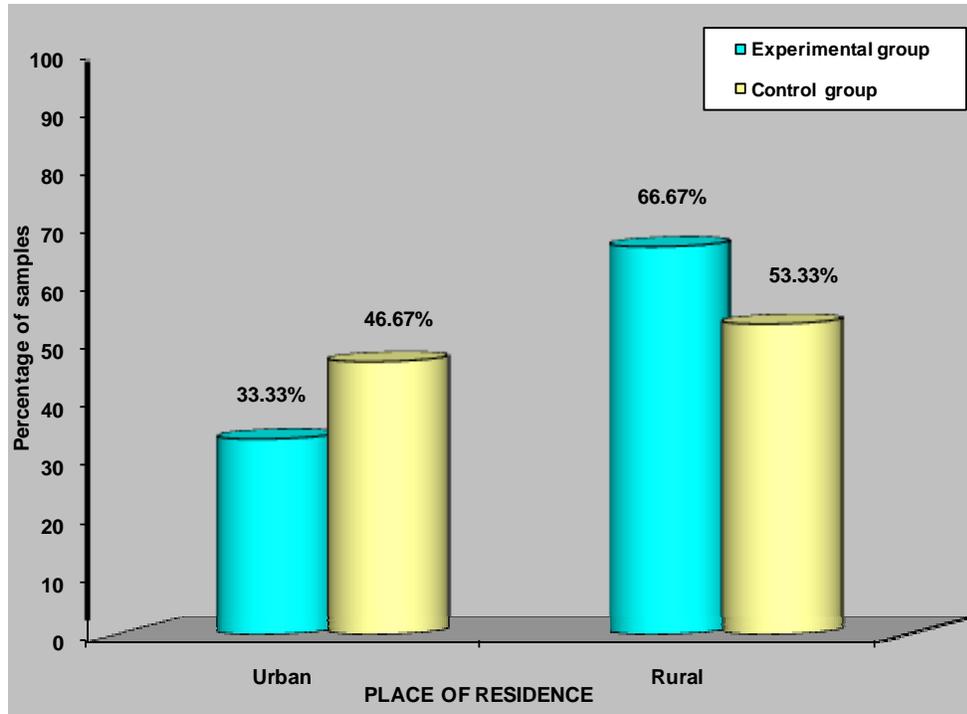


Figure-4.3: Percentage distribution of samples according to their place of residence

Distribution of samples according to place of residence shows that 20(66.67%) belong to rural area in experimental group. In control group, 16(53.33%) belong to rural area.

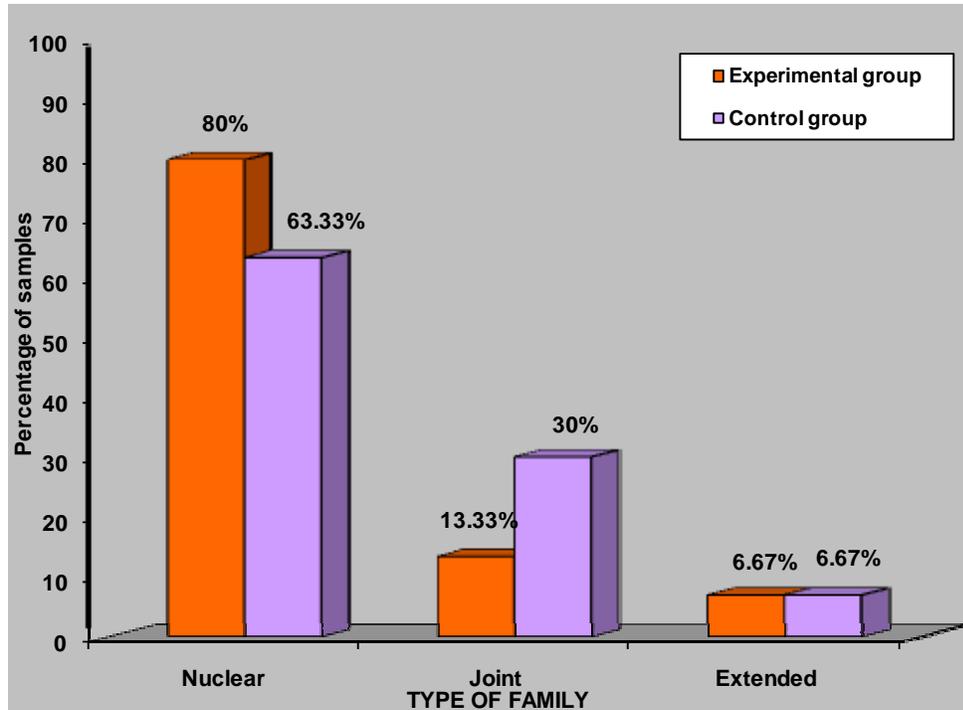


Figure-4.4: Percentage distribution of samples according to their type of family

Distribution of samples according to the type of family shows most of them, 24(80%) belong to nuclear family in experimental group. In control group, 19(63.33%) belong to nuclear family.

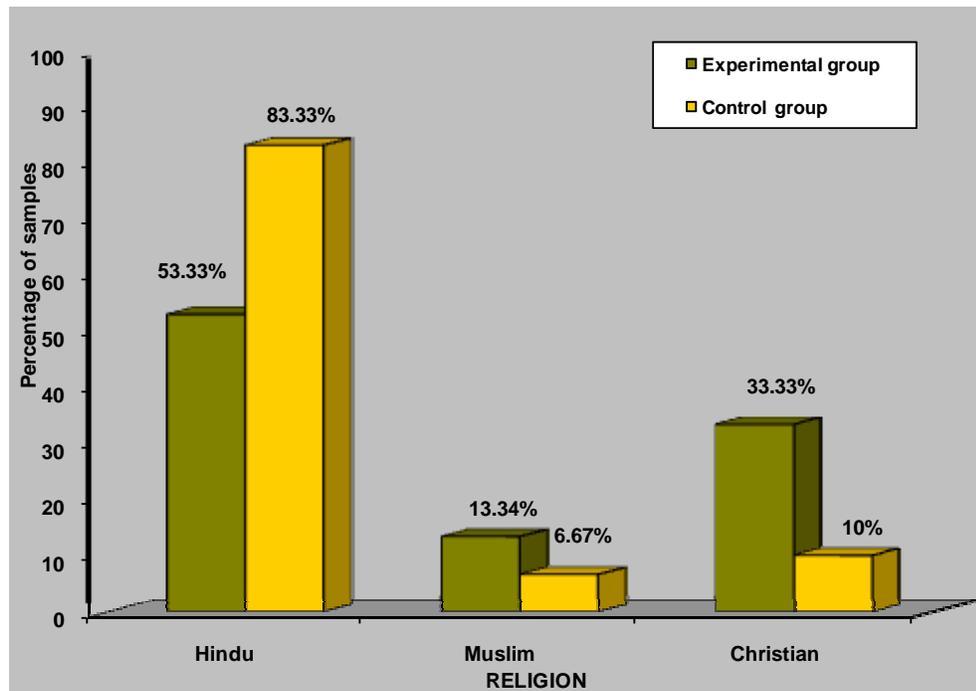


Figure-4.5: Percentage distribution of samples according to their religion

Distribution of samples according to religion shows 16(53.33%) belong to Hindu family in experimental group. In control group, most of them, 25(83.33%) belong to Hindu family.

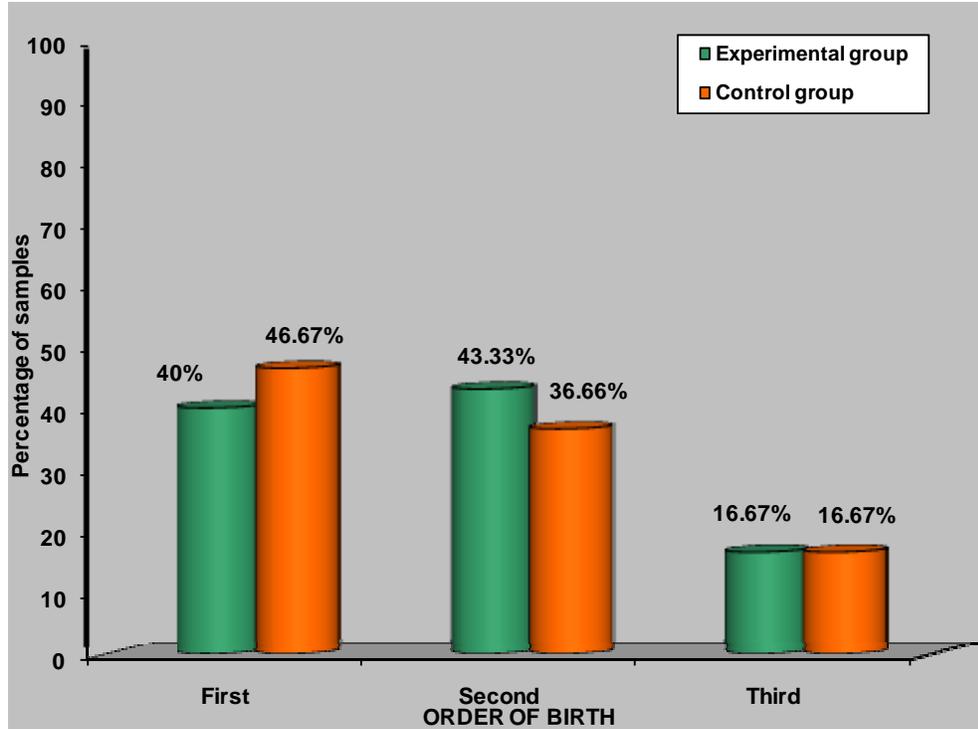


Figure-4.6: Percentage distribution of samples according to their order of birth

Distribution of samples according to order of birth shows 12(40%) were in first order of birth and 13(43.33) in second order of birth in experimental group. In control group, 14(46.67%) belong to first order of birth and 11(36.66%) in second order of birth.

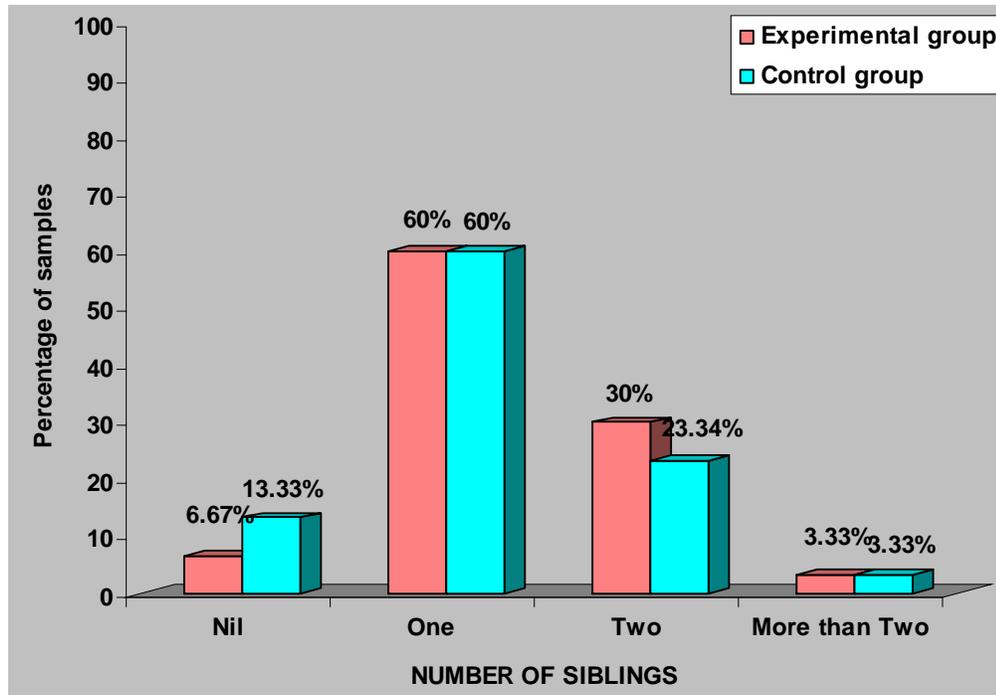


Figure-4.7: Percentage distribution of samples according to their number of siblings

Distribution of samples according to the number of siblings shows 18(60%) have one sibling. In control group, 18(60%) have one sibling.

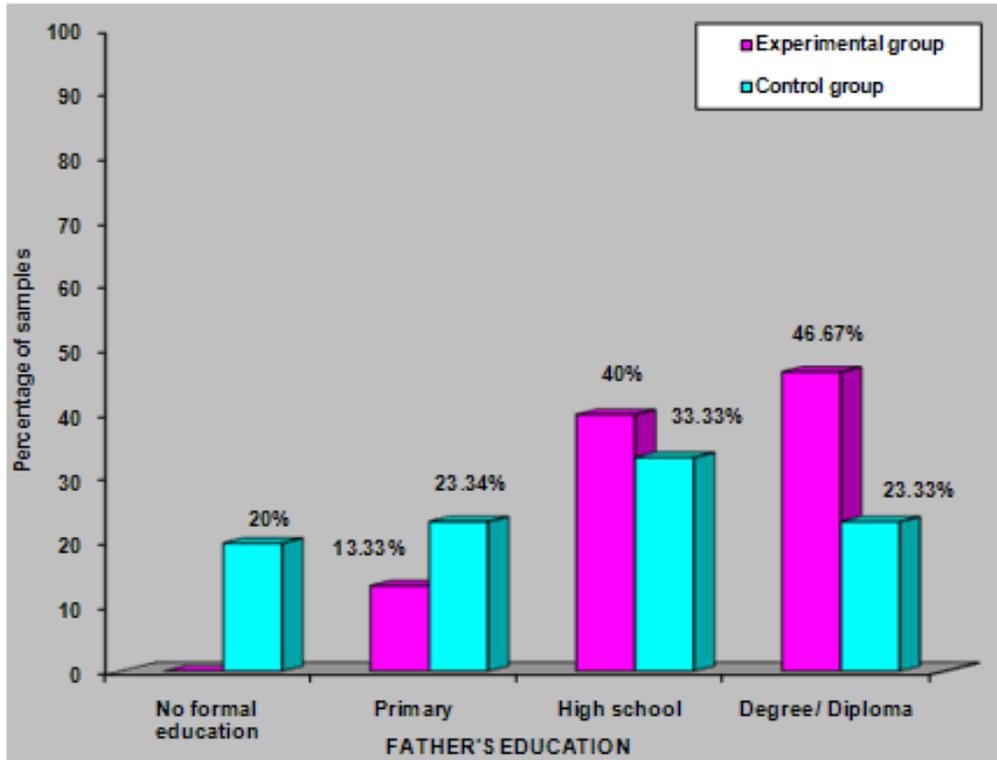


Figure-4.8: Percentage distribution of samples according to their father's education

Distribution of samples according to father's education shows nearly half of them, 14(46.67%) completed degree or diploma and 12(40%) completed high school in experimental group. In control group, 10(33.33%) completed high school.

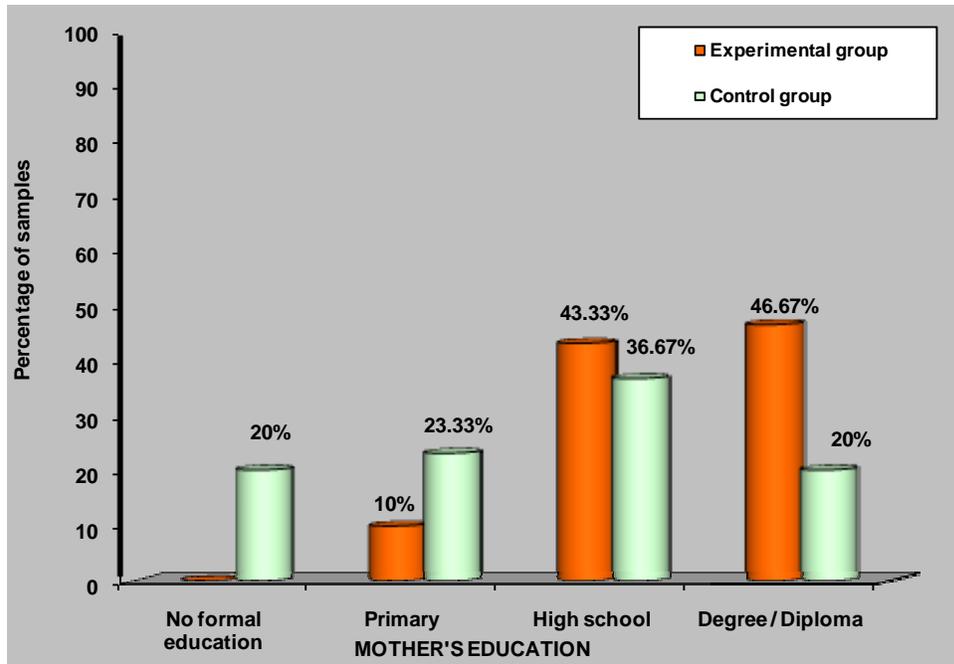


Figure-4.9: Percentage distribution of samples according to their mother's education

Distribution of samples according to mother's education shows 14(46.67%) completed degree or diploma and 13(43.33%) completed high school in experimental group. In control group, 11(36.67%) completed high school.

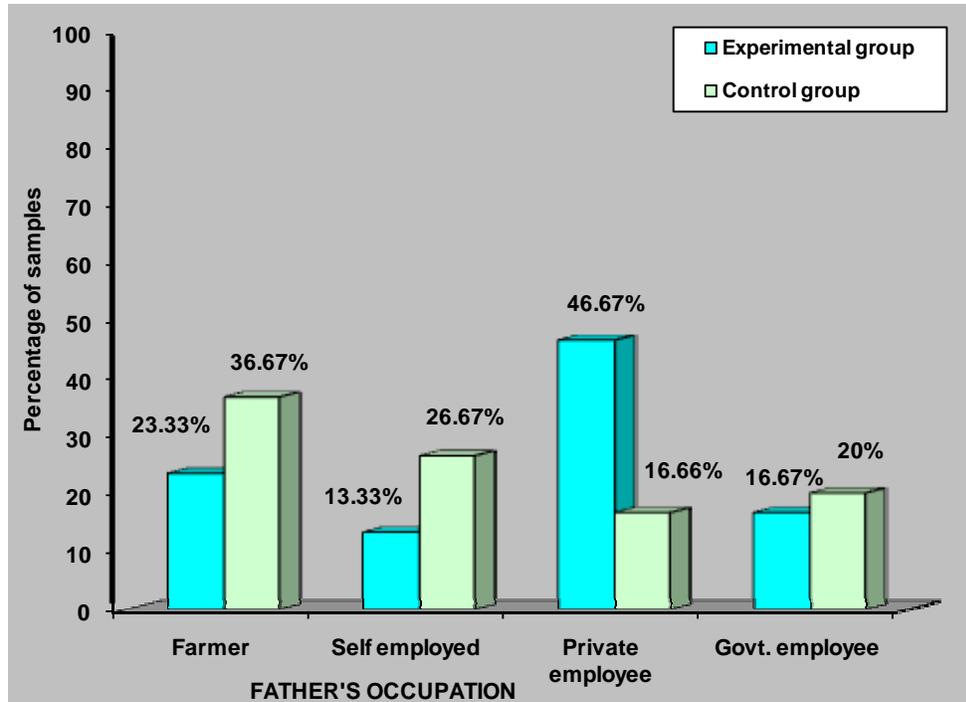


Figure-4.10: Percentage distribution of samples according to their father's occupation

Distribution of samples according to father's occupation shows 14(46.67%) are private employees in experimental group. In control group, 11(36.67%) are farmers.

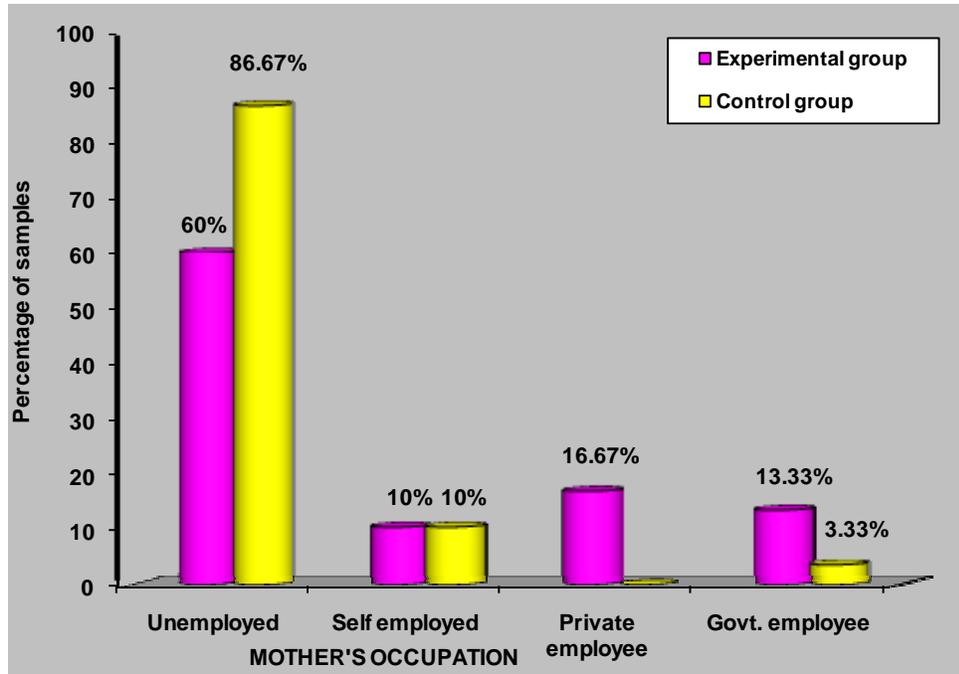


Figure-4.11: Percentage distribution of samples according to their mother's occupation

Distribution of samples according to mother's occupation shows 18(60%) are unemployed in experimental group. In control group, 26(18.67%) are unemployed .

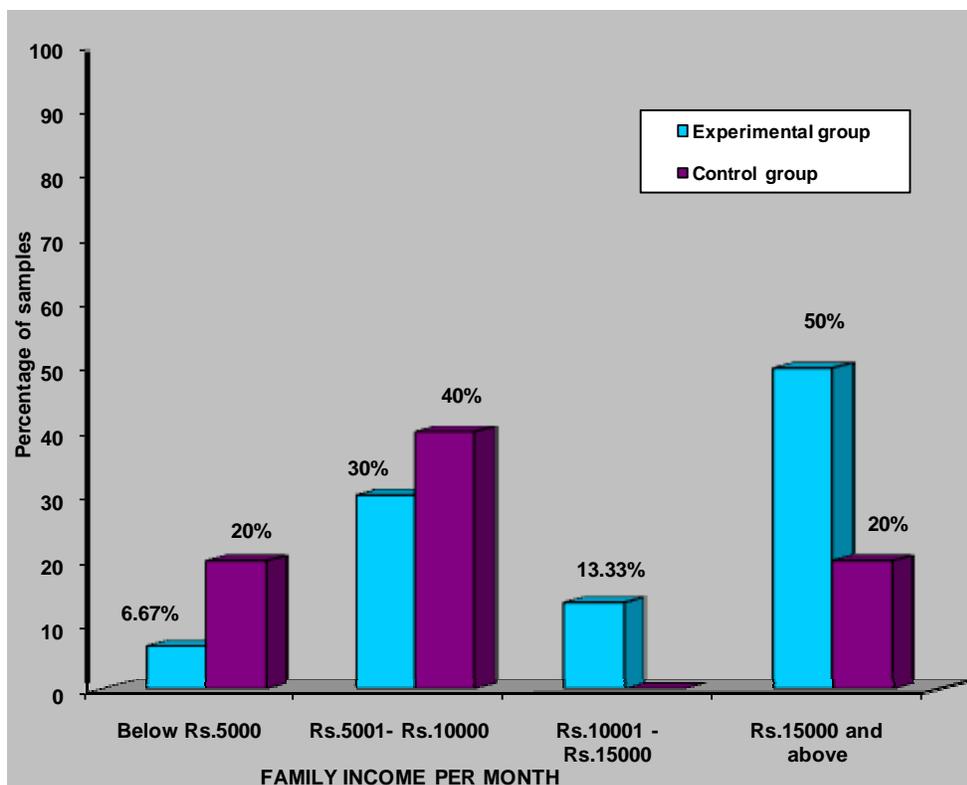


Figure-4.12: Percentage distribution of samples according to their family income per month

Distribution of samples according to family income per month shows half of them, 15(50%) have income Rs 15001 and above in experimental group. In control group, 12(40%) have income Rs 5001- Rs 10000.

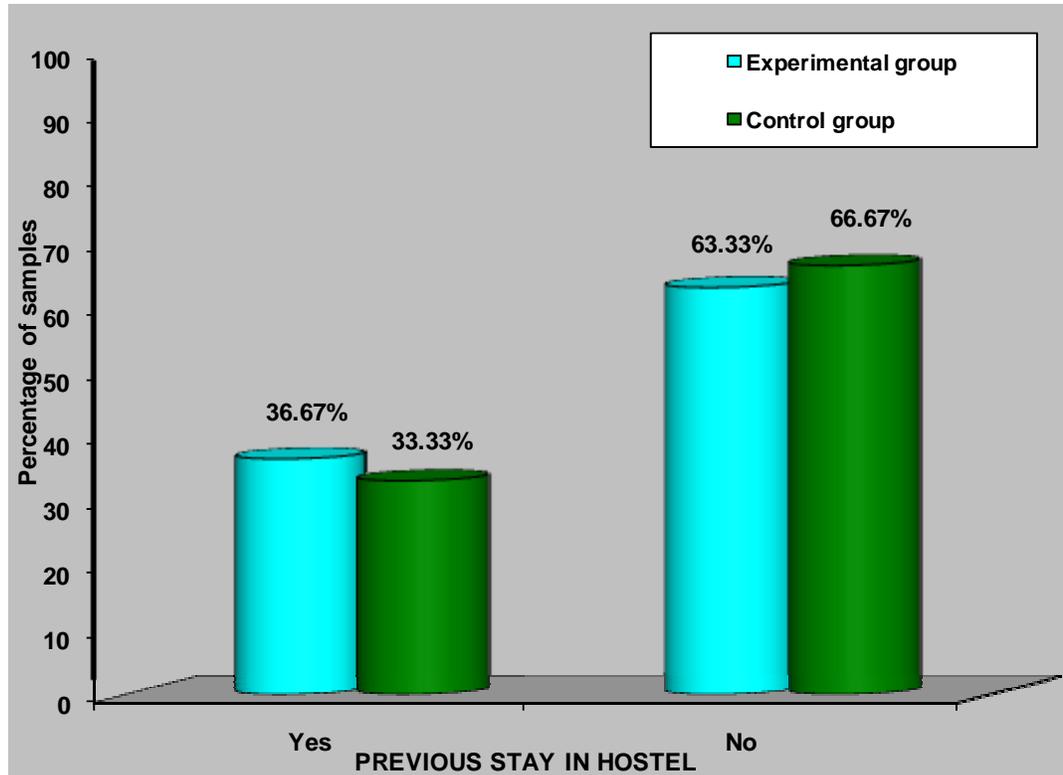


Figure-4.13: Percentage distribution of samples according to their previous stay in hostel

Distribution of samples according to any previous stay in hostel shows 19(63.33%) have no experience in experimental group. In control group, 20(66.67%) have no experience of stay in hostel.

Section – B

a) **Distribution of samples according to their level of stress and anxiety in experimental and control group.**

Table-4.1:

Frequency and percentage distribution of samples according to their level of Stress and Anxiety before and after administration of Hatha Yoga.

n=60

S. No	Variables	Level	Pre test				Post test			
			Experimental group n=30		Control group n=30		Experimental group n=30		Control group n=30	
			f	%	f	%	f	%	f	%
1.	Stress	Low	10	33.33	12	40	27	90	13	43.33
		Moderate	20	66.67	18	60	3	10	17	56.67
		High	-	-	-	-	-	-	-	-
2.	Anxiety	Mild	10	33.33	18	60	28	93.33	17	56.67
		Moderate	20	66.67	12	40	2	6.67	13	43.33
		Severe	-	-	-	-	-	-	-	-

Table 4.1 shows that in experimental group during pre test, 20(66.67%) of them had moderate stress and 10(33.33%) of them had low stress .However, in post test, most of them 27(90%) had low stress. In control group, during pre test, majority 18(60%) of them had moderate stress and in post test, 17(56.67%) of them had moderate stress.

The table also shows that in experimental group, during pre test, majority of them had moderate anxiety 20(66.67%) and in control group, 18(60%) of them had mild anxiety whereas in post test, 28(93.33%) of them had mild anxiety in experimental group and 17(56.67%) of them had mild anxiety in control group.

Section-C

Testing Hypotheses

a) Effectiveness of Hatha Yoga on the Level of stress and anxiety among adolescents in Experimental and control group.

Table-4.2:

Comparison of Mean, SD, Mean difference and paired 't' value on level of stress and anxiety in experimental group after administration of Hatha Yoga.

n=60

Variables	Pre test		Post test		Mean difference	df	Paired 't' value	Table value
	Mean	SD	Mean	SD				
Stress	38.67	11.30	26.13	6.74	12.54	29	8.06*	2.05
Anxiety	17.43	7.20	11.17	4.20	6.26	29	7.24*	

* Significant at $p \leq 0.05$ level.

Table - 4.2 shows that in experimental group, the pre test and post test mean score of stress was 38.67 ± 11.30 and 26.13 ± 6.74 respectively and the pre test mean score of anxiety was 17.43 ± 7.20 whereas the post test mean score was 11.17 ± 4.20 . The mean difference for stress was 12.54 and that for anxiety was 6.26. The paired 't' value obtained for stress and anxiety were 8.06 and 7.24 respectively which were significantly higher than the table value 2.05. It shows that Hatha yoga was effective in reducing the level of stress and anxiety in adolescents. Hence the research hypothesis (H_1) is retained.

Table-4.3:

Comparison of the post test Mean, SD and Independent ‘t’ value on level of stress and anxiety among adolescents in experimental and Control group.

n=60

Variables	Experimental Group		Control Group		df	Independent ‘t’ value	Table value
	Mean	SD	Mean	SD			
Stress	26.13	6.74	36.37	11.01	59	4.341*	1.96
Anxiety	11.17	4.20	16.37	7.50	59	3.312*	1.96

*** Significant at $p \leq 0.05$ level.**

Table - 4.3 shows that in experimental group the post test mean score for stress and anxiety was 26.13 ± 4.69 and 11.17 ± 2.05 respectively whereas in control group the post test mean score for stress and anxiety were 36.37 ± 6.52 and 16.37 ± 2.93 respectively. The independent ‘t’ value at $p \leq 0.05$ level for stress and anxiety were 4.34 and 3.31 respectively which shows that Hatha yoga was effective in reducing the level of stress and anxiety in adolescents. . Hence the research hypothesis (H_2) is retained.

C) Association between the level of stress and anxiety among adolescents and their selected demographic variables in experimental group and control group.

Table-4.4:

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in experimental group according to their personal variables.

n=30

S. No	Personal variables	Level of Stress					Level of Anxiety				
		Low	Moderate	df	χ^2	Table value	Mild	Moderate	df	χ^2	Table value
1	Age in years a. 17-18 b. 19-20	3 7	6 -	1	0.00	3.84	2 8	7 13	1	0.71	3.81
2	Academic year a. 1 st year b. 2 nd year c. 3 rd year	2 5 3	1 11 8	2	1.71	5.98	1 5 4	2 11 7	2	0.08	5.98
3	Place of residence a. Urban b. Rural	2 8	8 12	1	1.2	3.84	1 9	9 11	1	3.68	3.84
4	Previous experience of stay in hostel a. Yes b. No	5 5	6 14	1	1.15	3.84	5 5	6 14	1	1.45	3.84

Table-4.5

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in experimental group according to their family variables.

n =30

S. No	Family variables	Level of Stress					Level of Anxiety				
		Low	Moderate	df	χ^2	Table value	Mild	Moderate	df	χ^2	Table value
5	Type of family										
	a. Nuclear	9	15	2	1.31	5.98	9	15	1	1.31	3.84
	b. Joint	1	3				1	3			
	c. Extended	-	2				-	2			
6	Order of birth										
	a. First	5	7	2	0.81	5.98	5	7	2	3.03	5.98
	b. Second	4	9				5	8			
	c. Third	1	4				-	5			
7	Number of siblings										
	a. Nil	-	-	3	1.5	7.82	1	1	3	1.5	7.82
	b. One	5	13				5	13			
	c. Two	4	5				4	5			
	d. More than two	-	1				-	1			
8	Religion										
	a. Hindu	4	12	2	1.2	5.98	3	13	2	4.86	5.98
	b. Muslim	2	2				1	3			
	c. Christian	4	6				6	4			

Table-4.6

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in experimental group according to their socio economic variables.

n=30

S. No	Socio economic variables	Level of Stress					Level of Anxiety				
		Low	Moderate	df	χ^2	Table value	Mild	Moderate	df	χ^2	Table value
9	Father's education										
	a. Uneducated	-	-				-	-			
	b. Primary education	1	3	2	1.07	5.98	1	3	2	0,64	5.98
	c. High school	3	9				5	7			
	d. Degree or diploma	6	8				4	10			
10	Mother's education										
	a. Uneducated	-	-				-	-			
	b. Primary education	-	3	2	2.11	5.98	-	3	2	1.69	5.98
	c. High school	4	9				5	8			
	d. Degree or diploma	6	8				5	9			
11	Father's occupation										
	a. Farmer	1	6				3	4			
	b. Self employed	3	1	3	4.7	7.82	2	2	3	3.32	7.82
	c. Private employee	5	9				5	9			
	d. Government employee	1	4				-	5			
12	Mother's occupation										
	a. Unemployed	7	11				8	10			
	b. Self employed	-	3	3	1.98	7.82	-	3	3	3.03	7.82
	c. Private employee	2	3				1	4			
	d. Government employee	1	3				1	3			
13	Family income										
	a. Below Rs 5000	-	2				1	1			
	b. Rs 5001-Rs10000	2	7	3	4.63	7.82	3	6	3	1.05	7.82
	c. Rs10001-Rs15000	3	1				2	2			
	d. Rs 15001 and above	5	10				4	11			

Table-4.7

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in Control group according to their personal variables.

n=30

S. No	Personal variables	Level of Stress					Level of Anxiety					
		Low	Moderate	Df	χ^2	Table value	Mild	Moderate	Severe	df	χ^2	Table value
1	Age in years a. 17-18 b. 19-20	3 9	7 11	1	0.63	3.84	7 12	3 7	- 1	2	0.65	5.99
2	Academic year a. 1 st year b. 2 nd year c. 3 rd year	- 8 4	- 12 6	1	0.00	3.84	- 11 8	- 9 1	- - 1	2	5.11	5.99
3	Place of residence a. Urban b. Rural	6 6	8 10	1	0.09	3.84	9 10	5 5	- 1	2	0.92	5.99
4	Previous experience of stay in hostel a. Yes b. No	6 6	4 14	1	2.5	3.84	7 12	3 7	- 1	2	0.66	5.99

Table-4.8

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in Control group according to their family variables.

n=30

S. No	Family variables	Level of Stress					Level of Anxiety					
		Low	Moderate	df	χ^2	Table value	Mild	Moderate	Severe	df	χ^2	Table value
5	Type of family											
	a. Nuclear	7	12	2	3.25	5.99	13	5	1	4	1.58	9.49
	b. Joint	3	6				5	4	-			
	c. extended	2	-				1	1	-			
6	Order of birth											
	a. First	6	8	2	5.56	5.99	12	2	-	4	6.89	9.49
	b. Second	2	9				5	5	1			
	c. Third	4	1				2	3	-			
	d. Above three	-	-				-	-	-			
7	Number of siblings											
	a. Nil	2	2	3	6.92	7.82	4	-	-	6	4.69	12.59
	b. One	4	14				9	8	1			
	c. Two	5	2				5	2	-			
	d. More than two	1	-				1	-	-			
8	Religion											
	a. Hindu	11	14	2	2.25	5.99	15	9	1	4	1.39	9.49
	b. Muslim	1	1				2	-	-			
	c. Christian	-	3				2	1	-			

Table-4.9

Chi-square test on the level of stress and anxiety among adolescents and their selected demographic variables in Control group according to their socio economic variables. n=30

S. No	Socio economic variables	Level of stress					Level of anxiety					
		Low	Moderate	Df	χ^2	Table value	Mild	Moderate	Severe	Df	χ^2	Table value
9	Father's education											
	a. Uneducated	3	3	3	1.43	7.82	4	2	-	6	5.15	12.59
	b. Primary education	2	5				4	3	-			
	c. High school	5	5				8	2	-			
d. Degree or diploma	2	5	3				3	1				
10	Mother's education											
	a. Uneducated	2	4	3	7.13	7.82	2	4	-	6	7.9	12.59
	b. Primary education	5	2				5	2	-			
	c. High school	5	6				9	1	1			
d. Degree or diploma	-	6	3				3	-				
11	Father's occupation											
	a. Farmer	5	6	3	0.27	7.82	6	5	-	6	5.61	12.59
	b. Self employed	3	5				6	2	-			
	c. Private employee	2	3				4	1	-			
d. Government employee	2	4	3				2	1				
12	Mother's occupation											
	a. Unemployed	10	16	2	1.58	5.99	18	7	1	4	4.01	9.49
	b. Self employed	2	1				1	2	-			
	c. Private employee	-	-				-	-	-			
d. Government employee	-	1	-				1	-				
13	Family income											
	a. Below Rs 5000	5	1	3	8.82*	7.82	4	2	-	6	5.21	12.59
	b. Rs 5001-Rs10000	5	7				8	4	-			
	c. Rs10001-Rs15000	2	4				3	3	-			
d. Rs 15001 and above	-	6	4				1	1				

* significant at $p \leq 0.05$ level

There is no significant association ($p \leq 0.05$) between the level of stress and anxiety among adolescents and their selected demographic variables in experimental group. In control group, there is significant association between the demographic variable family income on stress. Hence Hypothesis H₃ is retained in control group for the above mentioned demographic variable.

Summary

This chapter dealt with data analysis and interpretation in the form of statistical value based on the objectives, independent 't' test was used to evaluate the effectiveness of Hatha Yoga on stress and anxiety . Chi square test was used to find out the association between the level of stress and anxiety among adolescents with their demographic variables in experimental and control group.

CHAPTER – V

DISCUSSION

This study was done to determine the effectiveness of Hatha Yoga on level of stress and anxiety among adolescents in selected colleges, Salem.

Objectives

- To assess the level of stress and anxiety among adolescents in experimental and control group.
- To evaluate the effectiveness of Hatha yoga on stress and anxiety among adolescents of experimental group.
- To find out the association between the level of stress and anxiety among adolescents of experimental and control group with their selected demographic variables.

Demographic Profile of the Samples

In experimental group, majority 21(70%) of the samples belong to 19-20 years of age, 17(56.67%) of them belong to 1st year, 20(66.67%) of them belong to rural area, most of the samples 24 (80%) were from nuclear family, 16 (53.33%) were Hindus, 13 (40%) belonged to second order of birth, 18(60%) of them had one sibling, 14(46.67%) of their fathers completed degree/diploma, nearly half 14(46.67%) of their mothers completed degree/diploma, half 15(50%) of their family had monthly income of Rs 15001 and above, 19(63.33%) of samples had no previous experience of stay in hostel.

In control group, 20(66.67%) of the samples belong to 19-20 years of age, 20(66.67%) of them belong to 2nd year, 16(53.33%) of them belong to rural area, above half of the samples 19 (63.33%) were from nuclear family, majority 25 (83.33%) were Hindus, 14 (46.67%) were in second order of birth, 18(60%) of them

had one sibling, 10(33.33%) of their fathers completed high school, 11(36.67%) of their mothers completed degree/diploma, 12(40%) of their family had monthly income of Rs 15001 and above, 20(66.67%) of samples had no previous experience of stay in hostel.

The first objective of the study was to assess the level of stress and anxiety among adolescents in experimental and control group.

During pretest, in experimental group, among 30 samples, 10(33.33%) had low stress and 20(66.67%) had moderate stress and none of the samples had severe stress while 10(33.33%) had low anxiety and 20(66.67%) samples had moderate anxiety. In control group among 30 samples, majority of the samples 18(60%) had moderate stress, 12(40%) had mild stress whereas 12(40%) had moderate anxiety and 18 (60%) had mild anxiety.

Ghaderi, A.R., et, al, (2009) compared the experiences of Stress, Anxiety, and depression among the Indian and the Iranian students. The data was collected from students studying in different departments of University of Mysore, Mysore. The sample was selected by using random sampling method and comprised of 80 Indian and 80 Iranian, both male and female students. The Depression Anxiety Stress Scale (DASS) is used to assess depression, anxiety and stress. The 2 x 2 x 3 ANOVA is used for statistical analysis. in anxiety also Indian students had significantly ($F=39.50$; $P<.001$) higher scores than Iranian students. The mean anxiety scores for Indian and Iranian students were 14.48 and 7.04 respectively. In stress scores, it was found that Indian students were significantly ($F=21.48$; $P<.001$) more stressful than Iranian students (means 8.50 and 7.69 respectively for Indian and Iranian students). The findings revealed that the Depression, Anxiety and Stress level of Indian students are significantly higher than those of Iranian student

The present study also indicates that stress and anxiety are common among adolescents and they require some relieving measures.

The second objective of the study was to determine the effectiveness of Hatha Yoga on level of stress and anxiety among adolescents.

In experimental group, the mean post test score of stress was 26.13 ± 6.74 and in control group it was 36.37 ± 11.01 where as mean post test score of anxiety in experimental group was 11.17 ± 4.20 and that for control group was 16.37 ± 7.50 . The independent 't' value for stress is 4.341 which is significantly higher than the table value 1.96. Also, the independent 't' value for anxiety is 3.312 which is significantly higher than the table value 1.96. This indicates that Hatha yoga is effective in reducing stress and anxiety among adolescents. So the first hypothesis (H_1) of the study was retained.

The findings of the study were supported by **Smith ,c.et al, (2007)** who conducted a study to compare yoga and relaxation technique at 10 and 16 weeks from study baseline for determining if either of the interventions reduce the subject's stress, anxiety and to improve quality of life. Yoga and relaxation were compared using a randomized control trial. 131 subjects with mild to moderate stress levels were recruited from South Australia. 10 weekly 1 hour sessions of Hatha yoga or relaxation techniques were applied to the participants. Changes were seen in the state trait personality inventory anxiety subscale, general health questionnaire. Following 10 week intervention, stress and anxiety scores improved. Yoga was more effective in reducing stress and anxiety than relaxation techniques. This findings support the result of present study that Hatha Yoga is an effective method to reduce the level of stress and anxiety.

The third objective of the study was to associate the level of stress and anxiety among adolescents in experimental and control group with their selected demographic variables.

There is no significant association ($p \leq 0.05$) between the level of stress and anxiety among adolescents and their selected demographic variables in experimental group. In control group, there was significant association between the demographic variable family income on stress. Hence Hypothesis H₂ is retained in control group for the above mentioned demographic variable.

Chatterjee & Walsh, (2010) studied on anxiety among adolescents in Kolkata city, India. Anxiety was compared with gender, type of school, socio-economic background and mothers' employment status and also adolescents' perceptions about quality time with their parents. A group of adolescents containing 220 boys and 240 girls, aged between 13-17 years were recruited in the study by a multi-stage sampling technique. The data was collected using a self-report semi structured questionnaire and a standardized psychological test, the State-Trait Anxiety Inventory. Results indicated that anxiety was prevalent in the sample with boys (20.1%) and girls (17.9%) suffered from high anxiety. More boys were anxious than girls ($p < 0.01$, $t = -2.63$), adolescents from Bengali medium schools were more anxious than adolescents from English medium schools and adolescents belonging to the middle class families suffered more anxiety ($SD = 5.2$ and 5.7 respectively) than those from both high and low socioeconomic groups ($SD = 6.3$ and 5.5 respectively). Adolescents whose mothers went for work were found to be more anxious ($t = -3.20$). Results indicate that a major proportion of the group perceived that they did not receive quality time from fathers (32.1%) and mothers (21.3%) and many did not feel comfortable to share their personal issues with their parents (60%).

All the three objectives and one hypothesis have been retained in this study.

Summary

This chapter dealt with the discussion of the study with reference to objectives and supportive studies. The data collection period provided me with an excellent opportunity to know about the various problems encountered by adolescents. By practicing Hatha yoga, adolescents were able to achieve significant reduction in their levels of stress and anxiety.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

In this chapter, the summary of the study, conclusion, implications to nursing practice and recommendations for further study are presented.

Summary of the Study

True-experimental design (pre-test - post-test with control group) was used in this study to determine the effectiveness of Hatha Yoga on stress and anxiety in adolescents. The study was conducted in Vinayaka Missions Kirupananda Variyar Engineering College, Salem and AVS Engineering College, Salem. The sample size was 60(30 in experimental and 30 in control group) and the samples were selected by simple random sampling technique using lottery method. Self administered questionnaire using 3 point Likert scale was used to collect the data. The data collected were analyzed with the help of descriptive and inferential statistics. To test the hypothesis, independent 't' test and chi-square were used.

The Major Findings of the Study

The major findings of the study was summarized as follows,

- During pretest, in experimental group, 20(66.67%) of the samples had moderate stress and 10(33.33%) of them had low stress .However, in post test, most of them 27(90%) had low stress. In control group, during pre test, majority 18(60%) of them had moderate stress and in post test, 17(56.67%) of them had moderate stress.
- During pretest, in experimental group, majority of them had moderate anxiety 20(66.67%) and in control group, 18(60%) of them had mild anxiety where as in post test, 28(93.33%) of them had mild anxiety in experimental group and 17(56.67%) of them had mild anxiety in control group.

- There is no significant association ($p \leq 0.05$) between the level of stress and anxiety among adolescents and their selected demographic variables in experimental group. In control group, there was significant association between the demographic variable family income on stress. Hence Hypothesis H_2 is retained in control group for the above mentioned demographic variable.

Conclusion

The study was done to determine the effectiveness of Hatha Yoga on stress and anxiety among adolescents at selected colleges, Salem. The result of this study showed that most of the adolescents had reduction in the level of stress and anxiety after practicing Hatha Yoga.

Implications

The findings of the study have implications in different branches of nursing i.e. nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice:

- ❖ Hatha Yoga can be introduced as a mode of intervention by the nurses for reducing stress and anxiety among the patients suffering from various illnesses.
- ❖ Hatha Yoga may be included into routine nursing intervention.
- ❖ Hatha Yoga can be given to staff nurses working in multi speciality units. This technique will help to reduce their work stress.

Nursing Education:

It is important to have educational programme on Hatha Yoga for nursing students, so that they can apply this technique to reduce the stress and anxiety experienced by the inpatients in the hospital.

- ❖ Nurse educator can encourage students to conduct health teaching sessions on various relaxation methods.
- ❖ Staff development programmes need to be arranged, so that the nurse educators can encourage the students to provide relaxation therapies to the patients.

Nursing Administration:

- ❖ Nursing administrator can organize in-service education programmes for staff nurses regarding Hatha Yoga.
- ❖ Cassettes about Hatha Yoga can be made available to staff nurses. This will help the staff nurses to promote the comfort of the inpatients.
- ❖ Nurse administrator can make arrangements for the practice of Hatha Yoga in hospital, so that the staff nurses can provide calm, quiet, clean and safe environment to the patients for the practice.

Nursing Research:

- ❖ Researchers should focus on non-pharmacological interventions to reduce stress and anxiety.
- ❖ The findings should be disseminated through conferences, seminars and publications in professional, national and international journals.

Recommendations

Recommendations include;

1. A similar study on stress and anxiety could be conducted with adolescents to find out the effectiveness of Hatha yoga.
2. A comparative study can be conducted to find out the difference in level of stress and anxiety in male and female adolescents.

3. A study can be conducted with large sample size to generalize the results of the study.
4. The nurses in the hospital can arrange Hatha Yoga sessions, especially for adolescents experiencing chronic stress and anxiety.
5. A study can be conducted to find out the presence of any relation between stress and anxiety.

Summary

This chapter dealt with summary, conclusion, implications for nursing practice and recommendations.

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ANNEXURE - A
LETTER REQUESTING PERMISSION TO CONDUCT A RESEARCH STUDY

From

Mr. Arun.T.Varghese,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Principal,
AVS Engineering College,
Salem.

Through,

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project – request – reg.

I, **ARUN.T.VARGHESE**, II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment for the award of M.Sc., (Nursing) Degree.

Topic: “A study to evaluate the effectiveness of Hatha Yoga On Stress and Anxiety In Adolescents at selected Colleges, Salem.

Kindly permit to conduct a research project in AVS Engineering College, Salem, from 12.07.11.to 07.08.11 with adherence to your college policies and regulations.

Thanking you,

Date :

yours obediently,

Place :

(Arun.T.Varghese)

LETTER REQUESTING PERMISSION TO CONDUCT A RESEARCH STUDY

From

Mr. Arun.T.Varghese,
II Year M.SC., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Principal,
Vinayaka Missions Kirupananda Variyar Engg. College,
Salem.

Through,

The Principal,
Sri Gokulam College Of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project – request – reg.

I, **ARUN.T.VARGHESE**, II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment for the award of M.Sc., (Nursing) Degree.

Topic: “A study to evaluate the effectiveness of Hatha Yoga On Stress and Anxiety In Adolescents at selected Colleges, Salem.

Kindly permit to conduct a research project in Vinayaka Missions Kirupananda Variyar Engineering College, Salem from 12.07.11.to 07.08.11 with adherence to your college policies and regulations.

Thanking you,

Date :

Yours obediently,

Place :

(Arun.T.Varghese)

ANNEXURE - B

**LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS
FOR CONTENT VALIDITY OF THE RESEARCH TOOL**

From,

Mr. Arun.T.Varghese,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To,

(Through proper channel)

Respected Sir/ Madam,

Sub: Requesting opinion and suggestions of expert for establishing content validity of the tool.

I, Mr. Arun T.Varghese., Final Year M.Sc. (Nursing) student of Sri Gokulam College of Nursing, Salem, have selected the below mentioned Statement of the Problem for the research study to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as partial fulfillment for the award of Master Of Science in Nursing.

Topic: A Study To Evaluate The Effectiveness Of Hatha Yoga On Stress And Anxiety Among Adolescents At Selected Colleges, Salem.

I request you kindly validate the tool developed for the study and give your expert opinion and suggestion for necessary modifications.

Thanking you.

Place: Salem

Date

Yours sincerely,
(Arun.T.Varghese)

Enclosed:

1. Certificate of validation.
2. Tool for collection of data.
3. Criteria checklist for evaluation of tool.
4. Content of Hatha Yoga.

ANNEXURE - C

Tool for Data Collection

Section – A

Demographic Profile

Instruction:

Dear participant, this section requires some of the personal information and you are requested to answer each question correctly. Your answer will be kept confidential.

Sample No:

Date:

--	--

The interviewer will ask questions listed below. Place a tick mark against your response. Response given by the respondent will be kept confidential.

Personal variables

- 1) Age in years.
 - a) 17 – 18
 - b) 19 – 20
- 2) Academic year
 - a) 1st year
 - b) 2nd year
 - c) 3rd year
- 3) Place of residence.
 - a) Urban
 - b) Rural
- 4) Any previous experience of stay in hostel?
 - a) Yes
 - b) No

Family variables

- 5) Type of family

 - a) Nuclear
 - b) Joint
 - c) Extended

- 6) Order of birth

 - a) First
 - b) Second
 - c) Third
 - d) Above third

- 7) Number of siblings

 - a) Nil
 - b) One
 - c) Two
 - d) More than two

- 8) Religion

 - a) Hindu
 - b) Muslim
 - c) Christian

Socio economic variables

- 9) Fathers education

 - a) No formal education
 - b) Primary education
 - c) High school
 - d) Degree or diploma

10) Mothers education

- a) No formal education
- b) Primary education
- c) High school
- d) Degree or diploma

11) Father's occupation

- a) Farmer
- b) Self employed
- c) Private employee
- d) Government employee

12) Mother's occupation

- a) Unemployed
- b) Self employed
- c) Private employee
- d) Government employee

13) Family income per year.

- a) Below Rs 5000
- b) Rs 5001 –Rs 10000
- c) Rs 10001- Rs 15000
- d) Rs 15001 and above

SECTION B:

Self administered questionnaire to assess the level of stress.

Instruction to participants:

Dear participant, this section is to evaluate the level of anxiety and you are requested to respond correctly. Your answers will be kept confidential.

Sl. no.	Item	Never 0	Almost Never 1	Sometimes 2	Fairly Often 3	Very Often 4
1	Have you been upset due to something that happened unexpectedly?					
2	Have you felt that you were unable to control the important things in your life?					
3	Have you felt tired of college?					
4	Do you feel confident about your ability to handle your personal problems?					
5	Have you felt that things were going your way?					
6	Do you feel bad about yourself?					
7	Have you been belittled by friends, teachers and parents?					
8	Have you felt to cry in private?					
9	Have you been angered because of things that happened that were outside of your control?					
10	Have you felt difficulties were piling up so high that you could not overcome them?					

Sl. no.	Item	Never 0	Almost Never 1	Sometimes 2	Fairly Often 3	Very Often 4
11	Do you experience feelings of disturbed sleep when facing problems?					
12	Do you experience feelings of difficulty in breathing when facing problems?					
13	Do you experience feelings of heaviness of chest when facing problems?					
14	Do you experience feelings of frequency of micurition when facing problems?					
15	Do you experience feelings of increased sweating when facing problems?					
16	Do you experience feelings of looseness of bowel when facing problems?					
17	Have you felt that you do not have enough money for daily expenses?					
18	Do you feel that nobody is bothered about you?					
19	Do you think excessively about yourself and your necessities?					
20	Do you feel to consume alcohol or other stimulants when thinking about your drawbacks at college and family?					

Sl. no.	Item	Never 0	Almost Never 1	Sometimes 2	Fairly Often 3	Very Often 4
21	Have you felt to be left alone?					
22	Have you felt that you are worthless?					
23	Have you been encountered in a strained romantic relationships?					
24	Have you felt helpless about managing relationships within your family?					
25	Have you felt helpless about managing relationships with your friends?					
26	Do you feel for your mistakes?					

SELF ADMINISTERED QUESTIONNAIRE TO ASSESS THE LEVEL OF ANXIETY

Instruction to participants:

Dear participant, this section is to evaluate the level of anxiety and you are requested to respond correctly. Your answers will be kept confidential.

Sl. no	Item	Not present	Mild	Moderate	Severe	Very severe
1	Anxious mood (worries ,anticipation of the worst, irritability)					
2	Tension (Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feeling of restlessness, inability to relax)					
3	Fears (of dark, of strangers, of being left alone, of animals, of traffic, of crowd)					
4	Insomnia (difficulty in falling asleep, broken sleep, unsatisfying sleep, fatigue on waking, night mares, night terrors)					
5	Intellectual (difficulty in concentration, poor memory)					
6	Depressed mood (lack of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing)					

Sl. no	Item	Not present	Mild	Moderate	Severe	Very severe
7	Somatic(muscular) (pains and aches, twitching, stiffness,myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone)					
8	Somatic(sensory) (tinnitus, blurring of vision, hot and cold flushes, feeling of weakness, pricking sensation)					
9	Cardiovascular symptoms (tachycardia, palpitations, throbbing of vessels, pain in chest, fainting feelings, missing beat)					
10	Respiratory symptoms (pressure or constriction in chest, choking feelings, sighing, dyspnea)					
11	Gastrointestinal symptoms (difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation)					
12	Genitourinary symptoms (frequency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, urgency of micturition, loss of libido, impotence)					

Sl. no	Item	Not present	Mild	Moderate	Severe	Very severe
13	Autonomic symptoms (dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair)					
14	BEHAVIOUR AT INTERVIEW (Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing etc.)					

HATHA YOGA - PROCEDURE

Hatha Yoga is a system of yoga introduced by Yogi Swatmarama, a yogic sage in the 15th century in India. Hatha Yoga tries to achieve balance between body and mind, as well as attempts to free the more subtle spiritual elements of the mind. Hatha yoga is a type of yoga which uses asanas and pranayama, practiced for 30 minutes involving six asanas and four pranayama techniques to achieve therapeutic effects.

Purpose

- To reduce stress.
- To reduce anxiety.
- To promote mental health.

Procedure

- 1) Warm ups - 3 mts
- 2) Stretches - 5 mts
- 3) Suryanamaskar - 7 mts
- 4) Asanas - 10 mts
- 5) Pranayama - 5 mts
- 6) Relaxation - 1 mts

Warm ups

- Stand straight with your arms on your hips.
- Slowly, rotate your head clockwise 5 times and then anti clockwise.
- Rotate fists of both arms clockwise 10 times and then anti clockwise.
- Rotate your right arm forward 10 times and then backwards . Repeat the same for left arm.
- Keeping your arms on your hips, rotate the hips 5 times in clockwise and anticlockwise direction.
- Lift right leg slightly and rotate the ankle 5 times in clockwise and anticlockwise direction.
- Repeat the same for left ankle.
- Relax.

Stretches

- Stand straight. Raise your right hand above your head while keeping the left hand on the hips.

Now, bend to the left side. Repeat the same with left hand. Repeat 5 times.

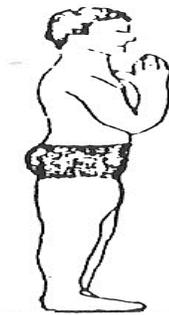
- Stand with your legs apart in a comfortable manner and bend down to touch your feet, alternatively, in a way that right hand touches left foot and vice versa. Repeat 10 times.
- Stand straight and bend backwards as far as you can. Now come back to the straight position. Repeat 5 times.
- Relax
- Suryanamaskar

Suryanamaskar

Posture #1: Tadasana (Mountain Pose).

Begin in the mountain pose with your weight evenly distributed over both feet. The feet are about hip width apart.

- Take a few deep slow breaths and center your body.
- At the same time bring your hands down in front of your face to the midpoint of the chest.
- Hold your palms together and exhale.



Posture #2: Urdhva Hastasana (Upward Hand Pose)

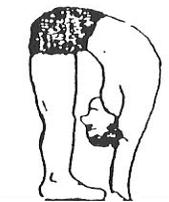
- On your next inhalation, gently raise your arms directly overhead into the Upward Hand Pose.
- Pushing from the waist, look towards the sky and greet the sun.
- Gently arch your back as much as feels comfortable and safe.



Posture #3: Uttanasana (Standing Forward Bend)

Leading with your hands bend forward and exhale as you lower your head.

- Keep your back straight by slightly bending your knees as you fold into the Standing Forward Bend.
- Reach only as far as comfortable.



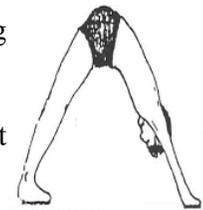
Posture #4: Lunge

- Placing your hands on the floor, place your right foot slightly in front of the hands and extend the left leg backwards and lower your knee.
- Inhale as you step the left leg back and arch your back and look to the sky.



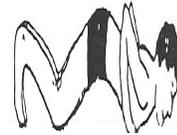
Posture #5: Plank Pose

- Exhale and step your left right leg back into the Plank Pose. Raise your hips and keep your head down looking towards your feet.
- Arms should be straight and hands flat on the floor at shoulder width. Hold the position and inhale.



Posture #6 PRANASANA

- Exhale slowly and lower yourself like a push-up. Lower your knees to the floor, followed by your chest, then your head.
- Hips should be slightly bent and raised off the floor and only the feet and hands should be touching the floor.



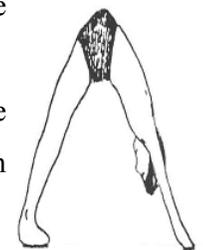
Posture #7: Urdhva Mukha Svanasana (Upward-Facing Dog Pose)

- Inhale and move into the Upward Facing Dog. As you stretch forward, use your arms to lift your torso as your hips move to the floor.
- Pull your shoulders back and open your chest.
- Look up towards the sky and only arch your back and head as much as is comfortable.
- Only the tops of the feet and your hands should be touching the floor.



Posture #8: Adho Mukha Svanasana (Downward-Facing Dog Pose)

- Exhale and raise your hips and buttocks into the Downward-Facing Dog.
- When doing this pose try to roll over the toes and make sure that your hands and feet are grounded as you lengthen your spine.
- Keep your head down and look towards your feet.
- You can choose to remain here for a few breaths if you choose.



Posture #9: Lunge

- Place your hands on the floor, place your left foot slightly in front of the hands, extend the right leg back, and lower your knee.
- Inhale as you step the right leg back, arch your back, and look to the sky



Posture #10: Uttanasana (Standing Forward Bend)

- Leading with your hands, bend forward and exhale as you lower your head.
- Keep your back straight by slightly bending your knees as you fold into the Standing Forward Bend.
- Reach only as far as comfortable.



Posture #11: Urdhva Hastasana (Upward Hand Pose)

- On your next inhalation, gently rise slowly and raise your arms directly overhead into the Upward Hand Pose.
- Pushing from the waist, look towards the sky, and greet the sun.
- Gently arch your back as much as feels comfortable and safe.



Posture #12: Tadasana (Mountain Pose).

- Exhale and gently lower your arms into a mountain pose with your weight evenly distributed over both feet.
- Complete the Salute to the Sun by bringing your hands up into the prayer position.



Repeat the same with opposite leg.

Asanas

1) Ardha Kaṭi Cakrāsana

a) STARTING POSITION:

- **Sthiti:** Tādāsana.

b) PRACTICE:

- While inhaling, slowly raise the right arm side ways up above the head until the biceps touch the ear, palm facing left.
- Bend slowly on the left side; slide the left palm down as far as possible along the left leg. Exhale as you bend. Raised hand should not bend at the elbow. Knees straight. Breathe normally. Maintain for about a minute.



- Inhaling completely slowly stretch up the trunk and the arm to vertical position.
- Bring the hand down to Sthiti position on exhale.
- Repeat on the left side, by bending towards the right.

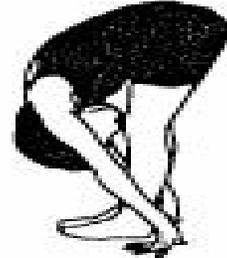
2) PĀDAHASTĀSANA

a) STARTING POSITION

- **Sthiti:** Tādāsana

b) PRACTICE

- Stand erect with legs together, raise the arms, parallel to ground.
- Raise the hands. Inhale while going up. Stretch up the body from the coccyx.
- Making the back concave, bend forward till the body comes to horizontal position. Attempt to push the bottom of the spine forward while bending. Breathe out while going down. Then inhale.
- While exhaling go down further, till the palms can rest on the ground and forehead can touch the knees. Maintain the position for about two minutes without allowing the knees to bend. Return to Sthiti.



c) NOTE:

- Do not bend the knee at any stage of the practice.
- You can keep your hands on the waist even, or can have wall support for proper balance.
- The leg movement should be continuous.
- Gradually increase the speed and mobility, within your limit
- Raise the leg forward / backward as much as you can.

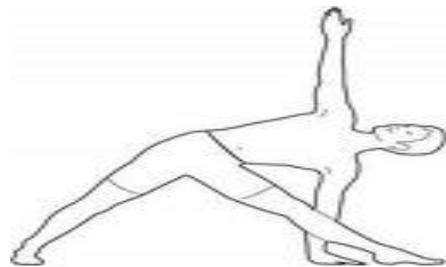
3) TRIKONĀSANA

a) STARTING POSITION:

- **Sthiti:** Tādāsana

b) PRACTICE:

- Raise both the hands slowly till they reach the horizontal position as the right foot is moved to about a meter away from the left foot. Inhale.
- Slowly bend to the right side in the same position. The fingers of the right hand close to the right foot. The left arm is straight up, in line with the right hand. Palms facing forward. Stretch up the left arm and see the fingers.
- After maintaining, return to the vertical position, first with hands horizontal to Sthiti.



- Repeat on the left side.

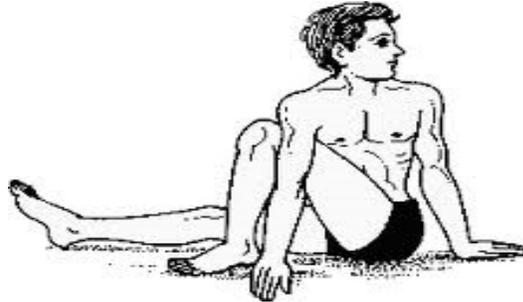
4) *VAKRĀSANA*

a) STARTING POSITION:

- **Sthiti:** Dandāsana.

b) PRACTICE:

- Bend the right leg at the knee and place the right foot (the arch of the foot) by the side of the left knee of the extended leg.
- Straighten and twist the waist towards the right side and take the left hand round the right knee and catch hold of the right big toe. Take the right hand behind, keep the palm on the ground in such a way that the trunk is kept erect, with a proper twist. Breathe normally. After maintaining for about a minute return to Sthiti.
- Repeat the same on the other side.



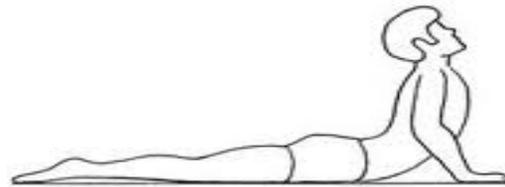
5. *BHUJANGĀSANA*

a) STARTING POSITION:

- **Sthiti:** Prone.

b) PRACTICE:

- Bring the palms to the level of the last rib bone and place them on the ground. Keep the hands bent at elbows; least pressure to be exerted on the hands. Maintain the elbows touching the body; let it not spread out.
- Raise the head first and then the upper portion of the trunk slowly, till the navel portion, just as the cobra raises its hood. Arch the dorsal spine well. Keep the body below the navel straight and in touch with the ground. Maintain this position for a minute.
- Come back to Sthiti position & relax in Makarāsana.



6) *SARVĀNGĀSANA*

a) STARTING POSITION:

- **Sthiti:** Supine

b) PRACTICE:

- Raise the legs together very slowly and gracefully (without bending at the knees) till it forms about 45° to the ground.



- Raise the legs further to 90° position & bring the arms simultaneously placing them near the buttocks.
- Now raise the buttocks and the trunk also, taking support of the arms and the elbows, without lifting the head. Rest the elbows on the ground firmly and support the back with both the palms. Straighten the trunk with the hands till the chin is well set in the suprasternal hollow. Bring the legs parallel to the ground.
- Keep the body, erect stretching it up vertically supporting on the shoulders but relaxed. Maintain for about 2 minutes. Carefully avoid all jerks and keep the head on the ground.
- Slowly come back to Sthiti.

Pranayama

Mudra pranayama

Hand gesture breath (Hasta mudra pranayama)

1. Gesture of consciousness breath. (Chin mudra pranayama.)

Sit in any comfortable sitting position, with the spine upright. Place the tips of the index fingers and thumbs together, and stretch the other three fingers out. Turn the palms upwards, and rest the backs of the hands onto the knees or thighs.



Close the eyes and breathe naturally, through the nose. Try to maintain awareness of each breath moving into and out of the nostrils for two or three minutes.

2. Gesture of pure wisdom breath. (Chinmaya mudra pranayama.)

Now fold the three straightened fingers inwards so that the tips point towards the palm, but without quite touching it.



3. Primal gesture breath (Aadi mudra pranayama)

Now place the thumbs into the palms, and curl the other fingers over the thumbs. Place these 'fists' down onto the thighs, with the backs of the hands uppermost.



4. Gesture of supreme spirit breath. (Brahma mudra pranayama.)

Now take these 'fists' so that the knuckles are pressed together, and the inner wrists are uppermost. Press both hands into the body at the level of the pelvic bone.



Relaxation

Shavasana

- The patient lies in the supine position, lower limbs 30 degrees apart and the upper limbs making an angle of 15 degrees with the trunk, with the forearms in the mid-prone position and fingers semi-flexed.
- The eyes are closed with eyelids drooping.
- The patient is taught slow, rhythmic diaphragmatic breathing with a short pause after each inspiration and a longer one at the end of each expiration.
- After establishing this rhythm, he is asked to attend to the sensation at the nostrils, the coolness of the inspired air and the warmth of the expired air
- The patient is asked to relax the muscles so that he is able to feel the heaviness of different parts of the body.

ANNEXURE – D

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **Mr.Arun T.Varghese**, final year M.Sc. Nursing student of Sri Gokulam College of Nursing, Salem (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **“A Study To Evaluate The Effectiveness Of Hatha Yoga On Stress And Anxiety Among Adolescents At Selected Colleges, Salem.”**

Signature with Date

ANNEXURE – E
CERTIFICATE OF TRAINING

VASISTA CLINIC
SIDDHA YOGA MASSAGE VARMAKALAI
CENTER FOR HOLISTIC HEALTH

DATE
: 20.06.2011

CERTIFICATE OF TRAINING
TO WHOMSOEVER IT MAY CONCERN

I hereby certify that Mr. Arun.T.Varghese, MSc (N) Final Year Student, Sri
Gokulam College Of Nursing, Salem, has underwent training on Hatha Yoga
and he is eligible to train students in practicing Hatha Yoga.

Signature: 
DINAKAR VENDAN, B.S.M.S.
Reg. No: 1854
Asst. Medical Officer (Siddha)
Seal: Government Hospital
Vembadithalam, Salem Dt.

441/2, Thriveni Gardens, Gorimedu, Salem-8, Cell: 9223207000

www.vetriyoga.com / email: vetriyoga@gmail.com

APPENDIX - F
LIST OF EXPERTS

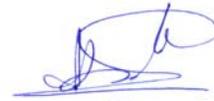
- 1. Mrs. Meera Saravanan, M.Sc.(N),**
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PSG College of Nursing,
Coimbatore.
- 2. Prof. Esther Daisy Joel, M.Sc.(N),**
Professor,
Department of Mental Health Nursing,
PSG College of Nursing,
Coimbatore.
- 3. Mrs. S.Jesintha Vedanayagi, M.Sc.(N),**
Associate Professor,
Mental Health Nursing,
Sacred heart College of Nursing,
Madurai.
- 4. Mrs. Jamuna Rani**
Professor,
Department of Mental Health Nursing,
Sri Ramakrishna College of Nursing,
Coimbatore.
- 5. Dr. Vetrivendhan**
Siddha And Yoga Consultant,
Vasista Clinic,
Salem

ANNEXURE – G

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled “**A Study To Evaluate The Effectiveness Of Hatha Yoga On Stress And Anxiety Among Adolescents At Selected Colleges, Salem.**” by **Mr. ARUN T. VARGHESE**, It has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous, free of grammatical or spelling errors and apt for the purpose.

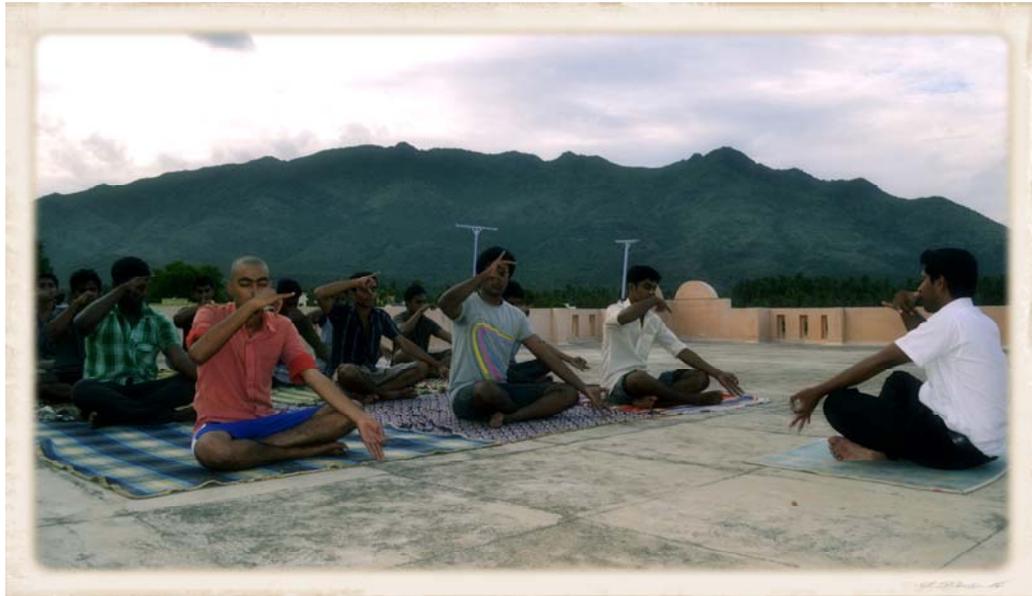


Signature with Date 16 Jan 2012

(T. Babu Srinivas)
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ANNEXURE – H
PHOTOS



INVESTIGATOR DEMONSTRATING CHIN MUDRA PRANAYAMA



INVESTIGATOR DEMONSTRATING BHUJANGASANA