CHAPTER - III

METHODOLOGY

This chapter deals with the research design, setting, population, sample, sample size, sampling technique, sample selection criteria, description and scoring procedure of the tool, reliability of the tool, pilot study data collection procedure and statistical analysis used for the study. The study was designed to determine the effectiveness of yoga therapy on academic motivation, adjustment behaviour, self-esteem of adolescents in higher secondary school.

3.1. RESEARCH DESIGN

A quantitative research method was used to determine the effectiveness of yoga on academic performance, adjustment behavior and self-esteem of adolescents before and after the intervention. (pretest posttest control group design)

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<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Intervention</th>
<th>Posttest</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Monday to Friday</td>
<td>6th day to 88th</td>
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<tr>
<td></td>
<td></td>
<td>5 school days</td>
<td>School days</td>
</tr>
<tr>
<td>Study group</td>
<td>O₁</td>
<td>*X</td>
<td>*X₁</td>
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<tr>
<td>Control group</td>
<td>O₁</td>
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</tbody>
</table>

|                  | I 31st day | II 89th day |
| Study group      | O₂        | O₃          |
| Control group    | O₂        | O₃ ✓        |
Key

O₁: Pretest data on demographic variables, assessment of academic motivation, pre-quarterly and quarterly examination, adjustment behaviour and self-esteem

*: Routine activities (P.T classes, music and craft work)

X: Lecture cum demonstration on yoga and issue of booklet on yoga - “A Way to Success” on the 5th day (last day of demonstration class)

X₁: Supervised practice of yoga under the guidance of a research assistant for 3 months during school days.

O₂: Posttest 1 data on assessment of academic motivation, adjustment behaviour, self-esteem and yoga performance

O₃: Posttest 2 data on assessment of academic motivation, pre-half yearly and half yearly examination adjustment behaviour, self-esteem and yoga performance

√: Issue of booklet on yoga - “A Way to Success” on the 89th day for the control group

3.2. INTERVENTION

It was a structured teaching and demonstration on yoga which was developed by the researcher as she being a yoga instructor and with the help of expert guidance and reference. The researcher had done a one year P.G Diploma in yoga and naturopathy at Tamil Nadu Physical Education University. The teaching module of yoga includes meaning of yoga, history, branches of yoga, benefits, preparation of yoga and 16 types of asanas namely Utkataasana, Padmaasana, Januseeraasana, Paschimothaasana, Navasana, Uthanapadasana, Sarvangasana, Vipareethakarani, Halasana, Salabhasana, Matsyasana, Vajraasana, Yogamudra, Maha Mudra, Pranayama and Nindrapadaasana.

For the purpose of introduction, the study group of 150 subjects was divided into 2 main batches consisting of 75 participants in each batch. Further for the
purpose of demonstration classes each batch was divided into 10 groups each consisting of 15 members. Each subject in the study group attended a total of 5 classes for 5 days. On the first day, a class on introduction which included meaning, history, types, branches of yoga, pre-preparation and benefits of asanas was given. From the 2\textsuperscript{nd} day to the 5\textsuperscript{th} day asanas were taught in group sessions, each session lasted for 20 minutes. A common hall was used to teach and demonstrate the asanas. Demonstration was done by the researcher.

A booklet on Yoga- “A way to success” was provided for the study group on the 5\textsuperscript{th} day following the demonstration class. It contained information on different types and benefits of asanas. The study groups were monitored daily for the practice of asanas in the school under the supervision of a research assistant. After 1 month, on the 31\textsuperscript{st} day the posttest I was done on academic motivation, adjustment behavior and self-esteem including asanas checklist. The study group continued to practice asanas as before under the supervision of the research assistant. The researcher periodically visited the study group and offered help as and when needed. Following this on the 89\textsuperscript{th} day posttest II was done on academic motivation, adjustment behavior and self-esteem including asanas checklist. The booklet on yoga was issued to the control group after posttest II.

3.3. SETTING OF THE STUDY

The study was conducted in two government higher secondary co-education schools. The participants of the study group were selected from Government Higher Secondary School, Maghakavi Bharathiyar Nagar, Chennai-39 which was 39 kilometers away from Sri Ramachandra University, Porur and the control group were selected from Government Adidravida Welfare Higher Secondary school,
Kanikapuram, Chennai-12, 35 kilometers away from Sri Ramachandra University, Porur. Both the schools were established for 35 years. The total number of students in each school was around 1850 to 2300. Both schools come under the corporation of Chennai.

3.4. POPULATION

The target population for the study group was adolescent boys and girls, having low academic performance and adjustment behavior problems, in the age group of 13-18 years studying in the Government Higher Secondary Schools, Chennai, during the period of data collection.

3.5. SAMPLE

The sample consists of 300 adolescents with low academic performance and adjustment behaviour problems and who have fulfilled the inclusion criteria during the data collection period were recruited for the study.
3.6. SAMPLE SIZE

Using the sample calculation method, the sample size was determined prior to the commencement of the study. Totally 300 adolescents were selected with 150 for the study group and 150 for the control group.

\[
n = \frac{2(Z_a + Z_{1-\beta})^2 \sigma^2}{\Delta^2}
\]

3.7. SAMPLING TECHNIQUE

Stratified sampling technique was instituted to select the samples from 9th, 10th and 11th standards. Each standard had 5 sections namely A, B, C, D and E. In 9th standard the strength was 232, 10th standard had 206 and 11th standard had 201 students respectively. From each standard a list of low academic performance adolescent students were identified. In 9th standard the number was 63, 70 in 10th standard and 65 in 11th standard. By using lottery method of simple random sampling, 50 subjects were selected from each standard respectively. So totally there were 150 samples in the study group. The same method was adopted to select samples for the control group too, so the control group consisted of 150 samples.
Study group

9th standard
Total No. of students - 232
63 (Less than 30% marks)

10th standard
Total No. of students - 206
70 (Less than 30% marks)

11th standard
Total No. of students - 201
65 (Less than 30% marks)

By lottery method

50
Boys 35
Girls 15

50
Boys 29
Girls 21

50
Boys 33
Girls 17
Control group

9th standard
Total No. of students - 231
72 (Less than 30% marks)

10th standard
Total No. of students - 216
69 (Less than 30% marks)

11th standard
Total No. of students - 218
70 (Less than 30% marks)

By lottery method

50
Boys 33
Girls 17

50
Boys 33
Girls 17

50
Boys 29
Girls 21
3.8. CRITERIA FOR SAMPLE SELECTION

3.9. INCLUSION CRITERIA

School students who were

- Both boys and girls in the age group of 13-18 years and studying in 9th, 10th, and 11th standards of the selected school.
- With less than 30% of marks in the pre-quarterly test and quarterly examination.
- Willing to participate.
- Able to read and understand Tamil or English or both

3.10. EXCLUSION CRITERIA

School students who

- suffered comorbid illness such as cardiac and renal problems
- were physically challenged
- were already practicing yoga
- scored a lie score of more than 5 (self-esteem inventory tool)
- were on medical leave.

3.11. DESCRIPTION OF THE TOOL

The tool consisted of 4 parts

Part A: Demographic Variables

It consists of details such as age, gender, educational status of the adolescents, religion, type of family, residence, educational status of the parents, occupation of parents, month’s family income.
Part B:

a. Academic Achievement Motivation Questionnaire (AAMQ)

It consists of questions related to academic activities at school and statements describing motivation to study.

The questionnaire was developed by Asha Mohan in 1982. The academic achievement motivation questionnaire is a self-administered. It has 50 items and has no time limit. There are 37 positive items and 13 negative items. The positive items have a response choice on a 5-point rating scale given as always, frequently, sometimes, rarely and never, which carries the scores as 4, 3, 2, 1 and 0, whereas, negative item has a response choice given as similar to the positive but scoring done as 0, 1, 2, 3 and 4.

Interpretation

There were two separate stencil keys provided for the scoring of positive and negative items. The total score was the summation of all the positive and negative items score. The minimum score obtained was 0 and the maximum was 200.

Reliability

The reliability coefficient was reasonably high ($r=0.69$) on using the test retest method.

b. Pre-quarterly test, Quarterly examination marks and Pre-half yearly test and Half-yearly examination marks

Interpretation

The total marks for the tests and examination were 625, which was converted into percentage. Marks less than 188 denoted less than 30%.

Part C: Bells adjustment inventory (BAI) Indian adaptation
It consists of questions related to adjustment behavior among adolescents it’s a standardized tool revised by Dr. R.K. Ojha (1983) self administered questionnaire. This inventory includes four components such as home, health, social and emotional aspects. Each component has 35 statements. The total items were 140. It’s a dichotomous which is answered as ‘yes’ or ‘no’.

**Interpretation**

A score of was given for each ‘yes’ response and ‘0’ score for ‘No’ response. When a student answered ‘yes’ it denoted difficulty. If she/he answered ‘No’ it indicated that the student had no such difficulty. Only ‘yes’ response was scored to measure adjustment problems. The level of adjustment behaviour was classified into excellent, good, average, unsatisfactory and very unsatisfactory.

**Reliability**

The reliability coefficients were determined by split half and test-retest method. For split-half the correlation between odd and even items was calculated and correlated by the Spearman Brown Formula. r=0.89.

**Part D: Self-Esteem Inventory (SEI)**

It’s a standardized tool developed by Coopersmith (1987). Self-esteem inventory consists of 58 items, which has five subscales. These subscales are General self, social self peers, home parents, Lie scale and school academic. General self has 26 items. Social self peer has 8 items, home parent has 8 items lie scale has 8 items and school academic has 8 items.

**Interpretation**

The total self esteem inventory score was 50 which were multiplied by two so that the maximum score was 100. The Total number of correct answers of all scales excluding Lie had a maximum score of 50 and Lie had a maximum score of 8. If Lie
scale was high (5-8) the child could have presented a rosier picture than the reality being experienced. The test retest reliability was obtained with the full SEI range from 0.88.

3.12. VALIDITY OF THE TOOL

The validity of the tool was evaluated by the experts of clinical psychology and research experts.

3.13. TRANSLATION OF THE TOOL

The research tools used in the study were translated from English to Tamil by the experts to suit the samples and semantic equivalence was obtained while by translating Tamil Version from English Version. The reliability of the translated version was established.

3.14. PILOT STUDY

Two schools (St. Joseph Higher Secondary School and Government Higher Secondary School, Kannadasan Nagar, Chennai 600 118), were chosen conveniently for the pilot study. Permission from Head masters of both the schools was obtained. Informed consent from both the groups of parents and adolescents were also obtained to proceed with the pilot study.

A total of 30 adolescents were selected, 15 from St. Joseph Higher Secondary School and 15 from Government Higher Secondary School conveniently. St. Joseph School, Kannadasan Nagar, Chennai 600 118 was selected for the control group and Government Higher Secondary School, Kannadasan Nagar, Chennai 600 118 for the study group and a total of 15 samples in each group of adolescents were selected by using simple random sampling.

Based on their academic performance marks, i.e. less than 30% in their pre-quarterly test and quarterly examination were identified. After obtaining consent from
the identified samples, pretest was conducted on academic motivation, adjustment behavior and self-esteem questionnaire.

After the selection of samples, the study group was subjected for yoga class for a period of 4 days. For one month, reinforcement was given through phone calls and by visiting the schools. Posttest was done at the end of one month using the same tools, academic motivation, adjustment behavior, and self-esteem questionnaire.

The findings of the pilot study revealed that, it was feasible to collect data from the study group and effective to conduct the study at the selected settings and the criterion measures were found to be applicable. The pilot study report was presented to research advisory committee and was approved by the committee. The committee permitted to proceed with the main study.
3.15. DATA COLLECTION PROCEDURE

- Ethical Clearance and permission from CEO and Headmaster
- Adolescents secure below 30% of marks in the pre quarterly test and quarterly exam
- Informed consent from parents and adolescents

Study group n = 150
- Routine Activities: Yoga + Booklet
- Academic motivation, adjustment behaviour, self esteem, yoga performance

Pretest
- Academic motivation, adjustment behaviour, self esteem.

Control group n = 150
- Routine Activities: Yoga + Booklet
- Academic motivation, adjustment behaviour, self esteem.

Posttest I 31st day
- Academic motivation, adjustment behaviour, self esteem, yoga performance

Posttest II 89th day
- Booklet on Yoga “A Way to Success” on 89th day
DATA COLLECTION PROCEDURE (STUDY GROUP)

Data collection was done after the approval of ethical committee and permission was obtained from Chief Education Officer (CEO), Corporation of Chennai, for the urban Government Higher Secondary Schools and Head masters of both the schools.

Adolescents with low academic performance, adjustment behavior in the schools, fulfilling the inclusion criteria were selected and consent was obtained after adequate explanation about the study. An informed consent was obtained from parents and adolescents of the study group to proceed with data collection.

Data collection was focused on demographic variables, pre-quarterly test and quarterly examination marks and assessment of academic motivation, adjustment behavior and self-esteem which was collected using standardized questionnaires. The consent from parents of adolescents was obtained. They were allowed to have their routine activities. On the 31\textsuperscript{st} day, posttest I was done. Then on the 89\textsuperscript{th} day the posttest II was done to the study group. The study group attended structured teaching and demonstration classes, on yoga. Group sessions were taken for 5 days. Each group consisted of 15 numbers.

1\textsuperscript{st} Day - Teaching on yoga (meaning, history, types, branches, benefits, and preparation) 30 mts

2\textsuperscript{nd} Day - Demonstration of four asanas (Utkataasana, Padmaasana, Januseeraasana, Paschimothaasana) (20mts)

3\textsuperscript{rd} Day - Demonstration of four asanas Navasana, Uthanapadasana, Sarvangaasana, Halasana (20mts)

4\textsuperscript{th} Day - Demonstration of four asanas Matsyasana, Salabhasana, Vajraasana, Nindrapadaasana (20mts)
5th Day - Demonstration of four asanas Yogamudra, Maha Mudra, Pranayama and Vipareethakarani (20mts) and issued a booklet on yoga “A Way to Success”

6th to 89th day - Supervised practice of yoga was carried out with the help of research assistant

From 6th day to 89th day the students practiced yoga in the school under the supervision of a research assistant and the researcher.
Supervised practice of yoga 6\textsuperscript{th} day – 89\textsuperscript{th} day

Study group (n=150)

group I (75)

<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
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<tbody>
<tr>
<td>49</td>
<td>26</td>
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</tbody>
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3:30-04.00p.m | 4:05-4:35 p.m.

group II (75)

<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>27</td>
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</tbody>
</table>

3:30-04.00p.m | 4:05-4:35 p.m.
On the 31st day, the first posttest was done with a standardized questionnaire on academic motivation adjustment behavior and self-esteem including practice assessment of yoga (checklist). Then the 2nd posttest was done on the 89th day using pre-half yearly test and half yearly examination marks. Also, the same questionnaire was used to assess the academic motivation, adjustment behavior and self-esteem including practice assessment of yoga (checklist).
Utkataasana  Padmaasana  Januseeraasana
Paschimothaasa  Navasana  Uthanapadasana
Sarvangaasana  Vipareethakarani  Halasana
Salabhasana  Matsyasana  Vajraasana
Yogamudra  Maha Mudra  Nindrapadasana
DATA COLLECTION PROCEDURE (CONTROL GROUP)

Data collection was done after the approval of ethical committee and permission was obtained from Chief Education Officer (CEO) Corporation of Chennai for the urban Government Higher Secondary School and from Head masters of both the school.

Adolescents with low academic performance and problems with adjustment behavior fulfilling the inclusion criteria were selected and consent was obtained after adequate explanation about the study. An informed consent was obtained from parents and adolescents of the control group to proceed with data collection.

Data collection was focused on demographic variables, pre-quarterly test and quarterly examination marks and assessment on academic motivation, adjustment behavior, and self-esteem collected using standardized questionnaire. They were allowed to have their routine activities. On the 31st day posttest I was done with a standardized questionnaire on academic motivation adjustment behavior and self-esteem. Then on the 89th day the same questionnaire was used for posttest II including the pre half-yearly test and half yearly examination marks. Then the booklet on Yoga –“A Way to Success” was given to the control group

ATTRITION OF SAMPLES

The total attrition in the study group was 8 after pretest of which 3 were absent (2boys+1girl), 2 had withdrawn from the study (boys) and 3 were irregular to the class (2boys+1 girl). So the total sample size became 142. The total attrition in the control group was 5 after pretest of which 2 were absent (boys), 1 had withdrawn from the study (girl) and 2 were sick (boys) during the study period. So the total sample size became 145.
### 3.16. STATISTICAL ANALYSIS

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<thead>
<tr>
<th>METHOD</th>
<th>TYPE OF STATISTICS</th>
<th>PURPOSE</th>
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</thead>
<tbody>
<tr>
<td>Descriptive Statistics</td>
<td>Frequency, percentage, Mean, Standard deviation</td>
<td>To assess the study related variables</td>
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<tr>
<td>Inferential Statistics</td>
<td>Paired ‘t’ test</td>
<td>To compare the data within the group</td>
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<tr>
<td></td>
<td>Independent ‘t’ test</td>
<td>To compare the data between the groups</td>
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<tr>
<td></td>
<td>ANOVA</td>
<td>To associate the study related variables with outcome variables</td>
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<td></td>
<td>Correlation</td>
<td>To identify the relationship between the outcome variables</td>
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<tr>
<td></td>
<td>Regression</td>
<td>To study the relationship between the outcome and study related variables</td>
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