Chapter - III

METHODOLOGY

After formulating hypotheses the next step is to proceed for scientific investigation of the problem. Hence, a well-designed methodology is essential to conduct the investigation in a suitable direction or manner. Research methodology is based on the purpose of the research, like investigation, explanations, diagnosis or conclusion and experimentation. Research methodology indicates the accurate objective of the research work in a systematic mode. It gives systematical information about the framework of research, availability of various data, sampling, analysis of data, observations or findings etc. Research design also includes the structure of the research work. The research design may help the researcher to systematize his thoughts in a particular structure.

The purpose of research design is to control over relevant variables and therefore allows the operation of experimental variables at maximum saturation. The experimental design is a research design where one manipulates the independent variable to see if this manipulation causes changes in the dependent variable. The according to Kerlinger (1983) “research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research question and to control over variance”. Hence the research design is a discipline of obtained data. It is attempted by adopting and approximating a sound strategy of control over relevant variables that affect the dependable variable (D.V.), otherwise they are likely to contaminate the effect of the independent variable (I.V.) if left uncontrolled. When these sources of relevant or extraneous or error variance as pertaining to the particular
research problem under study have been properly controlled, the design is said to possess the internal validity.

All research design should be externally valid. External validity implies manipulation of the experimental variables and control of the extraneous and error variables to such a magnitude that the independent variable (I.V.) is able to be effective in a fully saturated manner to lead to results that can be generalised. This aspect of a scientific investigation can be met partially only in an individual study. Saturation of stimulus can be approximated but attaining generalization requires wider and diversified studies.

Thus, the main purpose of a research design is to adopt such a strategy and structure of an investigation that follows the principle of max – min – con (D’Amato (1979)). This simply explains a statistical principle behind the mechanism of control of variance. It emphasizes maximization (max) of systematic or experimental variance, minimization (min) of error variance and controlling (con) extraneous systematic variances.

In this investigation following steps are taken under this methodology.

(1) RESEARCH DESIGN

To evaluate the impact of P.M technique on experimental group, in contrast to the control group doing normal activity at different experimental stages, a multi-level, pre- and post- (before and after) experimental research strategy with control group is implemented. The detail of research design is illustrated in table -1.
Table – 1

Research Design

<table>
<thead>
<tr>
<th>Groups / Independent Variable (I.V.)</th>
<th>Experimental Stages / Dependent Variables (D.V.)</th>
<th>Pre – (0 – month)</th>
<th>Post – I (2-months)</th>
<th>Post – II (6 – months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control Group (n=80)</td>
<td>Stress, inferiority and insecurity</td>
<td>Stress,</td>
<td>Stress, inferiority</td>
<td>Stress, inferiority</td>
</tr>
<tr>
<td>Normal activity</td>
<td></td>
<td>inferiority and</td>
<td>and insecurity</td>
<td>and insecurity</td>
</tr>
<tr>
<td>2. Experimental Group (n=80)</td>
<td>Stress, inferiority and insecurity</td>
<td>Stress,</td>
<td>Stress, inferiority</td>
<td>Stress, inferiority</td>
</tr>
<tr>
<td>Preksha Meditation</td>
<td></td>
<td>inferiority and</td>
<td>and insecurity</td>
<td>and insecurity</td>
</tr>
</tbody>
</table>

In this investigation two groups (control and experimental) of adolescent students were selected. The purpose of selection of the control group was to make the research strategy sound, to eliminate the effect of extraneous variables, test sensitivity and effect of maturity to draw the net effect of P.M. practice. The investigation was conducted at multilevel stages, i.e. pre-experimental, post-stage - I and post-stage - II. The same subjects were used at the said levels of investigation; therefore, it is a multi-group and multi-level design. The pre-post strategy of testing and employment of the control group was also followed in this investigation. Therefore in this study to explore the net
effect of the Preksha Meditation practice at the end of two month and six month experimental stage “a multi-group, multi-level, pre- and - post experimental research design was adopted.”

(2) CONTROL OF VARIANCE

Keeping in the mind the suggestions of D’Amato (1979) for max., min., and con., i.e. maximization of independent variable, minimization of error variance and control over extraneous variance, this experimental study was conducted.

Attempts were made to control over relevant variables. Kerlinger advocated for controlling the 3 Ss relevant variables i.e. subject relevant, sequence relevant and situation relevant variables, otherwise they are likely to contaminate the effect of independent variable (I.V.), is left uncontrolled.

i. Control of Subject-relevant Variables -

Self-control (pre - and post):

Control of subjectrelevant variables have been managed by implementing pre - and post - experimental design, because in this strategy the same subjects serve as self-control because they were their best matches for their pre - experimental states. However an additional group (control group) of subjects practicing normal routine school activity had also been planned. Hence the effect of P.M. (experimental group) can be separately evaluated as compared normal activity over two stages (two months and six months) of experiment.
Inter-group matching:

Inter-group matching means to compare the stress, insecurity and inferiority feeling between two groups of the subjects. It was presumed that these characteristics of the subjects were to be homogeneous at the pre-experimental stage of the investigation.

ii. Control of situation variance –

This variable was controlled by holding the situation of the experiment constant therefore; all the environmental conditions operating in the experimental situation were kept similar. The environmental variables includes all the physical aspects of experimental situation e.g. temperature, humidity, noise and lighting level and time.

iii. Control over sequence relevant –

This variable was controlled by keeping the presentation of testing and instruction in PM constant by counter balancing method.

(3) SAMPLE

A purposive sample of 160 students was drawn from the leading Government Senior Secondary Schools of Delhi. The sample was divided into two groups each of 80 students. One of these groups served as experimental (P.M. practice) while second one served as control (Normal activity) (Fig-4). All the subjects were male with age ranging from 15-18 (an average age of 16.5) years taken from class 11th standard (commerce sections) from Government Schools of Delhi and their economic status was middle economic level. Each group was given its respective experimental treatment for an equal amount of time.
Assignment of Intervention

Subjects of the experimental group were given the training of Preksha Meditation as an intervention by the investigator himself. The subjects practiced P.M. regularly for 40 minutes daily for the period of six months under the direct supervision of the investigator. The subjects of the control group were not given any specific task rather they were doing their daily routine activities as usual.

(4) TESTS

The following Standardized Psychological tests were used in this investigation:

(1) **Bisht Battery of Stress Scales (BBSS) (1987)** and its manual by Abha Rani Bisht (1987) and its manual. In this scale there are 13 areas of stress. In this investigation five areas of stress were taken, these areas are - *SAchS, SAS, SPS, SIS and SFS*. In this battery stress of each area is conceptualized as having four components, viz. (a) frustration,
(b) Conflict, (c) Pressure, (d) Anxiety. The reliability of the battery is significant at 0.05 level and validity of the scale having content validity and item validity.

(2) Pati’s ‘Inferiority’ Questionnaire and its manual (1976), Which consist of 20 items related to the feeling of inferiority in various areas like family, inter-personal relations, occupation, finance, physique etc. Some of the questions indicate the presence of inferiority feeling when these answered negatively, and are given scores accordingly. Questions were asked in the manner of ‘Yes’ or ‘No’. The reliability of the test is 0.920 and validity of the test is 0.717. These are sufficiently high reliability and validity coefficients.

(3) Pati’s Insecurity Questionnaire and its Manual (Hindi Version by Pati, 1976). This questioner consists of 20 items related to the feeling of insecurity is seen in various areas. Each questioner of this test has two options i.e. ‘Yes’ or ‘No’. The raw scoring and its conversion in weighted scores were carried out as per manual of the test. The reliability of the test is 0.936 and validity of the test is 0.713. These are sufficiently high reliability and validity coefficients.

(5) PROCEDURE

This investigation was carried out in the following manner:

(a) Measurement at Pre - experimental stage

Before to given any intervention, subjects of both the groups were administered on the aforesaid psychological tests to see the homogeneity, if any, on said variables of the subjects of both the group. This stage of testing is called as pre-experimental stage.
(b) Measurement at experimental post – stage - I

As stated earlier that subjects of the experimental group were assigned the intervention of P.M. practice. The subjects practiced this technique for two months, 40 min./day regularly. Subjects of the control group were doing their normal routine activity and no specific task was allotted to them. Subjects of both the groups were re-administered on the earlier referred psychological tests. This stage of testing was called the Post - stage - I of the experimental stage.

(c) Measurement at experimental post - stage - II

Subjects of both the groups were re-administered by the above-mentioned psychological tests after six months of their intervention. As mentioned earlier these Subjects of the experimental group were practicing P.M. while subjects of the control group were doing their daily routine activities for six months. This stage of testing is called the Post - stage - II of the experimental stage.

Instruction in P.M. training

The investigator himself taught the technique of P.M.. The investigator is a trained instructor and has sound and comprehensive knowledge of P.M. technique. He has conducted many programmes of teaching of P.M. technique in Delhi.

(6) STATISTICAL DESIGN

Any adequately designed experimental study assumes a backup of appropriate statistical design. The experimental design represents a method of scientific data collection while the statistical design represents a method of data analysis whereby inference drawing and
hypothesis testing become possible. The whole exercise is developing an adequate design is like creating a balance between these two sides of coin or research design (c.f. Galtung, 1969a, pg. 430-443 Edward, 1971; Siegal, 1956 pg. 18-20). The statistical analysis of the data will be made in two steps:

**Inter – group comparison** –

To evaluate the effect of P.M. on dependent variables of experimental on subjects of vis-à-vis the effect of normal activity on the dependent variables of the subjects of control group, the inter-group comparison were made. For this purpose ‘t’ test with significant criteria of \( \alpha = \text{or} < .05 \) was be applied significantly. Similar strategy was applied for control group.

**Intra – group comparison** –

To evaluate the amount of changes in dependent variables yielded by P.M. or normal activity the same subjects of both the groups will be compared with themselves at their different experimental stages (intra-subjects comparison). For this comparison the Sandler’s ‘A’ test with \( \alpha = \text{or} < .05 \) will be applied.

Statistical design is illustrated as bellow. –

**Inter-group comparison**

\[
\begin{align*}
\text{YEb} & \times \text{YCb} \\
R & \quad \text{YEa1} \times \text{YCa1} \\
& \quad \text{YEa2} \times \text{YCa2}
\end{align*}
\]
**Intra-group comparison**

**Experimental Group**

<table>
<thead>
<tr>
<th></th>
<th>YEb</th>
<th>x</th>
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<tbody>
<tr>
<td>R</td>
<td>YEb</td>
<td>x</td>
<td>YEa2</td>
<td></td>
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</tbody>
</table>

**Control Group**

<table>
<thead>
<tr>
<th></th>
<th>YCb</th>
<th>x</th>
<th>YCa1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>YCb</td>
<td>x</td>
<td>YCa2</td>
<td></td>
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