CHAPTER III

METHODOLOGY

3.1 Introduction
3.2 Method used for the Study
3.3 Sample and Sampling Technique
  3.3.1 Population
  3.3.2 Sample
  3.3.3 Sampling Procedure
  3.3.4 Control of Extraneous Variables
3.4 Tools of the Study
3.5 Data Collection
3.6 Statistical Tools
3.7 Method of Analysis
CHAPTER III

METHODOLOGY

3.1. Introduction

Research is the systematic application of a family of methods that are employed to provide trustworthy information about problems. Educational research is the systematic application of a family of methods that are employed to provide trustworthy information about educational problems. Most researchers, including educational researchers, undertake their inquiry to gain understanding about some issue or topic that they don’t fully comprehend. Having a stake in the outcome of the research makes conducting research more interesting and useful for the researcher (Gay, & Airasian, 2000, p. 3).

This chapter describes elaborately the procedure used by the researcher in order to conduct this research study. This chapter deals with the following sub – topics:

- Method used for the study
- Sampling
- Tools for the study
- Data collection
- Statistical tools
- Method of Analysis.

3.2. Method used for the Study

In due consideration of the nature of the problem, an appropriate method was selected for this research study. With regard to the problem statement the researcher desired to find out the relationship of AA and selected AF i.e. H/FA, SA, P/EA, EA & HA among the Urban and the Rural adolescent students.

If you seek to determine what percentage of the population has a certain characteristic, holds a certain opinion, or engages in a particular behavior, then a descriptive survey is used (Smith & Davis, 1997, p. 84).

Hence a descriptive survey method was being adapted for this study. The survey was conducted exclusively for the tenth standard students in various government recognized unaided secondary schools of the selected urban and rural localities according to the north,
south, east and west zones of Pune district. It helped the researcher to gain valid information about the topic concerned from the opinions of the adolescent students. The research method used for this study has enabled the researcher to find out the relationship between the variables and compare the boys and girls in both the localities (urban & rural) in Pune district.

3.3 Sample and Sampling Technique

3.3.1 Population

A population is any group of individuals who have one or more characteristics in common that are of interest to the researcher. The population may be all the individuals of a particular type or a more restricted part of that group (Best & Kahn, 2005, p. 12).

The term population, as used in research, refers to all the members of a particular group. It is the group of interest to the researcher, the group to whom the researcher would like to generalize the results of a study.

A population is a complete set of measurements (or individuals or objects) having some common observable characteristics (Elmes, Kantowitz, & Roediger, 2006, p. 375).

According to Lathrop (1969, p. 102), population refers to all of the scores about which we wish to generalize.

The population that the researcher would ideally like to generalize results to is referred to as the target population (Gay & Airasian, 2000, p. 140).

The population of this study includes “all the tenth standard students (boys and girls), studying in the unaided English medium schools in Pune district in selected Urban and Rural localities during the academic year 2008 - 2009.”

The practice of recognizing unaided English medium secondary schools has started around 1977-78 (Joshi, 2001, p. 10).

3.3.2 Sample

A sample comprises of the individuals, items, or events selected from a larger group referred to as a population. The purpose of sampling is to gain information about the population by using the sample. If the sample is well-selected, research results based on it will be generalizable to the population (Gay & Airasian, 2000, p. 121).
A sample refers to a limited portion of any given population (Lathrop, 1969, p. 102).

A sample is any part of a population of individuals on whom information is obtained. It may, for a variety of reasons, be different from the sample originally selected (Fraenkel & Wallen, 2006, p. 107).

A crucial issue in survey research relates to the sample that is surveyed. The researcher wants the sample to be representative of the population for whom the questions are designed. A sample is a subset of a population, and it is what we are usually examining when we compare experimental conditions. Thus we make statistical inferences when we draw a conclusion about an entire population on the basis of only a sample of observations (Elmes, Kantowitz, & Roediger, 2006, p. 97, 375).

A sample is a small proportion of a population selected for observation and analysis. Samples are not selected haphazardly; they are chosen in a systematically random way so that chance or the operation of probability can be utilized. A well-selected large sample is more representative of the population than a well-selected smaller sample (Best & Kahn, 2005, p. 12).

The researcher has taken 10% of the population as the sample for the study.

For descriptive research, it is common to sample 10% to 20% of the population, although this range will change with the size of the population studied. In reality, the appropriate sample size depends on a number of factors such as the specific types of descriptive research involved, the size of the population, and whether data will be analyzed for given subgroups (Gay & Airasian, 2000, p. 134).

i. Simple Random Sampling:

The term sampling, as used in research, refers to the process of selecting the individuals who will participate (e.g., be observed or questioned) in a research study. The process of sampling makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables within a relatively small proportion of the population. The method of sampling used for this study is Simple Random Sampling Method.

A simple random sample is the one in which every member of the target population has an equal chance of being included (Coolican, 1990, p. 26).
The larger a random sample is in size, the more likely it is to represent the population (Fraenkel & Wallen, 2006, p. 95).

A large random sample is likely to be the surest way to have a representative sample. A random sample is one in which each person in the population has the same chance of being sampled (i.e., surveyed) (Elmes, Kantowitz & Roediger, 2006, p. 97). Randomization is a control technique that guarantees that each participant has an equal chance of being assigned to any group in the experiment (Smith & Davis, 1997, p. 114).

Randomness in sampling takes the selection of the sample completely out of the researcher’s control by letting a random, or chance, procedure select the sample. Random sampling involves defining the population, identifying each member of the population and selecting individuals for the sample on a completely chance basis (Gay & Airasian, 2000, p.123, 124).

3.3.3 Sampling Procedure

For the present study the researcher has adapted the simple random sampling technique for collecting the data. A simple random sample is one in which each and every member of the population has an equal and independent chance of being selected. If the sample is large, this method is the best way yet devised to obtain the sample representative of the population of interest (Fraenkel & Wallen, 2006, p. 95).

Firstly, the sample was selected by this method from the respective schools of north, south, east and west zones of Pune district. The total number of unaided English medium schools in Pune district is 209 (173 urban & 36 rural schools) according to the information obtained from the Zilla Parishad - Pune. The researcher selected 10% of the population for the sample i.e. 18 urban and 5 rural schools from the north, south, east, west zones of Pune district. According to the availability of the schools, 2 schools from the north, 6 from the south, 2 from the east and 8 from the west zones of the urban localities were selected for the study, making a total of 18 urban schools. Likewise, 1 school from the north, 1 from the south, 2 from east and 1 from the west zones of the rural localities were selected for the study, making a total of 5 rural schools. Thus a total of 23 schools were selected. However one whole division from each school was selected. The researcher further considered the 10% criterion for the total number of tenth standard students from the selected schools. Based on the record of the number of students as obtained from the
Zilla Parishad, Pune, the total number of students in the urban schools was 9078 from which 908 students were to be selected. Likewise, the total number of students in the rural schools was 1277 from which 128 students were to be selected. The required students for the study was supposed to be 1036 (908+128), both urban & rural as per the 10% criterion but for this study the researcher selected a total sample of 1119 students, both from the urban and rural schools (1119 = 924 + 195).

Adolescence is a crucial period in the life span of an individual, as it represents the culmination of childhood and an intimation of the adult who is to be (Jersild, Brook & Brook, 1978, p. 4, 5).

As Gallagher and Harris (1961), rightly pointed out that adolescents today encounter difficulties and more challenges in life than previous generations, yet they are provided less guidance and intervention for their personal development, hence the researcher selected the tenth standard students as they are in the peak stage of adolescent period and need to be rightly motivated and directed to enhance their AA and their future. Adolescence is the period where it is important for the adolescent to gain independence from his parents and gain acceptance from his peers. So to the vitality of the adolescents, within bounds, and to prepare them to take on the roles of responsibility and maturity in future, the adolescents and their various problems need to be studied (Joshi, Gupta & Tomar, 2009, p. 11).

There are many problems that beset an adolescent who has difficulty in his adjustment. Hence there is a need to study the adolescents and learn more about his needs, his problems, his interests, his likes and his dislikes (Malm & Jamison, 1952, p. 10, 11).

The researcher selected the urban and the rural localities to improve the cultural aspects, find adolescents’ interests and capabilities and direct them in their studies.

The researcher selected the government recognized unaided schools because the researcher was curious to find the various problems faced by these students.

The researcher selected English medium schools to enable more efficient administration of questionnaire and to overcome any communication barriers.
Figure. III-1: Distribution of the Sample for the Present Study
(18 Urban Schools in Pune District)
Figure III-2: Distribution of the Sample for the Present Study
(5 Rural Schools in Pune District)
3.3.4 Control of Extraneous Variables

In order to prevent threat to internal validity of the study, the researcher has tried to control the effect of the extraneous variables as mentioned below:
1. Age: The adolescents selected for the study belong to the age group of 15 – 16 years.
2. School: The researcher selected only the government recognized unaided English medium schools for the study.
3. Standard: Only tenth standard (S.S.C.) students were selected for the study.
4. Division: Only one division from each school was selected.
5. Testing: Same questionnaire was given to all the students of the respective schools.

3.4 Tools of the Study

With due consideration of the topic concerned, adjustment inventory tool was used for the study.

1. Adjustment Inventory:

   The Adjustment Inventory was developed by M. N. Palsane (1977, p.1-3). He stated that adjustment is the relationship between the individual and his environment. The assessment of adjustment status in the different areas allows location of specific maladaptations of an individual. This inventory has been designed for use with persons of high school and college ages. It is suitable for both the sexes.

   It is of great help in counseling students with adjustment problems in different areas like H/FA, SA, P/EA, EA and HA. To make the individual understand and solve his problems, it is essential to measure his adjustment levels and to find out his maladjustments in different areas. The inventory also is helpful to the parents and the teachers to understand the behavior of the children under their care and contribute in the development and enhancement of their personality adjustment.

   The inventory is further useful for the purposes of routine student assessment, research investigation, laboratory demonstration, and so on.
a). Description of each area of adjustment:

i. Home and family adjustment:

The inventory consists of statements regarding the individuals home adjustment i.e. his relations with his parents, siblings and their attitude toward him, his position in the home, and whether he is satisfied with the various characteristics of his family. Individuals scoring high tend to be unsatisfactorily adjusted to their home surroundings. Low scores indicate satisfactory home adjustment.

ii. Social adjustment:

Adjustment in social area means the person’s relations with other individuals and social institutions. The statements in this area consists of whether the person is very popular, prefers few or more friends, likes to be social and friendly with strangers, is the centre of attraction and life of the parties, etc. Individuals scoring high tend to be submissive and retiring in their social contacts. Individuals with low scores are good in social contacts.

iii. Personal and emotional adjustment:

Statements on personal adjustment are related to the personal and emotional poise of people. Emotional adjustment covers fluctuations of mood, feelings of guilt, worry, loneliness, day – dreaming, excitability, calmness, control over emotions, etc. This area measures emotional maturity. High score indicates that the person is emotionally unstable. Persons with low scores tend to be emotionally stable.

iv. Educational adjustment:

Statements in this area are concerned with his education whether he is satisfied with it or not, what improvements he wants to suggest and do, whether he wants to take higher education, etc. It also covers the students’ relations with the teachers, the administrators and also the co-students. High score indicates difficulties in adjustment in this area, while low score indicates a better functional relationship.
v. Health adjustment:

This area is concerned with the individual’s health problems. It covers whether he suffers from any chronic diseases, pains and aches, etc. High scores indicate unsatisfactory health adjustment, low score indicates satisfactory adjustment.

b). Scoring:

There are 5 scoring stencils for the 5 scales. By supervising each one on the answer sheet in such a way that the item numbers 1 and 375 can be seen through the punched holes of the stencils, and counting the cross marks through the remaining punched holes, a score on a specific scale can be obtained.

c). Reliability:

It refers to the consistency of the measures of behavior (Elmes, Kantowitz, & Roediger, 2006, p. 170).

It is the extent to which a test or inventory is consistent in its evaluation of the same individuals (Smith & Davis, 1997, p. 91).

With a sample of 200 pre – university students (both boys and girls together) the test – retest (with an interval of four weeks) reliability of the various scales was as under:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Vtt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home / Family</td>
<td>.83</td>
</tr>
<tr>
<td>Personal / Emotional</td>
<td>.89</td>
</tr>
<tr>
<td>Social</td>
<td>.85</td>
</tr>
<tr>
<td>Educational</td>
<td>.93</td>
</tr>
<tr>
<td>Health</td>
<td>.79</td>
</tr>
</tbody>
</table>

d). Validity:

It is the extent to which a test or inventory measures what it is supposed to measure (Smith & Davis, 1997, p. 90).

It refers to the best available approximation to the truth of propositions (Cook & Campbell, 1979, p. 37, cited by Elmes, Kantowitz, & Roediger, 2006, p. 164).
Independent validity study is yet to be carried out in case of the entire scales. However, the content validity has been ensured by reference to the other scales of adjustment as well as to the concept of the adjustment in different areas chosen for assessment. Item-analysis was carried out scale-wise on the basis of a statistical index of item-total consistency (chi square). This is an index of item validity. It can therefore be said that the different scales of the inventory are internally consistent and homogenous. Further data on cross-validation, is however, not available at present.

**e). Instructions:**

The following were the instructions given to the students:

You are perhaps interested in knowing more about your personality. If after reading the instructions, you answer truthfully and in the appropriate way, you are likely to know much about yourself. The following statements are in regard to your day-to-day life. They are not related to ethical values or intelligence but to your personality and the main purpose behind this is to study student life. Your answers will be kept confidential and would not be misused. You will be given a questionnaire and an answer sheet. Read each statement carefully. Answer ‘true’, ‘false’ or ‘undecided’ against each statement number in the answer sheet. If the statement is true of you, make a crossmark (X) on ‘T’ (True) against the number.

Corresponding to the number of the statement if the statement is not true of you, make a crossmark (X) on ‘F’ (False). If you are not sure whether or not the statement is applicable to you, make a crossmark on? (Undecided) Avoid the use of the column for undecided. (Please read these instructions again).

First, write your name and the rest of the information on the answer sheet. If you are in doubt about the way in which to write the answers, please ask the supervisor. Answers must be written only in the answer sheet. Do not write anything in this booklet. Please answer truthfully.

There is no time-limit, but try to answer as quickly as possible.
Administration of the Inventory:

The subjects were instructed to be seated comfortably and as far as possible not have a chance to talk to each other and glance at their answers. The room was well ventilated.

By explaining the purpose of the test, the supervisor tried to get a full co-operation of the students.

The inventory is self-administering. All the instructions were printed on the front cover page of the inventory. The instructions were read out to the students and explained to them whatever is necessary. The following points were emphasized:

1. The results are useful only if the subjects give honest answers.
2. Answer sheet is separate and all the answers be marked in it as per instructions. No marks should be made in the test booklet.
3. The needed bio-data be filled on the answer sheet. The supervisor should see this personally.
4. There is no time-limit, but the subjects should work as fast as possible.
5. The answers of the individuals will be kept confidential.
6. If the subjects have difficulty in understanding the meaning of the words or statements, the supervisor may be consulted.
7. The use of the separate answer sheet be properly explained and demonstrated on the blackboard.
8. The answer - category of (?) or undecided be used very sparingly.

After the test is over, the answer sheet as well as the test – booklet of every subject was collected. The subjects were not allowed to walk away with the materials. The students were very cooperative throughout the study. They were very keen and excited about the entire study. The students completed the questionnaire as per the instructions given.

3.5 Data Collection

The data was collected by administering the Adjustment Inventory questionnaire to the students and getting the items marked on a separate answer sheet. The scoring was done on the separate scoring key provided in the Adjustment Inventory.
Academic scores (AS) that are the average score achieved by students in the board examination of that particular year of study were collected.

Figure III-3: Structure showing Procedure of the Study

PROCEDURE

Selection of Appropriate Method

Survey of Schools

Selection of Population

Selection of Sample

Selection of Tools

Administration of the Questionnaire

Data Collection

Data Analysis

Interpretation of Data

Summary and Conclusion
3.6 Statistical Tools

Standard statistical procedures of the descriptive and inferential statistics were employed for the analysis of the data. Statistical techniques employed for the present study were Descriptive statistics, Pearson product-moment coefficient of correlation and t-test statistics. The statistical packages used were MS-EXCEL and SYSTAT.

The techniques stated by Best and Kahn (2005, p. 345, 350 & 351) are explained as follows:

1. Descriptive statistics

i. The Mean ($\bar{X}$)

The mean of a distribution is commonly understood as the arithmetic average. The term grade-point average is a mean value. It is computed by dividing the sum of all the scores by the number of scores. In formula form

$$\text{Mean} = \bar{X} = \frac{\sum X}{N}$$

Where $\bar{X} =$ mean

$\sum =$ sum of

$X =$ scores in a distribution

$N =$ number of scores

ii. Variance

The sum of the squared deviations from the mean, divided by N, is known as the variance. The variance formula is

$$V(X) = \frac{\sum (x - \bar{X})^2}{N}$$

$$V(Y) = \frac{\sum (x - \bar{X})^2}{N}$$

Thus, the variance is a value that describes how all of the scores in a distribution are dispersed or spread about the mean.
iii. Standard Deviation (S.D)

It is a measure of spread or dispersion of scores in a distribution. It is also known as the square root of the variance.

The formula is

\[ S.D = \sqrt{\text{V}(X)} = \sqrt{\frac{N \sum X^2 - (\sum X)^2}{N^2}} \]

2. Pearson product-moment coefficient of correlation

Correlation is the relationship between two or more paired variables or two or more sets of data. The degree of relationship is measured and represented by the coefficient of correlation. Positive correlation specifies that for every unit increase/decrease in one variable there is a proportional unit increase/decrease in the other. When a large amount of one variable is associated with a small amount of the other that is for every unit increase/decrease in one variable there is a proportional unit decrease/increase in the other it is negative correlation. When the relationship between two sets of variables is a pure chance relationship, there is no correlation (Best & Kahn, 2005, p. 364).

Correlation coefficient is a single number that represents the degree of relationship between two variables. It can range in value from -1.00 to +1.00. A correlation coefficient of -1.00 indicates that there is a perfect negative relationship between the two variables of interest. A correlation coefficient of +1.00 indicates that there is a perfect positive relationship between the two variables of interest. A zero correlation means that there is little or no relationship between the two variables (Smith & Davis, 1997, p.187).

The correlation coefficient is a statistical tool that can be used to compare measurements taken on 2 different variables in order to determine the degree of relationship between these variables (Chandrakandan & Karthikeyan, 2004, p. 60).

When the data for both variables are expressed in terms of quantitative scores, the Pearson r is the appropriate correlation coefficient to use (Fraenkel & Wallen, 2006, p. 209).

The strength and direction of a correlation are determined by the calculation of the correlation coefficient, or ‘r’ (Elmes, Kantowitz, & Roediger, 2006, p. 369). When both the sets of scores to be correlated are continuous, a Pearson product-moment coefficient (r) is a widely-used statistic (Sommer & Sommer, 1997, p. 279).
The Pearson's product–moment correlation was used to find correlation between variables in the present study. It is denoted by lowercase letter r.

The formula according to Best & Kahn (2005, p. 459) is

\[
\text{Coefficient of Correlation } (r) = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}}
\]

Hence Pearson's product-moment correlation was applied to find the correlation between the variables in the present study.

3. t-test statistics

The test of the significance of the difference between two means is known as \textit{t-test} (Best & Kahn, 2004, p. 328).

\(t\)-test is based on \textit{t}-distribution and is considered an appropriate test for judging the significance of a sample mean or for judging the significance of difference between the means of two samples in case of small sample(s) when population variance is not known (in which case variance of the sample as an estimate of the population variance is used. In case two samples are related, paired \textit{t} – test or difference test is used for judging the significance of the mean of difference between the two related samples (Kothari, 2008, p. 196).

\(t\)-test is used for testing the significance of the difference between means by taking two means at a time (Mangal, 2007, p. 319).

According to Gupta (1995, p. 3.36) given two independent random samples of size \(n_1\) and \(n_2\) with means \(\bar{X}_1\) and \(\bar{X}_2\) and statistical deviations \(S_1\) and \(S_2\), the test statistic can be calculated as follows:

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{S} \times \sqrt{\frac{n_1n_2}{n_1 + n_2}}
\]

Where
\(\bar{X}_1\) = mean of the first sample
\(\bar{X}_2\) = mean of the second sample
\(n_1\) = number of observations in the first sample
\(n_2\) = number of observations in the second sample
S = combined standard deviation

If the calculated value of |t| exceeds $t_{0.05}$, the difference between $\bar{X}_1$ and $\bar{X}_2$ is significant at 5% level (Gupta, 1995, p. 3.33).

3.7 Method of Analysis

In the present descriptive survey study the method of analysis comprises of the mean, standard deviations and coefficient of correlation values. The pattern of relationship among the variables was described by using the technique of correlation coefficient. The significance of the difference between means of two samples at a time was known by the $t$-test.