CHAPTER-III
METHODOLOGY

3.1 Overview:

The contribution of the research work in the development of the human life is very important. To keep pace with the rapid changing environmental situation of the world, the society and remain tanned with them researches in this field are very important. The use of the word research is amide in the context of scientific research. In any discipline whether it is social science, science or commerce, methodology plays an important role in carrying out the research studies systematically and objectively. Research refers to a scientific and systematic investigation especially through search for new facts in any branch of knowledge. It is a systematized effort to find out the solution of the problem.

“One person may be a scientist without doing any research but nobody can do research without being a scientist.” - J.W. Best

The scientific approach is one of the modes by which people have attempted to understand their environment and themselves. The scientific approach is grounded on a set of fundamental assumptions that are unproved.

Scientific knowledge is a knowledge proven by both reason and experience (observation) logical validity and empirical verification are the criteria employed by scientists to evaluate claims for knowledge. These two criteria are translated in to the research activities of scientists through the research process.

The research process or method can be examined as the overall scheme of scientific activities in which scientists engage in order to produce knowledge; it is the paradigm of scientific inquiry. The research process consists of six principal stages:

- Problem
- Hypothesis
- Research design
- Sampling techniques
- Measurement/tools
Data collection

Data analysis

A body of practices, procedures, and rules used by those who work in a discipline or engage in an inquiry is a set of working methods. The present study aimed at studying level of Anxiety, Stress and Depression among diabetic type-II patients in relation to their Gender, Locality and Age. For this purpose, descriptive method of research was used in the conduct of the present study. It was required to select a representative sample of diabetic type-II patients and the necessary tool for collecting the requisite information. The relevant details regarding these aspects of the study are given as under:

3.2 Statement of Problem:

A Problem is an intellectual stimulus calling for an answer in the form of scientific enquiry. It is a question about relation among the variables. Research problems can be derived from observation, intuitively or from a combination of these. Probably, the greatest source of problem is the professional literature.

The present investigation attempts to “A Study of Anxiety, Depression and Stress among Diabetic Patients”

3.3 Significance of the study:

The investigator has chosen the present research problem as “A Study of Anxiety, Depression and Stress among Diabetic Patients” because of its relevance. The incidence of diabetes mellitus is ever increasing globally. Individuals with diabetes mellitus may have concurrent mental health disorders and are shown to have poorer disease outcomes. The researches in this field are required with conditions like diabetes, hypertension and anxiety disorders because it is evident from the various survey reports based on Indian Health Ministry that 10% of adults suffering from hypertension and the country is home to 25-30 million 49 diabetics. The number of death from heart attack is projected to increase to two million in 2010.
The researcher believes that anxiety affects patient’s response to the feeling of discomfort, pain and whole health behavior, with patients who are anxious about their health being more likely to consult physicians and report increased health problems. Another important aspect of this research work is stress. Stress can have serious health implications, increasing the risk of exacerbating medical conditions such as diabetes, hypertension and depression. Stress is unavoidable, that is why it is globally accepted that in the modern era, stress plays significant role in leading or causing various fatal diseases like chronic diabetes, hypertension. Diabetes, anxiety, and depression, are frequent pathologies, and each constitutes a public health problem in our country. These pathologies are known to be more frequent in elderly people. Whereas diabetes is easy to detect and diagnose, this is not always the case with anxiety and mood disorders.

3.4 Objectives:

The following objectives were formulated for present research work –

1. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to gender (Male and Female).
2. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Locality (Rural and Urban).
3. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Age groups (30-45 Yrs. and 50-65 Yrs.).
4. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Gender and Locality.
5. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Gender and Age groups.
6. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Locality and Age groups.
7. To assess and examine the level of the Anxiety, Depression and Stress among Diabetic patients with reference to Gender, Locality as well as Age groups.

8. To assess the relationship among anxiety, depression and stress for various groups of diabetic patients.

3.5 Operational Definitions:

Variables which are used in the present study are defined below in separate captions.

**Anxiety:** Anxiety is a psychological and physiological state characterized by cognitive, somatic, emotional and behavioural components. These components combine to create an unpleasant feeling that is typically associated with uneasiness, fear or worry. Anxiety is a generalized mood or state that occurs without an identifiable triggering stimulus. Anxiety is a normal reaction to stress. It may help a person to deal with a difficult situation, for example at work or at school, by prompting one to cope with it. When anxiety becomes excessive, it may fall under the classification of an anxiety disorder.

**Depression:** In the present study, the term “Depression” refers to symptoms of depression such as hopelessness and irritability, as well as physical symptoms that were measured by the Beck Depression Inventory, Beck & Beamesdefeber, (1974).

**Stress:** Stress is a normal physical response to events that make you feel threatened or upset your balance in some way. When you sense danger—whether it’s real or imagined—the body’s defenses kick into high gear in a rapid, automatic process known as the “fight-or-flight-or-freeze” reaction, or the stress response.

**Diabetes:**
Type 1 diabetes results from the body's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause is unknown.

Type 2 diabetes begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The primary cause is excessive body weight and not enough exercise.

Patient with Diabetes In the present study, “Patients with Diabetes” implies to those who suffer from type 2 diabetes who are newly diagnosed (less than three months).

3.6 Hypothesis:

Such statements which predict about the result of the research are called hypotheses. A hypothesis is the tentative conclusion intended for verification. Hypotheses means suggested explanation for group of facts, which is formulated by the investigator (before collecting data) either as a basis of further verification or is likely to be true.

For the present investigation following hypotheses were formulated.

- \( (H_0_1) \) There will be no significant difference between Male and Female diabetic patients in relation to Anxiety level.
- \( (H_0_2) \) There will be no significant difference between Rural and Urban diabetic patients in relation to Anxiety level.
- \( (H_0_3) \) There will be no significant difference between Age group-I (30-45 Yrs.) and Age group-II (50-65 Yrs.) diabetic patients in relation to Anxiety level.
- \( (H_0_4) \) There will be no significant interaction effect between Gender and Locality of diabetic patients in relation to Anxiety level.
- \( (H_0_5) \) There will be no significant interaction effect between Gender and Age-groups of diabetic patients in relation to Anxiety level.
 (H₀₆) There will be no significant interaction effect between Locality and Age-groups of diabetic patients in relation to Anxiety level.

 (H₀₇) There will be no significant interaction effect among Gender, Locality and Age-groups of diabetic patients in relation to Anxiety level.

 (H₀₈) There will be no significant difference between Male and Female diabetic patients in relation to Depression level.

 (H₀₉) There will be no significant difference between Rural and Urban diabetic patients in relation to Depression level.

 (H₀₁₀) There will be no significant difference between Age group-I (30-45 Yrs.) and Age group-II (50-65 Yrs.) diabetic patients in relation to Depression level.

 (H₀₁₁) There will be no significant interaction effect between Gender and Locality of diabetic patients in relation to Depression level.

 (H₀₁₂) There will be no significant interaction effect between Gender and Age-groups of diabetic patients in relation to Depression level.

 (H₀₁₃) There will be no significant interaction effect between Locality and Age-groups of diabetic patients in relation to Depression level.

 (H₀₁₄) There will be no significant interaction effect among Gender, Locality and Age-groups of diabetic patients in relation to Depression level.

 (H₀₁₅) There will be no significant difference between Male and Female diabetic patients in relation to the Stress level.

 (H₀₁₆) There will be no significant difference between Rural and Urban diabetic patients in relation to the Stress level.

 (H₀₁₇) There will be no significant difference between Age group-I (30-45 Yrs.) and Age group-II (50-65 Yrs.) diabetic patients in relation to the Stress level.

 (H₀₁₈) There will be no significant interaction effect between Gender and Locality of diabetic patients in relation to the Stress level.

 (H₀₁₉) There will be no significant interaction effect between Gender and Age-groups of diabetic patients in relation to the Stress level.
There will be no significant interaction effect between Locality and Age-groups of diabetic patients in relation to the Stress level.

There will be no significant interaction effect among Gender, Locality and Age-groups of diabetic patients in relation to the Stress level.

There will be a positive association among Anxiety, Depression and Stress in diabetic patients.

There will be a positive association among Anxiety, Depression and Stress in male diabetic patients.

There will be a positive association among Anxiety, Depression and Stress in female diabetic patients.

3.7 Research Design:

There are several methods of data collection. A systematic and scientific methodology, which is referred to as research design (Festinger and Katz, 1970), determines the correctness and accuracy of the obtained results. The most valid and reliable method of scientific investigation is one characterized by observing the effect of experimentally manipulated variables while the extraneous, systematic or relevant variables are under control and other variables possibly introducing errors are minimized, if not totally eliminated.

The present study was not possible experimentally because of nature of investigation. The researcher has adopted the quantitative descriptive research to gain the objectives of the present study. Quantitative Descriptive research includes data collection through questionnaire quantification of the responses of the respondents and fact findings. Quantitative Descriptive research involves collecting data in order to test hypothesis or to answer questions concerning the current status of the subjects of the study.

All most all research designs are complex. When, the researcher wants to study simultaneously two or more independent variables then factorial design has to be selected by the investigator. A factorial design is the most common way to study the effect of two or more independent variables. In a
factorial design, all levels of each independent variable are combined with all levels of the other independent variables to produce all possible conditions.

For the present research work to test the level of Anxiety, Depression and Stress among diabetic patients in relations to Gender, Locality as well as Age a test developed by Bhatnagar, P. (2011) was used. Scores of the tests were analyzed by 2x2x2 Analysis of Variance.

**Table 1.1: Showing 2 X 2 X 2factorial design of the present**

<table>
<thead>
<tr>
<th></th>
<th>Male (A-1)</th>
<th>Female (A-2)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AG-I (30-45 Yrs.)</td>
<td>AG-II (50-65 Yrs.)</td>
<td></td>
</tr>
<tr>
<td>Rural (B-1)</td>
<td>40</td>
<td>40</td>
<td>160</td>
</tr>
<tr>
<td>Urban (B-2)</td>
<td>40</td>
<td>40</td>
<td>160</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>80</td>
<td>80</td>
<td>320</td>
</tr>
</tbody>
</table>

A-Gender: A1-Males, A2-Females  
B-Locality: B1-Rural, B2-Urban,  
C- Age Groups: C1-Age Group-I (30-45 Yrs.), C2-Age Group-II (50-65 Yrs.)

**3.8 Variables:**

The independent variable as the explanatory variable, it is presumed cause of changes in the values of the dependent variable, the dependent variable is the expected outcome of the independent variable. Dependent variables are also termed criterion variables and independent variables, as predictor variables.

In the present investigation Gender, Locality and Age groups were taken as Independent Variables whereas level of anxiety, depression and stress were selected as Dependent Variables.

**Table:-1.2 Showing Variables of the study**
Methodology

Chapter - III

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name of Variables</th>
<th>Types of Variables</th>
<th>Grade of Variables</th>
<th>Name of the levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td>Independent</td>
<td>2</td>
<td>1. Male 2. Female</td>
</tr>
<tr>
<td>2</td>
<td>Locality</td>
<td>Independent</td>
<td>2</td>
<td>1. Rural 2. Urban</td>
</tr>
<tr>
<td>3</td>
<td>Age Groups</td>
<td>Independent</td>
<td>2</td>
<td>1. AG-I (30-45 Yrs.) 2. AG-II (50-65 Yrs.)</td>
</tr>
<tr>
<td>4</td>
<td>Anxiety</td>
<td>Dependent</td>
<td>1</td>
<td>Anxiety</td>
</tr>
<tr>
<td>5</td>
<td>Depression</td>
<td>Dependent</td>
<td>1</td>
<td>Depression</td>
</tr>
<tr>
<td>6</td>
<td>Stress</td>
<td>Dependent</td>
<td>1</td>
<td>Stress</td>
</tr>
</tbody>
</table>

3.9 The universe of the Study:

A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristics or traits. “The entire group from which the sample is selected, called as population or universe” P.V. Yung (1966). The universe of the study is Type-II diabetic patients of Anand, Ahmedabad & Vadodara districts of Gujarat State. It was decided to use stratified random sampling. For this purpose, it was decided to select 3 districts on random basis for the selection of sample equal representation to rural and urban areas.

3.10 Sample:

A sample is simply a subset of the universe. The concept of sample arises from the inability of the researchers to test all the individuals in a given population. The sample must be true representative of the population from which it was drawn and it must have good size to warrant statistical analysis. The main function of the sample is to allow the researchers to conduct the study to individuals from the population so that the results of their study can be used to derive conclusions that will apply to the entire population. It is much
like a give-and-take process. The population “gives” the sample, and then it “takes” conclusions from the results obtained from the sample.

For the present research work researcher has selected 320 diabetic patients (Type-II) age range between 30 to 65 years with the help of purposive random sampling techniques. Further they were classified into 2 groups i.e. Male (160) and Female (160). The categorization and details of sample selection are given in following table.

**Table:-1.3 Showing categorization and details of sample**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AG-I (30-45 Yrs.)</td>
<td>AG-II (50-65 Yrs.)</td>
<td>AG-I (30-45 Yrs.)</td>
</tr>
<tr>
<td>Rural</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Urban</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

**Criteria**
The following inclusion /exclusion criteria were followed in the present study:

**Inclusion Criteria**

A. Only new diagnosed (less than three months) diabetic patients with type 2 diabetes were selected.

B. All the patients were selected between age ranges of 30 to 65 years.

C. The patients must have at least secondary school education.

**Exclusion Criteria**

A. The patients should not have any other problem (complications) with diabetes.
B. The patient should not have any Mood Disorders due to Bipolar disorder, Mood disorder and Substance-induced mood disorder.

C. The patient should not have any Anxiety disorders due to Generalized Anxiety Disorder and Social Anxiety Disorder.

D. The patients should not have any other acute / chronic illness.

3.11 Tools:

The tools for the present study were selected in a manner to achieve an optimum level of confidence by the investigator for the objectives of the study. Since the study principally contained three variables namely values, personality dimension, mental health, therefore such tools were decided to be choosing as could validity and reliably measure these variables. The investigator after screening a number of available tests finally selected the following tool to collect the data:

Anxiety, Depression and Stress Scale: - This scale was developed by Bhatnagar, P. et al. (2011) and published by National Psychological Corporation. This scale consists 48 items divided into Three Sub Scale –

I. Anxiety,

II. Depression and

III. Stress.

This scale was administered to 1177 adults. This scale consists satisfactory validity and reliability.

3.12 Procedure of Data Collection:

In the present study, the investigator employed 'survey method' of research. Descriptive research studies were designed to obtain pertinent and precise information concerning the current status of any phenomena (Garrett, 2006).
The investigator with great interest planned the data collection soon after selecting the sample and finalizing the research. General and private hospitals were approached and requested to grant permission for data collection. All of them asked about aims and objectives of this research work. After fulfilling some official formalities and conditions, arrangements to meet the patients of diabetic (Type-II) were made. Personally established good rapport with the subjects, only new diagnosed (less than three months) type-2 diabetic patients were selected.

Each subject was given a questionnaire and requested to read statements one after the other and give their responses in response column by choosing appropriate response for each statement, whichever they felt correct and appropriate. The expectations of the questionnaire from the subjects were explained in detail. The investigator clarified and explained the doubts if they had any. There was no limitation of time to respond. The respondents were requested not to leave any item unanswered and incomplete.

3.13 Scoring:

Scoring of the obtained data was done with help of respective manuals available for the tests in the present study. The data have been arranged in the respective tables according to the statistical tests applied.

3.14 Statistical Analysis:

Descriptive statistical measures like mean and standard deviation were used to see the level of Anxiety, Depression and Stress among individuals with diabetes type-II of according to Gender, Locality and Age. ANOVA (Analysis of variance) factorial design 2 x 2 x 2 were computed to determine whether there is a significant mean difference between various pairs of diabetic patients. Pearson’s correlation coefficient was computed to provide information whether the dependent variables correlate with each other and to measure the degree of relationship between variables.