CHAPTER – III

METHODOLOGY

3.1 Introduction: -

Psychologists use the scientific method to gain knowledge about human and animal behavior. The scientific method differs from nonscientific (“everyday”) approaches to gaining knowledge. There is one way in which psychology has not changed in the 100 years or so of its existence: the scientific method is still emphasized as the basis for investigation. The founding of Wundt’s laboratory marked the beginning of the formal application of the scientific method to problems in psychology. This method is not identified with particular kinds of equipment, nor is it associated exclusively with specific research procedures. The scientific method is something abstract. It is an approach to knowledge that is best described by distinguishing it from what might be called nonscientific or “everyday” approaches to knowledge.

Psychology’s official beginning is marked by the establishment, in 1879, of a formal psychology laboratory in Leipzig, Germany, under the direction of Wilhelm Wundt. With this beginning came the first applications of the scientific method to problems of psychology. As an approach to knowledge, the scientific method is characterized by a reliance on empirical procedures, rather than intuition, and by an attempt to control the investigation of those factors believed responsible for a phenomenon. Those factors that are systematically controlled in an attempt to determine their effect on behavior are called independent variables. The measures of behavior used to assess the effect (if any) of the independent variable are called dependent variables.

Scientists seek to report result in an unbiased and objective manner. This goal is enhanced by giving operational meaning to concepts. Scientists also seek to measure phenomena as accurately and precisely as possible. Measurement involves
both physical and psychological measurement. Scientists seek both validity and reliability of these measures.

Hypotheses are tentative explanations of events. To be useful to the scientist, however, hypotheses must be testable. Hypotheses that lack adequate definition, that are circular, or that appeal to ideas or forces outside the province of science are not testable. Hypotheses are often derived from theories. More than anything else, scientists are skeptical. A skeptical attitude is not always found among nonscientist, who may rush to accept "new discoveries" and extraordinary claims.

The scientific method is intended to meet three goals: description, predication, and understanding. Both quantitative and qualitative researches are used to describe behavior. Observation is the principal basis of scientific description. When two measures correlate, we can predict the value of one measure by knowing the value of other. Understanding is achieved when the causes of a phenomenon are discovered. This requires that evidence be provided for covariation of events, that a time-order relationship exists, and that alternative causes be eliminated. When two potentially effective variables covary such that the independent effect of each variable on behavior cannot be determined, we say that our research is confounded. Confounding must be avoided if we wish to produce a study with internal validity. The external validity of a study involves the extent to which research results can be generalized to different populations, settings, and conditions.

Scientific theory construction and testing provide the bases for a scientific approach to psychology. Theories have the important function of guiding research and organizing empirical knowledge. Finally, many ethical questions are raised by psychological research; it is important that the science of psychology carried out according to the highest standards of scientific integrity. Getting started doing psychological research requires us to make several important decisions, including those about what topic to investigate, what is the specific question which wish to
answer, and is question a good one? Finally, it is must decide exactly how to do the research.

3.2 **Rational of research problem:**

Each and every research process starts with a problem; the basic element of research, which helps to transform an idea into concrete research operations. A problem is an intellectual stimulus calling for an answer in the form of scientific inquiry. It is a question about relations among variables. Research problem can be derived from a combination of these. Probably, the greatest source of problem is the professional literature. A critical review of the professional literature would familiarize the researches with the state of knowledge, with the problems that others studied, with concepts, theories, and major variables, conceptual and operational definitions and with the research methods used.

At each developmental stage different tasks are to be mastered and roles played effectively. Each developmental stage has its own unique demands to be met by the person. In the present scenario, life has become more and more charged with stresses and strains. These stresses and strain go on increasingly distressing human ecosystem.

In the present investigation, the following problem is selected:

*"To study the comparative Impact of ABO Blood Groups on certain Personality Factors".*

3.3 **Research objectives:**

1. The purpose of this study is to determine whether personality factors are influenced by Blood Groups.
2. To find out whether there are individual difference in terms of Blood Groups.
3. To explore whether Blood Groups affect personality.
4. To find out the relationship between Blood Groups and personality.
5. To suggest the importance of individual’s blood type is predictive of their personality character, and compatibility with others.
3.4 Research hypotheses: -

There is little doubt that hypotheses are important and indispensable tools of scientific research. It is tentative answers to the research problems. It is expressed in the form of relationship between independent and dependent variables. Nearly everyone has proposed hypotheses to explain some human behavior at one time to another. They are tentative conjectures because their veracity can be evaluated only after they have been tested empirically. When a researcher suggests a hypothesis, researcher has no assurance that it will be verified.

Hypothesis can be derived deductively from theories directly from observations, intuitively or form combination of these. Hypothesis is the most powerful tool man has invented to achieve dependable knowledge. They are the predication and even if they are not conformed, they have a power. Negative findings are sometimes as important as positive ones, since they cut down the total universe of ignorance and sometimes point up fruitful further hypothesis and lines of investigation (Mcguigan 1996).

To find out the expected relationship between personality factors and blood groups, the following hypotheses are formulated: -

2. Subjects with AB Blood Group would be more Affectothymiatic, Dominant, and Shrewdness and experience Low Ergic Tension than subjects with A, B and O Blood Groups.
3. Subjects with B Blood Group would possess Higher Scholastic Mental Capacity, more Higher Ego Strength and more Harria, Praxemia than subjects with A, AB and O Blood Groups.
4. Subjects with O Blood Group would possess more Surgency, more Stronger Superego Strength, more Parmia and experience Untroubled Adequacy than subjects with A, B, and AB Blood Groups.

The rationale of hypotheses is based on previous researches of Cattell, R. B. (1934), and Jogawar, V. V. (1997) those reported that personality is quietly associated with blood groups.

3.5 Sample: -

The sample of study was taken from the population of the Aurangabad District, Maharashtra, state of India. The effective sample consists of 400 mature persons who know their blood groups and their age range were 25-47, which were classified equally in four Blood Groups i.e. A, B, AB, and O. The sampling was stratified (a type of probability sampling). The efforts were made to have the sample as representative as possible in terms of gender, education and entire sample were free from all physical and psychosomatic disorders (purely healthy) at least last one year. All the subjects were of similar kind of socio-economic status. Here only blood group association reported on the personality factors, omitting the relations of factor scores to residence, age, social status, national, cultural, and other recorded variables.

<table>
<thead>
<tr>
<th>Table 3.1 The distribution of the effective sample</th>
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<tbody>
<tr>
<td>Blood Groups</td>
</tr>
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<td>A</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

72
3.6 Variables: -

- **Independent variables:** -
  - Blood Groups with four levels i.e. A, B, AB, and O.
- **Dependent variable:** -
  - Sixteen Personality factors measured by 16 PF questionnaire.

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 eliminated.

A variable is a symbol to which numerals or values are assigned. It is a property that takes on different values, i.e. something that varies. Variables can be classified in to several ways. The most important and useful way to categorized variable is ‘Independent variable’ and ‘Dependent variables’. This categorization is highly useful because of its general applicability, simplicity and special importance in conceptualizing and designing research.

The independent variable as the explanatory variable, it is presumed cause of changes, in the values of the dependent variable, the dependent variable is expected outcome of the independent variables, as predictor variables (Nechimas and nechimas, 1976).

The present study was not possible experimentally because of the nature of the investigation. To attain all objectives of the present study, one way ANOVA and post-hoc comparison i.e. LSD – Least Significant Differences were employed on four blood groups for sixteen personality factors to find out the significance differences
between blood groups and personality factors. Thus the present investigation was one way factorial research, in the present investigation blood groups were independent variables and personality factors were dependent variable.

3.8 Operational Definitions of ABO Blood Groups and Personality Factors:

- **ABO Blood Groups**: With the reference to the biological scientific language, in the present study blood groups A, B, AB, O are recognized by ABO blood groups.

- **Personality Factors**: Sixteen Personality factors considered as measures by 16 PF Questionnaire.
3.9 Capsule description of the Personality Factors:

1 Factor A:

- **Low Score Description:**
  > Sizothymia: - People who score low on this factor tend to be stiff, skeptical, cool, reserved, impersonal, detached formal, and aloof. They like things rather than people, working alone, and avoiding compromises of viewpoints. They are likely to be precise and “rigid” in their way of doing things and in their persona standers. In many occupations these are desirable traits. They may tend, at times to be critical, obstructive, or hard

- **High Score Description:**
  > Affectothymia: - Warm, outgoing, kindly, easygoing, participating, likes people – People who score high on this factor tend to be good natured, easygoing, emotionally expressive, ready to cooperate, attentive to people, softhearted, kindly, adaptable. They like occupations dealing with people and socially impressive groups. They are generous in personal relations, less afraid of criticism, and better able to remember names of people.

2 Factor B:

- **Low Score Description:**
  > Lower Scholastic Mental Capacity: - Concrete-thinking, less intelligent – The person scoring low on factor B tends to be slow to learn and grasp, dull, and given to concrete and literal interpretation. This dullness may be simply a reflection on low intelligence, or it may represent poor functioning due to psychopathology.

- **High Score Description:**
  > Higher Scholastic Mental Capacity: - Abstract-thinking, more intelligent, bright – the person who scores high on factor B tends to be quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture, and some with alertness. High scores contraindicate deterioration of mental functions in pathological conditions.
3 Factor C:

- Low Score Description:
  - Lower Ego Strength: Affected by feelings, emotionally less stable, easily annoyed – The person who scores low on Factor C tends to be low in frustration tolerance for unsatisfactory conditions, changeable and plastic, evading necessary reality demands, neurotically fatigued, fretful, easily annoyed and emotional, active in dissatisfaction, having neurotic symptoms (phobias, sleep disturbances, psychosomatic complaints, etc.). Low Factor C score is common to almost all forms of neurotic and some psychotic disorders.

- High Score Description:
  - Higher Ego Strength: Emotionally stable, mature, faces reality, calm – the person who scores high on factor C tends to be emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group morale. This person may be making a resigned adjustment to unsolved emotional problems.

4 Factor E:

- Low Score Description:
  - Submissiveness: Submissive, humble, mild, easily led, accommodating – individuals scoring low on Factor E tend to give way to others, to be docile, and to conform. They are often dependent, confessing, and anxious for obsessional correctness. This passivity is part of many neurotic syndromes.

- High Score Description:
  - Dominant: Dominant, assertive, aggressive, stubborn, competitive, bossy – individuals scoring high on this factor are assertive, self-assured, and independent-minded. They tend to be austere, a law unto themselves, hostile or extra punitive, authoritarian (managing others), and disregarding of authority.
5 Factor F: -

- Low Score Description: -
  ➢ Desurgency: - Sober, restrained, prudent, taciturn, serious – Low score on Factor F tend to be restrained, reticent, and introspective. They are sometimes dour, pessimistic, unduly deliberate, and considered smug and primly correct by observers. They tend to be sober, dependable people.

- High Score Description: -
  ➢ Surgency: - Enthusiastic, spontaneous, heedless, expressive, cheerful – High scores on this trait tend to be cheerful, active, talkative, frank, expressive, effervescent, and carefree. They are frequently chosen as elected leaders. They may be impulsive and mercurial.

6 Factor G: -

- Low Score Description: -
  ➢ Weaker superego strength: - Expedient, disregards rules, self-indulgent – People who score low on this factor G tend to be unsteady in purpose. They are often casual and lacking in effort for group undertakings and cultural demands. Their freedom from group influence may lead to antisocial acts, but at times makes them more effective, while their refusal to be bound by rules causes them to have less somatic upset from stress.

- High Score Description: -
  ➢ Stronger superego strength: - Conscientious, conforming, moralistic, staid, rule-bound – People who score high on this factor tend to be exacting in character, dominated by sense of duty, persevering, responsible, planful, “fill the unforgiving minute”. They are usually conscientious and moralistic, and they prefer hard-working people to witty companions. The inner “categorical imperative” of this essential superego (in psychoanalytical sense) should be distinguished from the superficially similar “social ideal self” of Q3.
7 Factor H: -

- **Low Score Description:** -
  threctia: - Shy, threat-sensitive, timid, ant, intimidated – Individuals who score on this trait tend to be shy, withdrawing, ous, retiring, “wallflowers.” They lly have inferiority feelings and tend to slow and impeded in speech and in essing themselves. They dislike pations with personal contacts, prefer or two close friends to large groups, and given to keeping in contact with all that ing on around them.

- **High Score Description:** -
  Parmia: - Bold, venturesome, inhibited, can take stress – individuals no score high on factor H are sociable, ld, ready to try new things, spontaneous, d abundant in emotional response. Their n-skinnendness” enables them to face are and tear in dealing with people and ueling emotional situations, without tigue. However, they can be careless of tail, ignore danger signals, and consume uch time talking. They tend to be “pushy” d actively interested in the opposite sex.

8 Factor I: -

- **Low Score Description:** -
  Harria: - Tough-minded, self-reliant, no-nonsense, rough, realistic – People who score low on this factor tend to be tough, realistic, “down to earth,” independent responsible, but skeptical of subjective, cultural elaborations. They are sometimes unmoved, hard, cynical, and smug. They tend to keep a group operating on practical and realistic “no-nonsense” basis.

- **High Score Description:** -
  Premsia: - Tender-minded, sensitive, overprotected, intuitive, refined – People who score high on this factor tend to be emotionally sensitive, day-dreaming, artistically fastidious, and fanciful. They are sometimes demanding of attention and help, impatient, dependent, temperamental, and not very realistic. They dislike crude people and rough occupations. In a group, they often tend to slow up group performance and to upset group morale by undue fussiness.
9 Factor L: -

- Low Score Description: -
  Alaxia: - Trusting, accepting additions, easy to get on with – The son who scores low on this factor tends be free of jealous tendencies, adaptable, careful, uncompetitive, concerned about a good team worker. They are open tolerant and usually willing to take a chance with people.

- High Score Description: -
  Protension: - Suspicious, hard to fool, distrustful, skeptical – People who score high on Factor L tend to be mistrusting and doubtful. They are often involved in their own egos and are self-opinionated and interested in internal, mental life. Usually they are deliberate in their actions, unconcerned about other people, and poor team members.

10 Factor M: -

- Low Score Description: -
  Praxernia: - Practical, concerned with own to Earth” issues, steady. – Low score on this factor tend to be anxious to the right things, attentive to practical matters, and subject to the dictation of that is obviously possible. They are concerned over detail, able to keep their ads in emergencies, but are sometimes imaginative. In short, they are pensive to the outer, rather than the inner, world.

- High Score Description: -
  Autia: - Imaginative, absent-minded, absorbed in thought, impractical. – High score of this factor tend to be unconventional, unconcerned over everyday matters, self-motivated, imaginatively creative, concerned with “essentials,” often absorbed in thought, and oblivious of particular people and physical realities. Their inner-directed interests sometimes lead to unrealistic situations accompanied by expressive outbursts. Their individuality can cause them to be rejected in group activities.
11 Factor N: -

- Low Score Description:
  > Artlessness: - Forthright, Unpretentious, Open, Genuine, Artless. - Individuals who score low on this factor have a lot of natural warmth and a genuine liking for people. They are uncomplicated, sentimental, and unvarnished in their approach to people.

- High Score Description:
  > Shrewdness: - Shrewd, polished, socially aware, diplomatic, Calculating. - Individual who score high on this factor tend to be polished, experienced, and shrewd. Their approach to people and problems is usually perceptive, hard-headed, and efficient – an unsentimental approach to situations, an approach akin to cynicism.

12 Factor O: -

- Low Score Description:
  > Untroubled adequacy: - Self-assured, secure, feels free of guilt, untroubled, self-satisfied - Persons with low scores on this factor tend to be unruffled and to have unshakable nerve. They have a mature, unanxious confidence in themselves and their capacity to deal with things. They can, however, be secure to the point of being insensitive to the feedback of others.

- High Score Description:
  > Guilt Proneness: - Persons with high scores on this factor have a strong sense of obligation and high expectations of themselves. They tend to worry and feel anxious and guilt-stricken over difficulties. Often they do not feel accepted in groups or free to participate.
13 Factor Q1: -

- **Low Score Description:** -
  Conservatism of treatment: -
  conservative, respecting traditional ideas -
  score on this factor are confident in:
  they have been taught to believe, and
  pt the “tried and true,” even when
  thing else might be better. They are
  ous and compromising in regard to
  ideas. Thus, they tend to oppose and
  one change, are inclined to go along
  tradition, are more conservative in
  ion and politics, and tend not to be
  ested in analytical “intellectual”
  ght.

- **High Score Description:** -
  Radicalism: - Experimenting, liberal,
  ritical, open to change - High score on
  is factor tend to be interested in
  lectual matters and to have doubts on
  ndamentals issues. They are skeptical
  nd inquiring regarding ideas, either old
  new. Usually they are more well
  rformed, less inclined to moralize, more
  lined to experiment in life generally,
  d more tolerant of inconvenience and
  nge.

14 Factor Q2: -

- **Low Score Description:** -
  Group Adherence: - Group-oriented,
  “Joiner” and sound follower, listens to
  hers - individuals who score low on
  is factor prefer to work and make
  cisions with other people and like and
  end on social approval and
  miration. They tend to go along with
  e group and may be lacking in
  idividual resolution. They are not
  cessarily gregarious by choice; rather
  ey might need group support.

- **High Score Description:** -
  Self-sufficiency: - Self-sufficient,
  ourceful, prefers, own decisions -
  dividuals who score high on this factor
  e temperamentally independent,
 ustomed to going their own way.
  ey discount public opinion, but are not
 cessarily dominant in their relations
  ith others; in fact, they could be
  esitant to ask others for help. They do
  ot dislike people, but simply do not
  eed their agreement or support.
15 Factor Q3: -

- Low Score Description: -
  ➢ Lower integration: -
  Undisciplined self-conflict, lax, careless of social rules — People who score low on this factor will not be bothered with will control and have little regard for social demands. They are impetuous and not overly considerate, careful, or painstaking. They may feel maladjusted, and much maladjustment (especially the affective, but not the paranoid) show Q3.

- High Score Description: -
  ➢ High self-concept control: -
  Following self-image, socially precise, compulsive — people who score high on this factor tend to have strong control of their emotions and general behaviour, are inclined to be socially aware and careful, and evidence what is commonly termed “self-respect” and high regard for social reputation. They sometimes tend, however, to be perfectionist and paranoids, are high on Q3.

16 Factor Q4: -

- Low Score Description: -
  ➢ Low Ergic Tension: - Relaxed, tranquil, composed, has low drive, unfrustrated — individuals who score low on factor Q4 tend to be sedate, relaxed, composed, and satisfied (not frustrated). In some situations, their over satisfaction can lead to laziness and low performance, in the sense that low motivation produce little trial and error.

- High Score Description: -
  ➢ High Ergic Tension: - Tense, frustrated, overwrought, has high drive — Individuals who score high on Factor Q4 tend to be tense, restless, fretful, impatient, and hard driving. They are often fatigued, but unable to remain inactive. Their frustration represents an excess of stimulated, but undischarged, drive. Extremely high tension level may disrupt school and work performance.
3.10 Research Tools: -

16 PF Questionnaire: - To assess the personality factors of the subjects, the sixteen-personality factor questionnaire form A, constructed by Cattell, H. B. (1989). Institute for personality and ability testing, Inc. (IPAT) staff, Champaign, Illinois (1991) was used. The questionnaire measures 16 primary source traits of personality.

Cattell, R. B. (1965) suggested that the characteristic that can be observed in a given situations represent 46 surface traits or clusters of related behaviors. He uses questionnaires, direct observation and life rewards. Some traits were closely related and represents single trait. Cattell called such underlined personality characteristics as source traits. He found that 16 source traits represented basic dimensions of personality. Using this source traits he developed “16 PF” adult questionnaire.

The sixteen personality questionnaire (16PF Form–A) is an objectively scorable test devised by basic research in psychology to give the most complete coverage of personality possible in a brief time. The test was designed for use with individuals aged 16 and above. In 16 PF 187 items are consisted 10-13 items are provided for each scale in From A and test is administered without a time limit.

The translation of Form A into Hindi was carried out with the same way translation precautions as described in the other foreign editions of the HSPQ and the 16 P.F. Test (Cattell, Pichot, and Rennes, 1961), prepared by Kapoor, S. D. (1970).

Reliability of 16 PF Questionnaire: -
Test-Retest Dependability coefficients of 16 PF Form A after 11 days N = 110, age 23-42 years.

<table>
<thead>
<tr>
<th>Personality factors</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<tr>
<td></td>
<td>.83</td>
<td>.69</td>
<td>.73</td>
<td>.81</td>
<td>.86</td>
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<td>.84</td>
<td>.58</td>
<td>.69</td>
<td>.59</td>
<td>.77</td>
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</tbody>
</table>

Validity of 16 PF Questionnaire: -
Validities estimated from correlation of two factor halves of 16 PF

<table>
<thead>
<tr>
<th>Personality factors</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
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<th>Q2</th>
<th>Q3</th>
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<td>.92</td>
<td>.70</td>
<td>.83</td>
<td>.72</td>
<td>.88</td>
</tr>
</tbody>
</table>
3.11 Research Procedure: -

After determining sampling technique, that person who knows their blood group and those possess pure health with similar kind of socio-economic status and explained them the purpose of data collection, thus the sixteen personality factor questionnaire was administered to 400 subjects and recorded the scores on this test with the help of individual interview technique.

First of all at the time of data collection every subject was asked to fill up information form, which included the full name, gender, birth date, age, education, socio-economic status, occupation, information regarding health of last one year (e.g. any severe surgery or any major physical or psychological treatment) and blood type. When subjects were completed this work, the researcher, too confirmed that the students had filled all the items of the subject’s information form.

In each test situation subject’s were asked to read carefully the instructions printed on the cover page of the test and asked to write information about them on provided place. When the subjects understood the instructions, subjects were asked to record their responses on the separate answer sheet of the test. The booklet and answer sheet were collected from the subjects, when they finished their work and checked carefully that they had answered all the items of the test. Thus the here was very carefully maintain the standard psychological testing situation, at the time of data collection and the sixteen personality factor questionnaire was administered to 400 subjects and recorded the scores on this test with the help of individual interview technique.

3.12 Scoring of the responses: -

The scoring of test was done according to instruction and norms given in the test manual. The 16 P.F. answer sheet were scored by a streamlined hand stencil key provided by the author of the test. All necessary instructions for applying the hand stencil key to get raw score for sixteen personality factors were also printed on the key to itself. Thus the raw score was ready to statistical analysis.
3.13 Statistical analysis:

The sample available for statistical analysis consisted of 400 subjects. The sample was divided into following four groups.

**Table 3.2 Variable wise sample available for statistical analysis**

<table>
<thead>
<tr>
<th>Variables</th>
<th>No. of subjects (sample)</th>
</tr>
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<tbody>
<tr>
<td>Blood Group A</td>
<td>100</td>
</tr>
<tr>
<td>Blood Group B</td>
<td>100</td>
</tr>
<tr>
<td>Blood Group AB</td>
<td>100</td>
</tr>
<tr>
<td>Blood Group O</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total = N</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

For the each subject, initially data of each group were separately tabulated by employing frequency distribution, descriptive statistics. The statistical analysis was mainly consisted of one way factorial univariate analysis of variance on blood groups, and for further post-hoc or posteriori comparisons LSD were employed with the help of SPSS including the search for the univariable outliers.