CHAPTER IV

METHOD AND PROCEDURE
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The main purpose of the present study was to determine the relationship between certain personality variables and the respiratory allergy disorders.

For the present study, the selection of the variables was done on the basis of previous related studies and on a priori grounds, choosing those personality variables, the relationship of which with the selected sample (allergic-sample) appeared more probable. Following were the aims of the present study:

(1) The main aim of the present investigation was to determine, if certain personality traits distinguish allergic individuals (e.g., Respiratory allergy patients) from normal healthy individuals and individuals suffering from non-allergic respiratory disorders (tuberculosis).

(2) To find out if any important personality differences exist between the following two groups:

(i) Those persons with symptoms of allergic illness, who clearly demonstrate an allergic constitution, as inferred from positive skin test results, family history, and personal history.

(ii) Those persons who do not demonstrate a constitutional diathesis, or do so only minimally.

(3) To find out if the duration of illness is related to the already mentioned personality variables selected for the present study.
To find out if sex and age are significantly related to the personality of the subjects suffering from allergy disorders:

**Hypotheses**

On the basis of review of literature, the investigator proposed the following hypotheses:

1. The personality profiles of the patients with allergic disorders would be significantly different from the sample of the normal individuals on the traits chosen for the present study. It was hypothesized that the allergic subjects would score higher on the traits like anxiety, neuroticism, hostility, anomie, and alienation and will be low on adjustment.

2. Amongst the allergic patients classified into three categories, i.e., strong, moderate and weak reactors, it was hypothesized that significant personality differences may be located on the personality traits included in the present study. The weak reactors would score higher on the traits like neuroticism, anxiety, and hostility would show greater feelings of alienation, anomie, and score lower on adjustment, when compared with the strong and moderate reactors.

3. There would be significant differences between patients higher in duration of disease as compared to the patients with lower duration. The former would be higher on the traits like neuroticism, anxiety, hostility, and lower on adjustment.
In the absence of very many studies and contradictory findings in this area, null hypotheses was proposed regarding the differences between the personality profiles of the allergic and tuberculosis patients.

**DESIGN OF THE STUDY**

**SAMPLE:**

For the reasons mentioned earlier in the need of the present study, only respiratory allergy group was selected. Besides this, the following two control groups were also taken:

**CONTROL GROUP I:** Consisted of patients suffering from non-allergic respiratory disorder i.e., tuberculosis, \((N=98)\).

**CONTROL GROUP II:** This consisted of a sample of normal healthy individuals matched with the experimental group \((N=117)\).

Thus the report of this study is based upon the response of 405 individuals, who served as subjects for the present study. Stratified random sampling technique was used for selecting the subjects. The participation of the selected subjects included in the study was on voluntary basis.

Keeping in view the demographic variables, the criteria for the selection of subjects, method of selection and total number of subjects in each group is given below:-

Also see the chart (Table-1).

**SELECTION OF SUBJECTS:**

**(A) EXPERIMENTAL GROUP**: (ALLERGIC-SAMPLE)

**CRITERIA FOR THE SELECTION OF SUBJECTS**

The following criteria were the basis of the selection of
TABLE A

DISTRIBUTION OF SUBJECTS IN THE THREE GROUPS (ALLERGY, TUBERCULOSIS AND NORMALS) ACCORDING TO SEX, AGE, DURATION OF ILLNESS AND SKIN REACTIVITY

<table>
<thead>
<tr>
<th>DISEASE GROUPS:</th>
<th>Allergy</th>
<th>Tuberculosis</th>
<th>Normals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group</td>
<td>Control Group I</td>
<td>Control Group II</td>
<td></td>
</tr>
<tr>
<td>Total n = 190</td>
<td>Total n = 98</td>
<td>Total n = 117</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>MALES</th>
<th>FEMALES</th>
<th>MALES</th>
<th>FEMALES</th>
<th>MALES</th>
<th>FEMALES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>111</td>
<td>72</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>79</td>
<td>26</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGE</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>36</td>
<td>24</td>
<td>18</td>
<td>9</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Middle</td>
<td>33</td>
<td>20</td>
<td>28</td>
<td>10</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Old</td>
<td>42</td>
<td>33</td>
<td>26</td>
<td>7</td>
<td>30</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DURATION</th>
<th>Groups</th>
<th>N</th>
<th>Groups</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I, 1-3 yrs.</td>
<td>42</td>
<td>Group I, 0-1 yr</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Group II, 3-5 yrs</td>
<td>49</td>
<td>Group II, 1+ to 3 yrs</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Group III, 5+ yrs</td>
<td>99</td>
<td>Group III, 3+ yrs</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SKIN REACTIVITY:</th>
<th>Males(90)</th>
<th>Females(54)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>52</td>
<td>28</td>
</tr>
<tr>
<td>Moderate</td>
<td>29</td>
<td>14</td>
</tr>
<tr>
<td>Low</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>
the sample in this group:

i) These were consecutive cases attending the Allergy Clinic, of Post Graduate Institute of Medical Education and Research, Chandigarh.

(ii) Only those subjects were selected who were clinically diagnosed by the consultant incharge of the unit, as suffering from respiratory allergy disorders.

(iii) Age group of the subjects was 14-50 years.

(iv) Subjects who were able to understand spoken Hindi and also could read and understand English well. Thus only those subjects were selected, whose minimum qualification was high school.

(v) Subjects who agreed to undergo physical and psychological investigation.

While selecting the sample for the present study, careful and consistent methods were used for classifying subjects as allergic. This included a careful history, physical examination and skin testing by the doctors or physicians incharge. This is important for designating a person as allergic, as also pointed out by Dekker et al. (1961). Without such basic information it is difficult to claim that one is studying a sample of allergic individuals.

**SAMPLE**

The total sample for the respiratory allergy group consisted of 190 patients (111 males and 79 females). Under this group were included patients with asthma and rhinitis.
This experimental group was matched with control Group I and II in regard to age and sex. Duration of illness was also studied by dividing the whole of allergy group into three categories i.e., group 1 from 1-3 yrs, group 2 from 3-5 yrs and group 3 from 5+ years (see Table 1).

Out of 190 subjects, only 144 subjects (both males and females) were skin tested, the reasons for which are discussed ahead. On the basis of skin tests, this allergy group was divided into three categories i.e., the strong, moderate, and weak reactors.

More precise differentiation of subjects on the basis of skin testing (especially since Wittkower and Petow (1932) caution against describing true allergic disease and non-reactive allergic disease as one and the same phenomena. Here the term "non-reactive allergic" is applied to the individuals presenting the symptomatology of allergic disease but lacking confirmation by positive skin tests. Patients who show positive skin reactions as well as clinical symptomatology are said to have "true allergic disease". The skin tests which are done to determine the allergens of an individual reveal that generally the skin reacts to only those allergens or antigens to which a person is allergic. This happens because of the presence of specific IgE (Immunoglobulin) which is produced in response to the allergen exposure on the mast cells in the skin. Normally patients react to just one or two of the antigens either highly
or moderately and are low reactors to the others and thus they are accordingly categorized. The skin reactivity ratings were based on a criterion of the size of the diameter of the wheal and three groups were compared on these ratings, e.g., low, moderate, and high as described below:

(i) **Low-Reactors:**

If the size of the wheal diameters of test is equal to or just 2-3 mm larger or when the difference is less than 5 mm than the control, they are low or non-reactors.

(ii) **MODERATE-REACTORS:**

If the difference between the size of wheal diameters of test and control is 5 mm or more up to double the size of control, with or without pseudopods, then they are classified as moderate reactors.

(iii) **HIGH REACTORS:**

If the size of wheal diameters of test is more than double the size of control or double the size with or without pseudopod formation, then they are classified as high or strong reactors.

**CONTROL GROUPS**

Two control groups matched on age and sex, with the experimental group, (Allergy-sample) were taken up for making comparisons:
(B) CONTROL GROUP I - TUBERCULOSIS PATIENTS

(a) CRITERIA FOR SELECTION OF SUBJECTS:

The criteria for selection of subjects for this group was as follows:-

I. These were consecutive cases attending the chest-clinic of Post-Graduate Institute of Medical Education and Research, Chandigarh. Out of these only those subjects were selected who were suitable for the present study.

II. The clinical diagnosis of tuberculosis patients was made by the consultant incharge of the unit.

III. Patient's willingness to undergo psychological investigations was also an important criterion.

IV. Another important criterion required was that the patients of this control group were equated for the presence of similar degrees of enduring physical illness or concern over a physical condition.

b) SAMPLE:

The total sample for the non-allergic respiratory group consisted of 98 tuberculosis patients (72 males and 26 females). For studying the duration of illness, this group was also divided into three categories i.e., group I from 0-1 yr., group II from 1+ to 3 yrs and group III from 3+ onwards (Table-1).
CRITERIA FOR SELECTION OF SUBJECTS:

The criteria for selection of normal cases was as given below:

(i) These were the attendants of the patients i.e., relatives, colleagues and friends etc.

(ii) Cases who were able to understand and read English, thus minimum qualification for this group was Matric.

(iii) Cases who agreed to undergo psychological investigations.

(iv) Normal recovery from incidental illness or accident.

(v) The most important criterion for the subjects to be in this group was that, subjects belonging to this group should not be suffering from any chronic or serious physical or mental disorder. Also, they should not have any complaints of suffering from any allergic disorder. This was insured by administering allergy performa and CMI (Cornell Medical Index Health Questionnaire). Thus only those subjects were selected for this group whose responses indicated on the Questionnaire, that they had never, to their knowledge manifested any of the allergic symptoms listed.

It would have been possible for a subject to be sensitive to some substance without manifesting symptoms, or to have symptoms which did not appear in the questionnaire but were of allergic origin, and still be included in the control group (Miller and Baruch, 1956). The statement that he was free from
allergic symptoms was construed as sufficient to warrant a subject's inclusion in the control group.

b) **SAMPLE:**

The total sample in this control Group II (sample of normal healthy individuals), consisted of 117 subjects (65 males and 52 females). For the present study it was not feasible to conduct skin tests on the control group. Such studies with no skin tests in the control group have been conducted by Smith I (1962), Smith II (1962) and Wittkower (1952). These investigators have yielded significant results.

To overcome any kind of limitations in such studies, some researchers like Saksena et al. (1976), Madhu et al. (1978) have suggested the increasing of the sample. Thus to minimise this risk, the investigator decided to have larger control groups.

Control group I, N = 98 (Tuberculosis)
Control Group II, N = 117 (Normal sample)

Total 'N' in control group = 215. (98+117 = 215)

See the chart depicting the total sample.

**DESCRIPTION OF THE TOOLS FOR THE PRESENT STUDY**

The tools for the present study were selected keeping in view various considerations, such as the suitability of the tests to the objectives of the study, the efficiency and
availability of suitable tests, with high reliability and validity, the amount of time available at the investigator's disposal, ease and personal competence of the investigator to administer, score and interpret the test results. Another important factor which was kept in mind was to avoid using the tests/tools as such or mere translations. Thus only those tests were used which were standardized, adapted or suitable in its original form for the sample of the present study. The following tools were chosen for the purpose of the present investigation:

1. Allergy performa.
2. CMI (Cornell Medical Health Questionnaire).
3. P.G.I. Health Questionnaire, N/2.
4. Pearlin's scale to measure Alienation.
5. Srole's scale to measure Anomie.
6. Bell's Adjustment Inventory.
7. Hostility and Direction of Hostility Questionnaire. (HDH).
8. Sinha's Anxiety Scale.

**CORNELL MEDICAL INDEX-HEALTH QUESTIONNAIRE:**

To insure that control group-II (Normal sample) doesn't suffer from any kind of physical or emotional disability, CMI (Cornell-Medical Index Health Questionnaire, Brodman et al., 1949) was used.

The term 'Health-Questionnaire' explains the nature and
purpose of the form to the patient. It contains 195 questions in simple language, so worded as to be understood by the persons with a reading knowledge of simple English. Technical terms are avoided, when their use is necessary, an explanation is added in the parentheses. CMI can be used as a test or as an objective interview technique.

It is a two response category (Yes/No) questionnaire. Each 'Yes' answered item is counted and may be considered as score (which indicates that the patient claims to have symptoms). Questions are grouped in sections. From A to L sections include questions on the physical problems, i.e., eyes, ears, respiratory symptoms, digestive tract, nervous system etc., Section M-R includes questions on mood and feeling patterns.

There are two forms of the CMI, one of men and one for women. They are identical except for six questions in the genitourinary section. A serious disorder is to be suspected when more than 25 items are so marked 'Yes'. The distribution of 'Yes' answers is noted. If the 'Yes' are chiefly in one or two sections, the patient's medical problem is localised. If scattered throughout the four pages, the medical problem is likely to be diffused, usually involving an emotional disturbance. More than two or three 'Yes' answers on the last page suggest a psychological disturbance.

CMI was administered to the subjects individually and
the scoring was done according to the method mentioned in the manual. The items were divided into the following sections:

1. **A to L Section**: (i.e., first three pages or item 1 to 144) is considered as 'Physical distress section'.

2. **M to R Section**: (i.e., last page item 145 to 195) is considered as emotional distress section.

3. **A to R Section**: i.e., all the four pages may be considered as 'total distress' and score on it as 'total distress score'.

This inventory has been used by many Indian researchers (Verma et al., 1971).

**PGI Health Questionnaire, N-2**

PGI Health Questionnaire N-2 is a neuroticism scale. It is based entirely on the complaints of neurotic patients in an Indian clinic. In order to meet the need of, the myth of culture fairness in psychological tests, where the complaints of neurotic patients are given due weightage, P.G.I. Health Questionnaire N-2 (Verma and Wig 1976) was used.

The sample for the construction of N-2 consisted of neurotic population i.e., all those clinically judged neurotics attending the psychiatric O.P.D. (Out patient Department) of P.G.I., Chandigarh. It is a simple test to measure neuroticism. It consists of 50 items which are simple,
short and in unambiguous language. Sources of the items were
the past records of neurotic patients complaints in medical
and surgical units. Thus ensuring control of social desirability
because of greater chances of acceptance of these spontaneously
given complaints in simple language.

The order of the item was physical symptoms preceding
the mental ones and followed by the lie items.

Regarding the physical complaints, first the patient
has to be put at ease thus ensuring better cooperation and lesser
effect of social desirability set (Gibson et al.,1967; Verma,1974).

ADMINISTRATION AND SCORING:

The respondents were asked to fill in the questionnaire
by marking 'Yes', (✓) only those items which were applicable
to them. Number of yes responses (✓) on items numbered 1 to 50
constituted the N-score (Maximum-score = 50).

The correlations with other neuroticism scales were
found positive and high e.g., + .50 with N scales of Maudsley
Personality Inventory (N=18); + .75 with PEN (N=21); + .94 with
PGI Health questionnaire N-1 (N=48); and + .85 with emotional
unstability score of Personality Trait Inventory (N-19)
Population, cater to the need of a more representative sample
of the general population (Khanna,1971).

A fair deal of representativeness of the rural and
urban people of both sexes, as well as of the Reliability of the
test, using Kuder-Richardson formula-20 is .93 which is highly satisfactory and validity was found to be .88.

This inventory has been used by many Indian researchers (Verma et al., 1979)

PEARLIN'S SCALE:

Pearlin's 15 point scale was used for measuring alienation. It consisted of four items. The first, third, and fourth items had four response categories and the second item had two response categories. The maximum score a person could attain was 15 and minimum 5. As such, the alienation score for a respondent could vary from 5 to 15.

SROLE'S SCALE

Srole's 15 point scale was used for measuring perception of anomie in society. It consisted of five items. The response categories offered were "Agree", "Disagree", and "undecided". Each item scored one point if he was undecided and three points if he agreed. As such, anomie score for a respondent could vary from 5 to 15.

Both the personality scales have earlier been well adapted/standardized and have been found valid and reliable in North India (Sandhu, 1970; Channabasavanna & Bhatt, 1977; Agarwal et al., 1980).

BELL'S ADJUSTMENT INVENTORY:

In order to measure the adjustment of individuals to
home, health, social relations, emotional problem, Bell's Adjustment Inventory was used.

Bell's adjustment Inventory is published in two forms, one for high school and college students and the other for adults. The student form was designed to measure adjustment in four major areas - home, health, social, and emotional. The adult form provides an additional score for occupational adjustment as well. In the present study the adult form was used; however, questions pertaining to occupational adjustment were deleted as the subjects in the present study though adults consisted of both working as well as non-working. Non-working subjects included students, house-wives and other subjects also, who did not have any occupation.

The questions pertaining to each of the five dimensions viz., home, health, social, emotional, and occupational adjustment are mixed randomly throughout the inventory. Each question can be replied as either 'Yes', 'No' or ?. There are 32 questions under each of the above mentioned five areas, thus yielding a total of 160 questions but for the present study excluding questions pertaining to occupational adjustment, it yields a focal of 128 questions. The coefficients of reliability for each of the five sections of the inventory and for its total score are as follows:--

Home adjustment = .91; Health adjustment = .81; Social Adjustment = .87; Emotional Adjustment = .91; Occupational Adjustment = .85; Total Score = .94 (Bell, 1935).
The inventory has been validated in two ways:-

(1) The items for each of the sections in the inventory were selected in terms of the degree to which they differentiated between the upper and lower fifteen per cent of the individuals in a distribution of adult scores. Only those items which clearly differentiated between these extreme groups are included in the present form of the inventory.

(2) The inventory has been validated through the selection of "Very well" and "Very poorly" adjusted groups of individuals by specialists in adult counselling and determination of the degree to which the inventory differentiates among them (Bell, 1935).

Scoring was done according to the manual for the Adjustment Inventory, Adult form, Bell (1935).

This inventory has been used by many Indian researchers (Gill, 1977; Shanmugam and Kaliappam, 1982) and has yielded meaningful results.

HDHQ (HOSTILITY AND DIRECTION OF HOSTILITY QUESTIONNAIRES)

This test has been devised by Caine and Foulds (1967) to measure hostility in its five components. It is designed to sample a wide, though not exhaustive range of possible manifestations of aggression, hostility or punitiveness. It is used for clinical purposes as well as for normals.

Hostility is the simple sum of all the five tests. Direction of hostility is the sum of intropunitive tests (with
SC counted twice over (less the sum of the extrapunitive tests.

Hostility = AH + CO + PH + SC + G

Direction of Hostility = \( (2 \text{ SC}\text{G}) - \text{AH} + \text{CO} + \text{PH} \).

These weighted combinations correspond very closely to the first and second components respectively and they are always used in practice.

The individuals tests were designed to measure particular aspects or modes of expression of aggression. A consideration of the rank order of the various clinical groups on the various tests tends to confirm that each of the tests is measuring that aspect of hostility which it was intended to measure, viz.,:

<table>
<thead>
<tr>
<th>Other directed hostility</th>
<th>1. AH</th>
<th>Urge to act out hostility.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. CO</td>
<td>Criticism of others</td>
</tr>
<tr>
<td></td>
<td>3. PH</td>
<td>Projected delusional (i.e., Paranoid Hostility)</td>
</tr>
<tr>
<td>Interdirected hostility</td>
<td>4. SC</td>
<td>Self-criticism.</td>
</tr>
<tr>
<td></td>
<td>5. G</td>
<td>Guilt</td>
</tr>
</tbody>
</table>

The total aggregate of these five components constitutes the hostility score. The first three components refer to the "other directed hostility" and the last two components refer to the "self-directed hostility". It also indicates the direction of hostility which can be deduced by the following formula, also mentioned earlier and which is given in the manual as well:-

Hostility = AH + CO + PH + SC + G

Direction of Hostility = \( (2 \text{ SC}\text{G}) - (\text{AH} + \text{CO} + \text{PH}) \).
If the subtracted score is positive, it denotes that hostility is extra punitive; and when it is negative, hostility is intropunitive. In the present investigation, however, total hostility alone and also the direction of hostility have been taken into consideration. The questionnaire contains 51 items to be answered in 'True' or 'False'.

Each item yields a score of one. It has no time limit but at the same time of administering the test, subjects are clearly instructed to work as fast as possible.

**Reliability:** Test-retest reliability (N=30; normals tested after one year) for hostility and direction of hostility, was found to be .75 and .51 respectively.

**Validity:** Method of criterion group was used in the validation of the battery.

This inventory has been used by a few Indian researchers (Singh, 1976; Indira & Murthy, 1977; Devar, 1983).

**Sinha's Anxiety Scale:**

This scale is used to measure anxiety level of the subjects ( Adults, college, and school students). Since this test is modified and validated against Taylor's Manifest Anxiety Scale = .69, N=70); so it is essential to mention details about TMAS.

Taylor's Manifest Anxiety Scale (TMAS; Taylor, 1953) is the most widely used self-report measures of anxiety. It consists
of true-false items, designed to measure anxiety. The items were selected on the bases of agreement amongst clinicians that they reflect important dimensions of manifest anxiety. This scale is an useful instrument for quick estimate of anxiety and also for locating the forms and dimensions in which anxiety may express itself. The items of this scale were drawn from the MMPI. It was developed as a device for selecting subjects for experiments in human motivation. It was also expected that such a test would differentiate subjects in terms of the degree to which they admitted frequently experiencing overt symptoms of emotionality. Thus, although created for research, the TMAS has also been used with some success for clinical purposes also.

TMAS was developed by IOWE by a group of workers interested in problems of learning. They were primarily interested in the measurement of Hull's D in human subjects. Thus they developed an instrument based on Hull-Spence learning theory.

As the items suggest, this scale attempts to measure a predisposition to behave anxiously, not the subjects immediate expressed emotional state. The score depends upon total number of items to which the subject has given the anxious response. Each item which is checked 'Yes' is awarded the score of one. Thus the measures range from low anxiety score of one to a high score of 100. The score of every individual would be total number of items checked positively.
Reliability:

The scale has a high reliability index, since correlations for test-retest scores obtained anywhere from 3 weeks to 18 months apart range from 0.81 to 0.89.

Validity:

The TMAS enjoys high face and concurrent validity. Based on TMAS Sinha's Anxiety Scale is one of the most popular and important anxiety scales, and has been used in several studies in the areas of anxiety on Indian Population (Parkash & Siddique, 1976; Pestonjee & Bagchi, 1978, 1979; Arri et al., 1979; Shanmugam & Kaliappan, 1982).

The split half reliability is reported to be .92 (N=36). The scale as mentioned earlier also has been validated against Taylor's Manifest anxiety Scale (1953) as modified by Sinha (1963). The correlations were found to be .69 and .73 against Taylor's scale, the correlation was .72 for Dutt's (1964) anxiety questionnaire.

Collection of the Data:

The subjects of this study were selected from chest clinic (O.P.D. & ward both) and allergy clinic (O.P.D.), of P.G.I., Chandigah.

The Director of P.G.I. and the chair persons of these two departments were approached and the objective and utility of the research work was explained to them. They took interest in
this research work and provided necessary facilities for the collection of data.

Selected cases were first interviewed for establishing a rapport and also for explaining the broad purpose of the study. The investigator appealed to the subjects to give their full cooperation in the collection of the required data for the study, the aim of which was purely academic. The subjects were requested to be frank and free in making their responses to the various inventories and questionnaires previously mentioned, which were to be given to them.

(1) **Experimental Group (Allergic-Patients)**

All the psychological tests were administered to these patients. Besides, these they also had to undergo a series of skin tests for fungus, dust, and pollens.

(2) **Control Group-1 (Tuberculosis-Patients)**

All the already mentioned psychological tests were administered to the subjects, except for CMI and allergy performa.

(3) **CONTROL GROUP-2 (Normals healthy individuals)**

Besides all the psychological tests mentioned for the experimental group, two more tests were administered, i.e., (i) Allergy Performa used by the physicians of allergic clinic for the measurement of allergy symptoms and detailed case history. (ii) Cornell Medical Index - Health Questionnaire (CMI) was also administered on the selected subjects individually.
Some cases were (approximately N=20) were rejected who showed a number of positive responses on allergy perform. thus showing the evidence of allergy symptoms. Similarly, these cases were rejected also (N=27, approximately) who scored more than 25 on CMI.

These tests were administered on each subject individually. These were given by the investigator in the same order and in accordance with the standard instructions. Instructions were read out carefully and clearly to the subjects. If the subject could not follow the meaning of any word or statement, care was taken to explain the same, by giving a substitute word or statement. In case the subjects needed clarification on any of the parts, care was taken to remove the doubts.

For each subject several sittings (ranging from 2-5 sittings) were required to fill the questionnaires and performas and undergo skin tests (the latter only in case of allergy sample).

**ANALYSIS**

**ALLERGY SAMPLE** - Consisted of total 190 patients who were diagnosed as suffering from allergic disorders. Out of these only 144 patients were skin tested, because of the following reasons:

1. Some patients themselves did not want to go through the skin tests.
(ii) Some patients physically or constitutionally were not fit enough to go through all the skin tests.

(iii) Only those persons were referred for skin tests who would benefit from them.

At the initial visit, subjects were interviewed by staff physician seeking an allergy oriented history and were given a complete physical examination, at which the eyes, nose, throat, lungs were examined carefully for findings suggestive of respiratory allergic disorder. Thus the diagnosis for such patients, by the consultant in charge was based on the composite of personal and family history, suggestive symptoms and physical findings. When it was confirmed that the patient does suffer from some kind of allergy and that he would benefit, if referred for skin tests, only then he was made to go through various skin tests.

A positive response to a thorough series of carefully controlled skin tests indicates a high probability that the individual is allergic. Negative findings, however, are not necessarily indicative of the absence of allergic sensitivity since for a wide variety of potentially allergenic substances (food-additives, drugs, chemicals), no reliable diagnostic tests are available.

When it was confirmed by the Consultant in charge, that the selected patients will have to go through the allergic skin tests
on the basis of the detailed history taken as mentioned earlier, they were referred to the investigator. They were requested to cooperate with the investigator to explore the psychological/personality aspects of the allergic disorders by undergoing certain psychological tests. The details about the performance of the skin tests are described below:

Skin tests were performed by trained allergy technicians, and reactions were read after 20 minutes by a staff physician. These patients were tested with antigenic extracts of a number of allergens. These included 30 fungus and dust allergens (See Appendix 16). The tests were performed on the volar aspect of the forearms. These tests are started about 5 cms distal to crease of the wrist on the radial side adjacent to the midline. Sites for testing are marked before. They should be at least 2-3" apart to prevent overlap of reactions.

Thus for intradermal skin tests with a syringe, the specially prepared solution of a substance to be tested (antigen) is injected into the skin. A positive reaction is indicated by the development of a wheal, which begins to appear within a few minutes. Tests are usually performed with solutions of all the common substances known to possess antigenic properties. It is seldom possible with these tests to identify one particular substance as the cause of allergic asthma in an individual case, and the chief value is, to distinguish atopic from non-atopic subjects.
First, a negative control with a buffered saline was employed on the patients. This is necessary in order to read and interpret the results of antigen skin tests meaningfully which are employed after the negative control. All the tests were read after 20 minutes. The diameters of the wheal were measured and the number of pseudopodia were recorded.

A negative control with buffered saline is a very crucial test from various aspects, the most important of which is that the definition and grading of positive antigen skin tests in a given case, are determined by comparing them with the size of the wheal of the negative control.

A positive skin test is a wheal and a flare reaction that appears 10 to 20 minutes after the suspected allergic substance is applied to the skin. Strongly positive responses may increase and reach a maximum after 8 hours and persist for 24 hours (Dolovich et al., 1973). A simple definition of a positive skin reaction with an antigen is as follows:

If the negative control wheal is 3 or 4, 5 mm, then any skin reaction wheal which is 10 mm or more, 11 mm or more, 12 mm or more respectively should be considered a definite positive skin reaction (Shivpuri and Shivpuri, 1976).

For each subject after the reactions were recorded, they were graded and thus classified on the basis of reactivity into one of the three categories i.e., high, moderate, or low
reactors. The criteria of classification of these categories has already been described earlier. A rating of '1' was applied to high reactors, '2' to moderate reactors and '3' to low/weak reactors.