CHAPTER IV

Method
HYPOTHESIS:

The present study aims to evaluate home treatment to schizophrenic patients, using nurse’s home-visits for the delivery of treatment, as compared to hospital admission for such patients. The study proposes to test the following hypothesis:

1. Home treatment is better suited to schizophrenic patients than hospital admission.

This major hypothesis has been further divided into five sub-hypotheses:

(a) Clinical improvement for the patients treated in the home will be better than/same as that for the patients treated by admission to the hospital.

(b) Social functioning of patients treated in the home, will be better than that of patients treated by admission.

(c) Burden placed on families of the patients will be same/less for the group treated in the home than those treated by admission.

(d) Change of attitude of family members toward mental illness will be more favourable in the group treated at home than in the group treated by admission.
(c) Cost of treatment for the patients treated in the home will be less than that of patients treated by admission.

RESEARCH DESIGN

In order to test the above hypotheses a prospective study has been conducted.

The study has compared two groups. The first group has received home treatment through a trained nurse. Treatment has been monitored by a Psychiatrist, based on the nurse's follow-up report. This has constituted the experimental group. Group two, used as a control group, consisted of similar patients and received hospitalization at the initial phase and out-patient follow-up subsequently as practiced generally in any hospital set-up.

Both these groups were assessed at the time of their first contact on various parameters and at regular interval periods, thereafter for a total period of six months.

The sample consisted of patients approaching out-patient department of the National Institute of Mental Health and Neuro Sciences, Bangalore. For the selection
of the sample, following criteria have been used:

1. Patient resides within the city of Bangalore.

2. Patient approaches the out-patient department for the treatment of the first episode of illness.

3. Patient is diagnosed as schizophrenic by the Consultant.

4. Patient lives in his/her family.

5. Patient has not received any prior medical treatment.

Each patient, that satisfied the selection criteria and his relatives, were then informed about the study and the assessment visits that the investigator would be making. The patients were then alternately allotted to group one and group two.

The alternate assignment of the patients to two different sample groups has been used in order to reduce bias and achieve randomness. This method has been chosen against taking already matched sample groups, mainly due to the fact that patients, that could satisfy the selection criteria, would be very few and collection of sample would be a very slow procedure.
DATA COLLECTION

Each patient thus assigned to different groups was then assessed for:

1. Level of clinical severity
2. Level of Social functioning
3. Burden felt by the family

Apart from this, one of the patient's close relatives was assessed for his attitude toward mental illness. After the initial assessment during their first contact, patients followed through their respective treatment procedures. They were assessed again for second and third time at 15 days interval of the initial contact, on the same 4 parameters mentioned above.

Subsequent assessments i.e., 4th to 8th were done at one month's interval each.

At the end of six months, the same relative, who had earlier been assessed for his attitude was assessed on the same instrument once more.

OPERATIONAL PROCEDURES

A. SPECIFIC TREATMENT MODALITIES OF THE TWO GROUPS

Group 1 (Experimental Group)
At the time of first contact in the out-patient department of the National Institute of Mental Health and Neuro Sciences, assessment, diagnosis and drug treatment were decided upon by the psychiatrists in charge of this experimental group. The same was explained to the nurse therapist involved.

At that time, the nurse interviewed the patient and his family members in order to:

(a) ascertain the directions and location of the house

(b) acquaint the family with him

(c) inform them of his next follow-up visit and to set up appropriate and consistent time for the same.

Subsequent to this first interview, patient remained in his/her home. The nurse-therapist made home visits and assessed the patients' clinical status, using Brief Psychiatric Rating Scale.(Overall and Gorham 1962). For the nurse's use, two more items were added to the scale, one regarding amount of responsibility patient was taking and the other one regarding amount of his/her social interaction. These two items were also recorded on a 7 point scale, like the other 24 items of the scale.
The nurse-therapist brought the report of his visit to the psychiatrist in charge, on a sheet where management areas were structurized (provided in the Appendix). He also provided his recommendation for further management on this sheet. Based on this report, further treatment was decided such as intake of drugs, advise to the family members etc., and the time for next visit was decided upon.

This mode of treatment delivery continued for a period of six months.

The patient and his family members were requested to contact the nurse or the psychiatrist in their office, in case of any crisis during the visit interval. Provision was made that in case of absolute necessity, any patient from this group would be admitted in the hospital for a period of maximum 3 days.

B. TRAINING OF THE NURSES IN THE FOLLOW-UP OF THE PATIENTS:

The experiment was planned in a prospective fashion. However, prior to the experiment, two nurses (one participant and one standby) involved in the programme had undergone training with regard to their role and duties. They have been trained in administering the Brief
Psychiatric Rating Scale, repeatedly on the patients approaching the outpatient department. Subsequently, their ratings were compared with the ratings completed by the investigator on the assessment of the same patients. This procedure was continued for one month until the nurse’s ratings compared fairly well with the investigator’s ratings.

Later, the nurses were asked to repeat the ratings on the same patients undergoing treatment at the hospital, at different time intervals. These were again compared with the ratings of the investigator done on the same patients during the same time.

Altogether, the nurses required 1½ months to be able to, adequately administer and rate the patients on the Brief Psychiatric Rating Scale.

Group 2 (Control Group)

At the time of first contact in the outpatient department of the National Institute of Mental Health and Neuro Sciences, the patients assigned to this group were admitted to the Psychiatric wards of the Institute. From then on they continued treatment as per the normal, regular procedure of the hospital admissions. After
discharge, they were given follow-up appointments at the out-patient department. They followed through whatever programmes the hospital may offer them.

The investigator contacted this group also at the same interval periods as that of the experimental group for the purpose of periodic assessments.

**DATA COLLECTION INSTRUMENTS**

The examination of the hypothesis and the interpretation of the results pertaining to any investigation, however, depend to a large extent on the type of the tools used in the investigation and their reliability and validity. Therefore, it seems essential here, to consider the various tools used in the present study for assessment of various parameters. The study has made use of four assessment instruments, to assess clinical severity, social functioning, burden on family and attitude of family member toward mental illness.

I. **Assessment of Clinical Severity**: To assess the clinical severity of the patients at a given point in time the Brief Psychiatric Rating Scale, developed and validated by Overall and Gorham (1962) has been used. The scale provides a wide range of gradation of severity viz., 1 to 7 for each of the symptoms. It also allowed freedom for
the interviewer to assess a particular symptom. It provides guidelines yet does not restrict the use of words to extract the information.

The scale was found particularly suitable for design of the present investigation due to the following advantages it holds:

1. It's wide range of gradation provided possibility of measuring change in the severity of each symptom. As such, it held superiority to the rating scales that note the presence, or absence of a particular symptom (Wing et al., 1967).

2. The scale could be filled in after an interview. This enabled spontaneity in an interview. In the present study repeated administrations of the same scale were necessary and as such this suited the purpose.

3. It was easy to administer and para-professionals could be trained easily in its administration. The same scale was also used by the visiting nurse in the case of 'home group'.

4. The scale being brief, could be completed in a short time.

The scale consists of 24 items - 22 symptoms, one item for the clinician's own assessment and one item for
Global rating of improvement - each scored on a 7 point scale. The point 1 on the scale denotes absence of a symptom and point 7 denotes its extreme severity.

The scale can be used in various ways, suitable to different research designs (Overall, 1972). For the present work, it was planned to calculate total pathology score i.e., sum total of all the scorings of each item, at each point of assessment. As such, minimum score possible was 24 and maximum score possible was 168. The scale is provided in the Appendix.

II. Assessment of Social Functioning: In order to assess the patient on the second criterion, viz., social functioning of the patient, after careful scrutinizing of existing scales, it was planned to use 'XAS behaviour inventories form R2 and R3' developed by Katz et al. This scale offered the following advantages:

(a) It was short and easy to administer

(b) It provided exploration into expectations of the relatives regarding a particular behaviour item.

(c) It was already standardized for Indian population (Chandrashekar et al., Unpublished data).

The scale consists of 16 items, consisting of various
activities and duties one is expected to perform in normal every day social life. The scale has to be filled by interviewing a close family member of the patient. Expectation of the level of performance by the relative regarding each of the item under normal circumstances, is scored on a three point scale. Then he has to assess what is the actual level of performance of the patient at the time of administration of the scale on each item. This performance is rated on a four point scale. By subtracting the performance score thus obtained, from the expectation score, a discrepancy score is achieved. The total of such discrepancy scores obtained on each of the 16 items is considered to be the discrepancy score in the individual's social functioning ability. The discrepancy score can range between zero to 32. The scale is given in the Appendix.

III. Assessment of Burden on Family: In the area of assessment of burden placed on patients' families, no quantified scales were available, although several researchers have attempted to assess its severity in different situations.

Therefore, a semi-structured interview schedule was developed to suit the needs of the present study. It was tested for its reliability and validity. Details
regarding the constructions of this tool are discussed in Chapter V.

This schedule contains 6 major areas of objective burden, which are divided into 24 sub categories. Each of these 24 sub-items gets rating on a 3 point scale, i.e., 0-1-2. Thus the minimum score possible on this scale is 0 and maximum possible score is 48.

Subjective burden as reported by the family was also rated on a similar three point scale. This was done by making the relative a standard question as to how he rated the feelings of burden that had occurred due to patients' illness.

The schedule was administered by the interviewer in an informal interview setting. The scale is given in the Appendix.

IV. Assessment of attitude of family member: In order to measure attitude of a family member toward mental illness, a short questionnaire containing 17 statements was constructed. The details of its method of construction are described in chapter V.

This schedule was self administered and was filled twice by the relative, once at the time of intake and
secondly at the end of six months of treatment. This was done to assess any change in attitude of the relatives of patients in the two groups.

The schedule is given in Appendix.

V. Assessment of the cost of treatment: The cost of treatment has been assessed by the following method.

Establishment cost per patient has been worked out for the hospital group, (a) by way of hospital expenditure on salaries of personnel, medication and other facilities divided by number of patients served for a given period of time, which provides expenditure incurred by the hospital per patient, (b) by way of hospital expenditure on in-patient facilities such as linen, diet etc., divided by the number of hospitalized patients for a given period of time. This cost has been worked out for each patient based on the number of days of his hospitalization.

This establishment cost has been averaged out per patient for six months (as that has been the length of follow-up period for the study group).

To this average establishment cost per patient has been added average per patient expenditure incurred by
their family members on medication, transport and other extra arrangements during the six-months follow-up period. This provides the average cost per patient for the hospital group.

For the home group, the establishment cost has been worked out on the following criteria:

a) Expenditure on visits by nurse - number of visits multiplied by amount of expenditure incurred per visit.

b) Salaries calculated for the time spent by the nurse on visits and by the psychiatrists on consultation for the patients.

c) Average per patient expenditure on free medication for six months multiplied by number of patients receiving free medication.

To this establishment cost again personal expenditure incurred by the families of the home group patients, on medication, transport and any other extra arrangement has been added and average cost per patient has been worked out.

As such, the assessment of cost is in monetary terms only and shows the actual expenditure in rupees. The parameter of loss of work hours was not used as it was
extremely difficult to get information in this area, on standard basis, since the sample includes men, women, working, non-working, student, house wives etc.

Procedures of Analysis

The data collected on the parameters of clinical severity, discrepancy in social functioning, burden on family, attitude of family members and cost of treatment, for hospital and home group has been arranged in tables separately for each parameter.

On the parameters of clinical severity, discrepancy of social functioning and burden on family, each group has been assessed eight times during the six month follow-up period. The attitudes of family members of each group have been assessed two times during this period. The cost of treatment has been worked out at the end of the follow-up period for each group.

The data obtained on the first three parameters namely, clinical severity, discrepancy of social functioning and burden on family has been analysed by various methods, in order to assess the differences between the two groups and the significance of such differences to the hypotheses of the study.
1) First, the scores obtained at eight time assessments by both groups have been compared by students' t test. The test has been applied eight times, each time comparing one assessment for each group on a given parameter. This test compares the scores and shows the level of significance of existing differences between the two groups. Thus, it offers the analysis of differences at each one of the eight time assessments. (Guilford 1962).

2) Secondly, the data on the parameters of clinical severity, discrepancy in social functioning and burden on family, obtained for both the hospital and home groups have been analysed by factorial arrangement. The factors have been taken as two groups and eight time assessments and (2x8) analysis of variance has been carried out.

This analysis assists in assessing the level of significance of differences between the two groups based on the eight different occasions and the interaction of the groups and the eight occasions (Winer 1962).

3) Another method used to analyse the data obtained on the parameters of clinical severity, discrepancy in social functioning and burden on family, has been
graphical presentation of scores obtained by both the groups at eight different assessments on each of these parameters. This enables one to assess the trend of improvement. An extension of this trend provides one with possible time of complete recovery by each group on each of these parameters.

4) Further, data obtained by hospital and home group on each of the three parameters (clinical severity, discrepancy in social functioning and burden on family) has been subjected to linear regression analysis (Draper & Smith 1966, Albert 1972). This has been done in order to assess the correlation coefficient between the trend of improvement observed in both the groups. This analysis provides one with an equation which gives mathematical proportion of the scores obtained by both the groups on any given parameter. In other words, it expresses in mathematical terms the description of a plotted line on a graph.

If the scores are exactly similar, for both the groups, a plot of them on a graph would give a slope that is one in value and passes through the zero point. But if the scores are not similar, but are directly proportional, the plotted line will still pass through
the same, but the slope will be different than exact value one. Or if the scores are indirectly proportional, the plotted line on a graph will intercept one of the axis. Statistically, this could be achieved by subjecting the data to regression analysis. This is done by the method of least square curve fitting, which says that the best representative curve is that for which the sum of the residuals is minimum.

A graphic presentation of this analysis is also presented.

5) The data obtained by the hospital and home group on the parameter of Attitude of family member has been compared once by students' t test and once more by factorial analysis of variance. Here the factorial arrangement is 2x2 (two groups and two time assessments).

The cost calculated for the treatment of both the hospital and home groups has been averaged out as cost per patient for each group. No statistical comparison of this average cost has been done.
Any study attempting to test a hypothesis based on data acquired by utilizing a measurement tool, should assure the accuracy, reliability and validity of such tools. Greenblatt and Glazier (1975), emphasise that “we need accurate, standardized information regarding our present systems of care in order to make just and rational decisions”. It has been described in the previous chapters, that, the present study attempts to evaluate one such system of care at a pilot study level. It is extremely important at this stage that the study takes into account, all aspects of the patient care, such as, his clinical improvement, his social functioning ability, burden placed on his family etc.

The attitudes of patients’ family members are also important and need to be studied in order to assess their impact on the outcome of the treatment. Yet another aspect of any evaluation is, the cost of a particular service in comparison with the existing services.

The present study makes use of existing standardized tools for the measurement of clinical severity and social functioning of the patient. However, in the areas of assessment of burden placed on the
families of psychiatric patients, no quantified scales, standardized for the population concerned are available. Similar situation has been encountered in the areas of assessment of attitude of family members.

A semistructured interview schedule has been prepared to assess the burden placed on the family. The details of the construction of this tool are described here.

Method of Construction: As a first step, free unstructured interviews were conducted with a relative each of 40 patients, approaching the out-patient clinic. Focus of the interview was to enquire into various areas of burden the family may have experienced due to the patients' illness. They were encouraged to be objective and concrete in their responses e.g., if they expressed that they had experienced financial burden, they were asked to give the details of expenses on drugs, travel, loss of pay etc. If they said that their leisure was curtailed, they were asked how they spent their leisure time previously and in what manner and to what extent was a particular leisure activity curtailed now. These interviews were recorded verbatim and subsequently their contents were analysed in terms of various categories of burden experienced and items which fell under each category.
Based on the outcome of this analysis, twenty four new interviews were recorded. These interview records were then distributed among six colleagues working in the psychiatric field. These six people were asked to pick out the items of burden and to group such items under general categories of their own consideration. The categorization of burden items thus collected, was then compared with the categorization prepared by the investigator earlier. It was found that all these categorizations were more or less similar in the broad categories although different terms were used by different people to describe the categories e.g., the area of financial burden was variously termed as economic difficulties, expenses and financial burden. Similarly, the area of burden in leisure activities was termed as recreational handicap, leisure time curtailment etc. Apart from this terminological differences, three of the colleagues had added some more items as burdensome behaviour which were not noted by the investigator or the other three colleagues.

As a third step all the possible items thus picked out were arranged in six different categories making use of the common item wording noted in the interview records.