CHAPTER 5

METHODOLOGY

5.1 Scope and Coverage

The challenges in the practice of Evidence-based Medicine\(^1\) in India and other developing countries can be described under the broad heads of –

- Inadequate Infrastructure – Information technology (IT), related systems and high quality information resources;
- Lacunae of Awareness – Awareness programmes needed for hospital librarians, healthcare professionals and decision makers in hospitals;

The present study covers –

- Aspects related to awareness regarding clinical librarians in healthcare settings;
- Prospect of clinical librarian as valid member of healthcare team;
- Provision of hospital libraries’ infrastructure including Information Communication Technology (ICT) facilities;
- The study is confined only to thirty one private hospitals in Kolkata, West Bengal namely,
  - Aditya Medical Park
  - Advanced Medicare and Research Institute
  - Anandalok Hospital
  - Apollo Gleneagles Hospital
  - B. P. Poddar Hospital and Medical Research Limited

- Behala Balananda Bramhachari Hospital and Research Center
- Belle Vue Clinic
- Calcutta Medical Research Institute
- Charnock Hospital and Research Center
- Columbia Asia Hospital
- DESUN Hospital and Heart Institute
- Eskag Sanjeevani Multispeciality Hospital
- Fortis Hospital
- Genesis Hospital
- Health Point Hospital
- ILS Hospital
- Jubilant Kalpataru Hospital
- K.P.C. Medical College and Hospital
- Kothari Medical Centre
- Medica Superspecialty Hospital
- Mission of Mercy Hospital and Research Centre Private Limited
- Nightingle Diagnostic and Medicare Centre Private Limited
- Park Clinic
- Peerless Hospital and B. K. Roy Research Center
- Rabindranath Tagore International Institute of Cardiac Sciences
- Ramakrishna Mission Seva Pratisthan
- Ruby General Hospital
- West Bank Hospital
- Wockhardt Hospital and Kidney Institute
- Woodlands Medical Center Limited

268
However, the scope of the study is limited to only private hospitals which are multi-speciality in nature and with minimum fifty bed capacity. Many super-speciality hospitals like Institute of Neurosciences, Arvind Eye Hospital, B. M. Birla Heart Research Centre, Bhagirathi Neotia Woman and Child Care Centre, Calcutta Heart Research Centre, Disha Eye Hospital and Research Centre, Tata Memorial Hospital, Suraksha Hospital, Saltlake Dental Foundation, Rotary Narayan Sankar Netralaya; multi-speciality private hospitals like Uma Hospital and Research Centre, Apex Hospital, Renaissance Hospital, Siddhi Multi-speciality Hospital and Research Institute; Government aided trusty hospitals like Marwary Relief Hospital, Matrimangal Hospital, Lohia Hospital, Asharam Bhiwaniwala Hospital, Abinash Dutta Maternity Home, Gujrati Relief Society, Premananda Memorial Leprosy Hospital, K. S. Roy TB Hospital; all Government multi-speciality and super-speciality hospitals like Calcutta National Medical College and Hospital, Nil Ratan Sarkar Medical College and Hospital, R. G. Kar Medical College and Hospital, S. S. K. M. Hospital, Sambhunath Pandit Hospital, Subodh Mitra Cancer Research Institute, Islamia Hospital, Chittaranjan Seva Sadan and Cancer Research Center, Charmicael Hospital of Tropical Disease, Bidhannagar Government Hospital, Beliaghata ID Hospital, Bangur Institute of Neurology has been excluded from this study due to above mentioned criteria. Data obtained for the study is limited to four years i.e. during the period of June, 2008 to February, 2012.

5.2 Methods Used

The research process is the paradigm of research project. In this study, there were various scientific activities in which researcher engaged himself in order to complete
the research. Each of these activities is interdependent. The present research process is thus the system of these interrelated activities. These are as follows:

![Figure 5.1: Stages of research process](image)

The present study is an investigation to understand the situation of clinical librarianship in Kolkata with special reference to private hospitals. The methodology followed for the study is described under the following headings:

- Variables
- Hypothesis
- Method used for data collection
- Tools used for data collection
- Sample used for the study
- Sampling technique used
Variables

The variables used for the study are broadly divided into two, namely classificatory variables and study variables. The variables are selected in accordance with the literature reviewed for the purpose.

Some of the major features of clinical librarians are taken as the study variables of the study. They are as follows:

- Skills
- Activities

The classificatory variables used for the study are:

**Community Level**

- Specialist Doctors/Consultants
- Resident Doctors
- Junior Doctors
- Nurses
- Management Staff
- Hospital Librarians
- Allied Health Professionals like dietitians and physiotherapists

**Gender**

- Male
- Female
Hypothesis

Hypothesis is usually considered as the principal instrument in research. The hypotheses envisaged in the present study have been described already in chapter one. The null hypotheses for this research study are:

- The proportion of healthcare professionals working in private hospitals in Kolkata is primarily unaware about clinical librarianship is 50%.
- The proportion of healthcare professionals working in private hospitals in Kolkata want to include librarian in the clinical team is 50%.
- The portion of the healthcare professionals working in private hospitals in Kolkata thought clinical librarian may have importance in clinical decision making is 50%.
- The hospital librarian or library-in-charge working in private hospitals in Kolkata provides proportion of standard clinical librarian service is 50%.
- The proportion of respondents identified finance is the major problem in implementation of librarian service is 50%.

Level of Significance

The maximum probability with which a true null hypothesis is rejected is known as Level of Significance\(^2\) of the test. In framing decision rules, the level of significance is arbitrarily chosen in advance depending on the consequences of a statistical decision. For this study, both 5% and 1% level of significance is used.

Critical Region

The set of values of the test statistic which lead to rejection of the null hypothesis is called Critical Region of the test. The probability with which a true null hypothesis is

rejected by the test is often referred to as ‘size’ of the Critical Region. For this research critical region is used to test null hypothesis.

**Steps in testing Hypothesis**

To test a hypothesis means to tell whether or not the research hypothesis seems to be valid on the basis of the data the researcher has collected. Procedure for hypothesis testing refers to all those steps that the researcher undertakes for making a choice between rejection and acceptance of a null hypothesis. Following are the seven steps in testing a hypothesis applied in this study:

![Diagram of steps in testing hypothesis]

*Figure 5.2: Steps in testing hypothesis*
Rejection Rule

Table 5.1: Rejection rules for $H_0(P = P_0)$

<table>
<thead>
<tr>
<th>Research hypothesis</th>
<th>Critical Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_1$</td>
<td>5% level</td>
</tr>
<tr>
<td>$P \neq P_0$</td>
<td>$</td>
</tr>
<tr>
<td>$P &gt; P_0$</td>
<td>$z \geq 1.645$</td>
</tr>
<tr>
<td>$P &lt; P_0$</td>
<td>$z \leq -1.645$</td>
</tr>
</tbody>
</table>

Decision Rule

At the time of testing hypothesis, it is not possible to study the entire population; instead a part of it can be studied. What researcher tries to prove is whether the sample results are sufficiently likely or unlikely to justify the decision to accept or to reject the null hypothesis. The null hypothesis can be either true or false. A researcher has a choice of either rejecting or accepting the hypothesis. Hence, there are four possibilities as presented below:

Case 1: The null hypothesis is true and it is rejected
Case 2: The null hypothesis is true and it is accepted
Case 1: The null hypothesis is false and it is rejected
Case 1: The null hypothesis is false and it is accepted

Table 5.2: Decision for test of hypothesis

<table>
<thead>
<tr>
<th>Decision</th>
<th>Accept $H_0$</th>
<th>Reject $H_0$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_0$ (true)</td>
<td>Correct Decision</td>
<td>Type I Error</td>
</tr>
<tr>
<td>$H_0$ (false)</td>
<td>Type II Error</td>
<td>Correct Decision</td>
</tr>
</tbody>
</table>

In this study, testing of hypotheses has been done and the decisions have been taken as per the above table.
Methods of data collection

Data for this research work has been collected from primary sources. For this study data has been collected through survey method. During the process of sample survey data has been obtained by direct communication with respondents through questionnaire and personal interview.

Tool used for data collection

Two questionnaires were administered for collecting the required primary data for this study. The first questionnaire was prepared to collect data from healthcare provider group consisting Consultant Doctors, Resident Doctors, Junior Doctors, Nurses, Management Staff, Dietitians and Physiotherapists. The second questionnaire was prepared to collect data from all Hospital Librarian or Library-in-charge. Data were also collected from the journals, dissertation, case report, websites, brochures, newsletters and house-journals of private hospitals in Kolkata. ‘Akhon Kolkata’\(^3\) by Anandabazar Patrika and The WEEK-HANSA 2011 Research Report\(^4\), are two important documents used for identification and locating private hospitals in Kolkata and other cities in India. Addresses of hospitals are collected from the above mentioned documents. Expertise of academicians working in the field of library and information science, healthcare setup and statistics were sought for preparing the questionnaire.

Questionnaire on Clinical Librarianship

In this research study, two different types of mixed questionnaires were prepared and administered to all the concerned viz. healthcare professionals and librarians respectively. Before designing the questionnaire for data collection, the researcher


personally visited all the thirty one private hospitals to examine the infrastructures and to have a detailed discussion with the head of the Human Resource Department of the hospitals regarding permission for the survey. Based on this observation, two detailed questionnaire ware prepared and data obtained from all the above mentioned population through interview session.

Questionnaire for healthcare professionals – The questionnaire has five parts; viz. demographics, knowledge on clinical librarianship, about own hospital’s library, manpower in the library and infrastructure available in the hospital. Necessary instructions were given at appropriate places to help the respondents in filling the questionnaire.

- The first part deals with the personal information regarding the respondents and it contains five items such as name, age, gender, designation and name of the hospital they belongs to.

- The second part of the questionnaire deals with user perception and the knowledge on clinical librarianship. This part contains eleven items such as source of knowledge regarding clinical librarianship, service of clinical librarian, usefulness of those services, impact on patient care, drawbacks, and their own internet searching skills and searching experiences.

- The third part deals with the library of the concerned hospital. This part contains twelve items such as knowledge regarding existence of hospital library, visit to the library and frequency of visit, knowledge regarding available facility in the library, use of library services, use of information provided by the library, impact on case management, respondents’ assessment on those provided information in terms of quality, cognitive value,
contribution to patient care and time saving aspects. This part also contains the causes for not using the library by the respondents.

- The fourth part deals with the manpower of the library of the concerned hospital. It contains eight items such as respondents' perception on competency, characteristics, activities and skills of library staff, respondents' assessment on performance of the library in terms of speed of service, knowledge and ability of staff, cooperation of staff and overall performance.

- The fifth part deals with the infrastructure of the hospital. This part deals with fifteen items such as available facility, copyright, automated management information system, scope for public-private partnership for strengthening infrastructure.

Questionnaire for hospital librarian or library-in-charge – The questionnaire has four parts; viz. demographics, knowledge on clinical librarianship, about own hospital's library and infrastructure available in the hospital. Necessary instructions were given at appropriate places to help the respondents in filling the questionnaire.

- The first part deals with the personal information regarding the respondents and the hospitals they are working. It contains six items such as name, age, gender, name of the hospital they belongs to with address and year of establishment.

- The second part of the questionnaire deals with user perception and the knowledge on clinical librarianship. This part contains eight items such as source of knowledge regarding clinical librarianship, service of clinical librarian, impact on patient care, drawbacks and their perception about inclusion of librarian in the patient care team as clinical librarian.
The third part deals with the library of the concerned hospital. This part contains twenty items such as position of library, total floor space of the library, type of users, present collection, subscription of current journals, library staff strength, library hours, type of issue, library budget, existing information retrieval system including catalogue, classification and indexes, automation activities, available facility and access system.

The fourth part deals with the infrastructure of the hospital. This part deals with fifteen items such as available facility, copyright, automated management information system, scope for public-private partnership for strengthening infrastructure.

Interview

In this research study interview method has been carried out sometimes to collect data from the consultant doctors as they are quite busy to find out time to complete the questionnaire by their own. So researcher had applied this method and asked questions from questionnaire to collect information from them, though it is not a formal structured interview.

Sample used for the study

The city of Kolkata has 31 private hospitals with minimum fifty bed capacity. All the healthcare professionals and librarians working in these thirty one hospitals are population in this research study. This is too large in size to collect data from the entire population. Hence the researcher selected a representative part of this population to conduct the study with the help of Morgan Table for sample size. On the basis of classificatory variables the researcher has collected data from each of thirty one private hospitals.
Sampling technique used

Sampling denotes the procedure of selection sample from the population. The sample has been selected through **stratified random sampling** to ensure representation of all identified categories. As out of thirty one multi-speciality private hospitals in Kolkata only fifteen hospitals have library services, so the total population is subdivided into two strata; viz. healthcare professionals working in hospitals with library facility and hospitals without library facility. Further sub strata have been drawn on the basis of profession as consultant doctors, resident doctors, junior doctors, nurses, hospital librarians, management staff and other allied healthcare professionals from the first two strata. The samples have been selected randomly among strata as whoever was present at the day when researcher visited to collect data.

Sample size

For the present study, a total of 1379 sample from the healthcare professionals working in the thirty one private hospitals in Kolkata has been chosen by giving equal weight to the hospitals with library facility and hospitals without library facility. The sample includes ten consultants, ten resident doctors, ten junior doctors, ten nurses, two management staff, one dietitian and physiotherapist each and the librarian or library-in-charge for each hospital as applicable. The sample size has been determined according to Morgan Table (Appendix III).

Questionnaire was distributed in such a way as to give representation to all subgroup with in the group. All the respondents did not return the questionnaire and some of the questionnaires returned were incomplete. Hence a final sample of 1279 questionnaires complete in all respect was selected for the study. The break up of final sample is as follows:
Consultant Doctors = 220
Resident Doctors = 300
Junior Doctors = 310
Nurses = 310
Management Staff = 62
Dietecians = 31
Physiotherapists = 31
Librarians = 15
Total = 1279

Data collection procedure

Sufficient copies of the questionnaire were prepared initially. The researcher then personally visited all the thirty one private hospitals to collect data from the healthcare professionals and the librarian or library-in-charge. The researcher also sought permission from the human resource manager of concerned hospital to administer the data collection tool among the healthcare professionals and the librarian or library-in-charge as applicable. Most of the participants responded positively by filling up and returning the questionnaire.

Analysis of Data

Data obtained from the healthcare professionals and hospital libraries through questionnaire and interview have been analyzed and interpreted in the light of objectives and hypotheses stated already. Various statistical methods were adopted in the analysis of data and for preparation of graphs, charts, tables and figures. Conclusions on the basis of findings have been drawn and suggestions have been made wherever necessary.
Consolidation of data

Data pertaining to classificatory and study variables were consolidated separately by using spreadsheet package ‘Excel’. The data were then subjected to further statistical treatment by using the 17th edition of statistical package ‘Statistical Package for Social Sciences’ (SPSS).

Statistical techniques used

The researcher has used mainly five statistical techniques at different stages of the study to draw the conclusions. They are:

- Pie chart
- Bar diagram
- Test of hypothesis
- Analysis of Variance (ANOVA)
- Chi-square test

SWOT Analysis

SWOT analysis is a tool that identifies the strengths, weaknesses, opportunities and threats of an organization.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
</tbody>
</table>

**Figure 5.3: SWOT Analysis**

In this research study SWOT Analysis has been used as a tool that can provide prompts to the healthcare providers and healthcare professionals involved in the analysis of what is effective and less effective in clinical systems and procedures, in preparation for a plan of some form of activity which could impact future clinical
decision making. In this study, SWOT Analysis of the existed infrastructure facilities provided by the fifteen private hospitals with library facility has been used to give a conceptual framework to find out the prospect of a clinical librarian as a valid member of health care team in the private hospitals in Kolkata.