Chapter - 3
Research Methodology

This study addressed following research questions:

1. How responsive is Indian Health system to the needs of Indian patients?

2. Whether eight elements of responsiveness suggested by world Health Organization are applicable to Indian population?

3. Are there other elements besides given eight elements which are important to Indians and hence should be added to responsiveness concept?

The study was conducted in Chandigarh and its two neighboring districts Panchkula and Mohali from Haryana and Punjab respectively. The main objective of the study was to find the current status of Indian health systems’ responsiveness and applicability of World Health Organization’s responsiveness elements in Indian context and to find out whether other elements like accreditation and patients’ rights are on the expectation list of patients. These questions were addressed from perspective of patients as well as healthcare providers and policy makers to make the data rich.

It was a cross sectional, study using the quantitative method of Questionnaire. In depth interviews with health care providers and management helped select areas which can be considered to be added to existing elements of responsiveness. Since a standard questionnaire was available as prepared by WHO initially and later modified for Multi Country Survey Study (2001) and World Health Survey (2003). It was modified in consultation with field experts to shorten the length and to include two new elements namely Accreditation and Patients’ rights. This was done through a panel discussion with 4 experts. These experts had complete knowledge of healthcare and hence could provide reliable
information on what could be important to patients and their expectations. These members of the panel had healthcare providing, management and research experience.

3.1 Sampling

Two separate samples were used. First group was of patients or actual consumers of healthcare who had utilized the healthcare services in the last 12 months anywhere in Panchkula, Chandigarh or Mohali. The recall period of 12 months has been used by the World Health Organization’s Multi-Country Survey Study on Health and Responsiveness (Valentine et al., 2003) to minimize recall bias in data collection. Patients or general public from both public as well as private sectors were included. Second sample was of key informants (KIs) who are the experts in healthcare. This group included doctors, nurses, pharmacists and some health care managers.

Table: 3.1

Sample Selection Table: Inclusion – Exclusion Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Those &lt;18 and &gt;65</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Both males and females</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>All educated &amp; uneducated</td>
<td></td>
</tr>
<tr>
<td>Type of Health Care</td>
<td>Current as well as in last 12 months</td>
<td></td>
</tr>
<tr>
<td>IPD/OPD</td>
<td>Both</td>
<td>Emergency and Post Op patients</td>
</tr>
<tr>
<td>Type of set up</td>
<td>Public, Private, Nursing homes, Clinics all</td>
<td></td>
</tr>
<tr>
<td>Physical and mental well being of Patients</td>
<td>Patients with any disability e.g., hearing, Or mental imbalance</td>
<td></td>
</tr>
</tbody>
</table>
3.1.1 Details of Inclusion- Exclusion Criteria

**Age:** Only patients in 18 to 65 age groups were included for this study taking into account their understanding of questionnaire and response will be more accurate than people below 18 and above 65. Besides the health needs of people too young and too old are very specific and different as old people are more prone to chronic diseases and may have some expectations very different from general population. Another reason to limit the age group to between 18 and 65 was to select cognitively capable adults.

**Gender:** As there is a difference in the needs of healthcare for both sexes and also access to healthcare is different we tried including equal number of both sexes in our study. Also, it adds variety to sample and richness to data.

**Education:** All patients irrespective of their educational status were included going by original WHO survey in order to add variety to the respondents.

**In Patient and Outpatients:** All types of Out patients and In patients of general wards were included but critical care patients admitted in emergency and Intensive care units were excluded as their physical and mental state will not permit them to give fair responses to the questions.

**Type of Healthcare:** All types of healthcare, public and private, primary, secondary and tertiary were included in the study to get wide range of responses in the area of study and add richness to the data.

**Type of Illness:** Patients with mental illness and certain physical disabilities like hearing were excluded from the study as their condition may impact their understanding of questionnaire and hence the response.

Basic demographic information was collected from all respondents and analyzed quantitatively for descriptive purposes.
3.1.2 Scoping the Study

Geographically: The study was conducted in Panchkula, Chandigarh and Mohali covering 2 states and a Union Territory. India is the home country of author of this study. India is a developing country located in Asia. One union territory and two neighbouring districts of two states were selected for the study.

3.1.3 Sample Size

Sample size was calculated according to the table provided by ‘The Research Advisors’ Annexure VI

- Current population of Chandigarh, Union Territory of India is around 1.2 millions (9.6 lakhs according to 2011 census)
- Current population of Panchkula district of Haryana is 3.2 Lakhs (according to 2011 census)
- Current population of Mohali district of Punjab is 1.8 lakhs (according to 2011 census)

Keeping the population of the area for our study it was desired to have around 100 key informants plus 300 household persons. Finally 120 KIs and 325 general public were approached. 99 KIs and 288 general public responded with filled questionnaire the remaining dropped out of study.

3.2 Two groups of Respondents

a) Key Informants: persons with experience working in the health sector or a related sector, and both interested in and knowledgeable about the health system of our country.

b) Patients/General Public: Persons who have themselves or any one of their family member has utilized health care services in last one year.
3.2.1 Criteria used in the Key Informant Survey

It was desired to have about 100 Key Informants, with the following criteria:

1. They should be over 18 years old.

2. They should have worked in the health sector or a related sector for a minimum of 2 years.

3. They should be knowledgeable about the health system.

4. They should be having the capacity to answer questions based on their general knowledge about health systems and not based solely on their personal experiences.

Around 120 Key Informants were identified and explained the concept and questionnaire. They were asked to fill the questionnaire and return in 30 days. 99 Key informants returned the filled questionnaire. Some of the Key informants were approached directly and questionnaire filled in presence of author of the study.

In selecting potential Key Informants it was ensured that there should be as close to equal proportions of:

- Males and females
- Government and private sector
- Urban and rural

Potential Key Informants were drawn from the following organizations:

- Universities/academic/schools (e.g., WHO collaborating centres)
- Non-governmental organizations/religious missions
- Non-governmental organizations/charities
- Public sector research organizations
- Private sector research organizations
- Public sector clinics or hospitals
- Private health care practices, clinics or hospitals
3.2.2 Sampling Criteria for General Public

Patients as well as others who have used medical services in last one year were included in the survey. 325 persons were approached and a response was received from 288 in 30 days.

In selecting household respondents it was again ensured that there is an equal proportion of:

- Males and females
- Educated and uneducated
- Urban and Rural
- Public sector service users as well as Private sector users
- Outpatient and Inpatient service users

3.3 Data Collection Tool

A questionnaire was prepared taking WHO questionnaires used in its various surveys- Multi Country Survey Study (MCSS), World Health Survey (WHS). The questionnaire was shortened in consultation with experts which comprised of academicians and clinicians. At the same time new areas which could of interest or importance to Indian population were searched through literature review and in discussion with researchers, academicians and clinicians. Finally two namely, Accreditation and Patients’ rights were included in the questionnaire. The questionnaire was also translated into Hindi and Punjabi for easy understanding of the respondents.

An experimental study was conducted initially with experts for face and content validation of WHO responsiveness elements and sub elements and two newly added elements and sub elements. Their suggestions regarding addition, deletion or modification in the existing elements were incorporated. Once the elements were finalized after consultation with the experts and patients, final questionnaire was readied and data was collected.
3.4 Pilot Study

A pilot study of the refined questionnaire (Annexure I) was done on patients with a sample size of 50. Through pilot study face validity, approximate time taken for filling questionnaire, easy understanding by the respondents, reliability by Cronbach’s alpha (Annexure II) were checked.

<table>
<thead>
<tr>
<th>Reliability Statistics Section C</th>
<th>Cronbach's Alpha</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.943</td>
<td>.946</td>
<td>53</td>
</tr>
<tr>
<td>Reliability Statistics Section D</td>
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<td></td>
</tr>
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<td></td>
<td>.934</td>
<td>.935</td>
<td>26</td>
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<tr>
<td>Reliability Statistics Section E</td>
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</tr>
<tr>
<td></td>
<td>.860</td>
<td>.861</td>
<td>14</td>
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<tr>
<td>Reliability Statistics Whole Questionnaire</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.862</td>
<td>.841</td>
<td>112</td>
</tr>
</tbody>
</table>

The questionnaire was found to be reliable and easy to understand and took around 30 minutes to fill it.
3.5 Final Questionnaire Sections

Based on the results of pilot study and suggestions from research committee and the experts in the field of healthcare the final questionnaire was prepared after making minor changes. The final questionnaire had 5 sections

Section A DEMOGRAPHICS
Section B DIFFICULTY USING HEALTH SYSTEM
Section C RESPONSIVENESS (All elements proposed by WHO + 2 new elements rating and overall level)
Section D RESPONSIVENESS TO DIFFERENT GROUPS IN POPULATION
Section E IMPORTANCE OF DIFFERENT ELEMENTS OF RESPONSIVENESS

The final questionnaire was also translated into Hindi and Punjabi languages for easy understanding of local people from Haryana and Punjab respectively (Annexures II, IV and V). The translations were carried out by professionally qualified translators in both languages. The respondents were given a choice between the three languages questionnaire.

Utilization of health services during past 12 months: the respondents were asked if they have utilized in-patient, out-patient services in the last 12 months anywhere in Panchkula, Chandigarh or Mohali. The response to this question was Yes/No.

Affordability of outpatient and inpatient health care. Financial access was assessed by asking if during the past 12 months the respondents ever had to forego healthcare because he/she could not afford it. The response categories for this question were Yes/No.

3.6 Data Collection Methods

All participants were given an orientation on the concept of responsiveness and its elements. Respondents were asked to recall their experiences as patients interacting with healthcare providers. They were then requested to provide their opinions, views and comments in light of actual experiences. Placards (Annexure VII) were used one for each
element and kept in front of respondents for easy reference while attempting the questionnaire. Then the importance of study and its impact on healthcare was explained. They were asked to clear doubts if any. Finally an informed consent was taken from all participants who were willing to participate in the study (Annexure XIII). To those who promised to fill the questionnaire and return later contact information of researcher was provided.

3.6.1 For Key Informants (KIs)

Meeting session methods: Personal meeting sessions were there with Key Informants

3.6.2 For Household Survey

- Door to door survey: to fill questionnaire on one to one basis
- Group survey: At places where a number of patients and their attendents could be approached.

3.7 Data Coding

Data collected through questionnaire was analyzed after coding. The coding for two types of responses was done:

Response 1: Always 1; Usually 2; Sometimes 3; Rarely 4; Never 5

Response 2: Excellent 1; Very Good 2; Good 3; Bad 4; very Bad 5

Response 3: Extremely Important 1; Very Important 2; Moderately Important 3; Slightly Important 4; Not Important 5

Coding was also done for demographics- age, gender, education level, work sector etc.

3.8 Cleaning of Data

The collected survey data was entered in MS-Excel. The data entered has been validated and cleaned in the following ways.
• These coding was entered in the excel sheet and later some codings were flipped (for example Section C and E so as to make all good responses have highest ranking as 5 and bad responses to have lower ranking as 1).

• **Duplication entries of records:** Every respondent’s response details were entered in individual rows. Though there are no duplications in the respondents level, the duplications in data entry level were checked. This was done by carefully examining the name of the respondent and available profile data, in each segment namely general public and knowledge experts.

• **Value Outlier Checks:** In most of the questions, the responses were captured in a five point rating scale and likert scale. Outliers were the values entered as ‘0’ and more than ‘5’. This type of error here and there were examined and cleaned.

• **Data Consistency Checks:** Data consistency indicates the consistency in the unit of measurement in each question. In all the data points only numeric value need to be entered. This has been checked.

• **Completeness of Responses:** For a valid response data record, it was expected to have answers in all the sections, and especially in the major questions that are key focus of the survey. Any records which are incomplete or half way done are not considered for analysis.

• **Logical Checks:** There are logical links/connection among certain questions. Responses cannot be blank in one place and answered in one place. This has been properly checked.

• For invalid responses- replaced with average score

• For missing items- replaced with average score

  Normality checks on the rating scale data was done and frequency tables where also prepared (Annexure XIV and XV)
3.9 Reliability Testing and Data Analysis

Cronbach’s alpha was found for each section of questionnaire to check on the reliability. Then mean score analysis for all elements was done. Mean of importance given to each element was calculated. Multiple Correlation Analysis was also done.

T test was done to compare responsiveness of health system to two different groups based on age, gender, economic status, education etc.

Data analysis using SPSS version 23 and AMOS version 21 softwares were used.

Data analysis used are:

a) Descriptive Statistics- frequency tables, mean of responses, normality checks
b) Multiple Correlation
c) T test and chi square
d) Factor Analysis- Exploratory as well as Confirmatory

Mapping of Objectives with the Tests/Analysis

<table>
<thead>
<tr>
<th>Objective</th>
<th>Approach</th>
<th>Sections/Questions</th>
<th>Tests to achieve it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1: Testing</td>
<td>Approach 1: Percentage distribution analysis.</td>
<td>Section C: Overall level Questions: C9, C13, C16, C19, C20, C23, C29, C33.</td>
<td>Examined what % of respondents have given higher rating.</td>
</tr>
<tr>
<td>Objective 1: Testing</td>
<td>Approach 2: Mean score analysis</td>
<td>Section C: Overall level Questions: C9, C13, C16, C19, C20, C23, C29, C33.</td>
<td>A Mean score value 4 and above (out of 5 point scale) is considered as a good score.</td>
</tr>
<tr>
<td>Objective 1: Testing</td>
<td>Approach 3: Importance Level (Expectation)</td>
<td>Section E: Q1 to Q8</td>
<td>If the average important level is 4 and above, then it is treated as an important element.</td>
</tr>
<tr>
<td>Objective 1: Testing</td>
<td>Approach 4: Multiple</td>
<td>Section C: Overall level</td>
<td>If strong correlation is found, then the element is treated as an important element.</td>
</tr>
</tbody>
</table>
correlation analysis. level Questions: C9, exists among the variables, it can be concluded that each one related with other, and change in one will affect other; and are important to have under responsiveness

<table>
<thead>
<tr>
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<th>Approach</th>
<th>Sections/Questions</th>
<th>Tests to achieve it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 2: Identifying elements of responsiveness relevant to Indian context (This is more about discussing about the newly added elements)</td>
<td>Approach 1: Importance Level (Expectation) on the Eight elements</td>
<td>Section E: Q9, Q10, Q11</td>
<td>If the average important level is 4 and above, then it is treated as an important element to have</td>
</tr>
<tr>
<td></td>
<td>Approach 2: Mean score Analysis Respondents’ rating on the newly added elements (using sub attributes mean score)</td>
<td>Section C: C34 to C52 (all 5 point rating scale questions only) [Accreditation, Patient’s rights]</td>
<td>Mean Score were examined. A Mean score value 4 and above, (out of 5 point scale) is considered as a good score.</td>
</tr>
<tr>
<td></td>
<td>Approach 3: Gap analysis (t test)</td>
<td>Section C: C34 to C52 (all 5 point rating scale questions only) [Accreditation, Patient’s rights] E 9 and E10 questions</td>
<td>To find difference between Expected and Perceived</td>
</tr>
<tr>
<td>Objective</td>
<td>Approach</td>
<td>Sections/Questions</td>
<td>Tests to achieve it</td>
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<tr>
<td>Objective 3: Developing an instrument to assess Health system Responsiveness in India</td>
<td>To understand if any existing attribute statements can be merged with other questions or can be removed/modified</td>
<td>Section C: All 5 point scale attributes questions</td>
<td>Principal component analysis for variables reduction - both EFA and CFA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting analysis</th>
<th>Approach</th>
<th>Sections/Questions</th>
<th>Tests to achieve it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section D:</td>
<td>Respect of Persons, Client interaction: Comparisons</td>
<td>All questions under Section D.</td>
<td>t-test</td>
</tr>
<tr>
<td>Responsiveness of Health System to Different groups</td>
<td>Male vs. Female, Young vs. old, Rich vs. poor, Urban vs. Rural, Education vs. No education, Indigenous vs Other population</td>
<td></td>
<td>t-test</td>
</tr>
</tbody>
</table>

Figure 3.1: Research Framework