CHAPTER III

METHODOLOGY

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CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the research methodology adopted for the study is discussed. The methodology of the research includes the research design, description of the setting, population, sample, sampling technique, development of the tool, content validity, pilot study, procedure for data collection and plan for data analysis. The present study was aimed to analyze the role of village level health workers in the delivery of primary health care in Kottayam district.

3.2 Research design

Considering the nature of the study and to accomplish the objectives, the investigator adopted a descriptive survey design for the study. A survey is an attempt to collect data from the members of the population with respect to one or more variables. Descriptive research involves collecting data in order to test hypothesis or to answer questions concerning the current status of the subjects of the study. Cross-sectional survey design is used to analyze the role of village level health workers in the delivery of primary health care in Kerala. Quantitative as well as qualitative data were obtained to get a clear picture of the existing scenario of the primary health care delivery at the grass root level. Qualitative
methods help to understand the life experiences, people’s beliefs and exploration of realities. In descriptive studies researcher uses various approaches to collect data. Triangulation is the use of multiple sources to draw conclusions about a particular problem. It can enhance credibility and help to overcome the bias that comes from a single method.

3.3 Setting of the study

Kerala is the southernmost State of India having a population of more than three crores. It is a small State with beautiful hilly areas as well as plains and coastal areas. There are 14 districts in Kerala and Kottayam district which is almost centrally located was selected for the present study. The area of Kottayam district is 2,208 square kilometer with a population of 19,52,901 (Census, 2001). The investigator obtained formal permission from DHS to conduct the study in Kottayam district (Appendix-II). Under the Director of Health Services, there is District Medical Officer (DMO), who is responsible for the health care of each district. Since the study setting is Kottayam district, the investigator obtained the list of primary health care institutions under DMO of Kottayam. It was found that there are 16 primary health centres either in the name of Community Health Centre (CHC) or as Block Primary Health Centre (BPHC). All these primary health centres have a mother PHC and two to eight mini primary health centres. Each mother PHC and mini PHCs have sub-centres functioning under them. Mother PHCs provide out-patient and in-patient
services whereas mini PHCs provide only out patient services. Out of the 329 health centres, 67 were main centres, which had out- patient/ in-patient services with medical officers posted. Hence the peripheral health units or the sub-centres were 262 in number in Kottayam district with one JPHN in charge of each centre. At the time of the study there were 339 JPHNs and 223 JHIs posted in the district. Since JHIs were not adequate in number, they had to cover more than one sub-centre area.

3.4 Population

The first step in sampling is defining the population; it is the group in which the investigator would like to generalize the results. Population denotes the entire group of subjects under study. In the present study the population refers to all the village level health workers (JPHN and JHI) of Kottayam district and their beneficiaries, the households of Kottayam district.

3.5 Sample and sampling technique

Selection of sample is a very important step in conducting any research study. Sampling is the process of selecting a subset of the population in which the entire population is represented. From the different sampling techniques, the investigator selected simple random sampling for selecting the sub-centres and the health workers. Random sampling method ensures every individual has the same probability of being selected and selection of one individual in no way affects the selection of another individual. In a simple random sample, the probability of selection of each
sampling unit will be, not only equal but also independent of each other (Syamalan, 2006).

Considering the setting of the study, a multi-stage random sampling technique was adopted. At the first stage, all the 16 CHCs/BPHCs were included for adequate representation of all the areas. In second stage one health centre was selected by lottery method from the list of health centres under the CHC/BPHC. Each health centre has a main centre and three to eight sub-centres. At the third stage, two sub-centres were selected again by lottery method. The main centre was excluded from the study as it provides inpatient/outpatient services. Thus the researcher selected 32 sub-centres as listed in Table-2. Each centre is staffed by a JPHN and JHI. Health workers (JPHN and JHI) of these sub-centers were included for the study. Households were selected by systematic random sampling from the family survey registers maintained in the sub-centres. Twenty households were selected from each sub-centre area. Thus 640 households were included in the study.
Table-2

**Sampling frame of the study**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>First stage</th>
<th>Second stage</th>
<th>Third stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BPHC/CHC</td>
<td>Health centre</td>
<td>Sub-centres</td>
</tr>
<tr>
<td>1</td>
<td>CHC Arunootimangalam</td>
<td>Velloor</td>
<td>Vadakara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Varikkamkunnu</td>
</tr>
<tr>
<td>2</td>
<td>BPHC Thalayolaparampu</td>
<td>Kuruppunthara</td>
<td>Manjoor (south)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kothanallor</td>
</tr>
<tr>
<td>3</td>
<td>CHC Edayarikkappuzha</td>
<td>Vazhoor</td>
<td>Chamampathal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Panapunna</td>
</tr>
<tr>
<td>4</td>
<td>CHC Erumely</td>
<td>Erumely</td>
<td>Vazhakkala</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peroorthodu</td>
</tr>
<tr>
<td>5</td>
<td>CHC Karukachal</td>
<td>Vakathanam</td>
<td>Kannanchira</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thrikkodithanam</td>
</tr>
<tr>
<td>6</td>
<td>CHC Koodalloor</td>
<td>Koodalloor</td>
<td>Vattukulangara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kalathoor</td>
</tr>
<tr>
<td>7</td>
<td>CHC Paika</td>
<td>Pallickathodu</td>
<td>Mukkanli</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anikad</td>
</tr>
<tr>
<td>8</td>
<td>CHC Ullanad</td>
<td>Kadanad</td>
<td>Pizhaku</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mattathipara</td>
</tr>
<tr>
<td>9</td>
<td>KMCHU Ettumanoor</td>
<td>Ettumanoor</td>
<td>Thellakom</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Punnathara</td>
</tr>
<tr>
<td>10</td>
<td>BPHC Athirampuzha</td>
<td>Athirampuzha</td>
<td>Mannananam</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maniaparampu</td>
</tr>
<tr>
<td>11</td>
<td>BPHC Edayazham</td>
<td>Thalayazham</td>
<td>Kothavara</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thottakam</td>
</tr>
<tr>
<td>12</td>
<td>BPHC Edamaruku</td>
<td>Edamaruku</td>
<td>Chemmala</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Melukavu</td>
</tr>
<tr>
<td>13</td>
<td>BPHC Kumarakom</td>
<td>Kumarakom</td>
<td>Attipeedika</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kumarakom (North)</td>
</tr>
<tr>
<td>14</td>
<td>BPHC Mundankunnu</td>
<td>Meenadom</td>
<td>Mundakal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pampady (South)</td>
</tr>
<tr>
<td>15</td>
<td>BPHC Panachikkadu</td>
<td>Panachikkadu</td>
<td>Erikadu</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kollad</td>
</tr>
<tr>
<td>16</td>
<td>BPHC Uzhavoor</td>
<td>Uzhavoor</td>
<td>Monippalli</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Edakkoli</td>
</tr>
</tbody>
</table>
In order to generate qualitative information, two Block Primary Health Centers (BPHCs) and two Community Health Centres (CHCs) were randomly selected for FGDs and in-depth interviews. Group discussions were planned separately for the JPHNs and JHIs of the selected health centres. Health workers render service to the community through ASHA and Anganwadi workers. Though they were not included in the main study, the investigator felt that they should be included while generating qualitative information. Focus group discussions for the ASHA and Anganwadi workers were also planned in the randomly selected health centre area. In-depth interview with one JPHN, one JHI from each health centre, supervisors and medical officer in charge of the four randomly selected health centres were also included for the in-depth interview. Schematic design of the study is given in figure- 4.

3.6 Inclusion criteria

JPHNs, JHIs, ASHAs, Anganwadi workers, supervisors, medical officers and households who are willing to participate in the study
Setting
Selected sub-centres of Kottayam district.

Population
Sub-centres, JPHNS, JHIs and households of Kottayam district.

Sample
32 sub-centres
32 JPHNs
32 JHIs
640 households
Qualitative data from selected JPHNs, JHIs, ASHAs, Anganwadi workers, supervisors and medical officers.

Tools
- Self-administered rating scale for JPHN and JHI
- Household survey proforma
- Sub-centre facilities assessment format
- Opinionnaire for JPHN and JHI
- Focus Group Discussion guide
- In-depth interview schedule

Analysis
- Computation of frequencies and percentages
- Arithmetic mean, Standard Deviation, Unpaired t test
- Analysis of variance, Post hoc comparison test
- Description of qualitative data

Study outcome
- Work performance of JPHN and JHI
- Services received by households
- Sub-centre facilities
- Problems and issues in the delivery of primary health care

Figure - 4
Schematic representation of the study design
3.7 Development of the tools

The investigator reviewed literature related to primary health care and performance of village level health workers within and outside country. Indian Public Health Standards (IPHS) for sub-centres were analysed and redefined job description of health workers was obtained from the State Government documents. The researcher also held discussions with health workers on various issues related to the health care delivery and consulted experts for the development of the tools. Informal discussions were also conducted with beneficiaries, and the long professional experience of the investigator helped in determining the important areas to be included in the tool.

The tools developed for the present study were:

1. Self-administered rating scale for JPHN and JHI
2. Household survey proforma
3. Sub-centre facilities assessment format
4. Opinionnaire for JPHN and JHI
5. Focus Group Discussion guide for JPHNs, JHIs, ASHA and Anganwadi workers
6. In-depth interview schedule for JPHN, JHI, Supervisor and Medical Officer
**Description of the tools**

**Tool 1: Self-administered rating scale for JPHN and JHI**

Considering the wide range of activities performed by health workers, it was difficult for the researcher to make an objective assessment of the performance of health workers. After discussing with experts, a self-administered rating scale to assess the performance of JPHN (Appendix-IV) and JHI (Appendix-V) was prepared which had two parts:

Part I: Socio-demographic information of JPHN/JHI, which includes age, sex, years of experience and population coverage.

Part II: Three point self-rating scale to assess the performance of JPHN/JHI. It has 65 items under ten sub-areas with three options ‘always, sometimes and never’. Option ‘always’ get two score, ‘sometimes’ get one score and ‘never’, zero score. The maximum possible score was 130. Though the total score range for both JPHN and JHI was the same, the score range in sub-areas was different, depending on the activities listed in their job description. The number of items and score range in sub-areas for JPHN and JHI is given in Table-3.
Table 3  
*Distribution of items and scores in sub-areas of performance of JPHN and JHI*

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Sub-areas</th>
<th>JPHN</th>
<th>JHI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number of items</td>
<td>Score range</td>
</tr>
<tr>
<td>1.</td>
<td>House visit</td>
<td>2</td>
<td>0-4</td>
</tr>
<tr>
<td>2.</td>
<td>Reproductive Child Health (RCH) services</td>
<td>14</td>
<td>0-28</td>
</tr>
<tr>
<td>3.</td>
<td>Nutritional services</td>
<td>5</td>
<td>0-10</td>
</tr>
<tr>
<td>4.</td>
<td>Immunization services</td>
<td>4</td>
<td>0-8</td>
</tr>
<tr>
<td>5.</td>
<td>School health services</td>
<td>3</td>
<td>0-6</td>
</tr>
<tr>
<td>6.</td>
<td>Communicable disease control</td>
<td>8</td>
<td>0-16</td>
</tr>
<tr>
<td>7.</td>
<td>Collection of Vital statistics</td>
<td>3</td>
<td>0-6</td>
</tr>
<tr>
<td>8.</td>
<td>Non-communicable disease control</td>
<td>9</td>
<td>0-18</td>
</tr>
<tr>
<td>9.</td>
<td>Meetings and conferences</td>
<td>5</td>
<td>0-10</td>
</tr>
<tr>
<td>10.</td>
<td>Maintenance of registers</td>
<td>12</td>
<td>0-24</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>65</td>
<td>0-130</td>
</tr>
</tbody>
</table>

The work performance of JPHN and JHI has been categorized into good, average and poor. The maximum score that could be obtained was 130. The score 0-43 (up to 33%) was considered as poor score, the score between 44-86 (34% to 66%) was considered as average score and score 87-130 (67% to 100%) was considered as good score in this study.
Tool 2: Household survey Proforma

A semi-structured interview schedule (Appendix-VI) to the adult member of the household was administered to assess the services received by them covering the following major areas of primary health care.

1. General information
2. Information regarding the awareness about sub-centre and house visits by health workers
3. Maternal health services
4. Child health services
5. Family planning services
6. Non-communicable disease management
7. Communicable disease control
8. Household’s assessment regarding the performance of village level health workers

Tool 3: Sub-centre facilities assessment format

This tool (Appendix-VII) contains two parts.

Part I: Observation check list: Investigator prepared an observation checklist to verify the facilities of sub-centre after consulting the experts from the field of public health and reviewing the Indian public health standards. Five sub-areas were identified as given below.
1. Basic facilities
2. Furniture
3. Equipment
4. Drugs
5. Supplies

Each sub-area was with 10 items, giving one score to each item and the score range was 0-10 in each sub-area. Thus the maximum score for the sub centre facilities was 50 and those sub-centres, which scored 35 and above were considered as with good facilities, the score range 17-34 was categorized as with average facilities and the score 16 and less was considered as with poor facilities. The facilities in sub-areas were also categorized in to good, average and poor. The score range eight and above was rated as good, score range 4-7 as average and the score range three and below was considered as poor in sub-areas.

Part II: It is a semi-structured interview schedule to JPHN regarding the availability and utilization of facilities of the sub-centre.

Tool 4: Opinionnaire to JPHN/JHI

It is a three-point scale (Appendix-VIII) to identify the problems and issues related to delivery of primary health care, comprising eighteen statements. The statements were grouped under three sub-areas as given below;
1. Opinion regarding the sub-centre facilities and acceptance by the community

2. Opinion regarding the delivery of primary health care services

3. Opinion regarding the recording system, supervision, in-service training and promotion.

Respondents were given three options such as agree, undecided or disagree to the statements based on their experiences and observations.

Tool 5: Focus group discussion guide to JPHNs, JHIs, ASHA and Anganwadi workers

Focus group involves organized discussion with a selected group of individuals to gain information about their views and experiences of a topic. The purpose of conducting focus group discussion is to obtain information of a qualitative nature from a predetermined and limited number of people. In order to generate qualitative information for the present study, investigator developed focus group discussion guide to conduct the discussions with JPHNs, JHIs, ASHA workers and Anganwadi workers (Appendix-IX). FGD guide consist of six topics as given below

Topics for discussion

1. House visits

2. Reproductive Child Health (RCH) services

3. Communicable disease control
4. Non-communicable disease management and control

5. Records and reports

6. Team work

**Tool 6: In-depth interview schedule to JPHN, JHI, supervisor and medical officer**

In-depth interview is a qualitative research technique that allows person to person discussion, which can lead to increased insight into people’s thoughts, feelings and behaviour on important issues. In order to explore the existing scenario of primary health care services at the village level, the investigator decided to conduct in-depth interviews with JPHNs and JHIs of randomly selected primary health centres. A semi-structured interview schedule was developed for JPHNs and JHIs (Appendix-X) covering the major areas of primary health care. Supervisors including medical officers are very much involved in the delivery of primary health care at the grass root level. In order to explore the problems and issues in the delivery of primary health care, it was essential to interview the supervisors also. The investigator developed semi-structured interview schedules for the supervisors (Appendix-XI) and medical officers (Appendix-XII) to elicit information on the existing system of rendering primary health care.
**Content validity and reliability**

The developed tools were given to seven experts from the field of public health, community health nursing, community medicine and coordinators of public health projects. As per the suggestions, two questions were modified in tool one and one question was added in tool two and three opinion statements were reframed in tool four. There was 100% agreement on the items of observation checklist. Two questions were reworded in the interview schedule to the JPHN regarding the utilization of sub-centre facilities. All the experts agreed on the aspects included in the FGD guide and in-depth interview schedule.

The reliability of the self-administered rating scale and opinionnaire was established by applying split-half method. The reliability coefficient for self-administered rating scale for JPHN and JHI was found to be 0.83 and 0.81 respectively. The reliability co-efficient of opinionnaire was 0.85 for JPHN and 0.84 for JHI. The tools were translated to Malayalam and retranslated to English with the help of language experts.

**3.8 Pilot Study**

Permission was obtained from Directorate of Health Services (DHS), Thiruvananthapuram and District Medical Officer, Kottayam. The pilot study was conducted in March 2009. Five sub-centers were selected for pilot study, which were not included in the main study. The health workers were contacted over phone and appointments were fixed. The purpose of the study
was explained and consent was obtained from study participants. The tools were administered to JPHNs and JHIs. Sub-centre facilities were observed with the help of checklist. Twenty households from each sub-centre area were also interviewed. One statement in the opinionnaire for health worker was reframed for better clarity. It took forty minutes for each health worker and thirty minutes for the households. Focus Group Discussion guides and the in-depth interview schedules were pilot tested. The pilot study did not show any major problems in the design of the study and the tools were found to be feasible.

3.9 Data collection process

The data were collected over a period of six months from May 2009 to October 2009. The investigator personally contacted the medical officer in charge of the selected sub-centres, and took permission to visit the sub-centre and interview the health workers. The health workers of the selected sub-centres were further contacted and fixed an appointment for the meeting at the sub-centre. During the data collection process, the investigator explained the purpose of the study, assured the confidentiality of their responses and consent was obtained. Self-administered rating scale was given to JPHN and JHI and asked to rate without consulting each other. Opinionnaire was also administered to JPHN and JHI with direction to give their free and frank opinion. The investigator further verified the
facilities of sub-centre and interviewed the JPHN regarding the availability and utilization of facilities.

Households of the area were randomly selected from the family survey register available at the sub-centre using systematic sampling technique. The investigator interviewed adult member of the household in the absence of the health workers.

In order to cover the entire district of Kottayam, the researcher had to travel a lot and at times the health workers could not keep the appointments due to sudden change in their work schedule.

Focus group discussions (FGD) were arranged with JPHNs and JHIs separately in randomly selected primary health centres. Four sessions were conducted for JPHNs and there were eight to twelve members in each session. The purpose of the FGD was explained and discussions were tape recorded with their consent. Assurance was made on the confidentiality of the information and it would be used only for the study purpose. The JPHNs whole-heartedly participated in the discussions and the researcher thanked them for their cooperation. Similarly, four FGDS were conducted for JHIs also in the selected primary health centres, participants varied from six to ten. Purpose of the FGD was explained and consent was obtained to record the information. They came out with various issues
related to the topics under discussion with suggestions for future improvement.

Four FGDs were conducted for ASHAs in the selected primary health centres and 10-12 members were present for each session. The purpose of the FGD was explained and consent was obtained to record the information. Discussions were based on the six areas of primary health care. They actively participated in the discussion and made their comments and suggestions.

Four FGDs were also conducted for Anganwadi workers of the selected primary health centre area on the pre-planned topics. Eight to ten workers were present for the sessions. Purpose of the FGD was explained and consent was obtained to tape record the information. They shared their views on various topics under discussion and each session took 45 minutes to one hour.

The researcher conducted in-depth interview with one JPHN and one JHI (who was free and willing to participate) of the randomly selected primary health centres. Similarly, supervisors and medical officers of the four randomly selected primary health centres were interviewed.

3.10 Scoring and processing of data

The quantitative data collected were entered in a master sheet of the computer. Each subject of the sample was given an identification number
and entered serially. The data were classified according to the different variables studied and were coded in the master sheet. The data were analysed based on the objectives and hypothesis, by applying appropriate statistical methods using SPSS. The following statistical techniques were used for this purpose.

- Computation of frequencies, percentage, arithmetic mean and standard deviation.
- Unpaired t test and analysis of variance (ANOVA)
- The post hoc comparison test.

Qualitative data obtained through FGDs and in-depth interviews were also analyzed. The tape-recorded data of each FGD was first transcribed and free listed. Content analysis was done with the help of three public health experts and grouped under six sub-areas. The transcribed verbatim of the in-depth interviews was also analyzed by three experts and organized under six themes. The findings derived from the FGDs and in-depth interviews were further verified by the village level health workers, supervisors and medical officers. Selected case studies are also included to support the findings. Important statements or quotable quotes with their references were marked for use in the report as reference material.
3.11 Summary

This chapter has dealt with research methodology adopted in the study, which is a descriptive survey design.

It also describes the sample and sampling technique, setting and population.

Development of the tools and its description has been presented. The chapter also explains the data collection procedure adopted and the methods used for data analysis.