CHAPTER II
RESEARCH METHODOLOGY

This chapter presents the research approach selected, sampling technique employed, tools selected and constructed, and the procedure adopted for the data collection. We may recall that the primary objective of this study in Sociology of Medicine was to explore the social and health aspects of married women regarding their reproductive health (RH) and quality of life (QOL) in the mining and non-mining regions of Goa.

RESEARCH APPROACH

In view of the nature of the problem, to accomplish the objectives and to test the hypotheses of the study, an exploratory and comparative research approach was planned for this study. This approach helps in identifying relevant areas, thematic issues and perspectives of women’s experiences and perceptions of existing status, conditions and circumstances for a detailed analysis. This design allows for description and narrative explanation of subject’s views regarding quality of life (QOL) and reproductive health (RH) concerns.

Research Design

Research design refers to the plan or organization of a scientific investigation. It helps the researcher in selection of subjects, manipulation of independent variables, control of extraneous variables, observations to be made and the type of statistical analyses to be used to interpret the data. Selection of the design depends upon the purpose of the study, variables to be manipulated and the condition under which the study may be conducted. A hypothetico-deductive research design was selected for the study.
Two groups of women in the mining and non-mining communities respectively were selected randomly and treated identically. After the sample selection, the final data collection tool was administered to the two groups as given in Table 2.1. No attempt was made to restrict the responses given by the subjects in both the groups. A correlation approach was also adopted to find the relationship between quality of life and reproductive health with selected demographic and reproductive health characteristics. A comparative approach was used to identify the perceptions of women regarding their QOL and RH in the mining and non-mining communities. Data collection between these two groups includes interviews to measure QOL and reproductive health (RH).

Table 2.1

Schematic Representation of the Study Design

<table>
<thead>
<tr>
<th>Groups of women</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining community</td>
<td>Assessment of the quality of life (QOL)</td>
</tr>
<tr>
<td></td>
<td>Assessment of reproductive health and well-being (RHW)</td>
</tr>
<tr>
<td>Non-mining community</td>
<td>Assessment of the quality of life (QOL)</td>
</tr>
<tr>
<td></td>
<td>Assessment of reproductive health and well-being (RHW)</td>
</tr>
</tbody>
</table>

Variables

The variables under study are described below.

In this study the dependent variable is quality of life of the women, which is measured with a standardized questionnaire rating scale as shown in Table 2.2. The independent variable is reproductive health of women, which is measured by a structured rating questionnaire and an indepth open-ended interview schedule. The extraneous variables are demographic and the reproductive characteristics inbuilt into the study.
Table 2.2

Variables and their measuring instruments

<table>
<thead>
<tr>
<th>Measure Variable</th>
<th>Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Life</td>
<td>Standardized questionnaire rating scale</td>
</tr>
<tr>
<td></td>
<td>Ferrans and Powers Quality of Life Index—Generic version (QLI)</td>
</tr>
<tr>
<td>Reproductive Health</td>
<td>Structured questionnaire rating scale</td>
</tr>
<tr>
<td></td>
<td>Reproductive Health Index (RHI)</td>
</tr>
<tr>
<td>Reproductive health and wellbeing</td>
<td>In depth open ended interview</td>
</tr>
<tr>
<td></td>
<td>Reproductive Health and Well-being Interview (RHW)</td>
</tr>
<tr>
<td>Demographic characteristics</td>
<td>Socio-economic status inbuilt in the RHW schedule</td>
</tr>
</tbody>
</table>

**DESCRIPTION OF THE STUDY AREA**

Goa is divided into two districts (North Goa and South Goa) and composed of 11 **talukas**. Goa is one of India's economically developed states as tourism and mining played an important role in its economy following liberation. Mining along the slopes of Sahyadri is a prominent industry in the state. The share of the manufacturing sector in the state domestic product has increased from 25% (1980-81) to 33% in 1996-97 (Economic and Political Weekly 1998: 45). The contribution of the agricultural sector to the net state domestic product declined from 16% (1981) to 9% (1996-97). In 1991, only 24% of Goa’s main workforce was employed in the agricultural sector (Office of the Registrar General and Census Commissioner 1992: 45). Goa is one of India’s most educationally advanced states and has good health indicators (Table 2.3). 82% of Goa’s population age seven and above is literate and the literacy rates are 89% for males and 76% for females compared with India (65%). While in India literacy rate is 76% for males and 56% for females (Ministry of Health and Family Welfare 2001 Census 1999a).
Table 2.3
Health indicators in Goa compared to India (2004)

<table>
<thead>
<tr>
<th>Item</th>
<th>Goa</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sex ratio (women per 1000 men)</td>
<td>960</td>
<td>933</td>
</tr>
<tr>
<td>2 Birth Rate</td>
<td>17.85</td>
<td>26.1</td>
</tr>
<tr>
<td>3 Death Rate</td>
<td>7.16</td>
<td>8.7</td>
</tr>
<tr>
<td>4 Infant Mortality rate</td>
<td>13.99</td>
<td>70</td>
</tr>
<tr>
<td>5 Maternal Mortality Rate/ lakh live births</td>
<td>39.6</td>
<td>407</td>
</tr>
<tr>
<td>7 Total fertility rate</td>
<td>1.7</td>
<td>3.39</td>
</tr>
<tr>
<td>8 Couple protection rate</td>
<td>34.1</td>
<td>46.5</td>
</tr>
<tr>
<td>9 Life expectation at birth (women)</td>
<td>72</td>
<td>59.7</td>
</tr>
<tr>
<td>10 Mean age at marriage for women</td>
<td>25.1</td>
<td>20</td>
</tr>
</tbody>
</table>


Research Setting

This research study has been conducted in the mining and non-mining regions of North Goa (Bicholim and Sattari talukas) and a few villages in these regions have been selected randomly by the investigator. Married women selected for the study are from similar socio-economic background. Field notes from observations and interviews with community people and married women in the mining region have helped to create a picture of the setting of the study and are described below to have a realistic view of the mining region (defined on page 14 in Chapter I).

Pale, Surla, and Velguem villages (Bicholim taluka) and Sonshi village (Sattari taluka) have been selected for study of rural women living in the mining community of Goa due to their high population density. In all these villages active iron ore mining activity has been existing for more than 50 years. These mines operate all through the year except during heavy monsoons. Men are mainly dependent on mining activity for their source of livelihood. Migrant women procure
jobs as mining labourers like carrying mine mud, sweeping, and spraying water. Women have lost their agricultural lands due to mining activity and processes.

Women are mostly at home and tend to family and household works. The roads are slushy, congested and heavily loaded with traffic vehicles (overloaded trucks carrying iron ore) to and fro the mines. There is lot of dirt, filth and dust due to the emissions from the overloaded ore laden heavy vehicles. Children find it hard to go to school due to dust pollution and heavy vehicular traffic. Only few of the villages have amenities like hotels, shops, small markets, local panchayat (administrative powers at the village level), health centre, anganwadi (crèche or nursery for toddlers and under-fives), schools (primary and high schools), road transport and communication. Most of the families have to depend on tanker water, which comes once a day, and there is a rush to fill the water pots. The nearest town is Sanquelim (18 kms) and Ponda (14 kms) but the distance varies from each village.

In Pale there are 9 wadas (units) with smaller hamlets in each wada and a total of 5641 population (Census 2001). The 9 wadas are Ambegal, Chowgule, Ambeshi, Navar/Duel, Tal, Bhamai, Rumad Savdi Khazan, Chinchini, and Cotombi. The village has 5 anganwadis under the panchayat and 7 under the Integrated Child Development Scheme (ICDS). There are 7 government primary schools. There is one primary health sub centre operating along with a rural medical dispensary (RMD) situated in the panchayat building. The doctor visits the RMD three days a week, while the health worker carries out morning rounds and is available in the health center in the evening. There are no doctors at night so they have to approach the nearest primary health center (Sanquelim or Ponda).

Surla has Bayem, Voilyle, Khodgin, Bhaimaikar, and other wadas and a total of 4943 population (Census 2001). The village has four anganwadis and few
government primary schools. There was one primary health sub centre for the community in Surla in the panchayat building. Since a few years the health centre is closed. Currently a newly appointed health worker is operating from the key point, i.e. the Velguem-Surla RMD. There is only one private doctor in the area.

Velguem has a total of 2273 population (Census 2001). The village has four anganwadi and few government primary schools. There are few amenities like the fish market, bus service, and diary society. There was one primary health sub centre for the community in Velguem in the panchayat building. Since a few years the centre has closed down and is operating in the combined Velguem sub centre-Surla RMD.

Sonshi has Sonus, Chirewal, Solie, and Voilye wadas. Among these wadas, Sonus wada is heavily polluted with dust and heavy vehicular ore traffic. It has a total of 402 population (Census 2001). The village has three anganwadis and few government primary schools. There are no health centers or local panchayat. They have to access the Cudnem panchayat, which is far. The common complains of the people are increased flies, dust, noise, dirt, filth, traffic, garage and mining activity leading to air pollution and ill-health. They complain of poor access to health centers and no action taken regarding control of dust pollution and less public transport facility. Wells in these villages are going dry, and only few houses have private taps. Municipal water supply is irregular. Some wadas receive water tankers in the summer months. Because of the continuous plying of trucks in the mines from early morning to late night there is a lot of dust and some of the main roads are poor, pot ridden and dirty. The dust settles on the houses and on fruit trees. Agriculture has declined due to silt. Few wadas are near the edge of big mines/ dumps (20 meters) and are full of dust.
Some of the social issues expressed by women in these villages in the mining region are provided in Table 2.4.

**Table 2.4**

Common issues expressed by women in the mining regions

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Area</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Workers</td>
<td>Truck drivers and miners have heavy work hence they are stressed and get drunk. Some labourers are on contract and have no benefits of long term health investments or plans.</td>
</tr>
<tr>
<td>2</td>
<td>Water</td>
<td>Water scarcity in wells (dry/ low levels) and erratic supply / scarcity of tap water in summer. Public taps phased out. Sometimes they have to travel far for water and depend on tankers for daily supply, which is irregular.</td>
</tr>
<tr>
<td>3</td>
<td>Air</td>
<td>Increased dust pollution, filth, fumes from overloaded ore laden heavy vehicles through residential areas</td>
</tr>
<tr>
<td>4</td>
<td>Heat</td>
<td>Increased heat, stress, and severe humidity</td>
</tr>
<tr>
<td>5</td>
<td>Health care</td>
<td>Sub health centers far from some wadas, no doctors/ pharmacy at night</td>
</tr>
<tr>
<td>6</td>
<td>Soil/ land</td>
<td>Loss of agricultural lands/ fields, poor crop yields/ productivity, poor soil fertility</td>
</tr>
<tr>
<td>7</td>
<td>Forest</td>
<td>Scarcity of fire wood, loss of forest produce, loss of biodiversity</td>
</tr>
<tr>
<td>8</td>
<td>Education</td>
<td>Schools are far, expensive</td>
</tr>
<tr>
<td>9</td>
<td>Gender</td>
<td>Less education for girls as they are married early in life, involved primarily in household work</td>
</tr>
<tr>
<td>10</td>
<td>Jobs</td>
<td>Women unemployed, struggle with meager salary of husbands.</td>
</tr>
<tr>
<td>11</td>
<td>Sound</td>
<td>Increased sound of mine trucks passing through residential areas, blasting in the mine sites</td>
</tr>
<tr>
<td>12</td>
<td>Transport</td>
<td>Lack of public transport in remote or interior wadas/ units</td>
</tr>
<tr>
<td>13</td>
<td>Roads</td>
<td>Poor road conditions, risk of accidents due to heavy vehicles plying</td>
</tr>
<tr>
<td>14</td>
<td>Illness</td>
<td>Complain of respiratory illness</td>
</tr>
<tr>
<td>15</td>
<td>Governance</td>
<td>Lack of good governance towards addressing and mitigating community issues</td>
</tr>
</tbody>
</table>
Poreim, and Querim (Keri) in Sattari taluka are selected as non-mining community in the study. There are absolutely no mines or mining related activity in these villages. The local community depends on agriculture as their main source of occupation and self sustenance. Keri has 2051 population and 5 wadas, they are Keri, Shiroli, Goltim, Ghoteli no 1 and no 2, and Bhairelwadas. The facilities availed in the village are gram panchayat, RMD, range forest check office, government high school, private doctors clinics, pharmacy, transport, telephone exchange, shishuvatika (nursery), balwadi (nursery), youth club, post office, agricultural fields, plantations (coconut, cashew, banana, aeracnuts (betel nuts), sugarcane, kokum etc), natural water sources, irrigation canals, 6 anganwadis, temple, telephone booths, hotels, grocery shops, petty shops (gaddos) and community resource centre (cybercafe) which is closed now. This is a mountainous region.

Poriem village has 3932 population and is divided into 12 wadas, they are Rane, Majik, Malshekar, Gosani, Chitmala, Podasho, Tulshimala, and Guravwadas. There is a gram panchayat, one private school, grocery shops, pharmacy, private doctors, government health centre, telephone exchange, milk diary, electricity department, agricultural office, forest office, bal bhavan (nursery), shishuvatika, higher secondary school, ITI institute, computer academy, 12 anganwadis, temples, bank and bus service. This village has horticulture (mango, coconut and cashew), agricultural fields, hotels, and landscapes. It has good source of water supply like rivers, wells, ponds, taps etc.

DEVELOPMENT OF THE STUDY INSTRUMENTS

The most important, accurate and reliable evidence that can be used in evaluating the outcomes of research investigation is by developing appropriate instruments to examine the specific variables. Treece and Treece (1986: 219) state,
"The instruments selected in research should be as far as possible the vehicle that would best obtain data for drawing conclusions pertinent to the study".

In social sciences, direct questioning or interviewing of a sample of people yields a good deal of information and it was considered appropriate in this study. The questioning and interview techniques adopted for the data collection in the study were considered to be the most efficient and objective method of deriving quantitative and qualitative information from married women. The interview was used to supplement and describe social issues and social behaviours that cannot be gathered through rating questionnaires.

At the outset various research and non-research literatures through online and printed bibliographic materials (books, journals, and articles) have been gathered for information and knowledge of concepts related to Sociology of Health and illness, social health, well-being, reproductive health and quality of life in general and specifically about women. Research and measurement studies done in the field of QOL and RH were reviewed to gather information on various steps taken to construct the tools and the statistical procedures adopted to estimate its validity and reliability. Published and unpublished data on various tools related to QOL and RH in general and specific were reviewed. They lent a great deal of information towards development of the study tools.

Based on literature and study objectives theoretical, conceptual and operational definitions of Reproductive health (RH) and Quality of life (QOL) have been prepared. Since a correlation approach is used to find the relationship between quality of life and the reproductive health, a common set of domains and sub-domains to measure RHI and QOL have been prepared. The areas or items relevant to RH and QOL concepts have been prepared and developed in the content blueprints of the data
collection instruments. These tools have been used for assessing the perceptions, experiences and viewpoints of women regarding their reproductive health status and quality of life.

Development of the questionnaire and interview instruments were selected and constructed to study the variables (RH and QOL). The instruments are given below.

- Ferrans and Powers Quality of Life Index Generic version (QLI) for the assessment of the satisfaction and importance areas of quality of life among women and will be expressed as QLI scores.
- Reproductive Health Index (RHI) for assessment of the women's satisfaction and importance areas of reproductive health status and will be expressed as RHI scores.
- Reproductive Health and well-being interview (RHW) for the levels of objective and subjective assessment of women's reproductive health status and conditions.
- Demographic and the socio-economic characteristics are inbuilt in the RHW.

CONSTRUCTION OF A TOOL FOR QUALITY OF LIFE

Standardized instruments are increasingly being used in various countries to provide additional information on sociological concepts associated with health and well-being. Different instruments use different sets of domains, reflecting an implicit difference in how social health and well-being is conceptualized and an explicit difference in how social health is operationally measured. Although such applications quantify individual or group experience, it explicitly refers to a conceptual definition of QOL as the basis for the selection of domains or operational indicators. Based on the domains identified from the research literature, many investigators have tried to develop instruments to measure QOL. There is no established consensus as to what
constitutes the key dimensions of QOL, but there seems to be a general agreement that physical, and psychosocial dimensions have to be included (WHO QOL Group 1995: 34).

Various QOL tools were reviewed for their content, suitability, feasibility and relevance to the research objectives, hypothesis and the study interests. A number of standardised QOL tools reviewed in the process are Health and quality of life, QOL Indicators, WHOQOL-100, Ferrans and Powers QOL index- Generic version (QLI-G), Manual for PGI, General well-being measure, Subjective well-being, Quality of well-being scale (QWBS) and Spitzers QOL index (QL).

Selection and Description of the Quality of Life Scale

Quality of life (QOL) can be defined as the presence of a reasonable amount of pleasurable, successful and meaningful experiences. The positive end of the QOL continuum means life satisfaction, happiness or well-being, the negative end relates to despair, depression or distress and the midpoint of the scale denotes well-being as okay or boring among women.

Ferrans and Powers (1992: 29-38) defined QOL as a “person’s sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her.” The Ferrans and Powers QOL index-Generic version (QLI) a standardized questionnaire rating scale was found to be more precise for the study objectives and assessment of the married women’s QOL status (Ferrans and Powers 1985). A content blueprint was also prepared based on the four domains of the QOL tool (Appendix I). This was necessary as the instrument was constructed keeping in view the corresponding domains in the review of literature.

The approaches to QOL has two broad categories, labeled by Ferrans (1997: 216) as the “normal life approach” and the “evaluation approach” with four domains
i.e. health and functioning, social-economic, psychological or spiritual and family life. The ‘normal life approach’ indicates how well individual functions within society, which reflects his/her satisfaction with that area in life. The ‘evaluation approach’ indicates how a person perceives a particular aspect of life referring to his/her important areas in life. A person can be unsatisfied with a QOL domain that she considers to be of relatively little importance in life, and thus maintain a satisfactory overall QOL. But her satisfaction with a domain of great importance would contribute to higher overall QOL.

The quality of life instrument has a total of 64 items in two parts, the Satisfaction and the Importance scale. Each part of the scale consists of 32 items or questions. The 32 items in the Satisfaction scale are identical to the 32 items in the Importance scale. With regard to item 21 and 22, only one item has to be answered, i.e. those who are employed answered the item 21 and those who are unemployed, retired or disabled have to answer the item 22. Therefore the total items are 64 and in each part (Satisfaction and Importance) there are 32 items.

The domains include Health and Functioning (13 items), Social and Economic (7), Psychological/Spiritual (7) and Family (5). The first part measures satisfaction (how satisfied are you with that area of your life?) within the four domains and the second part measures the importance (how important is that area of your life to you?) for these four domains. The rating scales for the QOL Satisfaction as well as the QOL Importance tools has six points: very dissatisfied/unimportant (1), moderately dissatisfied/unimportant (2), slightly dissatisfied/unimportant (3), slightly satisfied/important (4), moderately satisfied/important (5) and very satisfied/important (6) respectively (see Appendix V). A pictorial description of the six point rating scale is
given in a visual chart for identification by the women during the interview (Appendix X).

**Scoring of the QOL Scale**

There were four sets of scores calculated from the total QOL scale and the four QOL domains or subscales: health and social functioning, spiritual, psychosocial and family. The possible scores of each item ranged from 1 - 6. For the total (overall) quality of life score 32 items from each part were used to calculate the total score, which reflects overall quality of life. The steps of the scoring procedure for QOL were used according to the method given by Ferrans and Powers quality of life index (Appendix VII).

**Content validity and face validity of the QLI**

Validity refers to the degree to which an instrument measures what it is supposed to measure. Content validity is the sampling adequacy of the content being measured (Polit and Hungler 1998: 353).

The Quality of life standardized questionnaire rating scale (QLI) was tested for its face validity and content validity. An item development approach with a systematic review by the five subject professionals was done to know the item relevance and appropriateness of the tool. A high level of agreement was shown for the face validity. A systematic review of the tool was also done by the fourteen academic and research experts in various specialised fields to relate items to conceptual model in January 2005. To determine the content validity, the drafts of the QLI along with the content blueprint (Appendix I) and a criteria rating scale were submitted to the validators. The subject experts marked their evaluation on the criteria rating scale. There was high level or 100% strong agreement among the
validators for all the items in the four tools. There were few suggestions regarding items 3, 4, and 21 in the QLI tool.

Necessary modifications were made and the rest of the content was retained in the QLI. A letter was given to each validator regarding the requirements of the content validity for the tool (Appendix VIII). The final QOL tool was prepared which contained 32 items in part 1 (Satisfaction) and 32 items in part 2 (Importance). Content validity of the QOL was also supported by the fact that items were based on an extensive literature review of issues related to quality of life and on the empirical reports of initial interviews conducted among married women regarding their quality of life. The final QLI tool was prepared based on the content validity.

**DEVELOPMENT OF REPRODUCTIVE HEALTH INSTRUMENTS**

WHO distinguishes three dimensions of reproductive health: as a human condition (including the level of health and related areas of well-being); as an approach (policies, legislation and attitudes); and as services like provision of services, access to them, and their utilization (Sadana 2003:1). Different structured reproductive health questionnaires, interviews and focus group discussions have been studied for their appropriateness, areas and issues in the light of the present objectives and concerns. Some of the tools examined are given below.

- Evaluating women’s reproductive health and illness in Pakistan: Moderators guide for focus group discussions.
- Focus group discussions with young people.
- Ukraine women’s reproductive health project: Clinic exit interview questionnaire.
- Reproductive child health survey. IIPS, Mumbai and PC. 2004.
- Questionnaire for women in postpartum care on women’s RH and rights.
- Questionnaire for Reproductive health care service providers
- Menopause questionnaire among working women.

Though all these tools represent issues related to specific woman’s reproductive health, none of the tools were found to be compatible for the present study objectives, setting and context. Hence the researcher developed two tools for assessment of the reproductive health and well-being among married women based on the subdomains. For the quantitative assessment of the RH status among women a
Reproductive Health Index (RHI) was developed to assess the reproductive health of the women. The RHI was also used for its association with the QLI. For qualitative assessment of the reproductive health and well-being status among women a Reproductive Health and Well-being interview (RHW) was developed. The RHW is prepared based on the domains in the RHI tool so as to capture the actual (objective) and perceived (subjective) levels of RH status among women. This tool is used to examine in-depth the areas related to RH. This tool also includes demographic and socio-economic characteristics to describe the sample of women who participate in the study and for statistical analysis. Hence the RHI and the RHW tools were prepared by the investigator for the study purpose.

Identification of Core Issues for the Tools (RHI and RHW)

Individual interviews and focus group discussions were used to identify the areas that were considered important for reproductive health status among ten married women living in the mining community of Chiknewada in Cudnem (Sattari) and Kammamal wada in Curchorem town (Quepem, South Goa). These meetings were used as initial interviews to identity content areas suitable to be captured through interviews and questionnaires. This was conducted in November 2004. Women selected for the interviews possessed characteristics similar to those proposed for the larger study. From these discussions with the women, the investigator arrived at certain important areas in the life of the women with regard to reproductive health and well-being.

Construction of the Tools for the Reproductive Health Assessment

Based on the initial interviews two reproductive health structured questionnaires, i.e. the reproductive Health Index (RHI) and an indepth interview schedule, i.e. the Reproductive Health and Well-being interview (RHW) was
developed to assess the reproductive health among women. The methods adopted for the construction of the items and preparation of the questionnaire and interview are as follows:

- A review of the research and non-research literature related to women's health/ awareness, reproductive health/ fertility, family support/ communication, work/ education, health seeking behaviours/ health care, and social/ general life history was analysed.

- Academic and research expert's opinions and suggestions were taken into consideration in determining the important areas to be included in the questionnaire and interviews.

- Content outline and blueprint of the RH tools (RHI and RHW) was prepared based on the community, home and field observations of the concerns and issues of the women.

The RHI and the RHW was prepared to describe the social and health perspectives of the RH status and conditions of the married women. The following steps were adopted in the development of the RHI and the RHW.

- Preparation of the RHI blue prints similar to that of the QLI tool
- Preparation of the first draft of the RHI and the RHW.
- Obtaining content validity of both the tools
- Preparation of the final draft of the RHI and the RHW

**Preparation of the Blue prints for the RHI and the RHW tools**

The blue print for the RHI was prepared with six dimensions: physical health and illness (14 items), psychological health and illness (10), physical functioning (2), safe and satisfying sexual life (19), energy and fatigue (2), and cognitive functioning (3). This tool included areas related to satisfaction and importance areas of
reproductive health and well-being with a total of 50 items (Appendix II). The blueprint of the RHW included 12 domains: physical health and illness (12 items), safe and satisfying sexual life (12), energy and fatigue (4), psychological health and illness (8), physical functioning (3), cognitive functioning (3), social sanctions (4), social role (2), productive role (27), demographic (5), relations with partner (7), and need for support (2). The RHW tool included 90 items (Appendix III).

**Preparation of the first Draft for the RHI and the RHW tools**

The first draft of the RHI and the RHW was prepared on the basis of the blueprint, literature available on the topic and contents related to RH among women. The literature was also reviewed on the methodological development of the RHI rating questionnaire keeping in mind the objectives to be achieved. The first part of the RHI tool measures satisfaction within the six domains and the second part measure the importance for these six domains (Appendix V). The rating scales for the RHI Satisfaction and the RHI Importance areas has six points each: very dissatisfied/unimportant (1), moderately dissatisfied/unimportant (2), slightly dissatisfied/unimportant (3), slightly satisfied/important (4), moderately satisfied/important (5) and very satisfied/important (6) respectively. A visual chart was used to show the six point rating scale to the women during the interview (Appendix X). The content areas were simple, clear, and comprehensive for the married women.

**Content Validity of the RHI and the RHW tools**

To determine the content validity, the drafts of the RHI and the RHW along with the content blueprint and rating scale were submitted to fourteen experts (Appendix VIII). There was 100% strong agreement among the subject experts who validated all the items in the four tools. For the RHI there were few inputs and suggestions regarding 9, 10, 11, 20, 22, 23, 24, 25, 27, 36, 40 and 46 items in the tool.
For the RHW there were few remarks regarding the items 1, 2, 3, 4, 5, 6, 7, 8, 13, 16, 25, 26, 28, 32, 36, 38, 40 and 61. All changes suggested by the subject experts were incorporated in the RHI and RHW tools.

Based on their suggestions regarding social and cultural norms of local women in the present context, the required modifications were made in the final tool. The main content was retained in the RHI and the RHW. This had been added to the final draft. Hence there were very few modifications that were made in the content of the RHI and the RHW.

**Preparation of the Final Draft of the RHI and the RHW tools**

The final draft of the RHI was prepared incorporating the suggestions given by the expert validators. The final version of the RHI is given in Appendix VI. The final RHI consisted of 50 items in the satisfaction part and 50 items were finalized in the importance part. The scoring procedure for the RHI tool is the same as adopted by the Ferrans and Powers QLI tool. The total RHI score that can be obtained by the woman on the rating scale is 30. The final draft of the RHW was prepared incorporating the suggestions given by the expert validators. The final form of the tool consisted of 90 items as given in Appendix IV.

**Demographic Proforma**

The proforma consists of demographic, socio-economic, health and the social ecological characteristics. Demographic characteristics include items like age, religion, place of origin, residence, family, and diet pattern. Socio-economic status (SES) include education, employment status, primary occupation and total income of family and self, ownership assets like media communication, materials, and basic amenities (in-house water tap, a flush toilet, electricity, a radio/television/video deck, refrigerator, and motorcycle). Socio-ecological characteristics include type of house,
electricity, disposal of solid waste, sanitation facility, water, and type of fuel. A higher score of SES indicates higher family economic status among women. This proforma was inbuilt in the RHW tool (Appendix IV). The tool was given for content validity and the tool was found to be valid.

**Translation of the Tools**

All the three tools, namely Ferrans and Powers QLI-Generic version, RHI, and the RHW were given to a language expert in February 2005. The local language expert was well-versed with the local Konkani (common language used in the community) dialect of the women and used appropriate Konkani terminology with regard to relevant meaning, connotation and contexts.

Once all the tools were translated into Konkani language the tools were meticulously validated with language experts. The Konkani version of the tools was checked for the relevance and coherence to the present context by administering it to five women in Onda (Sattari). The women understood the items in the questionnaires except for few words. The tools were well accepted and appreciated in terms of their Konkani language and usage. There were a few changes made without altering the meaning of the questions.

**Pretesting of the Translated Tools**

Talbot (1995: 313) reported, “Pretest will help the researcher to determine, if respondents can understand the items and if directions are clear and if it has some preliminary reliability and validity”.

Pretest in the study was done on a small sample of women who possessed characteristics similar to those proposed for the larger study. All the data collection tools were administered to five married women in the mining community of Pissurlem (Sattari) and Guddemal (Sanvordem, Sanguem, South Goa) for assessing
the comprehension, simplicity and clarity of all the items in the Konkani version of all the tools in March 2005. A tryout of the tools was done to determine the clarity of the items, presence of ambiguous items, use of medical terms, descriptive phrases, use of contextual dialect, relevance to the setting, perceived meanings, grammar of the sentences, references to the everyday usage of the terms, language defining the parameters, and to ensure feasibility of the tool. The findings of the five interviews suggested that all the items were clearly understood by the women and their responses were also found to be appropriate.

POPULATION, SAMPLE AND SAMPLING TECHNIQUE

Population

Population denotes the entire group of subjects under the study, i.e. the totality or aggregate of all individuals with the specified characteristics (Rao and Richard 1996: 76). According to Treece and Treece (1993: 154) population refers to “the largest body of cases or individuals that are being researched, which confirms to the specific set of particulars”. In the present study, the accessible population refers to all married women who fulfill the sampling criteria and reside in the selected villages during the period of the study.

Sample and Sampling Technique

The researcher visited some of the households and communities in the mining belt in North Goa district of Bicholim taluka (Adwalpale, Sirigoa, Mulgao, Maem, Lamgoa, Bicholim, Piligao, Cudnem, Surla, Velguem and Pale villages), Sattari taluka (Pissurlem, Sonus, and Onda). Also the women living in the mining belt in South Goa was visited, Sanguem taluka (Codli-Kirlapal, Sanvordem, Rivona) and Quepem taluka (Curchorem, Sulcorna). Among these villages in the mining region
Pale, Surla, Velguem and Sonshi were selected (Table 2.5). Poreim and Keri (Querim) were the selected villages in the non-mining region.

During the field visits villages which have intensive mining or mining related activity were selected randomly for the study purpose. During the household visits the researcher interacted with the household members, built rapport with the family members, and sought participation among women and their spouses. This helped to gain cooperation with the women and their spouses during the data collection period in the area.

Sample consists of a subset of the units from the defined population, i.e. a group of individuals chosen from that population (Rao and Richard 1996: 77). The sample consisted of married women in the two selected rural mining and non-mining communities. Sampling framework and sampling criteria was prepared for inclusion of the women in the mining and non-mining communities.

Probability sampling procedure avoids bias for estimating the probability that each item in the population has of being included in the sample. “Random sampling entails the use of the most random procedure available to people or objects for use as subjects in a study” (Polit and Hungler 1983: 232). Random sampling technique was used to select the married women because of the easy availability of the sample according to the sampling criteria. The study results include a representative sample of the target population of married women with homogeneous attributes so as to reduce risk of bias.

A total of two hundred and ninety married women were randomly chosen for the sample size in the study as shown in Table 2.5. Samples were in two groups, i.e., 145 married women in the mining regions and 145 married women in the non-mining regions. During the data collection time frame 133 women in the non-mining region
completed all the questionnaires and interviews, except for twelve women who had incomplete questionnaires/ interviews due to personal circumstances. These twelve interviews/ questionnaires were not taken into account for data analysis. The sample distribution in the study is compared with the total women population in the village according to the Census of Goa (2001) as given in Table 2.5.

Table 2.5

Sample size and selected villages in the selected mining and non-mining areas

<table>
<thead>
<tr>
<th>Selected villages</th>
<th>Taluka</th>
<th>Total married women***</th>
<th>Total married women**</th>
<th>Total women*</th>
<th>Total women literates*</th>
<th>Total women not working*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pale</td>
<td>Bicholim</td>
<td>50</td>
<td>1383</td>
<td>2654</td>
<td>1769</td>
<td>2201</td>
</tr>
<tr>
<td>Surla</td>
<td>Bicholim</td>
<td>6</td>
<td>1126</td>
<td>2387</td>
<td>1588</td>
<td>1912</td>
</tr>
<tr>
<td>Velguem</td>
<td>Bicholim</td>
<td>62</td>
<td>572</td>
<td>1110</td>
<td>763</td>
<td>1018</td>
</tr>
<tr>
<td>Sonshi</td>
<td>Sattari</td>
<td>27</td>
<td>99</td>
<td>209</td>
<td>116</td>
<td>161</td>
</tr>
<tr>
<td>Poreim</td>
<td>Sattari</td>
<td>64</td>
<td>934</td>
<td>1948</td>
<td>1095</td>
<td>1120</td>
</tr>
<tr>
<td>Keri</td>
<td>Sattari</td>
<td>69</td>
<td>480</td>
<td>1030</td>
<td>621</td>
<td>521</td>
</tr>
</tbody>
</table>

Note. ***Married women selected in the study, *Census of Goa 2001.

**Enumeration from the health center and electoral roll of the local panchayat

The investigator procured an electoral list of the total population in the village from the respective local panchayats and an enumeration list of married women from the nearest health centre. From this list the investigator chose women in the households in each village. The chosen women were visited and the investigator scrutinized the women for the inclusion criteria (Appendix I). Married women were included in the sampling framework. Initially the investigator selected the households comprising of married women in the mining region randomly for the data collection. The selected women through the sampling technique were visited for building trust and rapport, explaining about the study, allaying their shyness and fears, and for gaining support and co-operation. Among the women who fulfilled the sampling
criteria and participated voluntarily in the study, a subset of 145 women were chosen from the total households of married women in selected villages in the mining region. Similarly 145 women were also selected in the villages that did not have mining, i.e., the non-mining regions.

These women were informed about the study objectives and the data collection plan that consisted of four interviews that would be scheduled for three consecutive sessions on days convenient to the chosen women as given in Table 2.6. Five women were selected for the first two days (two day sessions of two hours each) from among those who fulfilled the sampling criteria and were selected for the study. Prior to the days of data collection among the five women, the investigator would ask for tentative days and suitable timings for the interviews. The instructions for the interview were given to the women in privacy (Appendix 1). The visual rating scale chart for the two tools (QLI and the RHI) was shown to the women during the interview (Appendix J). On day 1 the women would be administered the QLI and the RHI questionnaires. Then the women were requested to provide a convenient timing for the next session on the following day (day 2). On the second day the women were administered the RHW interview. After the complete data collection with the women, they were sincerely thanked for their co-operation and patience during the interview.

### Table 2.6

<table>
<thead>
<tr>
<th>Instruments (for both groups)</th>
<th>Data collection schedule</th>
<th>Person collecting the information</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLI</td>
<td>Y</td>
<td>Researcher</td>
</tr>
<tr>
<td>RHI</td>
<td>Y</td>
<td>Researcher</td>
</tr>
<tr>
<td>RHW</td>
<td>Y</td>
<td>Researcher</td>
</tr>
</tbody>
</table>

Note: Y is the type of data collected on the scheduled day, i.e., on day 1 and day 2 of the research study.
Sampling Criteria

*Inclusion criteria.*

1. Married women in the age group 15 – 45 years.
2. Married women who had borne at least one child during their marital life.
3. Married women who are able to understand, converse, and communicate in Konkani.
4. Married women who voluntarily and willingly participate without compulsive force.

*Exclusion criteria.*

1. Women who are single, widows or above 45 years.
2. Women who are working in the mines or are migrant labourers.

PILOT STUDY

“A pilot study is a small preliminary investigation of the same general character as the major study. It is designed to acquaint the researcher with the problems to be corrected in preparation for the larger research project and to try out the procedures for collecting the data” (Treece and Treece 1993:176).

A pilot study was conducted in the first week of April 2005 to assess the feasibility of the study, plan for the statistical analyses and also to determine the flaws in the design. The pilot study was conducted in Piligao (Bicholim taluka) using a random sampling technique with ten married women in the mining region, selected as per the specified criteria. The data was collected over 2-3 days per women for gathering and recording all the information regarding the four study tools. On the first day the QLI was administered and it took nearly one hour. On the second day the RHI structured questionnaires were administered to the same women, which took nearly one hour. On the third day the RHW was administered which took nearly two hours.
The women participants in the mining and the non-mining communities were given all the four tools.

The investigator obtained permission from the Head of the Department (Sociology) of Goa University to conduct the study in the selected locations. The women subjects were explained about the study and the verbal informed consent was taken from them. The pilot study did not show any major problems or flaws in the design of the study. Hence no modifications were made in the tools and the design of the study. The study findings showed that the women were able to understand the Konkani items given in the QLI, RHI and the RHW tools. They were able to follow the instructions regarding the interviews/ questionnaires and the visual pictorial six point rating scales for the questionnaires. The logistics of the study, timing, duration and the length of the questionnaires were found be feasible, adequate and convenient to the women. The data analysis plan was made based on the pilot study.

DATA COLLECTION PROCEDURE

Formal administrative permission to conduct the study was obtained from the Head of the Department (Sociology) of the Goa University. The FRC formed by the department (Sociology) of the Goa University provided an ethical clearance to conduct the study in the study areas. Research and human ethics were followed throughout the data collection period and the study. There was no coercion or attempts to force or divulge matters considered personal to the women. In order to obtain open and honest responses from the women respondents, they were informed about the purpose and usefulness of the study. Assurance of anonymity regarding identification and confidentiality of the responses was also given to them. An introductory letter regarding the kind of research work was explained to each woman.
in the study. A verbal informed consent was obtained from the subjects indicating their voluntary participation or withdrawal anytime in the study.

Data collection period ranged from May to September 2005. The enrolled subjects were provided verbal and written instructions regarding the study aims, study procedures, ethics, data collection methods, interviews and interview techniques that would be used in the research study (Appendix I). The data was collected for the selected locations in the mining and non-mining communities till the specified number of the samples was obtained. All the respondents were interviewed in the privacy of their homes and seclusion from other family members during convenient times allotted for the data collection purpose. The data was collected for two consecutive days per women.

The data collection was completed after day two. The women accepted the interviewers and gladly answered all the questions without any hesitation and shyness. The participants were thanked for their valuable time, effort to recall aspects, participation and co-operation in the study. Field observations (resources, environment, socio-economic etc) made during the visits and remarks of the local women were taken into account.

Field Observations and Experiences

Few problems faced during the process of this study were women were not always open to questions regarding sensitive aspects (like violence, abortion). Some of the women had difficulty in articulating their personal views due to existing social mores, cultural barriers, and religious values, which made the investigator, probe into such issues. Most of the women were inquisitive about the interview and intervened in the process. There was subject mortality among women in the non-mining community, where only 133 responses were found to be complete out of 145 total
women. Some of the subjects who showed unwillingness to participate in the study were not included in the study. Since the entire data collection was conducted in two sessions, the women had to be encouraged and coaxed so as to participate in both the sessions. As expected the sessions took longer than the usual time, since the samples would deviate from the responses and discussed their other experiences.

During the study in the mining areas in Pale, Surla, Velguem, and Sonshi, the main observations were high dusty environment, dirty and slushy roads causing re-suspension of dust and inconvenience to passerby’s as water was sprayed every two hours to settle the dust and high vehicular fumes. High dust from mining activity, heavy vehicles carrying ore to and fro the site to the loading points and vehicular emissions causing huge clouds of re-suspended dust. High dust, heat, and noise pollution were prevalent through the day. The houses were poorly congested and the conditions were poor. Some of the people have adopted a ‘resigned’ attitude to their fate and destiny since they have been living in this highly polluted situation since birth. The lure of earning more with mining jobs or vehicular trucks has subdued the cry for clean air. Women have unsuspectingly traded well-being and quality of life for higher family economy. There have been very little monitoring and management measures taken by the government or the managing companies to reduce or control dust pollution since 50 years, if at all attempted.

If people complain against environmental pollution to the local bodies or panchayat, no action was taken. Their voices are unheard and some voices are subdued as they have been offered compensation for loss of land or rarely provided jobs in the mined. Those working in the mines trade off health for better income while their family members silently bear the grunt of the pollution. The others bitterly complain against rising dust pollution and poor quality of life due to dust at home and
the surroundings. All evergreen plants, trees, houses and animals are covered with red
dust. There are few agricultural fields that can be put to use. Very little grows in the
barren lands, silted fields and dumps.

There was scarcity of water and reddish dirty water due to mining activity. Some of the families have to depend on tanker water for their living as it comes only once a day and it is not reliable or clean. And there is a rush / long queue for it and women would fight for water. People complain of dust allergy and respiratory illness like TB in the area. There are no health centers at night or pharmacies for emergency. They have to travel far to the nearest town for health facilities. They say that they have no proper treatment or medicines at the health centers and many medicines are not available. Few private gynecologists in Bicholim remarked that women have anemia and infertility problem due to high dust exposure in the area.

**Data Analysis**

It was planned to initially analyse the data based on the objectives and the hypotheses of the study on the basis of appropriate statistical package (SPSS 13) for Social Sciences. The plan made was as follows.

1. Determining the frequency and percentage scores of the demographic and reproductive health characteristics among women in the RHW tool.

2. Evaluating the mean, median, standard deviation and significant difference between QLI and RHI scores among women in the mining and the non-mining groups with univariate analysis of variance (ANOVA).

3. Estimating the correlation between the QOL and RHI scores with Pearson’s coefficient of correlation (r).

4. Establishing the association between the QOL and RHI scores in mining as well as in the non-mining groups and the demographic characteristics with Chi square.
5. Qualitative content analysis and thematic description related to reproductive health and well-being issues among women.

The above plan had been successfully followed by the researcher while interpreting the data.