

Chapter III

Methods and Materials

3.1. Introduction

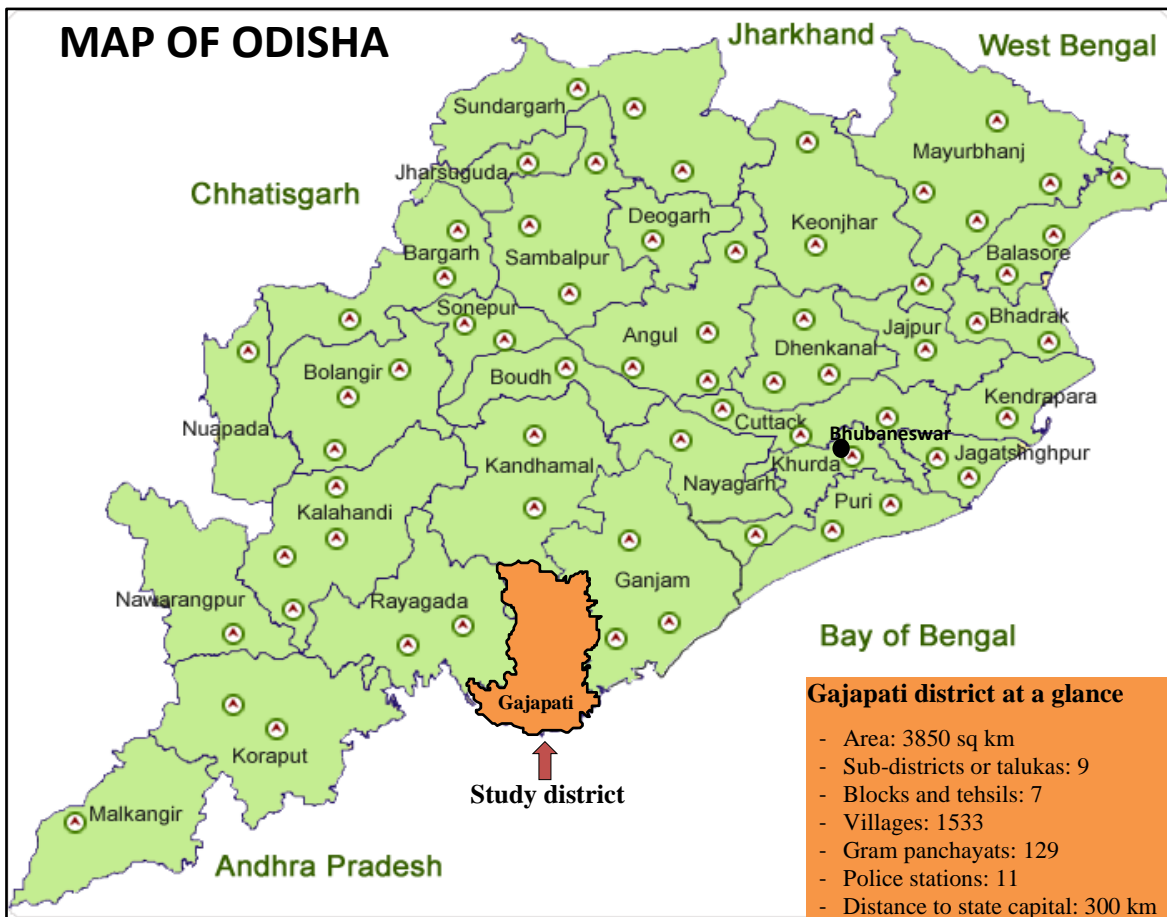
Completeness, accuracy and reliability of information collected through field work depend on the methods and tools used. It also needs proper planning and following of standard research protocols. These procedures help in drawing valid and logical conclusions. Thus, it is essential to define the research topic and objectives clearly. The present study follows the standard procedures and tries to explore how young married women are placed in determining their reproductive and infant health practices. It adopts standard research methodology and tools which are explained in this chapter. The broad sections contain the study area, study design, tools of data collection, ethical considerations, fieldwork experience and plan of analysis.

3.2. Study area

The study has been conducted in rural areas of Gajapati district in Odisha. It is on the border of Andhra Pradesh and located between 180.6' to 190.39' north latitude and 830.48' to 840.08' east longitude. It was carved out as a district status on October 2, 1992 after the bifurcation of Ganjam district. It spreads across 3850 sq. km. and has nine sub-districts or talukas, seven Tahsils, seven blocks, 1533 villages, 129 gram panchayats and 11 Police stations. The district headquarters are in Paralakhemundi which is about 300 km. from Bhubaneswar, the state capital.

More than 60 per cent of the district is in hilly terrain and high lands. Its economy is agrarian and the agricultural sector contributes a large amount of revenue. Except a few agro-processing units, there is no major industry in the district. However, some cottage industries like horn work, cane and bamboo work, broom work, leaf plate-making, etc., exist. A map of Odisha highlighting the district is given below.

Figure 3.2.1: Study area



As per 2011 census, population of Gajapati district was 577,817 with 282,882 males (49 per cent) and 294,935 females (51 per cent). There is a change of 11.4 per cent in the population compared with the population in 2001. About 88 per cent of the district population lives in rural areas. The population is tribal dominated and nearly half of it is comprised of tribes (49 per cent). Scheduled castes population is 6.8 per cent. Sex ratio of the district is 1043 per 1000 male sin 2011 census against 1031 in 2001. The child sex ratio was 967 girls per 1000 boys in 2011 against 964 girls per 1000 boys in 2001. Literacy levels between males show disparity. Literacy is 64.4 per cent among males but 43.2 per cent among females. The corresponding figures for males and females in 2001 stood at 54.7 per cent for males and 28.4 per cent for females. Gajapati district is among the backward districts of the state and a high priority district for specialized health programme implementation by Government. It is ranked as the second lowest in Human Development Index (HDI) and third lowest in Gender Development Index (GDI) among all the 30 districts of Orissa (*Orissa Human Development Report, 2004*). According to the *Annual Health Survey, 2012-13*, of every 1000 live births in Gajapati district about 56 do not

survive beyond one year, while 28 newborns die within 28 days of live birth. Similarly, per every 100,000 live births, about 245 mothers die every year.

The District Level Household Survey (DLHS-3, 2007-08) of Odisha shows that 46 per cent of women aged 20-24 years had a birth order of 2 and above and about 13 per cent of girls married before the age of 18 years. Annual Health Survey for 2012-13 does not show much improvement in these indicators. According to it, 42 per cent women aged 20-24 years had birth of order of 2 and above. Surprisingly, 40 per cent of the currently married women aged 20-24 years reported marrying before the legally permitted age of 18 years. It reflects that most of the women have experienced child-bearing in their younger age. Despite the focus on use of antenatal checkup, institutional delivery, use of family planning methods and child immunization by National Health Mission, in 2007-08 (DLHS-3) only 45 per cent mothers had three antenatal visits during the last pregnancy and 20 per cent of them delivered in an institution. Similarly, 44 per cent of 12-23 year children were fully immunized and 33 per cent of women used a modern family planning method. These indicators are lower in rural areas of the district. True, many health indicators improved in 2012-13 (AHS, 2012-13), yet a significant proportion of deliveries (34 per cent) took place at home, 68 per cent mothers did not receive full antenatal check-up and 51 per cent children aged 12 to 23 years were not fully immunized.

In 2006, the Ministry of Panchayati Raj included Gajapati district among the 250 most backward districts (out of 640) in country. It is one of the 19 backward districts in Odisha. It currently receives from the Backward Regions Grant Fund Programme (BRGF) of the Government of India. The National Health Mission in 2012 also considered it as one of the high priority districts for Reproductive, Maternal, Newborn, Child, Adolescent Health (RMNCH+A) on the basis of key maternal and child health indicators.

3.3. Study design

For the present study primary data were collected through both quantitative and qualitative methods. Quantitative method included structured survey through a questionnaire and qualitative method covered Focus Group Discussion (FGD). To select appropriate villages for the study, standard sampling design was followed, which is explained below.

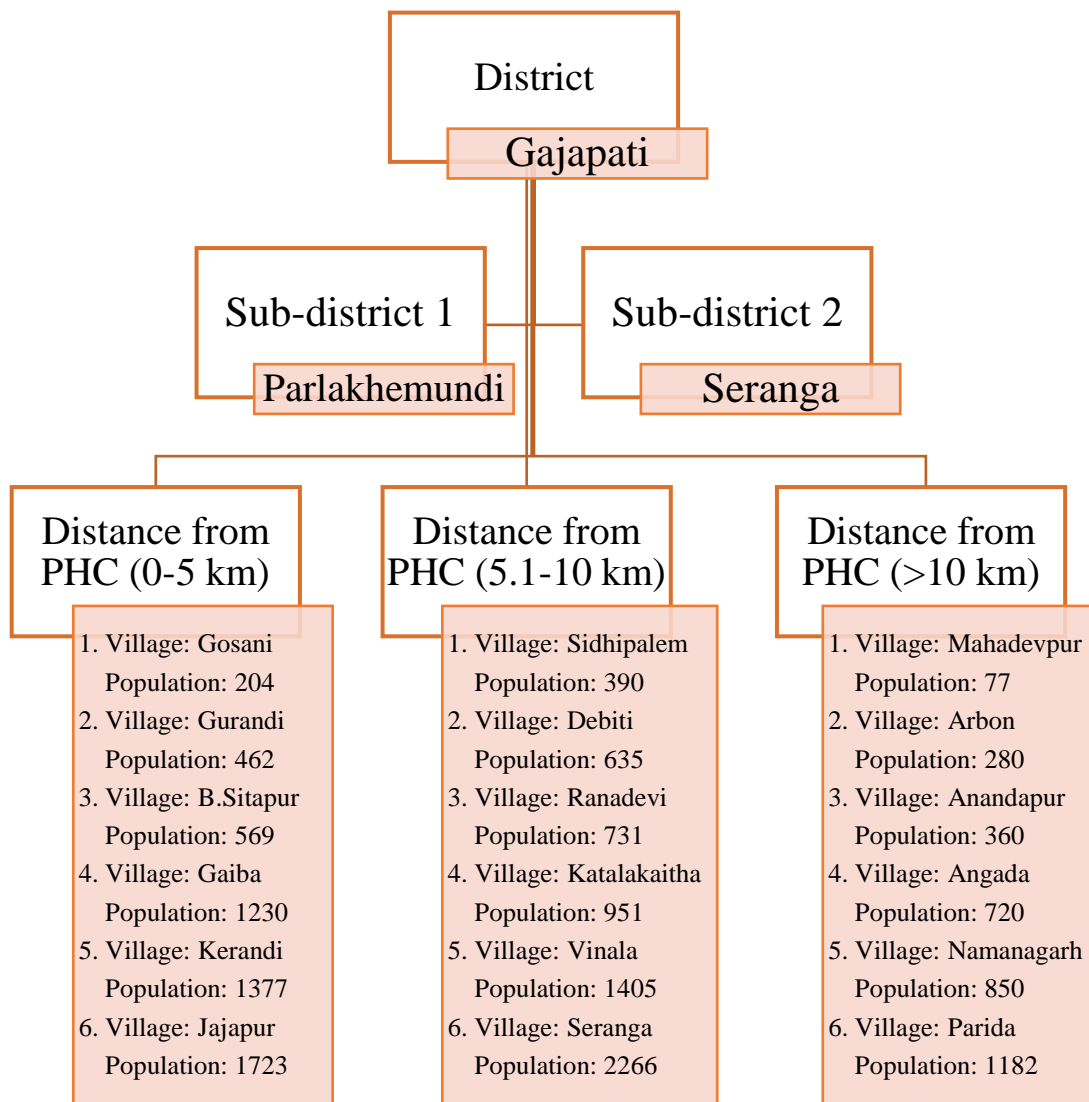
3.3.1. Sampling for quantitative method

Eligible respondents for the study were women who were married, aged between 15-24 years, and had a pregnancy outcome in last one year from the date of interview. Eligible respondents were selected through a multi-stage sampling design. The study district, Gajapati was divided into nine sub-districts (talukas) - Adava, Garabandha, Kashinagar, Mohna, Parlakhemundi, R.Udayagiri, Ramagiri, Rayagada and Seranga. In the first stage two talukas were selected based on rural female literacy, i.e. Parlakhemundi (having high rural female literacy of 28.8 per cent) and Seranga (having low rural female literacy of 20.1 per cent).

In the second stage, all the villages in the two talukas were further divided into three categories by their distance from nearest PHC, i.e., 0-5 kms, 5.1-10 kms and more than 10 kms. In the third stage, villages from each category were selected randomly till the village population size was reached to achieve the desired sample. The procedure to understand required village population size to achieve desired sample is explained in the subsequent paragraph. A total of 18 villages distributed across the two talukas were covered.

Considering the time and resources, it was planned to interview about 350 women for the current study. The required village population to get 350 eligible women was estimated based on crude birth rate (rural) of Odisha. According to NFHS-3 (2005-06), rural CBR of Odisha is 23. This assumes the availability of approximately 23 women who have delivered a baby in one year in 1000 population. With this assumption, 350 eligible women will be available in 15,217 population and the equation for this is - $\{(1000/23)*350\}$. To cover 15,217 population, villages were selected randomly from each category, i.e. villages whose distance to nearest PHC is 0-5 kms, 5.1-10 kms and more than 10 kms. Through this procedure 18 villages were selected (six each from category) whose population totalled to 15,412. The selected villages and their distance from the nearest PHC and population are mentioned in the framework given below:

Figure 3.3.1: Sampling framework



Complete house listing followed by structured interview were conducted in all the selected villages and a total of 324 women were interviewed. Due to women's engagement in important domestic work and agriculture field, about 30 women could not give time for the interview during household visits.

3.3.2. Sampling for qualitative study

To get more insights into different aspects of reproductive and infant health like source of knowledge, socio-cultural factors, decision-making, gender responsiveness, health care practices, treatment seeking behaviour, etc., nine FGDs were conducted with the

respondents. Every second village was selected for conducting an FGD. Each FGD had six to eight participants and lasted for one and half to two hours.

3.4. Tools of data collection

Three different tools were used to collect required information for the study, viz., (1) a structured house listing format was used to get population details of all households in the selected villages, (2) a structured questionnaire was administered to selected women at the household in quantitative survey, (3) a structured guideline was used for qualitative study – FGD. As the questionnaire had questions pertaining to family planning method used and sexuality (which are sensitive in the Indian context), trained female investigators were engaged to interview women in privacy. For conducting FGDs, female investigators were not required because sensitive issues were not discussed.

3.4.1. House listing format

House listing is an important element of population survey which gives an idea of socio-demographic characteristics of households in the surveyed area. It is also helpful to select the appropriate household and respondent for the interview. In the present study a structured house listing format³ was used which captured population details like name, age, sex, marital status of each person in the household. In addition, it captured the pregnancy status and outcome of currently married women aged 15-24 years. After collecting the required information, wherever eligible respondent was available, she was administered a structured questionnaire.

3.4.2. Quantitative survey

The study attempted to collect quantitative information on gender, reproductive and child health issues, keeping in view the objectives of the study. A structured questionnaire was designed, translated in local language (Odiya) and pre-tested in the field. All necessary corrections were incorporated in it and then used to collect information from young women. The questionnaire⁴ used in the present study consisted of eleven sections along with an introduction and consent form in the first page. In addition, it had the title of the study and identification details in the beginning. Section- wise details are given below.

³ See Annexure-A for the house listing format.

⁴ See Annexure-B for the questionnaire

Section 1: Socio-demographic characteristics of respondents

This section of the questionnaire captures age, education, occupation, and mass media exposure of the young women and their husbands. Additional information like religion, caste, family type, standard of living, migration status of husband, household income and expenses were asked. This information provides background of the study population.

Section 2: Marriage and pregnancy

Questions were asked on marital status, marital duration, pregnancy outcome in last one year, number of living and dead children, decisions on marriage and pregnancy.

Section 3: Awareness and practice about antenatal care

This section captured information related to awareness and practice of antenatal care and checkup, place of antenatal services, problems during pregnancy, treatment seeking behaviour, source of information on antenatal care, decisions on antenatal care and treatment for problems faced during pregnancy.

Section 4: Awareness and practice about delivery care

Information related to place of delivery, birth preparedness, transportation system to go to health facility for delivery, problems faced during delivery, treatment seeking behaviour, source of information on delivery care, decisions on delivery care and treatment for problems faced during delivery was collected in this section.

Section 5: Awareness and practice about postnatal care

In this section questions were asked to understand young women's awareness and practices related to postnatal checkup, health problems during postnatal period, treatment seeking behaviour, source of information on postnatal care, decisions on postnatal care and treatment for problems faced during this period.

Section 6: Awareness and practice about infant care

It captured information on awareness and practices of new born and infant care including breast feeding, immunization, infant health complications, treatment seeking behaviour, source of information on infant care, decisions on infant care and treatment relating to infant health problems.

Section 7: Awareness and practice about family planning

This section contained questions related to awareness and use of different family planning methods. Sources for obtaining different method and decisions to use a method were also asked.

Section 8: Awareness and treatment of RTI/STI

Questions on awareness and treatment of RTI/STI were asked in this section. Specifically, they tried to capture how RTI/STI can be prevented and what is the treatment seeking behaviour for any such problem.

Section 9: General information

In this section young women were asked generic questions. It explored the type of health facility generally women go for during illness, distance to the nearest facility, and road and transportation system available to reach the health facility.

Section-10: Decision-making and violence

Questions were asked on decision-making and violence. Young women were asked who in the family mainly decided on issues like purchasing, spending, obtaining health care and going out of the household. In addition, different types of violence faced by young women were captured.

Section-11: Gender norms and expectations

An attempt was made to know the gender norms and expectations in the society. Women were asked if they agreed, disagreed or partially agreed to different gender, sexuality and violence-related statements.

3.4.3. Qualitative study - FGD

Qualitative studies provide deeper insight on a particular topic and are often contextual. They directly link people's action, values, beliefs, emotions, etc., within their social set up. They complement the findings of quantitative survey. Qualitative methods improve the quality of survey results by assessing issues which quantitative figures cannot address. Sometimes they provide sensitive information that cannot be uncovered in surveys or structured interviews. Besides, rapport building with the community is possible through qualitative methods and they are conducive to more accurate reporting of intimate

experiences. They can be used to understand the implicit meanings embedded in behavioural patterns. FGD is used to collect deeper information from the young married women.

FGDs

They constitute group discussions that bring together people from similar backgrounds or experiences to discuss a specific topic of interest for the study. Focus groups are also 'focused' because the participants usually share a common characteristic such as age, sex, educational background, religion or something directly related to the topic. This encourages a group to speak more freely about the subject without fear of being judged by others, thought to be superior, more knowledgeable or conservative. It allows the participants to agree or disagree with one another. Thus, it provides more insight into how a group thinks about an issue, range of ideas, and the inconsistencies and variations that exist in a particular community in terms of beliefs, experiences and practices. During the present study, nine FGDs were conducted with the help of a structured guideline⁵. The broad issues covered in them were gender differences in education, occupation, mobility, sharing of household activities, exposure to mass media, autonomy and decision-making. In addition, efforts were made to explore the gender roles, violence faced by women, coping mechanism, marriage, and reproductive and infant health care behaviour of young married women.

3.5. Ethical consideration

Research ethics was followed at every step of the study. Research proposal and tools were discussed with the research committee including the guide and their suggestions were incorporated to avoid any risks to the participants. During the fieldwork, female investigators were told to follow the informed consent process and explain full details of the study to the respondents. While taking consent of the respondent, she was explained about the purpose of the study, confidentiality of the information, and risks and benefits of the study. Her freedom to participate or refuse to participate in the study was also explained to her. She had also the liberty of not answering a question or to quit the interview at any time during it if she felt uncomfortable. As the present study interviewed currently married women of 15 to 24 years and few of the selected respondents were below

⁵ See Annexure-C for FGD guidelines.

the legal age of marriage (18 years), the investigators obtained consent from her husband (if he was above 18 years) or mother-in-law. The investigators emphasized privacy and dignity of the respondent throughout the interview.

3.6. Field experiences

Experience of data collection in the field was rewarding and taught the ground realities. The investigators spent almost 28 days in visiting selected villages and had many good experiences and challenges. Building rapport with the community and getting connected with their everyday life was interesting. There was not a single village where researchers did not get community support in completing the interviews. Men and young children in the community helped in identifying the appropriate villages, hamlets, streets and households. Elderly people were supportive and because of which the interviews could be completed smoothly. In many villages, some traditional festivals were going on and this helped us to get most of the respondents at home. Still there were few who went to markets and agricultural field and for whom we waited till they returned from work. There were other challenges like respondent's engagement in domestic work and presence of either husband or mother-in-law during the interview, especially in case of minors. Whenever the respondent was busy in other work, we took more time to complete the interview. But when the husband or mother-in-law was present, the investigators asked questions of the questionnaire and later politely asked the husband or mother-in-law to leave them. In most of the cases they were successful and where it did not work, the other investigator kept engaging the husband or mother-in-law by discussing general things slightly away from the place of the interview. Distant location of hamlets was another difficulty which necessitated long walks by the investigators without proper roads and where no vehicle could go.

In some places conducting an FGD was a challenge. It was difficult to motivate women to come out of the household chores for an hour for a group discussion. Finding a proper place with complete privacy was another problem. Most of the women were not agreeable to go to others' places for discussion. Sometimes it was their unwillingness to go and at other times due to restrictions put by the family. However, with all these difficulties, FGDs were managed with the support of elderly people in the community and mothers-in-law of participants. In most places anganwadi Centres and in few others gram panchayat offices were used for conducting FGDs. During the group discussions some women were passive

and did not openly participate in them. In such cases the investigators encouraged the women to speak specifically by name. This activated passive participants.

3.7. Analysis plan

In the current study, 324 individual interviews and nine FGDs were conducted among the women aged 15 to 24 years. Quantitative data were analysed by using a statistical software SPSS and qualitative (FGD) information was analysed by using Atlas-ti. The complete analysis is presented in various chapters.

Most of the qualitative information is presented to substantiate quantitative results and to explain certain issues in greater details. All 9 FGDs were conducted in Odiya, the local language. Subsequently, the questions were first translated into English and then back into Odiya to ensure accuracy of the translation. English transcripts were coded in Atlas-ti as per the requirement of analysis and are presented in different chapters.

Quantitative data collected through structured questionnaires were edited and validated on the day of data collection to avoid any lapse of information. Data entry of all the questionnaires was carried out in SPSS and cleaned subsequently. Univariate, bivariate and multivariate analysis techniques have been applied to analyze the data. In the bivariate analysis, cross tabulation was done with different dependent and independent variables. Chi-square test was applied to understand the level of significance across various parameters. Binary logistic regression model was used to understand the determinants of selected reproductive and infant health practices. Besides this, some composite indices were developed to understand the characteristics of different related variables and also their influence on certain dependent variables.

3.7.1. List of variables used

The raw data contain a mix of continuous and categorical variables. All the continuous variables were categorized on the basis of their distribution and used for analysis. Variables used in the study are mentioned below.

Community level variables

- ✓ Type of roads available
- ✓ Available transportation system

- ✓ Available frontline health service providers
- ✓ Available health facilities

Household level variables

- ✓ Type of family
- ✓ Standard of living
- ✓ Monthly family income
- ✓ Family expenses
- ✓ Available information and communication mechanism

Individual level variables

- ✓ Age of women and husbands
- ✓ Education of women and husbands
- ✓ Occupation of women and husbands
- ✓ Mass media exposure of women and husbands
- ✓ Religion
- ✓ Caste category
- ✓ Migration status of husbands
- ✓ Years of marital duration
- ✓ No. of living children
- ✓ No. of children died
- ✓ Decision-maker for different reproductive and infant health behaviour
- ✓ Decision-maker for different household level activities
- ✓ Women autonomy
- ✓ Attitude towards gender norms
- ✓ Attitude towards sex and sexuality
- ✓ Attitude towards violence against women

Output variables

- ✓ Knowledge and practice of antenatal care
- ✓ Knowledge and practice of delivery care
- ✓ Knowledge and practice of postnatal care
- ✓ Knowledge and practice of infant care
- ✓ Knowledge and practice of family planning
- ✓ Knowledge and treatment seeking behaviour of RTI/STI

3.7.2. Operational definition of terms used in the study

Types of House: Construction of houses is based on the materials used. If the house is made of mud, thatch or other low quality materials, it is a *kachcha* house. On the other hand, if it is made of both low and high quality materials, it is semi-*pucca*. Houses made of high quality materials throughout including the roof, walls and floor are classified as *pucca*.

Nuclear family: This is the smallest unit of a family which includes father, mother and their unmarried children. In other words, it has a married couple living with their unmarried children.

Non-nuclear family: Joint family, which includes father, mother, son, grandson, great grandson with their spouses and as well as their daughter, granddaughter, great granddaughter and their families. These types of families comprise of married couples and their children.

Types of road: Roads are generally of two types, *kuccha* and *pucca*. The former road is a dirt track made by mud and is weak, while the latter road is made by either tar or concrete and is strong.

Community Health Centre (CHC): CHCs are established and maintained by the State Government under Minimum Needs Programme or Basic Minimum Services Programme. The Health Centre has four medical specialists, i.e., surgeon, physician, gynaecologist and paediatrician supported by 21 paramedical and other staff. It has 30 beds with one Operation Theatre (OT), X-ray facility, Labour Room and Laboratory facilities. It serves as a referral centre for four PHCs, covering a population of 80,000 to 120,000.

Primary Health Centre (PHC): It is a basic health unit whose activities involve curative, preventive, promotive and family welfare services. It acts as a referral unit for six sub-centres and has four to six beds for patients covering a population of 20,000 to 30,000. It is manned by a Medical Officer supported by 14 paramedical and other staff.

Sub-Centre (SC): It is the most peripheral contact point between the primary health care system and the community. It is manned by one multi purpose worker male and one MPW female or ANM. It covers a population of 5,000 in plains and of 3000 in hilly and tribal areas.

New born: A baby born is thus called in the first 28 days of her/his life. Such babies are also called “neonate”.

Neonatal death: Death of a live-born infant during the first 28 days after birth.

Condom: Men can use a rubber sheath on their penis before having sex to avoid pregnancy. People often call it “Nirodh.” There are other brand names like Moods, Kohinoor, Deluxe Nirodh, Rakshak, Masti, Sawan, Milan, Zaroor, Thrill, Kamagni and Ustad.

Oral Contraceptive Pills (OCPs): A woman takes this pill every day or once a week to avoid becoming a pregnant. The pill taken every day is a combination of estrogen and progesterone (hormones) that prevents the ovary from releasing an egg. These pills are also known as 'Mala D' and 'Mala N.' There are other brand names like Saheli and Pearl.

IUD: An IUD (intra-uterine device) is a foreign body inserted in the uterus which prevents a fertilized egg from being implanted in the uterus wall. It is designed to remain in the uterus from two to 10 years. It needs to be inserted by a medical person. Another type available is Multilode. This is a Copper T with an additional amount of copper, providing a longer life. In some states the IUD is known as 'Tambi'.

Norplant: The Norplant method consists of six small flexible rods filled with a hormone that are placed just under the skin inside the upper arm. They prevent pregnancy by slowly releasing the hormone. The six-rod Norplant provides protection up to five years (or until it is removed), while the two-rod Norplant 2 protects it up to three years.

Injectables: An injection of hormone that is released slowly into the bloodstream can be given regularly to women to prevent pregnancy. The most common type of injectable contraceptive is given every three months. This is known as *depomedroxyprogesterone*

acetate (DMPA), Depo-Provera, Depo, or *Megestron*^R. Another injectable contraceptive is NET (also called *Noristerat*^R) which is given every two months.

Safe Period/SDM/Rhythm Method: This is also called the periodic abstinence or calendar method. It is based on the principle that by not having sexual relations on certain days of her monthly cycle, a woman can avoid becoming pregnant. This is not the same as prolonged abstinence where the couple stops having sexual relations for months at a time to avoid pregnancy without regard to the wife's monthly cycle. To ensure that the respondent understands, the phrase "on the days of the month she is most likely to get pregnant" was stressed. If a woman does not feel like having sex on particular days of her cycle, that does not mean that she is using the rhythm method.

Abstinence: Couple not meeting with each other intentionally and not making sexual contacts.

Withdrawal: It is men carefully pull out the penis before climax. This is to avoid the sperm entering the female genital at the time of sexual intercourse.

Lactating Amenorrhea (LAM): Lactating Amenorrhea is a time when breast feeding women do not ovulate or have menstrual periods. The infant's sucking suppresses the production of the hormones that are necessary for ovulation. Without ovulation, pregnancy cannot take place. Sometimes people use this as a contraceptive method that is based on the natural postpartum infertility that occurs immediately after the child birth and breast feeding of the child.

Female Sterilization/Tubectomy: There are several types of operations a woman can have that will make her sterile, including a "tube tie" or the removal of the uterus (i.e., a hysterectomy) or ovaries. Operations to remove the womb or uterus are usually performed for reasons other than to provide contraceptive protection, e.g., because the woman experienced a problem during delivery, had recurrent spells of heavy bleeding, or cancer was found. Only when an operation is performed to enable the woman to stop having children can it be called sterilization.

Male Sterilization/Vasectomy: This is a comparatively minor operation done on men for contraceptive purposes. In recent years the “no scalpel” vasectomy (NSV) has become more common.

Modern family planning method: Contraceptive methods like condom, oral pill, IUD, norplant, injectable, male and female sterilization are modern family planning methods.

Spacing family planning method: Contraceptive methods like condom, oral pill, IUD, norplant and injectable are spacing family planning methods. They are reversible and generally used to space between children.

Limiting family planning method: Contraceptive methods like male and female sterilization are limiting family planning methods. They are permanent methods and irreversible. Once they are accepted, women cannot conceive in the future.

Traditional family planning method: Methods like safe period/SDM, abstinence, LAM, etc., are traditional family planning methods.

Live birth: Birth of a newborn (irrespective of the duration of gestation that exhibits any sign of life such as respiration, heartbeat, umbilical pulsation or movement of voluntary muscles) and whether or not the umbilical cord has been cut or the placenta is attached.

Stillbirth: When a foetus dies in the uterus or during labour or delivery, while existing in a woman’s body, i.e., there is no sign of life when the baby is born.

Spontaneous abortion: Expulsion from the uterus of the products of conception before the foetus is viable that occurs naturally. This is also known as miscarriage.

Induced abortion: Expulsion from the uterus of the products of conception before the foetus is viable. This is done intentionally by medication or instrumentation.

Antenatal care: Care taken during pregnancy. It includes TT injection, IFA consumption, etc.

Antenatal checkup: Care taken during pregnancy. It includes BP checkup, Hb/blood test, urine albumin test and abdominal checkup.

Birth preparedness: Preparedness for birth in case of home delivery. This includes identifying a clean place for delivery, keeping ready a soap cake to wash hands, new thread to tie umbilical cord, new blade to cut cord, clean cloth to wipe and wrap baby, identifying a trained birth attendant and a vehicle to go to health facility in case of emergency.

Premature Labour: Labour pain occurring before the expected time, i.e., before 37 weeks of pregnancy.

Obstructed Labour: No progress of the baby/fetus descending down the birth passage in spite of good uterine contractions.

Prolonged Labour: Labour pain continuing for over 10 hours without progress of the baby/foetus descending down the birth passage.

Convulsions: The person twitches and jerks, and becomes unconscious.

Breech presentation: If the baby exits the pelvis/birth canal with the buttocks or feet first as opposed to the normal head-first presentation.

Postnatal checkup: Checkup of mother and baby within six weeks after delivery. However, checkup within 24 hours after delivery is important followed by 3, 7, 14, 21, 28 and 42 days.

Early breast feeding: Breast feeding the baby within one hour after delivery.

Exclusive breast feeding: No other feeding to the baby except breast milk, not even water or external milk.

RTI/STI: Any infection or symptom of infection in the reproductive tract or organ that is self-reported by a young woman.

Domestic violence: Any act of physical or psychological abuse, or the threat of such abuse, inflicted against a woman by her husband or any other household member.

Attitude towards gender norms: Perception or opinion of a person on different gender norms of the society. This varies from one person to another. One may have very favourable view towards males, while another have towards females. Some people can have a balanced view for both the genders.

Attitude towards sex and sexuality: Perception or opinion of a person on different sexual concepts. It depends on how a person thinks about it and varies from one person to another.

Attitude towards gender-based violence: Perception or opinion of a person on different physical and psychological abuses towards women. It depends on how a person thinks about it and varies from one person to another.

3.7.3. Construction of indices and scales

In the current analysis, data used to prepare an index were either dichotomous or ordinal. Prior to constructing an index, reliability test was done for all the potential variables to understand whether they explain to the maximum or not as a group. Basically it gives an idea of the variables which are most reliable for explaining the maximum suitability for constructing an index. We examined the reliability with the SPSS 19.0 package to test whether the variables taken together are adequate for constructing a single index. In this reliability test, Cronbach's alpha value was calculated to determine the final variables or items to be used in the index. Items having the Cronbach's Alpha value of 0.60 and above have been included in the final index. Cronbach's alpha is a measure of internal consistency, i.e. how closely related a set of items are as a group. Technically it is not a statistical test, it is a coefficient of reliability (or consistency). An alpha value in the reliability analysis closer to 1.0 shows a perfect combination of variables for the index. Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among the items. Conceptually the formula for the standardized Cronbach's alpha is:

$$\alpha = \frac{N * \bar{c}}{\bar{v} + (N - 1) * \bar{c}}$$

Here N is equal to the number of items, c -bar is the average inter-item covariance among the items and v -bar equals the average variance. One can see from this formula that if the number of items is increased, Cronbach's alpha value increases. Additionally, if the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well (holding the number of items constant).

In order to make the analysis more relevant and to fulfill the objectives of the present study, few indices such as household wealth index, mass media exposure index, decision-making index, attitude towards gender norms index, attitude towards sex and sexuality index, attitude toward gender based-violence index and gender equitable measurement scale have been constructed for analysis. Each of the indices and scale is explained below.

Household wealth index: The household wealth index, also called standard of living (SLI) index, has been constructed on the basis of selected household characteristics of the young women, i.e., type of house, source of drinking water, type of toilet facility, availability of electricity, type of fuel used for cooking, ownership of livestock and household assets like (radio/transistor, watch/clock, electric fan, black and white television, colour television, telephone/cell phone, refrigerator, bicycle, bullock-cart, motor-cycle/scooter, car/jeep/truck, sewing-machine, water-pump, thresher and tractor). The variables have been given scores ranging between '0' and '4' according to intensity in a five-point scale (see Appendix-D) and then are summed up to get the total value of the composite index. After obtaining the composite index, it has been divided into three groups homogeneously as High, Medium and Low standard of living.

Mass media exposure index: The mass media exposure index has been constructed by taking into account three variables, viz., frequency of reading newspaper or magazine, listening to radio and watching television. Exposure of women and their husbands to each of the media was asked on a four-point scale. The responses to these questions were given scores ranging between '0' and '3' (see Appendix-E) and subsequently summed up to get a range of values for the index. These values are divided equally into three groups as High exposure, Medium exposure, and Low exposure. Similar index is prepared for the woman as well as for her husband.

Women autonomy index: Women in the current study were asked six autonomy related questions, i.e. whether they need permission from husband or other household members to go out for shopping, meet friends, watch movie, health facility, any work, spend money on her own. The responses to these questions were obtained in 'Yes' and 'No', which are scored as '1' and '0' respectively for constructing the index (see Appendix-F). Subsequently the scores are summed up to get a range of values and these are divided into three equal groups as High autonomy, Moderate autonomy, and Low autonomy.

Decision-making power index: Young married women were asked seventeen questions related to decision-making. Of them, six questions were related to domestic issues, nine reproductive health and two to infant health. These questions were broadly prepared on a six-point scale and tried to understand the extent of young women's involvement in decision-making. The questions included decision-making on pregnancy, antenatal care, treatment seeking for health problems during different reproductive phases, number and timing of having children, use of family planning method, daily menu in the household, shopping for the household, purchasing of major items, using of family earnings, obtaining health care for the self, obtaining health care for the child, going to the natal home and going to relatives' home. Responses of these questions were given scores ranging between '0' and '2' (see Appendix-G) and subsequently summed up to get a range of values. These values are divided into three groups equally as High decision-making power, Moderate decision-making power and Low decision-making power. Later based on the type of questions asked (related to domestic issues, reproductive health and infant health), three indices were formed as decision-making power on domestic issues index, decision-making power on reproductive health index, and decision-making power on infant health index.

Gender equity measurement scale: Measuring young women's attitude towards gender norms, sex and sexuality, gender-based violence is an important aspect of the present study. Here these perspectives are measured using a scale originally developed by Pulitzer and Barker (2002). This scale consists of a list of statements about men and women's roles related to domestic life and childcare, sexuality and sexual relationships, reproductive health, disease prevention, intimate partner violence as well as attitudes towards homosexuality. In this study the scale has been modified according to the Indian context and 38 suitable and contextual items selected for inclusion in the final questionnaire after pre-testing. The responses are collected in a three-point scale such as agree, partially agree

and disagree and scored between '0' and '2' according to the intensity in a three-point scale (see Appendix-H). Subsequently the scores are summed up to get a total value of the composite index. After obtaining the composite index, it was divided into three groups as High equitable gender attitude, Moderate equitable gender attitude, and Low equitable gender attitude. The scale has been scored in such a way that a greater number would mean more gender equitable attitude and thus the items originally facing the opposite direction have been switched accordingly for the analysis.

As mentioned above, statements used in the study are related to three broad groups, i.e. gender norms, sex and sexuality, and domestic violence. There are about 26 statements related to gender norms, seven to sex and sexuality, and five to gender-based violence. In the subsequent analysis, scores obtained for these groups of statements are clubbed separately to construct three different indices on the similar pattern. Those indices are *attitude towards gender norms, attitude towards sex and sexuality, and attitude toward domestic violence.*

3.7.4. Logistic regression

Logistic regression, also known as logit regression or logit model, is a type of probabilistic statistical classification model that measures the relationship between the categorical dependent variable and one or more independent variables. It is used when the dependent or response variable is dichotomous (i.e., binary as 0 and 1) and the independent or predictor variables may be continuous, categorical or a mixture of the two (Retherford and Choe, 1993 and Retherford and Roy, 2004). Logistic regression is preferred to the simple regression because of the non-linear association between the dependent and independent variables, results are easy to interpret and it leads to a logit model that drives the relative likelihood of occurrence of the event of interest.

The basic form of logistic function is:

$$P = \frac{1}{1 + e^{-z}} \text{----- (1)}$$

Where, 'Z' is the predictor variable and 'e' is the base of the natural logarithm and 'P' is an estimated probability.

Simplifying this equation,

$$Z = \log \frac{P}{1-P} \text{-----} (2)$$

The quantity $\frac{P}{1-P}$ is called the odds and the quantity $\log \frac{P}{1-P}$ is called the *log odds* or the *logit of P*.

In this study logistic regression analysis is carried out to understand the impact of various socio-economic and demographic variables on young women's health seeking behaviour and decision making. The dependent variables used in the analysis include women's acceptance of three ANC, seeking treatment for health problems during pregnancy, institutional delivery, seeking treatment health problems in post-natal period, use of modern family planning method and seeking treatment for infant health problems. Analysis is also carried out for women's involvement in taking decision on going for ANC, seeking treatment for infant health problems, number and timing of having children and use of modern family planning method. All these dependent variables are dichotomous as 0=No and 1=Yes. The independent variables used in the analysis are age, education, caste, type of family, number of living children, exposure to mass media, standard of living, distance to nearest health facility, discussion with health service provider, inter spousal communication, women autonomy, decision making power and gender equitable attitude.

In all the logistic regression analysis, three models are tested for each dependent variable. Here the socio economic and demographic variables are used constantly and the variables like 'women's autonomy', 'decision making power' and 'gender equitable attitude' are used one by one in each model to understand their level of influence on the dependent variable. Testing different models for a same dependent variable give an understanding, how the odds ratios are changing and influencing the dependent variable in one model to another. Additionally, it gives an idea, if there is a significant impact of any particular or few variables on the dependent variable after controlling all other factors.

In chapter 5 and 6 of the thesis, model three has included all the socio-economic and demographic variables along with 'women's autonomy', 'decision making power' and

‘gender equitable attitude’. While, model two has excluded ‘gender attitude’ variable and model one has excluded ‘gender attitude’ and ‘decision making power’ variables from the analysis. Similarly, in chapter 7, model three has included all the socio-economic and demographic variables along with ‘women’s autonomy’ and ‘gender equitable attitude’. While, model two has excluded ‘gender attitude’ variable and model one has excluded ‘gender attitude’ and ‘decision making power’ variables from the analysis.

Parameters in the logit models have been estimated using maximum likelihood method. Further, the problem of multi-collinearity associated with independent variables has been taken into consideration before introducing them into the regression equation. To avoid multi-collinearity effect, correlations between independent variables were observed and variables having high correlation were dropped from the model.