CHAPTER – 2

Review of Literature
REVIEW OF LITERATURE

2.1. Review on Indian Tribes

In this chapter an attempt is made to give a brief account of the concepts used in the study conducted on different aspects of health with special emphasis on reproductive health (e.g. age at menarche, age at marriage and the fertility of the tribal population). With availability of vast published studies on the tribal community in India, the researcher has chosen to highlight the studies directly connected to the objectives of the present research work.

The Nilgiri Hills are formed at the junction of the ranges of the Eastern and Western Ghats, which run southwards at a converging angle in the state. It consists of the great plateau spread over an area of 35 miles long and 20 miles broad at an average altitude of 6500 feet, and three other outlying tracts, viz., 1) a strip of malarious jungle at the northern foot of the plateau, (2) the Ouchterlony valley on the west and (3) the area further west called south East-Wayanad, Nilgiri Hills which were endowed with thick valuable forests in the early 19th century, are now transformed into tea and coffee plantations and rich fields for cultivation of tribes like Toda, Kurumba, Kota, Irula and Paniya. Several non-tribal groups immigrated into the Nilgiri plateau reducing the tribal people to a minority group.

For many centuries the tribes of the Nilgiri Hills in South India were isolated from the people of the plains. The steepness of the Hills and the climate of the plateau discouraged any extensive contacts with the Hindus of the lowlands. So the tribes formed a social enclave which was geographically close to Hindu life but culturally
remote from it. The Nilgiri folk lived in economic and social symbiosis, the Todas being pastoral people, the Badagas agriculturalists, the Kotas artisans, the Kurumbas food gatherers and sorcerers. (David G. Mandelbaum 1941)

The second largest tribes of Tamil Nadu, the Irula, live in the Nilgiri Hills. The Nilgiri Hills (Blue Mountains) covers an area of 984 meter square: the highest peak, Doddabetta (2640 m, 1 deg N 75.5 deg E), is in Western Ghats. The other major tribes of the Nilgiri Hills are the Toda, Kota, Paniya, Kurumba, and Mullukurumba. The Irula live on the eastern slope of the Nilgiri Hills, below Kothagiri and Coonoor (Thurston 1909; Ghosh 1973; Verghese 1974; Thurston and Rangacharry 1975), and on the plains of Tamil Nadu sporadically. A good proportion of them are live in the adjoining districts of Kerala State (Bhatia and Rao 1986). The population of the Irula numbers 79,835 in Tamil Nadu and 11,454 in Kerala (Census of India 1961; Bhatia and Rao 1986). Even today these groups hardly contract marriages outside their tribe. Of late they imitate the customs of the agricultural castes in marriage ceremonies, and they work as laborers on coffee and tea plantations.

Zvelebil. K.V (2000) in her cultural studies on the Nilgiris says that the assumption of the antiquity, the primitiveness of the highlanders, contains the suggestion that the well-known economic and tribal symbiosis of the various highland communities, like Todas, Kotas, Kurumbas and Irulas, have possessed a jajmani like relationship.

Subramanyam Naidu (1999) in his book “Strategic planning for the future development of the Tribes in India” says the tribals in this modern world are found to be depending on their forest and its produce for their livelihood. Though their natural resources and human resources are more, it has to be channelized to make these people useful contributors towards their life and indirectly to the nation.
Ethno-medical studies are in respect of herbal drugs have not been properly explored among the Nilgiri groups. Since these people have given up their own practices and gone for allopathic medicine. Hence, the following works deserve a place here (Abraham, 1981; Cyrilnayagam and Pushparaj, 1999; Dhanasekaran et al. 1993; Lakshmanan et al. 1986; Raghunathan, 1976; Rajan and Sethuraman, 1991 and 1993; Rajan et al. 1997 and 2000) to clearly understand the ethnomedical practices of Nilgiri tribes.

Ravichandran. M, (2004) notes that many of Nilgiri tribals argued that their failure in their tribal culture encourages them to take alcohol. In case of festivals, ceremonies and family functions, avoiding alcohol with their kith and kin companionship is very difficult to them.

Subramanyam Naidu (1999), had examined extends of tribal education, the pattern of income and expenditure and the impact of various tribal development and health programmes in the four states of South India. He had also formulated the strategies for the future development of the tribes. In his empirical study he found that the educational level is by and large low. The income pattern reveals that 54.21 per cent of the income was earned from agricultural wages, in which the majority (63.54 per cent) of their income is spent on the consumption of food. The study also reveals that even though there are many tribal development programs, it does not improve the living standard of the tribes, this is because of illiteracy and lack of awareness of the development schemes and programmes.

While describing “The Nilgiris as a Region”, Mandelbaum (1989: 2) has aptly pointed out, “The people and the terrain of the Nilgiri plateau are interested in their region because of their unusual characteristics. Throughout three principle periods, aboriginal, colonial, National Independence the Nilgiri region has constituted a singular
and singularly instructive enclave, a distinctive locale as perceived by observers as well as by its inhabitants”. Hockings (1989: 365) adds that, “In broad ecological terms, the Nilgiri region has undergone a drastic and quite irreversible transformation since the advent of the British more than a century and a half ago”.

Many studies on the genetics of tribal groups in Tamil Nadu have been conducted most of the available literature has reported on red cell enzymes and serum protein polymorphisms, such as PGM1, PGM2, ACP, AK, LDH, GLO, ESD, HP, TF, GM, and G6PD among the Irula, Kurumba, Toda, and Malayarayan (Kirk et al. 1962, 1963; Saha et al. 1976; Subramanian et al. 1994). Sickling trait has been studied among the Irula, Paniya, Toda, and Kurumba (Lehmann and Catbush 1952; Buchi 1959; Lehmann and Sukumaran 1956; Negi 1967; Ghosh 1973; Saha et al. 1976; Das et al. 1977; Ghosh et al. 1977; Ramasamy et al. 1994). A few studies have also been carried out on HLA polymorphism in the Kota and the Badaga of the Nilgiri Hills Selvakumar et al. 1987) and the Koya of Andhra Pradesh (Papiha et al. 1983). Most of these such studies are difficult for their lack of accounting for cultural factors in genetic or genotypic and phenotypic expressions.

The Irula of Nilgiri names the baby on the eight day. Traditionally the first son gets the name of the paternal grandfather, and the second, of the maternal grandfather; the first daughter, of the paternal and the second, of the maternal grand mother. Subsequent children are named after the paternal and maternal uncles (Zvelebil 1988).

The Irula marriage is also solemnized at bride’s residence. She is dressed in the clothes presented by the groom’s party and such finery as he has provided. The boy’s relatives give a token payment to the girl’s mother as “milk-money” for having breast fed her in infancy: the pair is seated side by side and the bride groom ties the thali the
marriage symbol around her neck. (Zvelebil 1987-97) reported that, previously, the jatti (clan-representative) of the boy would tie the thaali\(^1\) on his behalf.

According to Harkness (1832), "they have no marriage contract. the sexes co-habiting almost indiscriminately, the option of remaining in union, or of separating, resting principally with the female. Some among them, the favourites of fortune, who can afford to spend four or five rupees on festivities, will celebrate their union by giving a fest to all their friends and neighbours, and inviting the Kurumbars to attend with their pipe and tabor, spend the night in dance and merriment. This, however, is a rare occurrence".

Thurston (1975: II: 379) says, "The marriage ceremony, as described to me, is a very simple affair. A feast is held, at which a sheep is killed, and the guests make a present of a few annas to the bridegroom, who ties up the money in a cloth, and going to the bride's hut, conducts her to her future home. Widows are permitted to marry again".

The Kotas have an elaborate ritual: a car about 50 feet high is made of bamboo stick and decorated with flowers, the body is placed over a bit of animal skin tobacco grains and implements used by the departed are deposited in it, before it is taken in procession to the place of burial. (Iyer & Balaratnam 1961: 176)

The Kota father observes pollution until he see the crescent moon following the day of the birth. He has to cook his own food. The delivery is arranged outside the hut. The husband has to bring the leafy twigs of five different thorny plants and place them separately in a row and set them alight with fire made by friction. The wife re-enters the house carrying the newborn baby and walking backwards between the thorny twigs (Thurston, 1975 IV 23).

\(^1\) The thaali is a Dravidian work for the holy tread a holy golden threat that is placed by the grom around the bride's neck at an auspicious time during the wedding ceremonies.
Mandelbaum (1938) calls each *keri*² the seat of a matrilineal clan. A man's *keri* is determined by birth, irrespective of where he may live. It is easy to identify a person when the name of his *keri* is prefixed to his name. This is somewhat like prefixing a man's name with initials. The rules of a specific *keri* are not strictly adhered to, by all the kinsmen residing there. For want of space a man may build a house in another *keri*. There are instances of this, though sporadic.

W. Francis in his “The Nilgiris: Madras district Gazetteers (1908:160) remarked that, “The Paniyan are a short, dark-skinned Tribe with broad nosed and such curly hair that they are popularly (but erroneously) supposed to be of African descent”.

Census of India, 1891 (volume XIII: 394) reported that. “The Paniyan are said to have features of the African type, but there does not appear to be any other evidence in favour of their African descent”. Luiz (1962: 218-219) mentioned that, “Some are of the opinion that they are an African Tribe that came into India after a shipwreck on the West Coast. Their cephalic and nasal indices indicate a resemblance to the long-armed African Negroes and Kapiries.

Among the Toda, the afterbirth is buried two or three days after the delivery. One of their gods Koratow is represented as having been produced from the afterbirth was allowed to be dropped in the river and was carried down some distance when it got entangled in two plants. It became the boy who grew up to be Koratow (Rivers; i.190 & 323).

The Toda observe no ceremonies at all as part of marriage. As already mentioned the betrothal would have taken place when the girl is about fifteen or sixteen years old. The parents of the groom announce that they will fetch the girl on a certain day. The groom accompanied by his father and another male relative goes to the bride's

---

² Keri is known as a lane consists of six to seven houses are built in a row without leaving any gap in between.
residence where they feast on rice and Jaggery. The groom puts a few rupees into the pocket of the mother-in-law’s mantle and takes the bride home as his wife (River 1986.11. 502).

A majority of the Toda changed their occupation from pastrolism to agriculture (Nambiar, 1965). Emanuelle. M.B (1937) on “Toda Marriage regulation and Taboos says “there are some peculiarities of Toda marriage and sexual relationships that is polyandry, the institution whereby a man may take another’s wife upon the payment of compensation, that by which a man may take a concubine from the other half of the tribe.

Von Furer. C & Haimendorf (1954) says in Man’s Journal under “Hereditary Friendships and Inter-Tribal Sex Relations between Todas and Mudugas”, that the Todas might have received the sickle-cell trait from older Southern Indian communities. They also write, many of the village headmen (Mupam) in Mudugas have traditional Toda friends and these friends visit them at least once a year, and during the Toda’s stay, the Muduga vacates his house, but the wife remains in the house and the Toda visitor assumes the role of husband. The practice of “wife sharing” was also shared among the Inuit of Northern Canada.

Nimalandha Reddy. K (1992) says that the family planning operations are being carried out by both the government as well as private hospitals for Todas. He suggest that the Government hospitals, all registered private health centres and nursing homes adapt a measure of “No Family Planning” for small population like Todas, allowing families of atleast up to three childrens.

The Todas are divided into two endogamous sub-divisions called Tarthar and Teivali, which Rivers (1906 : 636 – 92) believes to have been derived from two different tribes which reached the Hills at different periods, and which are again divided
into a number of exogamous patricians called mod, each of which inhabits certain definite munds (hamlets).

The patriclan is the largest group of agnates between whom marriage is forbidden and sexual relations regarded as incestuous. But the actual genealogical links between all the clansmen are not remembered. Females are incorporated into their husband’s patriclans, according to Walker (1986: 68) despite this incorporation of females into the patriclans of their husbands, they are never totally served from their natal patriclan and its exogamy must always be observed. A Toda woman may—and frequently does—have more than one spouse in her life—time. She may later marry a man of the same patriclan as her previous husband without breaching the rules of exogamy. Rivers observed that the Toda had “a completely organized and definite system of polyandry” (1905: 515). Peter (1963: 267) also noted adolphic or fraternal polyandry was the natural form of marriage, receiving its character in the polyandrous marriages of their gods. The system of polyandry was clearly related to the practice of female infanticide and the consequent shortage of women Rivers (1906: 133,137). Toda, like other communities in India (Mandelbaum 1970: 185 – 6) regard child birth as a particularly polluting event.

The Todas of Nilgiri Hills do not touch menstruating women for fear of destruction of harvest. The Toda and Kota women in southern India cannot cross the threshold of a temple. The Santal women cannot attend communal worship (Sathyanarayana and Behera, 1986). Rivers (1973), Datton (1872) and Grigson (1938) have reported low status of women among Todas, Kharies and Mariya Gonds with reference to certain taboos during certain periods and ceremonies. The concept of health and hygiene among the tribal people and specially the primitive tribal groups is in a very wretched condition (Subramanyam Naidu, 1999)
2.2. Indigenous Health and Socioeconomic Status in India

Indigenous people are amongst the poorest and most marginalized population groups experiencing extreme levels of health deprivation (Willis R. et al. 2004). The suboptimal health status of indigenous peoples and the health inequalities between indigenous and non-indigenous populations reflect a fundamental failure to ensure the freedom of indigenous peoples to fully realize their human, socio-economic, and political capabilities (Sen A 1999).

Importantly, the health and wealth disparities between indigenous and non-indigenous populations are universal (Stephens C. et al. 2005; Bristow F. 2003). Improving indigenous health as well as eliminating the indigenous/non-indigenous health divide requires addressing the knowledge gap related to understanding the patterns of indigenous health deprivation (Stephens C, et al 2005). Surveillance of, as well as research on, indigenous health remains inadequate (Stephens C, et al 2005) even though this gap is beginning to be bridged in developed countries (Hetzel DM 2001; Bramley D et al 2005; Wilson K et al. 2002). While the unfavorable health status of indigenous peoples in developed countries has been shown across a range of outcomes, including mortality (Bramley D, 2004), disease (Anand S.S et al 2001), health behaviors (Frank J.W et al. 2000; Gaiser, J 1984), and health care (Finger C 2003; Johnston T & Coory M 2005), there are few systematic accounts of the health of indigenous peoples in developing countries (Seale JP et al. 2002; Escobar AL et al. 2001).

Notwithstanding the challenges of defining indigenous populations (Maybury-Lewis D 2002), including those specific to India (Karlsson BG 2003; India Ministry of Tribal Affairs, 2004), the group classified by the Indian government as "Scheduled tribes" has often been categorized as being indigenous (United Nations 2004; World Bank, 2005). Over 84 million people belonging to 533 communities are identified as
members of Scheduled tribes (India Ministry of Tribal Affairs, 2004), constituting 8.2 per cent of the total Indian population (Office of the Registrar General and Census Commissioner, 2001). Through a constitutional mandate (India Ministry of Tribal Affairs, 2004), formulated in 1950. Scheduled Tribes have been formally recognized as a distinct community in India. Consequently, there exist clear governmental policies for affirmative actions targeted towards Scheduled Tribes (Government of India 1950), and their members are routinely enumerated in national surveys (International Institute of Population Sciences 2000) and censuses (Office of the Registrar General and Census Commissioner 2001).

The Indian government identifies communities as Scheduled Tribes based on a community's "primitive traits, distinctive culture, shyness with the public at large, geographical isolation and social and economic backwardness" (India Ministry of Tribal Affairs, 2004), with substantial variations in each of these dimensions with respect to different Scheduled tribe communities (Basu S, 2000). While "Scheduled Tribes" is an administrative term adopted by the Government of India, the term "Adivasis" (meaning "original inhabitants" in Sanskrit) is often used to describe the different communities that belong to Scheduled Tribes. The Adivasis are thought to be the earliest settlers in, and the original inhabitants of, the Indian peninsula, with their presence dating back to before the Aryan colonization (pp. 37–38 of Thapar RA, 1990). The distinct identity of Adivasis has many aspects: language, religion, a profound bond linking the individual to the community and to nature, minimal dependence on money and markets, a tradition of community-level self-government, and an egalitarian culture that rejects the rigid social hierarchy of the Hindu caste system (Minority Rights Group, 1999), all of which closely approximates the indigenous definition articulated at the international level (Stephens C et al.2006).
Since the formal recognition of Scheduled Tribes in 1950, the proportion of individuals of Scheduled Tribes in the total Indian population has increased from 5.3 per cent (1951) to 8.2 per cent (2001) (India Ministry of Tribal Affairs, 2004). The concentration of Scheduled Tribes varies substantially between the Indian states (Office of the Registrar General and Census Commissioner, 2001).

In northeastern states, Scheduled Tribes constitute 65 per cent or more of the total population; in Chattisgarh, Jharkhand, Orissa, Madhya Pradesh, Gujarat, and Rajasthan this proportion ranges between 13 per cent and 32 per cent of the population; and in other states, including Punjab, Haryana, Delhi, and Goa, the contribution of Scheduled Tribes to the total population is negligible. In this study, we consider the Scheduled tribe category as being equivalent to indigenous within the Indian context.

Existing research on indigenous health in India, as in many developing countries (Abu SM et al.2004; Granich R et al.1999; Hsu HJ, 1990), is restricted to specific indigenous groups (Kate SL, 2001; Friedman MS & Somani J, 2002). The ability to meaningfully generalize the extent and nature of indigenous health patterns in India, consequently, remains limited. Using a nationally representative sample, we investigate the extent to which the indigenous/non-indigenous health divide is a reflection of the differences in socioeconomic well-being between indigenous and non-indigenous groups. If differential distribution of socioeconomic resources accounts for indigenous/non-indigenous health inequalities, this would emphasize the need to redress the pervasive and chronic socioeconomic inequalities between the indigenous and non-indigenous groups. Furthermore, we also examine the extent to which socioeconomic well-being predicts health outcomes within indigenous populations. If health inequalities are fundamentally social in nature (Berkman LF & Kawachi I, 2000;
Ivhrmot M, Wilkinson RG, 1999), and have less to do with being indigenous, we should expect a socioeconomic gradient in health even within this marginalized population.

The patterns of indigenous health deprivation and heterogeneity are investigated for all-cause mortality and tobacco and alcohol consumption; the public health relevance of tobacco and alcohol use in India has been well documented in recent years (Shimkhada R & Peabody JW, 2003; World Health Organization Tobacco or Health Programme, 1997; World Health Organization, 2002; Rahman L, 2002; Rodgers A et al.2004; Subramanian SV, et al 2004 & 2005; John RM, 2005; Neufeld KJ et al.2005).

Health planners and health workers of tribal areas should take note of the cultural practices of their clients to ensure good maternal and child health and obstetric care. All the traditional practices of the tribal need not be disturbed; only those practices which are harmful need to be discouraged (Jesurathnam, 1992).

Development of a culture of evidence based medicine depends on a body of research that draws from both qualitative and quantitative approaches (Jones R, 1995). On the contrary an ethnographic approach usually incorporates a range of methods and can combine qualitative and quantitative data. For many, the defining feature of ethnography is the use of participant observation, (Holy L. 1984) entailing prolonged field-work. In addition, ethnography is viewed as contextual and reflexive: it emphasizes the importance of context in understanding events and meanings and takes into account the effects of the researcher and the research strategy on findings. (Boyle J, 1994).

Ethnography can be used to understand the cultural dimension of health in numerous ways. It has been seen as a way of accessing beliefs and practices, allowing these to be viewed in the context in which they occur and thereby aiding understanding of behaviour surrounding health and illness (Boyle J, 1994; Morse J, 1996).
Simply put, ethnography is the study of people as they go about their everyday lives (Emerson, et al. 1995). It is therefore particularly valuable as patients' views on the experience of illness or delivery of service are becoming recognized as central to a modernized NHS. Ethnography can show, for example, how the effectiveness of therapeutic interventions can be influenced by patients' cultural practices (Prout A, 1996).

In addition, ethnography is particularly useful in understanding the organization of health care (Morse J, 1996). Ethnography is well-suited to the study of childcare. According to the anthropologist Clifford Geertz, human actions signal a world of multiple social meanings that must be understood through recognition of various contextual clues (Geertz, 1973). Interpretation emerges from "thick descriptions" of cultural phenomena. Building on the works of (Agar 1996; Weisner 1996), we apply a broadly conceived notion of ethnography to the study of childcare.

The National Population Policy- 2000 has recognized adolescents as an underserved vulnerable group that need to be served especially by providing reproductive health information and services (National Population Policy 2000). Hospital based retrospective studies in India show that primary amenorrhea, thyroid disorders, genital anomalies (Patki S, et al. 1993) ovarian enlargement, (Kumar A, et al. 1998) menstrual disorders, leucorrhoea and genital infections (Bhalachandra G, et al. 1993) are very common among adolescent girls. These studies suggest a need for screening through population-based studies or special health clinics in schools and colleges for early detection and management of common reproductive health ailments (Gandhi A.B, 1993) Such an approach is seen in School -based Health Centers in the United States that provide a broad range of reproductive health services either onsite or
by referrals, taking care of adolescents at risk who might otherwise not have accessed health care in a timely manner (John S et al.2003).

The status of women in a society is a significant reflection of the level of social justice in that society. Women's status is often described in terms of their level of income, employment, education, health and fertility as well as the roles they play within the family, the community and society (Ghosh, 1987).

At the International Conference on Population and Development, Cairo, 1994, the consensus on the definition of reproductive health and well-being stressed three major points: all pregnancies should be intended, all births should be healthy, and sexual activity should be free of coercion and infection (United Nations, 1995).

Recent research has shown that reproductive health outcomes in India are poor in general, but particularly in less developed regions such as the northern state of Uttar Pradesh. Maternal mortality is unacceptably high: the national maternal mortality ratio was estimated at 437 deaths per 100,000 live births (IIPS, 1995), and in Uttar Pradesh the number was considerably higher, at 599 deaths per 100,000 live births (Tsui et al.1998). Community-based studies conducted in various regions in India have all shown that the prevalence of reproductive and maternal morbidity among women is very high (Bang et al.1989; Bhatia et al.1997; Datta et al.1980; Koenig et al.1996; Kumar et al.1995).

The timely use of reproductive health services for both maternal complications and reproductive tract infections is essential in preventing the escalation of conditions which can result in death or permanent disability (Dixon-Mueller & Wasserheit, 1991; Thaddeus & Maine, 1994). While many factors contribute to the utilization of care,
health-seeking behaviour can only take place if individuals possess a certain amount of knowledge about both illness and the benefits of care (Janz & Becker, 1984).

2.3. Reproductive health

Reproductive health behaviour includes behaviour related to marriage, family planning practices, breast-feeding, childcare etc. It also considers the age of marriage, general practices of family planning, contraceptives used, and breast-feeding and child care practices.

The concept of reproductive health has been defined as "a state in which people have the ability to reproduce and regulate their fertility; women are able to go thorough pregnancy and childbirth safely; the outcome of the pregnancy is successful in terms of maternal and infant survival and wellbeing; and couples are able to have sexual relations free from fear of pregnancy and contracting diseases" (Mahmood Fathalla, WHO, 1988).

Reproductive health is a major world priority, with particular problems in developing countries. However, as Ndong states, "reproductive health generally has been synonymous with women's health" (Ndong I et al. 1999), and reproductive health of men has received little attention (Collumbien M & Hawkes S, 2000). Researchers and health planners have pointed out those better outcomes for reproductive health programmes would be expected if men were involved (Collumbien M & Hawkes S, 2000; Dudgeon MR & Inhorn MC, 2004; Pachauri S, 2001; Wang YF, 1999; Wegner MN, 1998), and there are a number of mechanisms by which this might occur. Hawkes S et al. (1999) indicated that the treatment of male reproductive health problems might actually encourage more women to seek treatment, and therefore improve the overall level of reproductive health. Other studies have highlighted that women often need the support of their husbands, including financial support, to attend reproductive health
services (Pachauri S, 2001; Singh KK et al.1998; Verma RK, 1997) and that the health status of couples, in particular the reproductive health status, is strongly linked to the knowledge, attitudes and behaviour of men (Wegner MN, 1998; Bloom SS, 2000).

Until now limited information on reproductive health problems and health care needs in men from developing countries, particularly from rural areas of India, is available (Hawkes S et al.2002; Verma RK et al.2001). The information collected during the interviews, clinical examination and pathology reports was entered into the Epi-Info data entry and analysis package (Dean AD et al.1994). Statistical analyses were carried out using the SPSS (SPSS, 2001). The relationship between reproductive health complaints, clinical findings and other health and socio-demographic factors was investigated. P-values for the differences between means were calculated using the independent samples t-test. P-values for the differences between proportions were calculated using the chi-squared test or Fisher's exact test.

Maternal and childcare is an important aspect of health seeking behaviour, which is largely neglected among the tribal groups (Basu et al.1990). Maternal healthcare and childcare is an important aspect of health seeking behaviors, which are largely neglected (Basu, S.K, 1993).

The cultural norms that particularly affect women's health are attitudes towards marriage, marriage practices, age at marriage, values attached to fertility and sex of the child, pattern of family organization, her status in the society, decision making capability and ideal role demanded of women by social and cultural conventions (Kshatriya, 1992). All these determine her place in the family, her access to medical care, education, nutrition and other health resources.

Lack of menstrual and personal hygiene is also found to be associated with RTI's. In addition, there are socio-economic and cultural determinants of RTI's. Studies
have shown a strong association between women’s livelihood, work and their reproductive health (Ooman 2000).

Kulkarni and Adhikari in a study of adolescent women in India and Nepal report relatively high rates of gynecological morbidities, especially in the settings where girls have limited access to adequate health care (quoted in Bott and Jejeebhoy 2000).

Reproductive health problems are not only the problems of married women but unmarried women also experience gynecological problems. But they often do not discuss about these problems with anyone due to the fear of social stigma attached to such problems. As most of the public sector services generally target adult married women, unmarried adolescents often do not seek health services due to the fear that the services are not confidential, inability to pay, prerequisite of parental/partner approval and negative or insensitive attitude of health providers (Mamdani 1999).

Women suffer from reproductive morbidity due to their ‘culture of silence’. They are reluctant to discuss their problems with either anyone at home or with a health provider (Patel and Khan 1996).

About one-third of the total disease burden among women aged 15 to 44 years in the developing countries is linked to health problems arising out of pregnancy, childbirth, abortion and reproductive tract infections (World Bank, 1993).

In the demographic literature, age at marriage has long been regarded as one of the proximate determinants of fertility (Davis and Blake, 1956; Bongaarts, 1982). However the empirical evidence for the effects of age at marriage on fertility is inconsistent (Durch, 1980; van de Walle and Foster, 1990). As a result, the effect of age at marriage on fertility in developing countries remains mostly speculative.
The timing of marriage and child bearing appears more recently to be undergoing changes towards the direction of longer delays as revealed by a study done in India (Boom and Reddy, 1986).

Women with higher educational levels are more likely to break with traditional patterns including early marriage and child bearing. Education indirectly influences age at first birth, and change in the traditional work role. Women with gainful employment may be more likely to postpone marriage and even child bearing within marriage. Maxwell (1987) in a study of 5,000 US women observed a positive relationship between education and age at first birth. With regard to education, Gaisie (1984) found that the median age at first birth for women with secondary or tertiary education was 25 years compared to 19 years for the middle and primary school leavers. Similar studies in Kenya by Konogolo (1985) confirmed that post-primary schooling (especially of 9 or more years) has a strong effect in postponing the onset of fertility often by 3 to 4 years.

The spread of education and literacy among women is believed to be fundamental to changes in the reproductive behaviour. The effect of women's education on fertility in less developed countries is found to be curvilinear, i.e. fertility tends to rise first with education and then decreases sharply once a certain level of education is attained (Cochrane, 1979).

The argument is that education is positively associated with improved health, lower levels of infertility, abandonment of traditional constraints upon sexual behaviour and the practice of breastfeeding, all of which are known to raise fertility levels. As the educational level increases, marriage tends to be postponed which causes a negative effect on fertility and counteracts the initial effect of fertility increase.

Moreover, educated women desire relatively fewer children. They have high contraceptive prevalence and a high chance of working outside their homes. All of these
factors are known to lower fertility levels (Cochrane, 1979). However, there is also a possibility of the reverse causation which is less documented, i.e. the initiation of child bearing causing the termination of education (Cochrane, 1979). While analyzing the relationship between fertility and the level of education in sub-Saharan Africa, Cohen (1993) has shown that fertility is either curvilinear or negatively related with education but does not appear very responsive to few years of education. Several studies have established that first marriage occurs earlier among women with early menarche (Buck and Stavraky, 1967; Kiernan, 1977; Ryder and Westoff, 1971). Other studies by Presser (1978), Zelnik (1981), and Udry (1979) have shown that women with early menarche have early first intercourse and earlier first births. The mechanisms for linking events in timing and sequence are not clearly understood. Various mechanisms have been proposed. Biological mechanisms include increased release of sex hormones at puberty leading to increased libido, and consequently too early intercourse. Those women with early puberty are more fecund than women with later puberty. This fact leads to earlier births for a given exposure to the risk of pregnancy for those women with early age at menarche.

2.4. Menstruation

A large proportion of adolescent girls suffer from various gynaecological problems, particularly menstrual irregularities such as hypermenorrhoea, hypomenorrhoea, menorrhagia and dysmenorrhoea. For instance, in a study conducted in Mumbai, nearly 55 per cent of the girls were found to be suffering from dysmenorrhoea (Vaidya et al. 1998). Similarly, a study in Gambia found that reports of dysmenorrhoea were highest among younger women (15–24 years) than higher age groups (Walraven et al. 2002).
Health behaviours and practices vary from culture to culture, and ignorance of culturally divergent beliefs and practices may lead to failure in health care delivery (Spector 1991, 1995).

Gupta and Jain (1998) in their study found that only 65.8 per cent girls had information about the onset of menses before it started (this study included only school- and college-going girls, who are likely to have better access to information either from peers in school/college or mothers). The studies conducted in different parts of the country indicate mother and peers as the major source of information on menstruation (Gar et al. 2001; Gupta and Jain 1998; Narayan et al. 2001).

2.5. Age at marriage

The tribals have their own perceptions regarding marriage, pregnancies, antenatal, natal and post-natal care. These practices, which are useful, can be encouraged and the harmful practices are to be discouraged (Pandey et al. 1997).

The age at which the girl was given in marriage deepened on social values. Among the tribals, virginity was not very much valued. Many of the tribal societies were lax towards pre-marital sex relations, which were considered as training in the art of love and sex life and often ended in marriage (Vidyarthi and Rai, 1977).

There were a few micro-level studies, which dealt with the age at marriage of individual Tribes e.g. female age at marriage - Ao Naga (16-20 years), Bbil (16 yrs.), Chenchu after puberty, Khasi (13-18 yrs.), Koli (12-16 yrs.), Bodh (19 yrs.), Gond (18 yrs.), Munda (18 yrs.), Oraon (16 yrs.) (Sinha, 1986). Mean age at marriage of Jaunsads was 12.2 yrs., Dudh Kharias 21.41 yrs., and Santhals 17.87 yrs. (Basu, et al. 1993).

Jaunsaris of Jaunsar-Bawar, Dehradun were a polyandrous tribe and they followed the custom of child marriage as a part of their cultural behaviour, which was still prevalent among them (Basu, 1993).
Studies all over the world have brought forth evidence in support of the contention that the socioeconomic and socio-cultural milieus of a population have tremendous impact on the fertility and mortality components of that population, and subsequently on selection (Crow 1958; Spuhler 1963; Johnston and Kensinger 1971; Crawford and Goldstein 1975; Spuhler 1976; Tripp-Reimer 1980; Koertvelyessy 1983; Jorde and Durbize 1986). In India, a few studies have demonstrated the role of natural selection in imposing characteristic fertility and mortality differentials among the different populations (Ghosh 1970; Barua 1976; Murty and Ramesh 1978; Chengal Reddy and Lakshmandu 1979; Rao and Murty 1984; Basu et al. 1988; Bhasin and Kshatriya 1990; Basu and Kshatriya 1990 Reddy and Chopra 1990; Patra and Kapoor 1996; Kapoor and Patra 1998; Kapoor and Kshatriya 2000). All these studies reveal a relationship between socioeconomic conditions and the index of total selection.

Age of marriage affects the fertility of tribal women and thus the reproductive health behaviour in tribals differs from non-tribals. The average number of children tribal women have is 6 out of which 2 die during her lifetime. Some tribals consider children as their assets which lead to high fertility. Having children, especially male children, improves a women’s status in society. Because of this belief 93 per cent of them have more children and thus face moderate to severe anemia and 33 per cent show evidence of varying degrees of Vitamin A deficiency (Sharma et al.1993).

In the North-Eastern region, the age at marriage was found to be relatively high whereas it was relatively low in the central region because of the influence of Hindu culture (Sinha, 1986). It was further observed from research investigations that the frequency of abortions, miscarriages, and still-births were found to be much higher in younger mothers below the age of 19 years. The major life threatening complications for very young mothers were pregnancy induced high blood pressure, anaemia and
difficulty in delivery due to disproportion between the pelvic-size and the head of the baby.

2.6. Fertility

Research dealing with culture and fertility has often focused on the status and autonomy of women to take decisions. There are studies that provide evidence that gender inequality increases fertility (Morgan and Niraula 1995; Balk 1994; Basu 1992; Dyson and Moore 1983). But, how the reproductive behavior of couples varies over different forms of culture, i.e. patriarchy or matriarchy, has been relatively less explored in demographic research.

Koenig and Foo (1992) produced empirical evidence to support the hypotheses that patriarchal systems encourage larger family size by providing special incentives to women for bearing a minimum number of sons and by maintaining a system that subordinates women to men in key areas such as their own sexuality and reproduction. On the other hand, literature documenting the relationship between matriarchy and fertility can hardly be found. A study among Mosuo in China revealed that matriarchy and polyandry lacked pro-natalist consequences for individual Mosuo households (Johnson and Zheng 1991).

The important questions that emerge are: How family size preferences of women and men vary over these two different forms of culture? In most of the societies, men want larger families than women do (Singh, Ram and Ranjan 2006; Mason and Smith 2000; Bankole and Singh 1998; Lasee and Becker 1997).

Pandey (1990) observed high fertility and mortality in Mishmi tribal groups and attributed into the low level of education and income lack of knowledge of family planning method and importance of small family size poor medical facilities, lack of proper sanitation and drinking water.
Barua (1982) studied 196 ever pregnant women belonging to the Hajong tribe of West Garo Hills district of Meghalaya. High infant mortality (18.2 per cent) and prenatal mortality (3.1 per cent) were reported among them.

Das et al. (1982) studied two Lepcha villages of northern Sikkim namely Lachen and Lachung and found the total fertility rate for Lachung and Lachen to be 4.66 and 3.79 respectively.

Prakash and Malik (1990) showed that high altitude Bods had higher fertility than the low altitude Bods. They also had higher mean number of children (4.11 per mother) as compared to the low altitude Bods (3.63 per mother). The altitudinal differences in fertility have been explained in terms of socio-cultural factors such as education, awareness, urban contact, advancement in medical facilities, which were higher at low altitude. The differences have also been accorded to a stronger feeling in the altitude population that children were economic assets.

Kumar and Mitra (1975) observed high infant mortality and fertility among 199 Tharu tribal women of Naintal. Despite the availability of modern facilities of treatment, Tharus had their own beliefs and concepts of diseases.

Saxena (1990) in his study conducted among the Tharu and Buksa Tribes of Uttar Pradesh reported that the Tharu and Buksa couples displayed a high level of fertility, which was well reflected in the tendency to achieve higher order births even at younger ages.

Basu, et al. (1993) while conducting research investigation on 481 households among the Jaunsaris of Jaunsar Bawar, Dehradum found a crude birth rate of 42.67 per thousand populations and infant mortality rate of 79.64 per thousand live births. Polyandry and polygamy were found to co-exist in the study sample. A. Basu (1990) found that Lepchas ate fish and a type of tuber viz. Diascoria, while Sherpas did not eat
them. It was observed that diasoria had a fecundity-inhibiting function resulting in lower fertility among Lepchas as against Sherpas though both shared a similar physical environment.

Datta (1990) reported from her study that Koras, a Scheduled Tribe of Midnapur, West Bengal had a mean of 3.30 surviving children in their completed age of fertility. She found the crude birth rate and total fertility rate to be 41.81 per 1000 population and 4.42 per 1000 Kora women respectively.

Infant mortality was found to be very high i.e. 179.75/1000. The fertility record of Kutiya Kondh mothers in various age groups indicated a total fertility of 5.0 estimated from the average fertility of the women in the group 45-49.

Basu and Kshatriya (1992) studied the fertility and mortality trends among the Dudh Kharia of Sunderagarh district Orissa. They reported that the estimated total fertility, crude birth rate, crude death rate and infant mortality rate were 5.39, 38.5, 11.80 and 102.4 respectively.

Ch. Satish Kumar (1993) reported that the average pregnancies per mother and infant mortality rate among the Desia Kondhs of Orissa were 3.89 and 151.28 respectively.

Khan (1993) while investigating the Dongria Kondhs of Orissa found average pregnancies per mother and the infant mortality rate as 4.07 and 153.11 respectively.

Choudhary and Kumar (1976) estimated the birth rate as 43.5/1000 among the Bhils of Jhabua district of Madhya Pradesh,

Sharma & Khan (1990) observed that the average fertility rate among Kharwars of Sarguja district (M.P.) was 4.85. The highest reproductive wastage (9.67 per cent) was observed in the age group of 40-44 years and the pre-reproductive mortality was highest (6.84 per cent) among mothers in age group 35-39 years.
Basu and Kshatriya (1988, 1989) reported the fertility and mortality estimates on the basis of demographic analysis of genealogical data collected from 792 households of the four tribal populations, namely Muria, Maria, Bhattaras and Halba from Bastar district of Madhya Pradesh. The results of the study indicated that total fertility rates were 5.64, 6.00, 5.95 and 5.89 respectively for the four groups, which were higher than the Madhya Pradesh rural non-tribal population and Indian national population, and was in accordance with high fertility levels among the tribal. The study groups showed higher mortality among males than females. A very high rate of infant mortality was observed among Bhattaras (148.56) followed by Murias (123.25) whereas Marias (85.44) and Halbas (92.78) from the same area displayed lower IMR.

The study of Sirajuddin et al. (1984) among the Chenchu tribal group of Achampet taluk of Andhra Pradesh found the average number of children for each woman. Average number of surviving offspring per married women and mortality in relation to live births were 3.67, 2.96 and 27.5 respectively.

Ghosh (1970) while studying the Kota tribe of Nilgiri Hills, Madras found the average number of live births per women aged 40 years or more to be 3.73. Also the frequency or mortality before reproductive age i.e., 15 year was 30.8 per cent. This also revealed a high mortality and fertility among the Kota tribe.

Murty (1987) investigated the Soliga tribe in Karnataka in order to find out their fertility behaviour. The Crude Birth Rate (CBR), General Fertility Rate (GFR) and Total Fertility Rate (TFR) among the Soligas were found to be always higher in comparison to the general population of Karnataka. The unusual high fertility rate among the Soligas was influenced by their age at marriage, which was ultimately influenced, by the age at menarche. The mean age of menarche among the Soligas was 13.2 years and the age of marriage was 14.2 years, which was very early. Early age of marriage, and
low levels of family planning acceptance seemed to be responsible for the high fertility among the Soligas. The completed family size among the Soligas was 5.64.

Other factors, which affect fertility of women, are income, occupation, education, family type etc. Generally fertility among tribals is high but varies from one type of tribal community to another; this variation is largely dependent on economic conditions. Variation is greater among older age groups of women than the younger age groups. Age of mother increases the fertility rate and there is direct relation between age at marriage and fertility in all women i.e. tribals as well as non-tribal (Mutharayappa R, 1994).

The study of demographic and health determinants of infant deaths by Gurumurthy et al (1990) among the Sugali tribal group in the Kalyanadurgam and Beluguppa blocks of Ananthapur district of Andhra Pradesh pointed out that out of 348 infant deaths 45.4 percent were neonatal and 54.6 per cent were post neonatal. About 25 percent infant deaths occurred due to dysentry/diarrhoea and 20 percent due to maternal factors such as pre-maturity, birth injury, multiple birth, low birth weight, birth asphyxia and so on.

Murty and Ramesh (1978) also found a high fertility and mortality among the Pardhans of Adilabad district. M.P. Basu (1967) conducted a demographic research work among the Irular of Tamil Nadu and reported the net reproductive index which was also an indication of their fertility as 1.31. It was also reported that mortality according to the age of the child was highest in the first year.

Fertility as well as mortality rates are relatively higher in tribal populations than the upper caste populations and they are higher in related than in unrelated couples (Veerraju, 1973; Rami Reddy and Papa Rao, 1978; Rajasekhara Reddy, 1984;
Gangadhar, 2000 and others) is associated with decrease in fertility (Driver, 1963; Zachariah, 1981; Jain, 1985; Veena Bhasin and Bhasin, 2000 and others).

It is concluded that the overall proportion of fertility in consanguineous and non-consanguineous marriages is more or less equal, but mortality is some what higher among non-consanguineous marriages than in consanguineous ones unlike many populations studied earlier (Rami Reddy and Papa Rao, 1978; Rajasekhara Reddy, 1984; Abdul Latheef et al. 1998; Babu et al. 1999; Gangadhar, 2000 and others), where fertility and mortality are relatively higher in consanguineous marriages than in non-consanguineous marriages.

Demography is the scientific study of human populations primarily with respect to their size, their structure (composition) and their development (Change) (IUSSP, 1982).

In India, after independence, attempts have been made to study the association of culture with fertility behaviour among certain Tribes through social and demographic variables (Majumdar, 1958; Vidyarthy and Rai, 1977; Das, 1973; Roy Burman, 1961; Prasad Rao, 1970). These studies have taken cultures as an independent variable determining the fertility behaviour. Among tribals every aspect of life from birth to death is being influenced by the prevalence of customs, beliefs and notions which have been practiced in their day-to-day life. For instance, among the Bhils cultural practices of sexual laxity and treating children as assets caused high rates of fertility, (Chuadari and Kumar, 1976). Similarly abortion and infanticide were often practiced by some of the Scheduled Tribes to balance the pressure between bearing of children and avoiding births (Nag, 1962).

Fertility levels are not uniform across different occupations and cultures. It varies from one occupation to another among tribals. A few empirical studies conducted
on Tribes have tried to explore the relationship between the occupation and fertility. Reddy and Reddy (1984) have observed two reasons for higher fertility among Sugali tribe of Andhra Pradesh. Firstly, the agricultural work needs more and more people for completion of work, thus they procreate more and more children. The second reason for higher fertility is to compensate for the relatively higher mortality among them. The higher fertility in case of Yanadis (Gurumurthy, 1984) was observed for traditional occupation i.e., collection of minor forest produce and fishing followed by agricultural labourers, own agriculture, household work, employees and industrial workers. Similar findings were also found in another study in Uttar Pradesh (Gupta, et. al., 1975).

Sex ratio is not uniform across different tribal groups. It varies from one tribe to another, again mainly because of high mortality rate among females. Malhotra (1978) has observed that as some tribal people practice a nomadic way of life, usually females are not only neglected during their ill-health but also exposed to harsh weather conditions. Nomadic way of life itself affects the female mortality rate. On the other hand, Mann (1980) has reported that even though Hakkipikkis practice nomadic way of life their sex ratio is very much balanced. Contrary to this, high sex ratio has been observed among Koraga tribe where females outnumber males (Reddy et. al., 1984).

Kingsley Davis (1951) while examining the proportion distribution of India’s population by religious groups over time (1901-1951) observed that mortality among tribals was very high. Further, he noted that the aboriginal’s high fertility was compensated by high mortality under primitive conditions of life. Evidence of high mortality among tribals has also been noticed among tribals in Biha. Verma (1977) estimated that the crude death rate among the Santhal tribe was 23.41 and Brihor tribe was 33.11 per 1000 population.
Majumdar (1947) observed that high fertility among tribals is offset by high infant mortality and the number of children reared by tribal mothers at any time does not exceed those reared by other caste mothers.

According to Bannerman (1982), the disease and treatment, particularly in the tribal areas, cannot be understood in isolation. Health and treatment are very much connected with the environment. The traditional health care system and treatment are based on their deep observation and understanding of nature and environment. The knowledge of many medicinal plants has often been derived by observing their use by other animals. Further, he points out that traditional medicine still remains the only source of care for tribal people, and for them primary health care is synonymous with traditional medicine.

Zhang (1994) reported that over two-thirds of births in the world are delivered by local or traditional midwives or birth attendants. In tribal areas traditional birth attendants are the only source of assistance and care, and deliver over 90 per cent of the births. Further, he states that “the workforce represented by traditional/practioners and traditional birth attendants is a potentially important resource for the delivery of primary health care.

The practice of consanguineous marriage is absent in north India, but is highly popular in South India (Rao and Inbaraj, 1977; Rao, 1982; Sanghvi, 1982; Bittles et al., 1993; Chandrasekar et al., 1993). Perusal of studies conducted in the past reveals that the degree of consanguinity varies from place to place and also from time to time because of associated socio-cultural differences. Some of the reported socio-cultural factors influencing consanguinity are religion, caste and education (Rao and Inbaraj, 1977; Bittles et al., 1991; Bittles et al., 1993; Bittles 1994). In some populations a high prevalence of marital unions between close relatives also has been reported among land
owning families (Schull and Neel, 1972; Rami Reddy and Chandrasekhar Reddy, 1979) and in traditional ruling and the highest socio-economic status groups (Al-Thakeb, 1985).

The most frequent types of consanguineous marriages in India are the uncle-niece, first cousin and cross-cousin marriages. The practice of uncle-niece marriage is prevalent in several parts of South India while it is non-existent in north India. The tribal groups of India practice cross-cousin marriage, i.e., marriage with mother's brother's daughter (MBD) or father's sister's daughter (FSD). Muslims of India practise both parallel and cross cousin marriages (Chakravarthy, 1968; Hazra., 1988).

The frequency of consanguinity in Tamil Nadu is found to vary between 12.69 per cent and 25.46 per cent of which the 1st cousin marriage accounted for 10.00 per cent to 20.68 per cent among the tribal populations, namely Gond, Todas, Kotas, Irula and Kurumba (Chakravarthy, 1968; Ghosh, 1972). In Madhya Pradesh 57.00 per cent of consanguineous marriages were reported among Muria Gond (C.F. Basu, 1994b).

The age at menarche and at menopause show wide variation within and between populations and is shown by a series of studies to be influenced by or is related to race, heredity, environment, climate, socio-economic status, pathological conditions and psychological conditions and psychological factors (Bolk, 1923; Popenoe, 1926; Laska Mierzejewska, 1970; Bhardwaj and Virmani, 1971; Valsik et al.1973; Roberts et al.1977; Brudevaii et al.1977; Uche, 1979; Satyanarayana and Naidu, 1979).

Studies on menopausal age show a positive association with menarcheal age, i.e., the menopausal age is low where the menarcheal age is high. There is, however, less adequate information about the determinants of menopausal age, except for a general suggestion that nutritional status commonly affects both menarcheal and menopausal ages (Pearl, 1939; Tanner, 1955; Frish, 1975; Flint, 1976; Talukdar 1977).
Another view suggests that the age at menopause is negatively associated with age at menarche in a few populations (Wolanski 1973; Mukherjee 1974; Talukdar, 1977). Studies at the individual level, so far reported, do not yield any equivocal results. Women showing early menarche are reported to have had (a) Late (Qurtis 1947) (b) Early (Seetha 1957) and (c) Either early or late menopause (Rajangan and Thomas 1987) in different series of data. Again statistical evidence of correlation between ages at menarche and menopause among individuals have either been found to be absent (McMohan and Worcester, 1966; cited by Frich, 1975) or small and non-significant).

Several studies over the past decades have established that marriage occurs earlier among women with early menarche (Buck and Stavraky, 1967; Kiernan, 1977; Ryder and Westoff, 1971). More recent studies by Presser (1978), Udry (1979) and Zelnick (1981) have shown that women with early menarche have earlier first intercourse and earlier first births.

A multiple regression analysis of the relationship between age at menarche and age at first birth for different ethnic groups in Hawaii (Chinese, Japanese, Caucasians and Hawaiians) produced ambiguous results but no significant heterogeneity of effect by ethnic group is reported (Goodman et al. 1980). The age at which women marry is a significant variable in population characterization and is intrinsically related to fertility. Marriage generally precedes childbearing and the age at the birth of the first child is primarily linked with the age at marriage. A number of studies have been conducted in India to estimate the effect of higher female age at marriage on fertility by several demographers (Agarwal, 1966, 1972; Talwar, 1967; Malakar, 1978) who have suggested that raising the female age at marriage tends to reduce fertility by shortening her reproductive life span. But some studies (Sinha and Bhargava 1982; Sinha 1987) have shown an inverse relationship.
between age at marriage and fertility. This might be due to some other associated factors like socio-cultural, economic and demographic nature, etc. Education and modernization contribute to postponement of marriage.

Similarly age at first birth is especially significant because it signals the entry of women into the state of motherhood. This changes the women's status and influences a long list of other demographic, social and economic phenomena that render the first birth an event that deserves careful study. The time elapsed between the onset of sexual activity (age at marriage) and the first birth is often used as an index of fecundity of a population (in societies in which contraceptives are non-existent) and they are known to bear a negative relationship to family size (Busfield, 1972; Bumpass and Mburugu 1977). Age at first live birth varies from female to female. Almost all females reproduce within 2 to 4 years after marriage. In some cases it may extend up to 8 to 10 years or even more than that.

Schwartz and Mayaux (1982) report that female fecundity declines with increasing age and the probability of conception per cycle declines sharply as early as at age 30, while Menken et al. (1981), and Bongaarts (1982) suggested that the study may have overestimated the difficulty of conceiving after age 30. According to Wood (1989), Wood and Weinstein (1990) an increasing risk of fetal loss with maternal age appears to be the single most important physiological cause of age related changes in fertility with declining capacity to conceive, playing a measurable but secondary role.

Duza and Baldwin (1977) found that the fertility declines in Turdsia, Sri Lanka and Malaysia could be partly attributed to rising age at marriage as a result of enhanced educational and occupational opportunities.

The Mysore study (UN, 1961) showed that rural females who married between 14 to 17 years of age had an average of 5.9 children while those who married between
18 and 21 had only 4.7 children. Mukherjee’s (1961) Calcutta study, Balakrishna’s (1971) study in Madras and Agarwal’s (1967) survey on the villages near Delhi and Lucknow reveal that females marrying after age of 19 years have their fertility reduced by about 0.5 to 1 child on an average. Many studies reveal that within the biological limits of human fertility several social, cultural, psychological,

2.6. Family welfare programme

While evaluating the impact of the family welfare programme on tribal women through a study of 300 tribal women of Tamian Development Block of Chindwara district of Madhya Pradesh, it was observed (Tekhre, 1989) that tribal women gave more attention to child welfare and child development programmes rather than mother care or family planning programmes. This may be because of their inherent maternal instinct and protectiveness towards their children. They contacted doctors more for antenatal care than postnatal care because of their concern with the welfare of the foetus in the womb and preparing for a safe labour. More than 90 percent of the eligible couples of Jaunsaris and Santals were found to be aware of family planning methods whereas only 16 percent Dudh Kharia couples were aware of family planning methods.

To make them aware about pregnancy and childcare the Integrated Child Development Programme renders services for the general welfare mainly health and nutrition of expectant and nursing mothers and children (Kar, R.K. & Gogoi, 1993).

According to W.H.O. “Family Planning can favourably influence the health, development and well being of the family and has a striking impact on reduction of infant and child mortality rate” WHO report series no. 600, Geneva, 1976 pp.36). Female education is said to influence infant and child mortality in several ways. The first is through birth spacing. Better educated women are more likely to practice birth control methods than less educated women (Cochrane, 1983).