CHAPTER I
INTRODUCTION

1.1 General Introduction

Advancement of Medical Science and easy access to modern medical facilities, the death rates have declined significantly during the last few decades. On the other hand compatible drop in birth rate is not accompanied. As a result population growth is becoming unmanageable and have resulted serious challenges to the achievement of national objectives and targets with regard to socio-economic development. It seems by 2045 AD India may overtake China in population, if present trend of growth rate is continued. Demographers and social scientist have been studying their phenomenon of population growth and they have observed that among all the demographic factors, fertility is primarily responsible for the current growth of human population especially in underdeveloped and developing countries. In the recent times the subject of human fertility occupies a central position in the study of population growth.

The word fertility refers to the actual reproductive performance whether applied to an individual or a group. And human reproductive
processes are mainly influenced by induced abortion and contraception. Common sense and an elementary understanding of the biological determinants of human reproductive indicate that contraception and induced abortion represent alternative means of achieving the same aggregate level of fertility in a population. So the levels of contraceptive use and the incidence of induced abortion continue to provoke heated discussion.

An induced abortion is the deliberate interruption of pregnancy by artificially inducing the loss of the foetus. Pregnancy is a critical phase in women's life and for obvious reason it cannot be avoided. However for smooth management of health, sometimes pregnancy is required to be avoided or terminated in initial stage. Generally, when family planning measures fails, induced abortion is adopted. In India the chief reason for termination of pregnancy is due to failure of contraception. Almost 50 percent MTP (Medical termination of Pregnancy) cases were done for this reason and about 30 percent MTP cases were done because of pregnancy or delivery threatening the health of the mother. Induced abortions may be illegal- septic abortions or legal- Medical termination of Pregnancy (MTP). Most septic abortions resulted from illegal abortions. Any abortion associated with
fever and signs of pelvic or generalized sepsis is considered septic abortion. It is estimated that about 5-10 percent of abortion admissions in hospitals on septic abortion cases. The risk of dying from sepsis after illegal abortion is 50 times more than legal abortion (Grimes, et al, 1980). The data from the Federation of Obstetrics and Gynecological Society of India (FOGSI) collaborative study on maternal mortality showed that septic abortion was the most common obstetric cause, amounting to nearly a third of the maternal deaths (Rao, 1980). Earlier abortion was illegal in India as well as in rest of the world. Now a days, nearly two-thirds of the world’s population live in countries, which have legalized abortion. The most important reason for the trend towards the liberalized abortion laws has been the belief that this measure will result in the reduction in mortality due to illegal septic abortion (Tietz, 1983). The Medical Termination of pregnancy (MTP) Bill was enacted in India in 1971 and came into force on 1st April 1972. The Act permits termination of pregnancy by a registered medical practitioner where the length of pregnancy does not exceed 12 weeks or by two registered medical practitioners acting together where the length of pregnancy exceeds 12 weeks but does not exceed 20 weeks. Accordingly in India, only 24,000 MTP’s were recorded in 1972, by the year 1990 the number has risen to 5,95,969. In the country as a whole,
about 6 to 7 million abortions occur annually, and roughly 90 percent of them take place in unapproved facilities. A survey of the world abortion situation from the available data reveals that abortion has been the most widely practiced method of fertility control in every country, irrespective of culture, socio-economic or religion. In several countries abortion become the main method for birth control. In Russia, Hungary and other east European countries, the majority of women and men who wanted to limit the family size accepted abortion as a safe method of fertility regulation. In Vietnam, abortion services are part of national family planning policy to control population growth. In Sweden a woman on average gives birth to two children and that every second woman have an abortion during her reproductive life. People have easy access to modern contraceptives and abortion on request. Though abortion is widely practiced but there are alarming incidence of mortality and morbidity in relation to period of gestation. Period of gestation is one of the most critical determinants of the sequel of induced abortion. There is progressive increase in several complications such as hemorrhage, shock and hypertension with increasing period of gestation. Morbidity and mortality associated with second trimester abortion are several folds higher than morbidity and mortality following first trimester abortion. Mortality rates showed a similar trend. Various
The contribution of family planning, in particular, the use of modern contraceptives on fertility reduction has featured prominently in research in developing countries (Freedman 1997). Literature on the subject is temporally and spatially pervasive, shedding light on countries such as the Asian success stories of Thailand, Taiwan, Bangladesh and Kerala area in India as well as the surprise African trio namely Kenya, Zimbabwe and Botswana. African countries (e.g., Mauritius, Kenya and Ghawa) necessarily laid emphasis on family planning before broadening their scope to include mortality and spatial dynamics of demographic behavior (Oucho, 1998). In the last two decades family planning researchers dwelt on analyzing the family
programme impact on fertility reduction. Their analysis concentrated on measuring programme impact by three variables; decline in fertility, changes in the prevalence and composition of means of fertility regulation and improvements in health (Frijka, 1998). Thus there has been constant attention in family planning as a prerequisite for fertility decline, especially in developing countries where rapid population growth was considered a major constant to socio-economic development. Botswana, Sub Saharan Africa’s economic success story, has broadened its family programme a development which has paid dividends given that the country has registered fertility decline for nearly a decade. However, in the Indian context, particularly in rural areas the structural right towards modernization has been very slow and the idea of family planning limitation through the acceptance of family planning methods has not spread widely. With the result, ever use of contraception, current use and intentions to use all have been low in rural areas as empowered to urban areas. As per the National family Health Survey (1998-99) current use of any methods was higher in urban areas (58 percent) than in rural areas (45 percent). However the influential factors that affect the use of methods include age at marriage, education, ideal number of living children, spacing between successive births, employment, poverty, health and status of women.
These factors in turn increase contraceptive use among the couples when structural changes such as socio-economic development or modernization takes place (Coale, 1979). Such transformation brings cognitive changes among the couples to limit their birth rates through the adoption of contraception.

The relationship between contraceptive use and induced abortion is a long debated and difficult one. The difficulty arises from the complex interaction of several interrelated factors that range from social, cultural, religious and economic influences, from how ideal family size is determined and from the demand for abortion and contraception, to a totally different set of variables related to quality family planning services. How the quality of services affect their use, contraceptive discontinuation and contraceptive failure as well as the use of abortion services are all factors that come into play in this relationship.

Differential in the reproductive performance of any population are usually attributed to variations in the exposure to the risk of pregnancy and the timings of births when exposed (Rajaram et al 1994). Birth intervals in human population offer an interesting, fruitful and
and intriguing area for scientific enquiry into fertility patterns. In traditional societies, birth spacing has been probably the most effective means of regulating reproductive capacity. Also, the analyses of birth intervals provide a useful framework for examining biological and social factors determining the level of fertility in human populations. First birth interval provides fecundity level of a woman. Most recent birth interval reflects the current reproductive performance of women and also it represents the dividing line between above and below replacement level fertility. Fertility histories include data on the timing of various significant events in the life cycle of a woman, such as her marriage and the dates of first, second and the last live birth. These data permit calculation and analysis of birth intervals, which can be categorized into two broad types. Closed birth interval, which is the interval between the successive live births of a woman and the open birth interval, which is the interval from the date of last live birth to the date of survey, calculated for each woman. The study of birth intervals both closed and open has gained considerable importance as they are used as sensitive indices of fertility and for detecting current changes in the natality pattern of women who are still in reproductive ages.

The analysis of birth interval through stochastic modeling mainly deals with the estimation of parameters, which are mostly
biosocial in nature. Further, if the entire reproductive process of a woman is known, it is possible to model directly the density of waiting time of conceptions/births (Sheps and Menkius, 1973). If on the other hand, the data on the incomplete or maternity histories of women collected through retrospective surveys are available, one can use life table procedures to get unbiased estimates. Moreover, all the above-mentioned techniques act as a kind of univariate analysis as they are to be applied in every state of population for which the researcher is interested to assess the tempo and quantum aspects of fertility. Also, the direct summary measures cannot be assessed in such analysis. An alternative way, therefore desired through which the birth interval data can be analyzed under the multivariate set up. This will help us to examine the effect of many covariates on the timing of births.

There are three multivariate regression based methods classified on the basis of their treatment of time.

1. Logistic regression based method or contingency table based.
2. Accelerated failure time models.
3. Proportional Hazard models.
The first method is used when the time is treated as a discrete variable whereas the last two models are used when the time is treated as a continuous variable. The advancement of such analytical methodologies and availability of large volume of data and also the advancement in the computer knowledge have facilitated the demographers to analyze the determinants of birth intervals in great detail (Moreno-Navano, 1987). However, among the continuous time models, most often used is Cox's semi-parametric proportional hazard model (Cox, 1972). This method is used for the multivariate analysis of censored data, which combined the basic idea underlying the life table analysis, and regression analysis. Despite certain limitations this technique helps us to examine the effect of many co-variates on an individual. This model also allows a kind of heterogeneity with respect to risk factor as it assumes that the risk of conception varies from woman to woman and it is a function of various socio-economic demographic factors and programme components. With the use of Cox model of life table regression, it could be possible to study systematically the effect of diversity caused by known (Observable) factors. Since it is not possible to observe all sources of variation, Cox model was soon generalized to include both observed and unobserved factors (Heckman et al, 1982, Trussell et al, 1989). Moreover
proportional hazard model has been used by several researchers to study the socio-economic and demographic determinants of child mortality (Hobcraft, 1980, Trussell et al 1983) and birth interval (Rodríguez et al, 1980; 1984 Rajaram et al 1994, Nath et al 1994b) in addition to the application of cox model, there have been attempts to fit various parametric models to underline rate (hazard) of an event happening at a certain time. Where parametric models fit, one can estimate the effect of unobserved factors as well by using this model. The model can be useful even in smoothing the hazard rates and are therefore, appropriate in a small sample situation also. (Balakrishnan et al., 1988)

1.2 Review of Literature

Due to increasing popularity of induced abortion in fertility control extensive study has been done on induced abortion. Of late, in many countries liberalization of abortion laws and abortion as a measure of fertility regulation has received considerable attention among researchers. The book India’s Abortion Experience 1972-1992, written by S. Chandrasekhar was primarily designed to make a case for the liberalization of the law then in force in India and to help reduce the
incidence of illegal abortion and thus reduces the nation's maternal mortality rate. In addition, the book went on to tell how India was able to pass new parliamentary legislation, the Medical Termination of Pregnancy Act. Chabra (1996) has discussed in detail the merits and demerits in implementation of MTP Act 1971 in India; key public health issue and indicator of unmet contraceptive use, searing testimony of gender and conjugal inequality, mortality, morbidity and growing problematic trends and inadequacy of administrative support. Khan et al (1996) has discussed the estimates of abortion in India, Availability and Distribution of MTP facilities by State and resource allocation for MTP services. Sundstrom (1996) revealed emphasis about family planning and abortion as fertility regulation, abortion as a health issue, legal status of abortion in different countries, fertility and abortion in different contexts and the abortion situation in selected countries. Ahmed et al (1996) discussed the liberalization of MTP in Bangladesh, about poor facilities of MTP services, the consequence of a social stigma and religious prohibition against induced abortion in Bangladesh, also they discussed in detail the trend of abortion and identify risk groups of women who are prone to abortion and the pattern of contraceptive use following abortion. Omran (1971) has discussed in detail the prevalence of induced abortion in transitional societies, low
fertility determinates and abortion, the consequence of suppressing abortion and the need for liberalization of abortion low. Fikereee et al (2001) in their work stressed about the socio-economic and demographic background of the abortionist in Karachi, the method and the reasons for the induced abortion, knowledge attitudes and practices of contraception prior to and after induced abortion and morbidity occurring consequent to the abortion were discussed. Singh et al (1991) have examined socio-economic and demographic background of abortion seekers in Chandigarh. They discussed the reasons for seeking M.T.P., knowledge, attitudinal and perceptual dimensions of abortion, the decision making process and its psychosocial implication in seeking MTP and the contraceptive practices of abortion seekers in detail. Henshaw et al (1999) have discussed about the countries with highly restrictive laws, global incidence and the countries where abortion is legal and where is illegal. They mentioned that approximately 26 million legal and 20 million illegal abortions were performed worldwide in 1995, resulting in a worldwide abortion rate of 35 per 1000 women aged 15-44. Among the sub regions of the world, Eastern Europe had the highest abortion rate (90 per 1000) and Western Europe the lowest rate (11 per 1000). Among countries where abortion is legal without restriction as to reason, the highest abortion rate, 83 per 1000
was reported for Vietnam as lowest as 7 per 1000 for Belgium and Netherlands. Abortion rates are no lower overall areas where abortion is generally restricted by law than in areas where abortion is legally permitted. Orobaton et al (1996) examined the effect of induced abortions on the decline of total fertility rates in two African countries—Egypt and Zimbabwe. Also discussed the implication of rising induced abortion rates for maternal health within the content of restrictive legal environments and suggested recommendations for reducing the incidence of abortion related maternal deaths. Agadjanian et al (1997) analyzed ethnic differences in induced abortion among ever-married women in Kazakhstan drawing on data from the 1995 Kazakhstan Demographic and Health Survey. The implications of the results for induced abortion trends and family planning policy in Kazakhstan are discussed in addition to other findings. Geto et al (2000) in their study, recent trend in the incidence of induced abortion are analyzed in order to identify the target group and its requirements for family planning policy in Japan. They observed that the abortion ratio remained the highest among women aged 40-44. An increase in the abortion ratio was seen in the two youngest groups (younger than 20 and 20 to 24), especially among those who were born after 1955. The proportion of abortion experienced by women younger than 25 increased from 18
percent between 1976 and 1989 to 30 percent between 1991 and 1995, and a slight increase was also observed among women aged 40-44. The proportion of abortions performed after eight weeks of a pregnancy for the two youngest groups remained higher than that for older age groups during 1975-95. The analysis demonstrated that women younger than 25 should be the principal concern of family planning policy in Japan. Thapa et al (2001) have discussed about the incidence and reason of induced abortion in urban Nepal. They observed that women in Nepal desire a small family size, especially those living in urban areas. Although significant numbers of women practice contraception, induced abortion is also used, primarily to contract family size and for birth spacing. The primary motivation for seeking abortion for no more children. Women in urban areas who had ever had an induced abortion tended to be younger of lower party and more educated than those in rural areas.

The relationship between levels of contraceptive use and the incidence of induced abortion continues to provoke heated discussion. Marston et al (2003) examined the relationships between contraception and abortion and he revealed that rising contraceptive use results in reduced abortion incidence in settings where fertility itself is constant.
The parallel rise in abortion and contraception on some countries occurred because increased contraceptive use alone was unable to meet the growing need for fertility regulation in situations where fertility was falling rapidly. Senlet et al (2001) examined the role of changes in contraceptive use in Turkey. The analysis included a number of simulations that examine what abortion levels might be in different contraceptive use scenarios. His study revealed that the decline in abortion is due to a decrease in the number of abortions associated with traditional method failure. This decrease is related to three factors; a shift from traditional method use to modem method use, a decline in the traditional method failure rate and a decline in the proportion of pregnancies resulting from traditional method failures that are aborted. 

Victor Agadjanian (2002) discussed how abortion related views reflect the long-standing ethno cultural differences between the indigenous Kazakhs and Kazakhstan's residents of European roots, as the latter continue to have significantly higher levels of abortion. In addition, the analysis points to some generational differences in views concerning abortion and contraception. Finally, the study demonstrated parallels in attitude toward abortion and toward contraception thereby questioning straightforward assumptions about the replacement of abortion with contraception. Bongaarts et al (2000) examined the potential role of
further increases in contraceptive prevalence and effectiveness in reducing abortion rates.

Variation and complication in relation to period of gestation of induced abortion has received considerable attention among researchers (Cates and Tietze 1978, Tietze and Henshaw 1986, Henshaw 1990, Anderson et al 1993; Ahmet Icduygu, 1996; ). Also some researchers concentrate on fatal loss and the absolute magnitude and shape of the risk function during gestation (Shapiro, S.E. et al 1962; James, 1970; Abramson 1973; Bakketeng et al 1978; Wilcox et al 1988; Hilden et al 1991).

A study on birth control measures suggests that among the various factors of fertility determinants none has a more direct effect on the individual than the use of contraceptive methods (Ross, 1983). So the determinants and variation in relation to the use of family planning method has received considerable attention among researchers (Rajaretnam 1995, Phillips et al 1997, Fikree et al 2000, Bora et al 2001, Roy et al 2003). Bora et al (2001) examined the factors influencing the use of contraception in rural Delhi. His finding suggested that the persistence of son preferences was the primary cause.
of low intention to practice family planning. In addition factors like women's age, literacy, number of living children, number of living sons and visits to the health centers have turned out to be significant or important in explaining in contraceptive use. Fikree et al (2001) have discussed in detail about the factors influencing contraceptive use among young women in urban squatter settlements of Karachi, Pakistan. Their study revealed that the long term goals of improving women's education levels and economic status are important for increasing contraceptive prevalence in Pakistan. A study on affects of son preference on contraceptive use, abortion and fertility in Matlab, Bangladesh conducted by Bairagi (2001). His study concluded that sex preference does not have a strong effect on contraceptive use in Matlab. Its absence, however, would probable increase recourse to abortion, which is used to limit fertility once couples have the number of sons they desire. The effect of sex preference on childbearing is becoming stronger as fertility declines, because couples must achieve their desired number of son's within a smaller over all number of children. Mishra et al (1994) examined factors influencing the main reasons for not intending to use contraception. This paper on the other hand considered some more important factors in the analysis of intention not to use contraception on the whole. Ghosh (2001) also carried out a
comparative study of Northern and Southern states of India on intention not to use contraception. This study found that husband’s approval of contraceptive use is one of the major factors influencing intentions regarding future contraceptive use. Education emerges out as another factor that encourages contraceptive use. This study rather not surprisingly found that desire for future child is one of the patent variables which increases the likelihood of intentions not to use contraception in future in states which have not reached replacement level of fertility. To predict the need for contraceptive services, family planning programme managers often rely on levels of unmet need desired from measures of childbearing intentions. However, women’s intention to use a method has not received as much attention as a measure of contraceptive demand. In India use of both contraceptive and child bearing intentions predicts contraceptive demand better than use of either indicator alone and may thus help programme planners estimate future demand for contraceptives services (Roy et al 2003). Ross et al (2001) emphasized the need to consider women’s intention to use contraceptives instead of or in addition to assessing unmet need. According to Casterline et al (2000) intentions to practice contraception may be a more valid indicator of the demand for family planning than unmet need. Even after adjustment for women who state that they will
use contraceptives but might fail to do so. Vlassoff et al (1990) found that women usually stopped having children when they reached or approached their ideal number of sons. Hence in predicting contraceptive demand, family planning programme planners need to determine how well women’s child serving behavior adhered to intentions.

Realizing the fact that birth intervals are inversely related to complete family size, in recent years an increasing number of demographers are turning their attention towards the study of birth interval data. Birth interval is an indicator of reproductive health. Regulation of fertility seems to be the major solution that can improve reproductive health. The data on birth intervals are taken as indicator of reproductive performance and considered to reflect the differential pattern of reproduction (Sheps and Perrin, 1964).

The length of the first birth interval is one of the strongest and most persistent factor affecting fertility—with longer intervals usually associated with lower fertility. Bumpas et al (1978), Trusell and Menken (1978) Milman and Hendershot (1980) have demonstrated that the length of first birth interval subsequently influences the spacing...
and childbearing pattern. Analyzing data from a 15 years follow up serving in Illions, Marino (1978) has found that the older the age at marriage and longer the interval between entry into marriage and parenthood, the smaller is the number of children. Freedman et al (1959), Bumpass (1969), Presser (1971), Busfield (1972), Cutright (1973), U.S. Bureau of Census (1975), Bumpass and Mburugu (1977) have realized that both age at marriage and first birth interval bear a negative relationship to the completed family size. However, Bayer (1968), Bumpass (1969), Elder and Rockwell (1976), Marini (1978,1981) revealed that a major difficulty in attempting to study the effect of timing of these events and the number of births may be due to the association of these variables with some other casual factors. Kalam and Udry (1986) examined the effects of a number of covariates on the length of the first birth interval for non-contraceptive population based in world fertility survey data from nine developing countries. Rao (1987) and Rao and BalaKrishnan (1988) have analyzed Geyana survey data. Analyzing data from a traditional society of India, Nath et al (1993) contributed knowledge to the pattern of fertility and first birth interval through analysis of several co-variates such as age at marriage, mother's education, female occupation etc. The closed birth intervals are treated quite sensitive to reflect current and abrupt changes in the
underlying fertility behavior of women than the conventional fertility rates. Data on closed birth intervals can be used for the estimation of various biological parameters such as fecundability, postpartum amenorhoea and for incidence of fetal waste through suitable probability models. These models are of crucial importance for detecting the current changes in fertility pattern of women who are still in reproductive ages. The first birth interval, the time between marriage and the first live birth and last but one birth interval can be considered as a closed birth interval. A number of social scientists (Sheps and Perrin, 1964; D'Souza, 1974; Chakraborty, 1976) have derived probability models for closed birth interval assuming that the length of the marital duration is sufficiently long. In this context Sheps et al (1969) Sheps and Menken (1972) proposed some theoretical continuous time models for closed birth interval for any specific order with fixed marital duration. Though the collection and analysis of retrospective birth interval data in underdeveloped countries is of special significance, yet the collection of such data in these countries suffers from non-sampling errors arising out of recall lapse on the part of the respondent (Rindfuss et al, 1982). In this context data on most recent birth interval (MRBI), which is defined as the interval between last and last-but-one birth prior to the survey data, seems to be less affected by
such memory biases. Thus they will be more reliable for analysis of fertility changes among married women compared to other closed birth intervals (Srinivasan, 1967; Singh et al 1988; Mukherjee et al 1991). Nath et al (1994) studied the most recent birth interval of a traditional society of Assam and found that co-variates such as age at first marriage of women, parity of the mother, survival status of the last but one birth and family income have significant effects on the duration of this interval. Poole (1971), Sheps and Menken (1972), Mukherjee et al (1991) have outlined procedures to obtain theoretical distribution of last closed birth interval. Assuming expected rate of achieving conception during susceptible state and the chance of female being sterile following a birth are functions of parity, as well as taking probability of incurring a foetal loss as zero, Singh et al (1988) have derived a parity dependent probability distribution for the most recent birth interval.

To deal with first conception delay, various probability models under different sets of assumption have been proposed. Starting with Shep's (1964) work in which he used Type-I geometric distribution to describe data on the time of first conception. Singh (1964) derived a continuous time model for the waiting time of first conception and applied it to an observed distribution relating to females of a rural
locality in India. Potter and Parker (1964) and Singh (1961, 1968) have also suggested geometric and type-I geometric distribution of waiting time for first conception and obtained moments and Best Asymptotically Normal estimates of the parameters. Sheps (1964), Mazumder and Sheps (1970), Suchindran and Lechenbruch (1975) have given type-I geometric, compound geometric and truncated type-I geometric distribution and have estimated the parameters by the methods of moments and maximum likelihood.

Realizing the importance of induced abortion and reproductive health in fertility control present study was planned and a survey was conducted during the year 1999-2000 in Guwahati Medical College and Hospital, Guwahati under the heading “A survey on induced abortion and reproductive health”. The details of data and sampling design are discussed in Chapter-II.

1.3 Objectives

Keeping the above discussion in view the objectives of the present study are:

1. To identify the socio-economic and demographic background of the women who come to seek abortion and to find out the reasons for seeking MTP
2. To find out the correlates of timings of induced abortion in other words it is to examine the grounds that distinguish pregnant women who elect abortion in the early period of her pregnancy from those who delay abortion to the late periods of pregnancy and some of the socio-economic and demographic correlates of these reasons by using logistic regression analysis.

3. To estimate the relative significance of factors affecting current use of contraceptive methods in different socio-economic and demographic settings.

4. To identify the different socio-economic and demographic factors that influence the length of first birth, last but one birth and last birth interval by using proportional hazard model.

5. To modify an age dependent probability model on waiting time of first conception and to illustrate the applicability of the model to our surveyed data.

6. To develop a probability model on first birth interval incorporating age at marriage distribution. A procedure to obtain maximum likelihood estimator of the parameters has been attained.
1.4 Organization of the research work

This research work is organized into eight chapters in order to achieve the aforesaid objectives. A brief discussion of the organization of the thesis is as follows:

Chapter I is the current one, which apparently dealt with the general introduction, discussion of the need of the present study, a review of literature, objectives of the study and a brief account of organization of the thesis.

The most important and difficult part of any retrospective study is the collection of data regarding the study. In chapter II objective of the survey, description of the sampling design, characteristics of the survey population and the analytical methods used in the study have been described. The data for the present study was collected from Guwahati Medical College and hospital (GMCH), Guwahati during the year 1999-2000 under auspices of Department of Statistics, Gauhati University. The details data regarding birth histories, induced abortion and its effect on reproductive health, socio-economic
and psychological information was collected through personal interview.

In the third chapter an attempt is made to find out the correlates of timing of induced abortion. Here due emphasis was given on the question of "What distinguished pregnant women who elect abortion in the early period of her pregnancy from those who delay abortion to the late periods of pregnancy?" A bivariate analysis was carried out first to find out the correlates of the timing of induced abortion. Then multivariate analyses were constructed to identify some of the determinants of having an induced abortion in the third and later months of pregnancy. A logistic regression procedure was applied and it was observed that the co-variates such as number of children at present, try for delaying pregnancy, mother tongue, area of residence, mother's education have significant effects on the timing of abortion.

In the fourth chapter an attempt is made to estimate the relative significance of factors affecting current use of contraceptive methods in different socio-economic and demographic settings. The difference between the characteristics of users and non-users of the contraceptive methods and the factors influencing use of contraceptive among
couples were assessed. The study also distinguishes the relative significance of the use of contraception between the women who underwent induced abortion and who did not. Here interaction effects of the factors for practicing contraception were considered. A logistic regression analysis is used to estimate relative impact of selected demographic and socio-economic variables on contraceptive use by two categories of women-current users and non-user. It is found that the covariates such as group (women were classified into two groups, exposed group-those who underwent induced abortion during the exposure period and control group-those who did not go for induced abortion till the interview date.), husband’s education, number of child at present and caste have significant effect on the use of contraception.

In the fifth chapter, the effects of various socio-economic and demographic factors on the length of the first birth interval have been examined. The length of the first birth interval is one of the strongest and most persistent factor affecting fertility—-with longer intervals usually associated with lower fertility. Life table and multivariate hazards modeling techniques are applied to analysis the data. Such as age at marriage, age at first birth, mother’s education, mother’s occupation, husband’s education, caste and mother tongue have
significant effect on the first birth interval. Here interaction effects of different factors were examined and it is observed that the factors mother's education with mother's age at delivery and mother's education with caste have significant effect on first birth interval.

The chapter six describes on analysis of the last but one birth interval and last birth interval. The analysis of last but one and last birth are demographically important because it reflects the current reproductive performance of women. Also the last birth represents the dividing line between above and below replacement level fertility and it seems to be less affected by recall lapse in memory. Thus it will be more reliable for analysis of fertility changes among women compared to other closed births. Life table and multivariate hazards modeling technique are applied to analysis the data. Here it is found that the co­
variates like mother's age at the time of deliver, try for delaying pregnancy, mother's occupation caste and parity of last but one birth have strong effect on the duration of the last but one birth interval. Similarly the factors mother's age at last birth, mother's education, parity of last birth; husband's occupation and type of family have highly significant effect on the length of the last birth interval. The interaction effect of mother’s education with mother’s occupation has
significant effect on the length of the last but one birth interval. Where the interaction effects of mother’s education with mother’s age at delivery has highly significant effect on the duration of last birth interval.

In the chapter seven an attempt is made to derive a probability model on waiting time of first conception for a finite period of exposure. The probability distribution for waiting time of first conception is assumed to be age dependent. Here female reproductive period is considered to be finite. The model involves two parameters ‘a’ and ‘θx₀’. ‘a’ represents the age at which women becomes able to conceive and ‘θx₀’ represent age constant depending on x₀, where x₀ is the age at marriage. The value of the parameter ‘a’ is considered on the basis of empirical studies and ‘θx₀’ is estimated by the method of maximum likelihood.

In the chapter eight, the last chapter an attempt is made to derive a probability model of first birth interval by incorporating age at marriage distribution. A procedure to obtain maximum likelihood estimator of the parameter has been attained.