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Study of Marriage Pattern and Its Implications on Fertility in Bangladesh

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University of Rajshahi

STUDY OF MARRIAGE PATTERN AND ITS IMPLICATIONS ON FERTILITY IN BANGLADESH

A

Dissertation

Submitted to the University of Rajshahi

in Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

BY

MD. ABDUL KHALEQUE

University of Rajshahi
June, 2011

Department of Statistics
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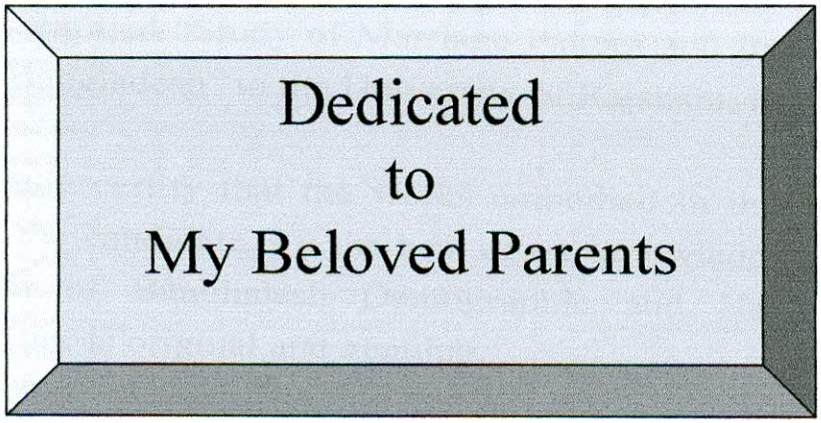
Dedicated
to
My Beloved Parents

Certificate

We are pleased to certify that Md. Abdul Khaleque, Research Fellow, Department of Statistics, Rajshahi University for submission of the PhD thesis entitled "Study of Marriage Pattern and Its Implications on Fertility in Bangladesh" to the University of Rajshahi, Bangladesh.

We do hereby certify that the works embodied in this thesis were carried out by the candidate. To the best of our knowledge he used the secondary data of Bangladesh Demographic and Health Surveys (BDHS). His work is original and genuine.

We wish him a colorful future and every success in his life.

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Statement of Originality

This dissertation does not incorporate any part without acknowledgement of any material previously submitted for a higher degree or diploma in any University /Institute and to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text.

University of Rajshahi
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Abstract

Recent studies on marriage patterns in Bangladesh have revealed a clear trend towards decreasing proportions of married women and an increase in age at first marriage. Despite marriage being one of the most important proximate determinants of fertility, the role of these nuptiality changes on the country's decreasing fertility levels has not been adequately explored. Using data from the 2004 Bangladesh Demographic and Health Survey, this paper fills this research gap by examining the pattern of marriage and impact on fertility in Bangladesh. Adolescents, their parents and the community should be more aware of the negative consequences of early marriage, early pregnancy and large family size. In Bangladesh there has long been strong social pressure for the preservation of virginity until marriage. This is one of the cultural characteristics of the great majority of people in the country irrespective of their religion. Sex out side marriage occurs only seldom, since pre-marital sex is looked down upon harshly in Bangladeshi society (Maloney and others, 1981). Among females almost 95 percent of marriage takes place before the end of their second decade of life. This densely populated country of 136.7 million people (SVRS, 2004) is also characterized by a high population growth rate (1.42 percent annually: BBS, 2004), high nuptiality and low age at marriage (N Islam, 1989). There has been a clear rising trend towards higher age at marriage over time (Islam and Islam, 1993).

The study covers a period of nearly 32 years from 1975 to 2007. The trends in the marriage pattern as well as in the levels of fertility are examined for this period of study. Attempts are made to find the correlated components of marriage and fertility responsible for giving rise to such tends as are observed during the course of analysis.

The results show that marriage patterns have been changing over time. Analysis of age patterns of marriage by means of Coale's model nuptiality schedule has yielded some interesting results. It has been found that marriage still remains a universal

phenomenon in Bangladesh. Early marriage prevails in the population and that marriage not only start early but progresses fast and are concentrated within a short span of time at least in the female population.

This study confirms that marriage is almost universal among females in Bangladesh there are very few women who remain single throughout their lives. As in various other developing agricultural societies, early female marriage is customary in Bangladesh. Most female have been married before age 20, with almost 100 percent getting married by the time they reach age 30. Data from the 2004 BDHS indicates that, among the 10205 sampled married females aged below 50 years; about 95 percent had been married when they were below age 20 and only 5 percent were married at 20 years of age or older. In Bangladesh the legal age of marriage is 18 years for the women; however a large proportion of marriages of still take place. Thus, it may be said that about 95 percent of marriages in Bangladesh are teenage or adolescent marriages. This situation gives rise to a very low age at marriage in Bangladesh. This leads to an exceptionally low mean age at first marriages, i.e. 13.4 years. Legislation on age of marriage, therefore, seems to be ineffective in delaying childhood marriage in Bangladesh. In a recent study have observed that a large majority of the rural community in Bangladesh are ignorant about the legal age for marriage and are even less concerned about the negative social and health consequences of adolescent marriage.

According to the regression, the TFR equals on average 7.82 births per women in the absences of contraception (CPR=0), and fertility declines at a rate of approximately 1.0 births per women for each 9% increment in the contraceptive prevalence rate. Under such relationship between TFR and CPR the replacement fertility requires a prevalence level of fertility can be achieved. The regression equation of TFR on CPR suggest that a TFR of 2.5 births per women can be achieved by the year 2015 if the level of CPR is raised to 65% and if the level of contraception is raised to 73% it is possible to achieve a target fertility level of 2.0 per women.

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INTRODUCTION

1.1 Bangladesh and its population

Bangladesh is located in the northeastern part of South Asia. Bangladesh emerged as an independent and sovereign country in 1971 following a nine-month war of liberation. She achieved her independence on March 26, 1971 from the colonial rule of Pakistan after a tremendous sacrifice. The war of liberation ended of December 16, 1971 in victory of Bangladesh forces and surrender of the occupying army. It is one of the largest deltas in the world with a total area of 56,977 square mile's or 147,570 sq. km. Bangladesh is the most densely populated country in the world, excluding city states such as Hong Kong and Singapore. The country has a population of about 140 million, with a corresponding population density of more than 900 per square kilometer. For administrative purposes, the country is divided into 6 divisions, 64 districts and 496 Upzillas (sub districts) (BBS, 2001:19). Muslim constitute almost 90 percent of the populations of Bangladesh, Hindus constitute about 9 percent and others constitute about 1 percent. The National language of Bangladesh is Bangla, which is spoken and English however, is widely spoken. During the first half of the last century the population increased by only 45% .This slow increased was due to a combination of high birth rates and high death rates. In the second half of the century, population growth was rapid, tripling during the period. The relatively young age structure of the population indicates continued rapid population growth in the future. According to the 2001 census, 39 percent of the population is under 15 years of age, 57 percent are between 15 and 64 years and 4 percent are age 65 or over (BBS,2003:51). This young age structure constitutes built-in "population momentum," which will continue to generate population increases well into the future, even in the face of rapid fertility decline. The population projections indicates that the population will increase rapidly

even after attaining replacement level fertility because of the echo effect of the high fertility experience in the past.

The Bangladesh population policy indicates that the population should stabilize at 210 million by 2060, if replacement- level fertility is reached by 2020. This estimate of future population size is reasonably consistent with World Bank projections from 1994(Bos et al..., 1994), the United Nations projections 1996 revision (United nations, 1996), both of which estimated a mid-21st century population 218 million. However, there is wide disparity between the estimates of Bangladesh Government and others on the time when the population would stabilize. The World Bank boldly forecast a final stationary population of 263 million by mid-22nd century (2150), whereas others have not projected beyond the mid-21st century. Recently however, the United Nations has revised their estimate for 2050 by 25 million (or 11 percent) to 243 million, apparently on the basis of the decade long fertility plateau (United Nations, 2004).

The country is covered with a network of rivers and canals forming a maze of interconnecting channels. Dhaka is its capital city and Chittagong is the main seaport. Being an active partner, Bangladesh plays vital role in the international and regional forum, particularly in the UN, Commonwealth and South Asian Association of Regional Cooperation (SAARC).

Bangladesh is located in the tropics between $20^0 34'$ and $26^0 38'$ North latitudes and $88^0 01'$ and $92^0 41'$ East longitudes in South Asia. The Indian states of west Bengal, Meghalaya, Assam and Tripura border on the west, the north and the east respectively. Bangladesh also shares its border with Myanmar on the southeast corner. In the south, the country has a long coast along the Bay of Bengal. Topographically, the country is almost entirely a fertile alluvial plain formed by the two main rivers, the Ganges and the Brahmaputra (locally known as the Padma and the Jamuna) and their hundreds of tributaries. Bangladesh is often referred to as a land of rivers. The main rivers are Padma (Ganges), Jamuna, Meghna, Bramhaputra, Surma and Karnafuli. The coastline

of the Bay of Bengal is 66,400 km. The only hilly parts are in the northeast and southeast of the country. Bangladesh has the world's largest mangrove forest, the world heritage Sunderban

Which houses flora and fauna of innumerable species. Bangladesh has the fauna of about 1600 species of vertebrates. Royal Bengal Tiger (Panthera Tigris) is the most famous species of carnivorous mammals which lives in the Sunderban.

Bangladesh has a tropical monsoon climate with three main seasons- the hot and humid summer (March-May), the rainy season (Jun-Sep) and the mild and relatively dry winter (Dec-Feb). Spring and autumn (Oct-Nov) are brief but can be distinguished in changes in vegetation as well as mean daily temperature. Average annual temperature is 260C and while rainfall is 2540 mm. During the summer monsoon (mid-may to mid-October) rains dominate the seasons in Bangladesh. The rainfall is high and falls in the range of 140 centimeters. The mean maximum temperature is 21^0C (in January). These factors make the climate very unpleasant with high relative humidity (86.5% in Chittagong in July) accompanying quite high temperature (Johnson, 1975). Despite the return the sunny skies the uncomfortable hot humid weather persists up to October. Because of rain and flooding there is a superabundance of standing water and these excess moisture helps to maintain an unpleasantly stickle atmosphere. The costal regions of Bangladesh are subject to damaging cyclones and floods almost every year.

Agriculture is the overwhelmingly dominant sector of the economy, occupying 80 percent of the total population and contributing 25 percent of gross domestic product (GDP). The average per capita income is as low as $444 and more than one-third of the populations live below the absolute poverty line (UNDP, 2003). Rice, wheat, jute, sugarcane, tobacco, oilseeds and potatoes are the principal crops. The country produces about 51 million kilograms of tea per year, a sizeable quantity of which is exported to foreign markets after meeting the internal demand. Bangladesh produces 1057000

metric tons of superior quality jute annually and 16 percent of export earnings come from raw-jute manufactures (BBS, 2001. Industry, although small is increasing in importance as a result of foreign investments. Unemployment/underemployment is a serious problem, and pressure on the land in rural areas has led to movement of people from rural to urban areas.

Bangladesh ranks 138th in the human development Index (HDI) as presented in the human development report of 2004 with a HDI value of 0.519. With this HDI value, the country belongs to the category of medium human development countries. However, Bangladesh ranks among the three last countries in this category, followed by Sudan and Cameroon. Within the region, the position of Bangladesh is better only than Pakistan, which ranks 144 in the HDI.

Bangladesh still struggling to emerge from the realm of poverty. Bangladesh ranks 72nd among 94 development countries in terms of the human poverty index (HPI). The HDI is multidimensional measure of poverty for developing countries; it takes into account social exclusion, lack of economic opportunities and deprivations in survival, livelihood and knowledge.

1.2: Marriage behavior in Bangladesh

Very few studies have ever been made of marriage custom in Bangladesh (Johnson, 1975). Ethnically, Bangladesh is homogeneous, having only one major ethnic group (98.8%) known as Bengalese. There are some ethnically different tribal populations in the hilly regions of the country constituting 1.2%. Islam is the predominant religion with 88.30%, Hinduism 10.5%, Buddhism 0.6%, Christianity 0.3% and others 0.3% (Bangladesh population census, 2001). The country is more or less culturally homogeneous.

In Bangladesh, marriage means the prescribed legal union between a mean and women, establishing them in new social roles as husband and wife. Pre-marital cohabitation does not exist and it is looked upon as a social evil. Marriage for women in Bangladesh is widespread and most of them become married before reaching the age of 20 years. In rural Bangladesh, there is a common belief that a girl age 20 years is too old to marry. Constraints on marriage that didn't exist before are, however, now making an appreciable change-shortage of land, unemployment, etc. Also marriage among the highly educated elite is becoming less desirable as they are capable of making themselves free from the contractualism of arranged marriages. As early as possible a girl must to go to her husband's household. For patterns a puts puberty unmarried daughter is considered a danger because of the secret desire to indulge in illicit coitus that might be in their daughter's mind, which may result in social scandal and for which the parents may be socially condemned and have to face rancor and social boycott. If a daughter's marriage is delayed, the parents feel guilty and begin to think of her as a burden. Parents of girls who can arrange early marriage for their daughters feel very proud.

A mature girl may cherish illusive fantasies about events related to sexual pleasure and wishes to find a household as soon as possible so that she can comfortably establish a happy home with children and can lead a life with proper rights and esteem. Whenever a mature unmarried girl finds that friends in her age group friends she wants to have a husband, children and her own happy home where she can legitimatize her prestige. Men and women who never marry are excluded from many social activities, which makes them feel that have that some how failed to get a partner. Socially they are stigmatized due to their unusual marital status (Aziz et al. 1985; Malony et al. 1981; Chowdhury, 1984; Sheikh, 1990).

Because of the predominance of an agrarian economy, the Bangladeshi people have a very young age at marriage, a low rate of divorce and a fairly high rate of remarriage

following immature widowhood. In Bangladesh, like other Asian societies, land and other resources are divided among all living sons and marriage and inheritance are the expectation of the entire sibling set both men and women. In the past, child marriages were common in Bangladesh. Child marriage was prohibited in 1929 in British India, of which Bangladesh was than a part. With the influence westernization and recent economic hardship, this practice is now almost abolished. In those days the child bride remained with her parents or near relatives until she attained puberty. However, most girls still marry while they are still in their teens.

For the man, age at marriage is not rigidly determined but it is usually decided by this ability to independently support a family. If he is the eldest or the only son he will be expected to get married early. Traditionally, the main occupation is cultivation and the eldest son inherits or shares is father's land. Therefore, employment outside the family is not an important criterion for marriage for the son. Marriage in Bangladesh is mostly arranged by the father and other relatives or guardians. Usually parents or in the absence of the parents, close elderly relatives, approach him/her for his/her consent to a proposed marriage. The young man/girl passes on his/her opinion through a friend. While the selection is made by the parents or near relatives, the consent of both partners, that is the bride and bridegroom, in front of witnesses is essential for the marriage to be considered valid.

Islam which is the predominant religion of Bangladesh, attaches great importance to the family by strengthening the ties binding its members and safeguarding it against undermining influences. Hence marriage is considered an important social institution and is almost universal in Bangladesh. In the Islamic sharia or law, marriage is obligatory for persons who are able to cope with its financial burdens. There are certain restrictions that must be followed in finding a suitable spouse according to Islamic law. A Muslim man is prohibited from marrying his daughters, his sisters and his aunts on both his father's and mother's (Levy, 1957). He also forbidden to marry

both a women and her daughter, nor may he take possession of a women who is already lawfully married to another man. The Holy Quran also forbids marriage between two persons reared at the breast of the same women. The marriage ceremony takes place at the house of the bride or a place mutually decided on families of the bride and groom. The Kazi (according to Islamic rights) usually performs the actual marriage ceremony. In this ceremony, assent to marriage is obtained directly from the groom in case of the bride; this is obtained from her representative, known as Ukil. Two male witnesses are required to validate the legal aspect of marriage. In Islam, marriage considered a contract and the terms are required to be fully documented on Nikha Namma (registration form). According to the Muslim family Law Ordinance of 1961, the following information is to be recorded on the marriage registration form: (i) year of marriage (ii) name of the locality (Union/town committee) (iii) age of the bride and groom (iv) marital status of the bride at the time of marriage (v) amount of Mahr in takes and (vi) date of marriage according to the Arabic calendar (Afzal et al. 1971).

According to the Muslim marriage, a husband is required to given a certain amount of Mohr to his wife at the time of marriage (Afzal et al. 1971). The balances of Mohr is in any case required must be paid with or without divorce for the marriage to be legal. She has the right to forgive all or some of the unpaid portion if she wishes. The amount is decided taking into consideration, among other thinks, the social position from the Quran where it is stated: " As the women in marriage surrenders her person, so the man must also surrender-besides some of his independence at least part of his property according to his means".

Another feature of the marriage is the demand for dowry, which usually goes from bride to groom. This could be in the from of cash or kind. Another kind of marriage "ghar jamai" is also practice in Bangladesh, mainly in rural areas, where the groom comes to lie permanently in his father- in-law's house. In this type of marriage most of the husbands are bound to return to their parental house if the wife dies.

Since marriage under Muslim law is a contract, divorce is allowed. Under the traditional Muslim law, divorce can be obtained in one of following ways:

(i) by mutual consent of the husband and the wife with out the intervention of the court.

(ii) by a judicial decree at the suit of the wife and

(iii) by the husband at his will by simply pronouncing the intention to do so in front of witnesses, without the intervention of the court.

This later form of divorce is popularly known as Talaq. Divorce by talaq was substantially modified by the Muslim Family Law Ordinance of 1961. Under this ordinance, divorce by talaq does become final or effective immediately. The husband must file a written notice with the principal of the union Council (lowest tier of local self government) stating that he was divorced his wife by talaq. During the period of 90 days from the date of serving the written notice, the law provides conditions for efforts to be made to bring about reconciliation. If such a reconciliation is not achieved, then the divorce becomes effective after the expiry of 90 days. If the man decides to take back his divorce wife, she has to be married temporarily to another man for a period of at least three months and then get divorced from this new husband and remarry the former husband through Islamic rites. In this case of a divorce initiated by the husband, he has to bear all his divorced wife's essential expenses for a period of three months.

In the case of divorce, the husband has sole claim over the children, if any. Remarriage following divorce is permissible by law but divorced person finds it difficult to find a suitable spouse. A strong social stigma exists in marrying a divorced person. Usually a divorced woman, if she remarriages, will marry a divorced or widowed man or and old man who has never married.

Although polygamy (up to four wives at a time) is permitted by Islam, its practice is very limited in Bangladesh. In a few cases where the first wife could not give birth to any issue or son, the husband may take another wife with the hope of getting the

desired issue. In rural areas, the polygamous man is usually a large land holder, whereas in the towns he is often a poorly educated but wealthy trader. However, the family Law ordinance of 1961 restrains this right by making this provision: "No man during the existence of a marriage shall except with the previous permission in writing of the arbitration council, contract another marriage, nor shall any such marriage contracted without such permission be registered under the ordinance. The arbitration council will be constituted by the union council chairman and a representative of each of the parties. Violation of the rule will imply the immediate payment of the entire dower to the wife and imprisonment up to one year or a fine of taka 5000 or both" (ESCAP,1981).

The marriage law and customs of the Muslims who constitute 88.3% of the total population have been discussed so far. There is a need then, to draw attention to some aspects of marriage customs and laws of the Hindus, who constitute 10.5% of the total population. The Hindu marriage system differs from the Muslim marriage system in some respects and marriage usually takes place within a caste. It may be mentioned that there are four main castes among the Hindus. Marriage arrangements are however similar in both the Islamic and Hindu religious in Bangladesh, having been influenced by local custom (D'Souza, 1979). For example, the practice of paying dowry to the bridegroom in cash or kind is prevalent among both Muslims and Hindus. Among the Hindus, the bridegroom is also required to pay certain among known as pan or price to the father of the bride. The pan is fixed through the negotiation by the bride and groom and partly depends upon social position. Pan is a social practice. Hindu marriage is eternal and need not be registered. Divorces are very rare among the Hindus in India and Bangladesh (D'Souza, 1979). Usually separation is the alternative to divorce for the Hindus. If a divorcee happens, a man has to bear all necessary expenses of his divorced wife until her death. She still remains a claimant of his property. Marriage of a widow was prohibited for many centuries in the Hindu religion. It is still discouraged

and thought to be some thing evil in the society although many social leaders have fought for the cause of remarriage for widows. On the other hand Hindu widowers can marry can single woman. Among the Hindus, polygamy is permissible with the consent of the first wife (Krishnamorthy, 1977).

A match maker plays a vital role in Bangladeshi marriage. He is the medium of communication between the two parties involved and any query or demand has to be passed through him. On many occasions he has to face attacks and counter-attacks from both sides. This is a thankless job, but without a match-maker intervening, marriage negotiation is almost unthinkable in both rural and urban Bangladesh.

Bangladeshi custom requires older children to marry before younger ones consider getting marred. If in any case a younger girl married before her elder sister, the elder sister is thought to be cursed and unsuitable for marriage. The bridegroom does not have to pay compensation in such a case. Ideally, a man has to be about five or six years older than the girl. In rural areas, most of the marriages take place just after the harvest. There are some lunar dates which are more favorable than others for a marriage ceremony and there are a few lunar dates on which marriage is strictly prohibited in Bangladesh.

Social legislation against child marriage was passed in British India (including Bangladesh) for the first time in 1929(D'Souza, 1979). The Child Marriage restraint Act, commonly known as Sarda Act, named after its sponsor Har Bilas Sarda came into effect in 1930 (Census of India,1931). Under this law, punishments were provided for the solemnization of marriages under 14 years of age for females and under 18 years of age for males, although marriage were not invalidated. The Sarda Act was not welcomed by either the Muslim or the Hindu community. The time gap between the passing of the Act and its actual enforcement was abused by the people as frequency of child marriages rapidly increased (Census of India, 1931). Soon after the independence of Pakistan, political leaders and social thinkers began to be aware of the growing

population problem. But they had a long wait until the people realized that legal action was needed to raise the minimum age at first marriage. The Muslim family law ordinance was passed in 1961 requiring registration of all Muslim marriages. The Sarda Act was amended raising the minimum age of marriage for females from 14 to 16 years and for males from 18 to 21 years. But in actual practice no action was taken for the violation of the ordinance so far as age at marriage was concerned. In the absence of a vital registration system it is difficult to implement the law as there is no way to challenge the age as stated by a person. The Bangladesh population council has recommended that a proposal should be developed in due course to rise the age at marriage giving due consideration to the existing socio-economic conditions of the country (Population controlled and Family Planning Division, 1976). Its recommended age at marriage for females is 18 to 25 years and for males 20 to 28 years.

Bengali peasant cultures are suffused with a pro – fertility ethos which evolved over 300 years of adoption and symbolic relationship between man and the land. The culture was become highly successful in its ecological setting. The various great religions are superimposed but rural beliefs about fertility and the human body are more fundamental and cut across them.

Human fertility and land fertility re analogous. A woman is the field and the seed is nourished by her juices before birth and by her milk after birth. Muslims commonly say that every mouth brings its own food and each person's food is pre-allocated before his birth. Therefore, some conclude that land can indefinitely support those souls to be born. Such pro-fertility beliefs were at one time functional, but because life expectancy is now 62 years they have become dysfunctional. It is thought by Muslims to be a moral duty to have and raise children and to increase one's kinship and lineage groups. The bodily substances shared by the breeding group are said to be transmitted by the male semen and the female semen, which mix at conception.

Muslim consistently have higher fertility than Hindus and give negative advice about population control twice as much as Hindus (Maloney et.al, 1981). But these differences can disappear through motivation. The most fertile group is the rural middle class, who are mostly Muslim cultivators. Their higher fertility is not just because of religious affiliation, but because they are enmeshed in the matrix of peasant life that evolved with a pro-fertility bias.

It is believed that one's fate is written on one's forehead at conception, or that at birth, fate is determined by Allah before the soul is sent to the fetus. God controls the four main aspects of living: life, death, wealth and sustenance. There are two kinds of fate- unchangeable and changeable and Muslims seek God's fevour for the changeable fate on the night of Shab-i-Barat. The concept of Karma is actively assented to by Muslims and Hindus: one's deeds, especially bad deeds, will affect the doer.

The number of one's children, thus is predetermined by God and food is allocated accordingly. It is a cultural expectation that people should affirm this. Stated dependence on God for number of children is statistically correlated with higher fertility, early marriage and stricter purdah, more fasting, more prayers, less abortion, negative advice on populat ion control and negative opinion of religious leaders on family planning and less use of modern contraceptives.

Having children is a compulsory duty in Islamic tradition and children must be raised in the religion; this is also advocated in Hindu tradition. Muslims say if there are several sins one can be given for religious education. Many children will have more voices to praise God and in the Day of Judgment the Prophet will be pleased to see long lines of worshipers. Children have a duty to care for the parents' funerals. An infant who dies in innocence will plead in heaven for this parent to be let in. The female is blamed for childlessness, like a barren field without nutrients. Children are needed for old age supports and this need may be increasing with more landlessness. Children who do not support aged parents are said to be beasts and accursed. Sons are

more desirable and more of them bring diversity of income and make the kinship group large and strong, but daughters require dowry to be married.

Among the reasons for people wanting more children, the first is sex preference. Sex preference operates as a relatively stronger reason for wanting more children among females than among males. Most people want several children for undefined personal fulfillment, which is couched in terms of moral duty, family prosperity or future support. When there are many sons each one will take up a different occupation according to his taste and capacity. Then there will be ab increase in the level of happiness and convenience. If one does not have children his possession of property is meaningless.

A male child is favored. If the males in a family are few then the size of the lineage segment (Bangsa) becomes small. Males are future earners, but females are economically unproductive. Parents have to spend a lot on arranging marriages of daughters. So for economic reasons a male child is preferred. Nowadays a girl is viewed as a problem in the family. If parents could control the sex of children born then every couple would decide to have a male child first. A son is essential for continuity of the lineage and old age security.

1.3 Research perspectives

Bangladesh is one of the developing countries which has been experiencing accelerated population growth in recent decades. The ever-growing population is putting severs constraints national efforts to improve the overall living conditions of the people. The high rate of growth is presumably due to sustained high level of fertility and declining mortality as in other developing countries.

High population growth in the recent decades in the world, in general and in the developing countries, in particular has drawn attention of several researches because of

its intricate relationship with and important bearing on the socio-economic development. There is now a general recognition that rapid population growth in developing countries is jeopardizing all the developmental efforts in ameliorating the socio-economic conditions in these countries. For large increases in population in limited land space-as that of other resources would not only lead to an increasing pressure on land but also create ecological imbalance. Moreover, sustained population growth, ceteris-paribus, means more consumption, less saving high social overhead cost, less investment , reduced output per worker and less job opportunities, all leading to a vicious circle of poverty and fatalism(Coale and Hover, 1958; Kuznetes, 1969; Demeny, 1972; Kirk, 1967; Muller, 1977; Birdsall, 1977).

Population growth is the resulting of three components- fertility, mortality and migration As such any change in the growth rate can be brought about by manipulating any or all or a combination of these components. The possibility of bringing down population growth by migration seems to be bleak, because of imposed restrictions on migration, as also the possibility by raising the mortality (on moral grounds). Thus it appears that fertility is the only variable which may have to be manipulated by policy interventions in order to reduce population growth (NAS, 1971; UN, 1973). Thus the problematical factors in determining the course of population have been the levels and conditions of fertility and the prospects for their change "(Un, 1979). This has made the study of fertility so important in recent years.

Human reproduction is influenced by social, economic, psychological, genetic and cultural factors interacting with each other in a complex manner. As Simmon and Saunders (1977) point out, "Genetic and physiological factors set conditions that make reproduction both certain and limited. Societal and psychological factors determine to a large extent when and where it will occur". Thus with equal level of development, other determining factors may cause variation in the fertility level among nations and even among region with in the same nation. Moreover, socio-cultural considerations may predominate the economic consideration in some countries or regions in determining the level of fertility in contrast to others. Thus, the study of fertility and it determinants is of prime importance not only for its own sake, but also in

understanding the mechanism through which it works and its subsequent relationship with other components of population growth and related matters.

In explaining the decline of fertility in the developed countries Ryder maintains that low fertility has been achieved in Eastern Europe through four transitional phases: high nuptiality- high marital fertility; low nuptiality- high marital fertility; low nuptiality- low marital fertility; high nuptiality- low marital fertility; whereas Eastern Europe has cut the sequence by omitting the two intermediate stages(Ryder, 1967). Coale asserts that the presently low fertility countries achieved this state by employing both Malthusian and Neo-Malthusian methods of fertility regulation (Coale, 1967). Hence age at marriage and proportion marrying occupy a very important place in studies related to policy interventions for reducing fertility in countries with sustained high fertility like Bangladesh(Duza and Baldwin, 1977; Nortaman and Hofstatter, 1978).

There has been a growing interest in the study of nuptiality not only for its great impact on fertility but also in its own right as an important demographic factor which affects the marital life cycles of a vast majority of people in a society. The role of nuptiality in population growth has drawn attention of not only the demographers but also of the policy makers and planners for the reason that delayed marriage can contribute significantly to reduction in fertility and in turn the population growth.

From a demographic point of view, marriage is an event that marks the beginning of the potential period of child bearing. The marriage rates at each age and proportions of population in each marital status category are vital to fertility analysis. Age at marriage can significantly affect the rate of population growth of a country, particularly of a non contraceptive society where births take place within marriage. In a situation of limited control of fertility within marriage, a negative association between age at marriage and family size is almost inevitable. In view of this raising the age at marriage is considered to be policy intervention "beyond contraception " that may initiate a fall of population growth on a major scale in developing countries.

The study of nuptiality has long been a concern of sociologists and anthropologists. Demographers have only recently started to devote significant attention to this field (Duza and Mokhtary, 1976). Basically, two phenomena seem apparently to characterize the nuptiality behavior, namely the ages of first marriage and proportion marrying. Normally, both the factors seem to change over time contributing to change in marriage patterns.

Therefore analysis of these components is necessary through not sufficient for studding the age patterns of marriage. Average age at marriage takes account of the marriage patterns prevailing in a population but does not fully signify the inherent peculiarities. Lestheaghe has pointed out that the classical indices characterizing nuptiality schedules such as mean age at marriage yield rather unsatisfactory information since they do not allow for the specification of the age at which marriage starts nor the tempo at which nuptiality schedule proceeds (Lestheaghe, 1971). Therefore in order to have a clear and complete picture about the age patterns of marriage one should know not only the average age at which the people marry but also the age at which marriages begins together with the tempo of marriage, age span of first marriage, first marriage frequency, risk of first marriage, the ultimate proportion marrying etc. Knowledge of these parameters is necessary to specify the nuptiality process and to make an in-depth analysis of the age patterns of marriage.

Nuptiality patterns and levels have also certain implications for non-demographic socio-economic fields; as for example, rising age at marriage would permit a great exposure to young adult for non familial activities including education, greater mobility opportunities and attractive labour markets for both sexes. Avoidance of very early childbearing certainly contributes to the health the mother and children (Westoff, 1975).

The traditional rule of agricultural economy is associated with very early marriage, especially among girls and with marriage prevalence. It is in fact true that industrialization and economic development are associated with later female marriages but with almost unchanged prevalence. The practice of polygamy calls for greater attention. The role of the family in marriage formation also requires more attention

with regards not only to consent or blessing but also to so such other determinants as homogamy customs, payment of dowry or bride wealth and living arrangements after marriage. Attention needs to be directed to the changing of nature of marriage and family. Research on the impact of the women's movement and of the changing legal education and occupational status of women on the perceptions of marriage needs additional analysis. Likewise, the effect of women's greater economic and decision making independence on the increase in mean age at first marriage and in unmarried cohabitation requires closer scrutiny.

Marriage policies can be directed to a variety of objectives, such as the social condition on unmarried women's, the welfare of the unmarried elderly population. The effect of the migration on the marriage marked and the social and legal aspects of illegitimate children. The implications deal primarily with demographics aspects and more specifically, with the fertility implication of marriage in countries where the current level of fertility is not deemed satisfactory. With proper incentives and legislation, marriage policies could be geared either to increase or to decrease fertility.

In Bangladesh, fertility is high and fertility regulation is lo, the possibility of action to raise the minimum legal age at marriage is a policy measure that have found to be well worth trying. Obviously, with no or negligible pre-marital conception, delayed marriage of women can have a significant impact on the reproduction of adolescents. However taking into consideration the large size of the female population aged 15-19 year, the potential total number of births that can be avoided by delaying marriage among teenagers can be considerable.

Furthermore, since the current legal marriage age constraints are not widely respected and large proportions of girl still marry below the current legal minimum age, further raising of this age by some legal action would be rather meaningless to a great extent. It would be preferable, as an initial step, to act on better enforcement of the current legislation. To the extent that a new legal minimum age is established to accelerate a trend rather than to initiate one, better prospects for success of legislation could be expected in a favorable socio-demographic context, particularly, one with an increasing trend in age at first marriage. It should also be realized that the

interrelationships involved are natural and that active policies and measure taken to improve the status of women, including access to advanced education and employment opportunities in the modern section of the economy can also be expected to induce later marriage among girls.

Finally, marriage and dissolution are among the important variables associated with population growth. Patterns of age, sex and other socio-demographic characteristics of the population by the marital status are used for the study of fertility and reproduction and of various related sociological and medical problems (Davis and Blake, 1956). According to Chen, Huffman and Satter waite (1976) the reproductive life span of a woman's influenced by behavioral variables, such as marriage, divorce, celibacy and terminal conception and biological variables such as menarche, menopause, sterility and widowhood. Hence in a society where use of contraception is little and celibacy is virtually absent, the behavioral variables which influence the reproductive life span of women only include marriage and marriage dissolution.

1.4: Review Literature

Early age at marriage in underdeveloped societies represents the maximum hedge against the threat of failure in population in population replacement (Davis and Blake, 1956).Freedman (1964) supported this opinion and suggested that delayed marriage is one of the "fertility control measures" of pre industrial societies. In a study on the European historical experience, he indicated that the nuptiality pattern occupied a prominent place in the reduction of fertility and noted that late marriage and wide spread celibacy were the causes of fertility decline in the population of Western Europe in contrast to Eastern and Central Europe. Their marriage continued to be almost universal and customarily occurred earlier a somewhat slower fertility transition was achieved through a reduction in marital fertility without any drastic accompanying nuptiality change. Population of developing country, however commonly exhibits nuptiality patterns characterized by a still higher incidence and considerable younger age pattern marriage than even the earliest observed schedule from Eastern Europe (Lesthaeghe, 1971).

Aird (1956) initiated a case study of fertility levels and differentials in two villages of Bangladesh were he looked at the incidence of marriage. He also dealt with marriage dissolution. He estimated that 16.0% of all ever married women in the two villages were currently or has been at some time polygymously married. He found that the proportion of women married at ages 5-9 and 10-14 were 1.4% and 46.5% respectively. He also noted that in 1954 more than 98% of the women were married by the age of 19 years.

Ahmed (1962) estimated the singulate mean age at marriage for male and females using 1951 population census data on marital status. He also estimated the rates of divorce and widowhood. In 1951 there were 206 divorces and 159 widows per 1000 ever married women in Bangladesh.

Sadiq (1965) first carried out the incidence of marriage at the national level. Using Hanal's method he measured the singulate age at marriage, marriage frequencies, marriage probabilities and the time trend and regional differences in mean age at marriage using marital status data from the population censuses of 1931 to 1961.

Muniruzzaman (1966) used data of the Demographic Survey in East Pakistan 1961-1962, which was conducted in four rural and two urban places in the East Pakistan for estimation of population by marital status, age and sex. The rural-urban differentials in median age at first marriage of males and females and the extent of remarriage were presented. The age difference between husband and wife was estimated to be about 10 years for both urban and rural areas. Using the same survey data Obaidullah (1966) calculate the incidence of marriage and remarriage and the educational differentials in age at first marriage for both rural and urban areas. He found a slightly higher age at marriage among the educated women.

Afzal (1967) studied age at marriage of the Bangladeshi (East Pakistan) ever married women based on a sample from the 1961 census covering 2.2% of urban and 0.05% of the rural population. He found that the overall fertility rates and the mean age at marriage of rural woman in Bangladesh were inversely related.

From the Population Growth Estimation (PGE, 1962-65) data Alam (1968) used single year age distribution by sex and marital status for the year 1964 to estimate the mean age at marriage for males and females of Pakistan (including Bangladesh). He used Hainal's method to estimate mean age at marriage from single year age data.

A study conducted by Stoeckel and Chiwdhury (1969) in rural Bangladesh found that total fertility was higher among the women who married at a younger age. In another study Stoeckel and Choudhury (1971) observed that the women in rural Bangladesh who married at comparatively older ages were more respective to family planning than those who married at very young ages. They suggested that the reasons for these differences might stem from the fact that in traditional societies where "pre-puberty marriage is orthodox and customary" the delay of marriage (often for obtaining education) may lead to or be manifest in a non-traditional orientation, such couples might from a more progressive segment of the society and possible be more careful about family limitations.

Sirageldin, Noris and Ahmed (1975) estimated median age at marriage from the National Impact Survey conducted during the 1968-1969 period. A study the collected information on marriage was the 1974 Bangladesh Retrospective Survey of Fertility and Mortality (BRSFM, 1977). The report presented that an indirect estimation of singulate mean age at marriage (using Hajnal's method) both for males and females, the percentage never married and ever married by age, sex and regions, percentages of widowed and divorced by age, sex and regions and a first marriage model for Bangladeshi women. The report also included an estimation of rural-urban differentials in all marital events.

A case study of " The Household Life cycle and Economic Mobility in Rural Bangladesh" conducted between 1976-78 in a rural area in Bangladesh by Cain (1978)

estimated the mean age at first marriage as 24.0% years for males and 16.0 years for females. Cain also found that higher age at marriage of males the larger is the age difference between husband and wife which often leads to a wife becoming widowed at a young age.

A comprehensive national study on nuptiality and exposure to childbearing is represented by the 1975 Bangladesh Fertility Survey (BFS, 1978). In this survey more information on marriage was collected than in any of the survey conducted before. The survey included information on current marital status, whether marriage was immediately consummated or not, number of time married, date of each marriage, age at marriage, reasons and date of termination of marriage. The findings of the study indicated that there has been a gradual increase in age at first marriage of women in Bangladesh. The mean age at marriage of women who married in 1974 was 11.4 years and it rose to 14.0 years for marriages of 1972 increasing further by 1976.

Ruzicka and Chowdhury (1978) have studied marriage and divorce in rural Bangladesh. The study used data on marriages and divorces recorded by the continuous demographic surveillance system conducted by the Cholera Research Laboratory (currently Known as ICCDDR, B), Dhaka in 228 adjoining village with a population of 2,63,000. There analysis was based on the records collected during 1975 and 1976. Their study was unique in the sense that in no other area of Bangladesh does a relatively complete and accurate vital registration system exists. They estimated the mean and median age at marriage, mean duration of marriage of the divorces and the waiting time between termination of marriage and remarriage.

Kabir M(1978) estimate the parameters of Coale's model for first marriage using data of the 1974 Bangladesh Retrospective Survey of Fertility and Mortality, the Population Growth Estimation of 1962-65 and the 1951 and 1961 Population Census

of Bangladesh. He noted a shift in the age at which a significant number of marriage take place (a_0) from 10.6 in1951 to 11.9 in 1974. Moreover, the expansion of the period in which the marriages takes place from 12.4 to 16.0 years is suggestive of the change in the pace of marriages. He suggests that the initial age at which marriage takes place has risen and at the same time they are being distributed over a wider range. He also suggests that marriage is still universal in Bangladesh.

According to Ahmed (1989) women who married after the age of 20 years were more liberal in their attitude towards abortion in Bangladesh. Shahidullah (1980) studied the differentials nuptiality patterns in Bangladesh using the 1975-76 Bangladesh Fertility Survey data. He estimated the Proportions married, the mean and median age at first marriage, average difference between husband wife at first marriage and socio-economic differentials of age at marriage for rural and urban areas in Bangladesh. He also estimated the rates of divorce and widowhood in rural and urban areas.

Abedin (1982)estimates the mean and median age at marriage in a rural community in Bangladesh. He has estimated various nuptiality parameters recoursing coale's nuptiality model and using these values estimated the frequency of first marriage and risk of first marriage.

Sakib (1984) estimated the mean median age at first marriage, seasonal index of marriage by differentials of marriage using Demographic Surveillance System Matlab (DSS) data. He suggested that the seasonally of marriages exist in rural Bangladesh.

Ahmed (1985) estimated the trend of age at first marriage in Bangladesh using Bangladesh Fertility Survey (BFS, 1975) data. He suggested that the level of age at first marriage in Bangladesh be found to be the lowest among all Asian countries. He

has observed a trend towards higher age at marriage, although the speed of the trend is not found to be the same for all regions of Bangladesh. The pace is observed to be faster in rural areas than the urban areas. The pattern of urban-rural differentials also is not the same for all regions.

Satter (1990) construct a nuptiality table for a rural community in Bangladesh. He found that the average waiting time before first marriage for woman surviving to their 25-th birth day is only one year while for a man it is above 7 years. The probability that a woman aged 15 years will remain single for the next 10 years (up to age 25) is 0.6 while this probability for a man is 0.7. Islam and Islam (1993) estimate the mean age at marriage 14.8 years using the BFS, 1989 data.

Singarimbum (1971) shows the changes that have taken place in the marriage pattern among rural Javanese. Low age at marriage and decision regarding marriage made by the parents were the norms in the past. Consummation of marriage was frequently delayed. Although marriage has been highly valued in the society, the divorce rate was high. With the advanced of education and social progress in general, changes have taken place. Age at first marriage has gone up parental role in marital decision making has declined and the divorces rate has dropped significantly.

Rosero (1992) uses census data to examine the impact of nuptiality on the fertility transition in Latin America. He finds that fertility decreases among adolescents during the 1960. Although no trend was observed for later decades . However, "an increase of legal marriages in connection with consensual unions was also observed. Apart from an (increase) in the number of illegitimate children, the impact of the increase of consensual unions upon fertility is uncertain. No regional trend was observed in connection with age at marriage. This stability suggests that cultural factor rather than socio-economic reasons determine Latin American patterns of marriage.

This stability suggests that Latin American patterns of marriage are determined by cultural factors rather than socio-economic reasons.

Islam and Islam (1994) estimate the mean age at marriage 14.8 years using the BFS, 1989 data.

Islam and Abedin (1996) Show that fertility takes place in the country overtime and is contributed much by the change in marital fertility, marriage pattern and increasing use of contraception. They also show that in order to lower down the level of fertility further more stress must be given to rise the age of marriage women, which is of course a component of beyond contraception. Again, effort must be given to increase the level of marital fertility. The joint effect of those two phenomenons does will inevitably fall on the reproductive pattern of women and that would help to bring down at a desired level.

Haskey (1996) provides the estimates of the proportions of marriages which ended in divorce for the different groups of couples who have married since the 1950s. Over one quarter of all couples who married in the late 1970s and early 1980s had divorced by the end of 1994. As well as giving the overall proportion of couples married in a given year who subsequently divorced, estimates are provided of the corresponding proportions for different subsets of those couples according to each partner's marital status before marriage and age at marriage.

Dr Shail Jain (2007) examines the trends in registered marriages and divorces, and proportions of the population in different marital states in Australia. Marriage rates have declined, while divorce rates have increased.

Magagula, Thandi Kuki (2004), studied that young people have high knowledge of modern methods of contraceptive (knowledge ranked up to 91 percent) however use of methods is lower (ranked up to 44 percent). Traditional methods were the least known except for withdrawal which had a plausible percentage (64.7 percent). Most of sexually active young people have ever used contraceptives and injectables were the leading method while condoms were the most generally known. The study also showed

that contraceptive use increases with age, level of education, wealth and discussion of family planning with partner. Married young women had a high level of contraceptive use than those never married. Socio-cultural context hinders the establishment of reproductive programs on adolescents as their sexuality is attached to marriage and childbearing. It was recommended that intensive programs informing young people about their reproductive decision-making is needed.

Islam *et al.*, 2001, observed reduction in fertility levels is primarily attributed to a successful implementation of family planning programmes at the national level; however, the impact has not been seen uniformly across the regions. Fertility levels remained high at around three to four children per woman in Chittagong and Sylhet divisions. Contraceptive use is lowest in Sylhet (32%) followed by Chittagong division (43.9%) compared with the national average of 55.8%, and has actually declined over time (NIPORT *et al.*, 2005). Adolescent fertility rates are also stagnantly high in these regions (Nahar *et al.*, 2008).

An estimated 75 percent of rural girls in Bangladesh marry before the age of 16, and only 5 percent marry after 18 years (Barkat and Majid, 2003).

Delayed marriage is also associated with a significant increase in female schooling, adult literacy, and quality of marital life. Though they are substantial, the benefits appear to come at a high cost to families: dowry payments increase an estimated 40% of baseline cost with each additional year that marriage is postponed (Erica Field-2004).

1.5: Objectives of the study

In an empirical analysis of data on Asian countries Smith (1976) demonstrated a transition in the marriage pattern. He also observed that urbanization, expansion of education and creation of non agricultural occupation cause rapid transition in the marriage pattern and the timing of family formation. Social scientists believe that urbanization and industrialization will bring changes in developing countries in the same way that they did in European countries (Goode, 1963). Malaysia, Tunisia and Sri Lanka are cited as examples. The patterns of changes may be the same, at a certain level of abstraction, but their manifestations do vary depending on the cultural setting. In societies where traditional and cultural values are strong, the pace of change in family formation appears to be slower (Gupta, 1979).

After independence from the British Government in 1947, the Pakistan Government began initiating social and economic development programs in various aspects of the society. Because of the unstable condition of the government in the first few years, these programs were not implemented properly. After crossing the crisis period the government launched an effective multiphase developmental program in the country. During the period of Pakistan, there was a significant increase in the literacy rate, urbanization, industries, non-agricultural occupation and per head medical facilities. After 1971, marking independence of Bangladesh, the government made efforts to further enhance the pace of the social development program. Therefore if the existing theories of social changes are true, change in age at marriage as well as in the level of fertility in Bangladesh may be expected. With this conceptual background this study intent to test the following hypothesis:

(i) If modernizing institutions such as urbanization, industrialization, education, communication and mass media have the capacity of enhance individual value systems (Ogburn, 1961; Goode, 1963; Inkles et. al, 1974), if the country has been undertaking policies for implementation and expansion of such modernizing institutions and if individuals are exposed to such institutions then an increasing trend age at marriage can be anticipated in the country and also reduce the level of fertility.

(ii) If urban areas are centers for the innovation of new ideas, if urbanities have opportunities to be more exposed to the modernizing institutions than ruralities, if urbanism is a way of life, then the age at marriage in the urban areas will be higher than in rural areas and increasing trend of age at marriage will be faster in the urban areas. Specifically the higher opportunities for women's education, jobs and participation in alternative activities have a direct impact on the age at marriage and fertility level. Because urban areas are always given a higher priority in socio-economic development programs, the change in urban areas usually becomes faster than in rural areas.

(iii) If ecological differences, cultural differences, differences in pace of development and socio-demographic compositional differences have an effect on individuals value judgments, individuals decision making processes and individuals outlook on social life, then differences in age at marriage and level of fertility between regions are expected to be observed. Specifically, differential patterns of urbanization, education, religious distribution and sex differential child (infant) mortality create difference in the level of age at marriage as well as the trend of age at marriage and level of fertility.

(iv) More efforts are necessary to motivate people to have a smaller family and extend more family planning facilities in order to abate the high rate of

population growth in the country. Redistribution of socio-economic facilities such as medical facilities, employment opportunities and education facilities, specifically for females, will eventually level off the regional variations in the level of fertility and hence reduce the overall level of fertility in the country. Integrated socio-economic development and family planning activities are thus necessary to slow down the rate of population growth. While socio-economic development will generate necessary motivation towards desire for smaller family size, family planning facilities will help in translating the desire.

The government of Bangladesh has lodged many development programs to arrest the population growth rate at a desired level as reflected in the population policy formulation through the reduction of fertility level and increasing the age at marriage of both males and females of the country. The government has taken up basic need strategies as one of the means of achieving the target set in population policies from time to time. However in spite of various socio-cultural and economic impediments notable progresses are expected to achieve during the near past in the areas of population in general and in the areas of marriage and fertility in particular. The present study is undertaken with a goal to explore the trends in the marriage pattern that is taken place in the country in response to various development programmers and also investigate the factors mostly responsible for giving rise to current levels of marriage pattern. The study requires an in-depth analysis to explore the inherent peculiarities of marriage and fertility which stems from the speculation that in recent times of the aforesaid phenomena have shown some changes in their levels and patterns.

Broadly speaking the specific objectives of the study are:

(1) To examine the age pattern of marriage.

(2) To isolate the factors significantly affecting marriage patterns and

(3) To examine the effect of fertility on marriage.

(4) To formulate Target Fertility

(5) To identify the direct and indirect effects of socio-economic and demographic factors on marriage.

In order to fulfill the stated objectives our purposes are then to examine the Marital status distributions, estimate the nuptiality parameters which control age patterns of marriage with reference to model nuptiality schedule, to investigate the dynamics of nuptiality by means of nuptiality tables, to evaluate various socio-economic correlates that significantly affects both marriage and fertility patterns and to assess the proximate determinants of fertility. But before proceeding for detailed analysis investigation should be made into the temporal trends in marriage and fertility patterns and such analysis is undertaken in next chapter.

1.6: Organization of the study

In order to furnish a meaningful explanation and representation of this study, the complete work of this dissertation has been organized into ten chapters. First chapter is introduction which contains a brief description about Bangladesh and its population, marriage and reproductive behaviors of the population of the country, review of literature and objective of the study have been included.

The second chapter contains description about data sources used in the study together with data screening and methods and techniques adopted in course of analysis of data. Analysis of Marital status of different divisions of Bangladesh and

Timing and quantity of nuptiality. Evidence from Proportion single, Analysis of currently married status, marital dissolution, Widowed and Divorced in Chapter 3.

Chapter 4 contains analysis of marriage differentials where attempt are made to provide comprehensive information about the components, which significantly affect marriage. Analysis of trends of marriage and in fertility patterns on the basis of various indicators of marriage and fertility and by means of regression methods and Coale's indices is provided in chapter 5. The most important part of the present study is given in chapter 5, which is the logistic regression analysis. A technique under taken to isolate the intensity of the influences of various socio-economic and demographic factors of adolescent marriage. The dynamics of marriage studied by means of nuptiality tables are presented in chapter 6. Chapter 7 provides a study on the biological aspects of fertility analyzed by means of Bongaart's model of proximate determinants of fertility. Chapter 9 contains analysis of estimation of contraceptive prevalence level required achieving target fertility in Bangladesh. The study is completed by providing summary, policy implications and concluding remarks in chapter 10.

Chapter two

Data Source and Analytical Methodology

Chapter two

Data Source and Analytical Methodology

2.1: Introduction

Ideally, statistics on marriage, widowhood and divorced are divided from a well-maintained registration system. The vital registration system in Bangladesh, introduced by the British in 1873, is incomplete and unreliable. In the absence of reliable or complete registration of vital events, retrospective questioning is a useful way of getting current estimates and historical trends in the major demographic variables (McDonald and Abdur Rahman, 1974). In situations where registration is inadequate as in Bangladesh, heavy reliance is placed on censuses and sample surveys, which provide information on marital composition, age at marriage. in the analysis of marital status with differentials has used various methods of analysis. The description of the methods discussed in respective chapters.

2.2: Sources of Data

The present study covers a period of approximately 32 years from 1975 to 2007. Many of developing countries like Bangladesh, vital registration system have not been started on a national basis. So, we badly depend on the information of demographic data on census and sample survey. Bangladesh has a long experience of census taking and currently quite a few national wide fertility and contraceptive survey have been conducted in last few decades. They are mainly Bangladesh Fertility Survey of 1975 and 1989; Contraceptive Prevalence Surveys of 1979, 1981, 1983, 1985, 1989 and 1991 and Bangladesh Demographic Health Surveys of 1993-1994, 1996-1997, 1999-2000, 2004 and 2007.

Eventually the data of the present study are taken from Bangladesh demographic and Health Survey (BDHS) of 2004 and 2007. The 2004 Bangladesh Demographic and Health Survey (BDHS) is the fourth BDHS undertaken in Bangladesh. This periodic survey is conducted every three to four years to serve as a source of population and

health data for policymakers, program managers, and the research community. The 2004 BDHS survey was conducted under the authority of the National Institute for Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. The survey was implemented by Mitra and Associates, a Bangladeshi research firm located in Dhaka. Bangladesh demographic and Health Surveys (BDHS) of 2004 collected data on marital status classifying the status as single (never married), Married, Divorce, and widow categories addressing female population. As such, the distributions of female population by marital status are available and taken for analyzing the inherent peculiarities of marriage patterns in marital status. Data source employed nationally representative, two-stage sample that was selected from the master sample maintained by the Bangladesh Bureau of Statistics (BBS) for the implementation of surveys before the next census (2001). A Total of 10811 households were selected for the sample; 10523 were occupied, of which 10500 were successfully interviewed. The shortfall is preliminary due to dwellings that was vacant or destroyed or in which inhabitants had left for an extended period at the time the interviewing teams visited them. Of the households occupied, 99.8 percent were successfully interviewed. In these households, 11601 women were identified as eligible for the individual interview (i.e., ever-married and age 10-49) and interviews were completed for 11440 or 98.6 percent of them. In households that were selected for inclusion in the man survey, 4490 eligible men age 15-54 were identified of which 4297 or 95.7 percent were interviewed. For administrative purpose the country is divided into six divisions, 64 districts (Zillas), and 496 Upzillas (BBS, 2001:19).In terns each divisions is divided into Zillas and in tern each Zilla into Upzillas. Each urban area in the Upzilla is divided into wards and into mahallas with in the wards; each rural area in the Upzilla is divided into Union parishads (UP) and into mouzas with in the UPs. The urban areas were stratified into three groups, (i) standard metropolitan areas, (ii) Municipality areas and (iii) Other urban areas. These divisions allow the country as a whole to be easily separated into rural and urban areas. The 2004 BHDS sample is a

stratified, a multistage cluster sample consisting of 361 primary sampling units (PSUs); 122 in the urban area and 239 in the rural area. Fieldwork commenced on 1 January 2004 and was completed on 25 May 2004.

The 2007 BDHS employs a nationally representative sample that covers the entire population residing in private dwelling units in Bangladesh. The survey used the sampling frame provided by the list of census enumeration areas (EAs) with population and household information from the 2001 Population Census. Bangladesh is divided into six administrative divisions: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylthet. In turn, each division is divided into *zilas,* and each zila into *upazilas.* Rural areas in an upazila are divided into *union parishads* (UPs), and UPs are further divided into *mouzas*. Urban areas in an upazila are divided into wards, and wards are subdivided into *mahallas*. These divisions allow the country as a whole to be easily divided into rural and urban areas. EAs from the census were used as the Primary Sampling Units (PSUs) for the survey, because they could be easily located with correct geographical boundaries and sketch maps were available for each one. An EA, which consists of about 100 households, on average, is equivalent to a mauza in rural areas and to a mohallah in urban areas.The survey is based on a two-stage stratified sample of households. At the first stage of sampling, 361 PSUs were selected. Figure 1.1 shows the geographical distribution of the 361 clusters visited in the 2007 BDHS. The selection of PSUs was done independently for each stratum and with probability proportional to PSU size, in terms of number of households. The distribution of the sample over different parts of the country was not proportional, because that would have allocated the two smallest divisions, Barisal and Sylhet, too small a sample for statistical precision. Because only a small proportion of Bangladesh's population lives in urban areas, urban areas also had to be over-sampled to achieve statistical precision comparable to that of rural areas. Therefore, it was necessary to divide the country into strata, with different probabilities of selection calculated for the various strata. Stratification of the sample was achieved by separating the sample into divisions and,

within divisions, into urban and rural areas. The urban areas of each division were further subdivided into three strata: statistical metropolitan areas (SMAs), municipality areas, and other urban areas. In all, the sample consisted of 22 strata, because Barisal and Sylhet do not have SMAs. The 361 PSUs selected in the first stage of sampling included 227 rural PSUs and 134 urban PSUs. A household listing operation was carried out in all selected PSUs from January to March 2007. The resulting lists of households were used as the sampling frame for the selection of households in the second stage of sampling. On average, 30 households were selected from each PSU, using an equal probability systematic sampling technique. In this way, 10,819 households were selected for the sample. However, some of the PSUs were large and contained more than 300 households. Large PSUs were segmented, and only one segment was selected for the survey, with probability proportional to segment size. Households in the selected segments were then listed prior to their selection. Thus, a 2007 BDHS sample cluster is either an EA or a segment of an EA. The survey was designed to obtain 11,485 completed interviews with ever-married women age 10-49. According to the sample design, 4,360 interviews were allocated to urban areas and 7,125 to rural areas. All ever-married women age 10-49 in selected households were eligible respondents for the women's questionnaire.

2.3: Data Screening

Data from a sample of 11,440 Bangladeshi married women were collected by BDHS-2004. The data set were checked for outliers by the present authors. The presence of abnormal points in data set, can affect the interpretation of results (Stevens, 1996). Outliers were found in the data set. These were identified using statistical techniques (Dunn and Clark, 1974). Some missing values were also found in the data set, which reduced the number of cases. Currently, pregnant women were excluded in the present study. After removing outliers, excluding currently pregnant women and units with missing data, the data set was reduced to 10,127 for our analysis in the present study.

2.4: Analytical methodology

The analyses have been used the following demographic, Statistical, Mathematical techniques and methods and Computer software packages as per requirement of the present study.

The marriage patterns are analyzed by average of location and dispersion. Marriage pattern are analyzed by using Coale's nuptiality schedule, which is discussed in the relevant chapter. Again the dynamics of age pattern of marriage have been analyzed by means nuptiality tables. Logistic regression was used to identify the risk factor for adolescent marriage.

Fertility behavior within marriage has been analyzed by means of the Coale's Indices of overall fertility, marital fertility and marriage pattern devised by analyses Coale and others. To quantity the change in fertility, Bongaarts' model for identification of changes in terms of proximate variables have been used.

Details of the technical aspects of the methods used in the analysis such as estimation of nuptial parameters recoursing Coale's Nuptiality Model, Coale's Indices, Construction of nuptiality tables, Bongaarts' Model for proximate determinants of fertility are given in relevant chapters.

For this analysis computer software packages: Statistical Package for Social Science (SPSS), Microsoft Excel and Microsoft word has been used.

Chapter-3

Marital Status Distribution

Chapter-3

Marital Status Distribution

3.1 Introduction:

Marital status is one of the important components of population composition. Data on marital status distribution describe the behavior of a population in the formation and dissolution of marital unions. Such distribution shed light on the inherent peculiarities of marriage pattern prevails in a society. While age pattern of marriage including timing and quantity in the marriage pattern are studied by means of age distribution of never married population, formation and dissolution of marriage are studied by the distribution of ever married population.

It is apprehended that marriage pattern in general and age pattern of marriage in particular, might have change over time in the recent past. Now any change in marriage pattern would be reflected in the marital status distribution of the population. Such distribution provides quantitative information about various nuptial events such as never married, married, widowed, divorce and separation. It tells the history of marriage prevails in a community from near past.

In this chapter a preliminary analysis of different divisions in marital status distribution in undertaken with a view to shed light on the inherent peculiarities of the marriage pattern prevailing in the country. The main purpose of this chapter is to evaluate the different divisions in the marriage patterns. This is preliminary investigations depending heavily on the distribution of population according to different marital status categories viz., single, married, divorce and widowed.

3.2: Marital status by administrative

Proportions of persons aged 10 and above at different marital status categories viz.. single, married, widowed, separated and divorced for females are shown in table 3.2.1. The data does not give any information about single population for different divisions. In Bangladesh most of women in this age group are married. Twenty three percent of women aged 10-49 have never been married; most never-married women are 10-19. The proportion single of females is high at Sylhet division, which is 24.1% and low at Barisal division which is 22.4%. The average of proportion single for different divisions in Bangladesh is 23.2%.

Table 3.2.1: Proportion of persons aged 10 and above by marital Status of different divisions in Bangladesh-2004

Division	*Female*			
	Single	Married	Widowed	Divorced
Barisal	22.4	71.9	3.2	0.6
Chittagong	23.7	70.6	3.8	0.9
Dhaka	22.9	71.3	3.1	1.1
Khulna	23.0	71.6	2.3	0.9
Rajshahi	23.2	71.4	3.4	1.1
Sylhet	24.1	68.4	4.7	1.7

Source: Bangladesh Demographic and Health Survey 2004.

The proportion married of females is high at Khulna division, which is 71.9% and low at Sylhet division which is 68.4%. The average of proportion married for different divisions in Bangladesh is 70.9%. The proportion widowed of females is high at Sylhet division, which is 4.7% and low at Khulna division which is 2.3%. The proportion divorced of females is high at Sylhet division, which is 1.7% and low at Barisal division which is 0.6%.

3.3: Timing and quantity of nuptiality: Evidence from Proportion single

The timing of nuptiality indicates the pact at which marriage takes place and the quantity, the ultimate proportion of persons gets marry. Both feature of nuptiality are captured from proportion single of the marital status distribution.

Such distribution further reflects, to some extent, the mark of beginning of marriage or the timing of marriage. Various studies of nuptiality pattern of Bangladesh indicate that marriage in Bangladesh starts very early; progresses fast and almost all persons marry (ESCAP, 1981; Kabir, 1978; Abedin, 1982; Islam, 1996; Zamman, 2000).

Table 3.3.1: Percentage distribution of single population by age of different divisions in Bangladesh: 2004

Age	*Female*					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
10-14	88.5	92.5	88.3	87.4	86.5	96.7
15-19	52.5	51.3	56.3	51.5	49.5	57.4
20-24	16.1	14.4	14.7	15.5	16.1	14.2
25-29	4.3	4.3	3.6	4.1	4.2	4.5
30-34	1.5	1.3	1.1	1.1	1.3	1.1
35-39	0.5	0.3	0.3	0.5	0.3	0.0
40-44	0.0	0.5	0.4	0.6	0.4	0.0
45-49	0.0	0.0	0.0	0.0	0.0	0.0
10-49	22.5	23.7	23.1	23.0	22.8	23.3
SMAM						

Source: Bangladesh Demographic and Health Survey 2004.

The percentages of proportion who are never married at different ages for the different divisions in Bangladesh are presented in table 3.3.1. A remarkable maximum proportion of single population has taken place at ages 10-14 and 15-19 of females.

The data further indicate that by age 29 almost all females marry. The maximum proportions of single population are found at age 10-14 in every division. The next maximum proportions of single population are found at age 15-19, 20-24 and 25-29 respectively. There are no single populations or closely zero at ages 40-44 and 45-49 at every division.

3.4: Analysis of currently married status

Marriage is virtually universal both for males and females in Bangladesh and it occurs at earlier ages for females and males (Hong, 1980; Islam, 1996). An increasing tendency of proportions currently married females till the age of attainment of maximum value and afterwards the decrease in such proportion reflect the probable tendency of persons to remain single in great numbers till to that age, in former case the dissolution of marriage through divorce and widowed and remarriage after those ages. However, the dissolution of marriage might be more prominent among the females vie- a-vie remarriage might be more prominent among the males (Islam, 1996). The decreasing tendency of such phenomena is also evident from time trend data.

Table 3.4.1: Percentage distribution of currently married population by age of different divisions in Bangladesh: 2004

Age	*Female*					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
10-14	10.8	6.6	11.7	12.1	13.5	3.3
15-19	45.9	46.9	41.9	46.3	48.5	40.0
20-24	83.3	82.9	81.3	81.2	81.0	81.1
25-29	95.5	90.8	92.3	91.2	93.2	89.1
30-34	92.7	93.3	93.9	93.8	92.2	98.9
35-39	89.6	89.6	89.4	90.1	91.8	85.5
40-44	90.4	81.7	83.1	88.4	83.1	82.3
45-49	85.7	75.5	85.3	82.4	80.2	73.3
10-49	71.9	70.6	71.3	71.6	71.4	68.4

Source: Bangladesh Demographic and Health Survey 2004.

The Percent distribution of currently married populations by age of different divisions in Bangladesh is presented in table 3.4.1. The maximum proportion currently married females are found ages 25-29 and 34-39 in Barisal, Chittagong, Dhaka, Khulna and Rajshahi divisions, at age 30-34 in Sylhet division. The proportions of currently married are increased from the lower age group to middle age group and then that decreased to higher age groups for every division. So we see that the maximum proportions of currently married females are found at age 30-34 for every division in Bangladesh.

3.5: Marital dissolution

3.5.1 Widowed

In all censuses and surveys conducted in Bangladesh there has been higher proportion of widowed females than males at all ages (Ruzicka and chowdury Beeker et al, 1982; Islam, 1996). The difference in the incidence of widowhood between males and females is mainly due to age difference between them and partly accounted for higher remarriage rates of males. The crude date rate for females for most years except the famine year of 1975 exceeded those of males (K. Shaikh 1982). Because of the impact of age structure on CDR this can not be taken as a final conclusion. It is shown by Ruzicka and chowdhury (1978 c.28; 1978d.37; Samad et al 1979; Chowdury et al.1981.51;1982;37) that is most adult ages females had about the same or higher death rates than males during 1975 to 1989. Again it is evident that age at marriage and age difference between husband and wives has a strong effect on the changes of the husbands becoming a widower.

In general, for a fixed age difference, say 10 years the older the wife's age at marriage the higher is her husband's probability of is coming a widower at any given marriage duration. Table 3.5.1 indicates that remarkable figure in the proportion of widowed at the higher ages for females of all divisions in Bangladesh. It may be noted that the proportion is negligible at the lower ages. It also indicates that among females, a larger proportion remaining in the widowed state is observed.

Table 3.5.1: Percentage distribution of widowed population by age of different divisions in Bangladesh: 2004

Age	*Female*					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
10-14	0	0	0	0	0	0
15-19	0	0	0.1	0.2	0.3	0
20-24	0.4	0.6	0.7	0.5	0.5	1.4
25-29	1.3	1.4	1.2	0.6	0.4	3.2
30-34	2.9	2.2	2.9	1.8	3.9	4.9
35-39	8.9	5.4	6.2	5.7	4.6	9.2
40-44	7.7	16.3	12.0	6.4	11.5	13.3
45-49	12.1	20.6	12.1	11.3	17.4	18.1
10-49	3.2	3.8	3.1	2.3	3.4	4.7

Source: Bangladesh Demographic and Health Survey 2004.

In further indicates that at age 10 and over the percentage widowed females have been 3.2%, 3.8%, 3.1%, 2.3%, 3.4% and 4.7% respectively in the division Barisal, Chittagong, Dhaka, Khulna, Rajshahi and Sylhet.

3.5.2 Divorced

Divorce is one of the processes of marriage dissolution brings with it the loss of potential period of reproduction. By how much the reproductive life span will be shortened depends on how long the divorced women remain in the divorced state and on probability of her remarriage. Though Muslim men can repudiate their wives without assigning any reason, scholars can find many references having sentiment against it and respondents think divorce symptomatic of the immorality of the times. It is presumed that Muhammad (sm.) permitted it only "if the parties fear they can not keep with in God's bounds"(Kapadia 1972). In original Islamic a women had no absolute right to divorce her husband but could do it in some cases by Judicial decree (Jhavala, 1975). Under Islamic law as confided in British India and again under the Muslim Family Laws Ordinance of 1961 she could do so on various non-supports. According to Islamic principles, a wife has the right to divorce her husband. Such a right should be exercised only when the husband fails to provide the promised of maintenance.

In formal Hindu tradition there is no provision for divorce. But various studies in India show rates of divorce or separation between 10% and 20% or even more (Gupta 1970). Among the lower castes divorce or separation and remarriage are more frequent.

In Bangladesh, a large proportion of divorce occurs at younger ages and hence the potential time lost in the divorced state may considerably affected fertility (K. Shikh, 1982). Marriage dissolution due to divorce is frequent in Bangladesh (Ruzicka and Chowdury, 1978). It is claimed to be more frequent among girls who married at early age than among that marriage later. In often occurs within the first few years of marriage (BFS, 1978).

Table 3.5.2: Percentage distribution of divorced population by age of different divisions in Bangladesh: 2004

Age	*Female*					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
10-14	0.0	0.4	0.0	0.0	0.0	0.0
15-19	0.3	0.8	0.6	0.8	1.1	1.3
20-24	1.8	0.4	1.5	0.8	1.8	1.1
25-29	0.9	1.1	1.4	1.6	1.1	0.5
30-34	0.5	1.6	0.5	0.4	1.6	3.8
35-39	0.0	1.1	2.5	1.4	1.2	2.6
40-44	0.0	0.9	2.3	1.7	1.5	1.8
45-49	0.7	1.1	0.4	1.3	0.0	3.44
10-49	0.6	0.9	1.1	0.9	1.1	1.7

Source: Bangladesh Demographic and Health Survey 2004.

The percentage distribution of divorced population by age of different divisions is presented in table 3.5.2. The maximum proportions of divorced females are found at age 30-34 in Sylhet division. It is evident from table 3.5.2 that most of the divisions occur among young couples except Barisal division. Table 3.5.2 indicates that the proportion of divorced is negligible at age 10-14. It further indicates that at age 10 and over the percentage divorced females have been 0.6%, 0.9%, 1.1%, 0.9%, 1.1% and 1.7% respectively in the division Barisal, Chittagong, Dhaka, Khulna, Rajshahi and Sylhet.

Chapter 4
Differentials of age at Marriage

Chapter 4

Differentials of age at Marriage

Introduction:

There has been a growing interest in the study of nuptiality not only because of its great impact on fertility but also in its own right as an important demographic factor which affects the marital life cycle of vast majority of people of any society. Marriage as a demographic variable changes the compositional structure of a population by exerting its influence on the population. Moreover, the role of nuptiality in population growth has drawn attention of not only the demographers but also of the policy-makers and planners because delayed marriage can contributes significantly to reduction in fertility and in turn, in population growth.

Age at marriage has been established as one of the strongest determinants of fertility (Ahmed, 1982 ; Sirageldin, Naris and Ahmed 1975). It is well known that social norms, demographic pattern and economic factors all play a part in shaping marriage in a society (Dixon, 1971). Some socio economic factors, such as urbanization, female school enrolment or education and female labour-force participation have been widely recognized to have a major effect on marital postponement. The problem is that those socio-economic factors are interrelated to such a degree that it is often not possible to single out one as more important than others in their relationship with age at marriage (Henry et.al, 1979).

Peoples demographic behavior, in general is influenced by the forces of social development. As the process pf social development affects every aspects of a society, it also influences people's decisions about the timing of marriage and the family structure. In the empirical analysis of data from Asian countries, Smith (1976) has demonstrated a transition in the marriage pattern. He has observed that urbanization, expansion of education and creation of non agricultural occupation cause rapid

transition in the marriage pattern and timing of family formation. Social scientists believed that urbanization and industrialization bring changes in developing countries in the same way as in European countries (Goode, 1963). Malaysia, Tunisia and Sri Lanka are cited as examples. In societies where traditional and cultural values are strong, the pace of change in family formation appears to be slower (Gupta, 1979). If modernizing factors like urbanization industrialization, education, communication and mass media have the capacity to enhance individual value systems (Ogburn, 1961; Goode, 1963; Inkless, et.al. 1974). If the country has been undertaking policies for implementation and expansion of such modernizing factors and if individuals are exposed to such factors, than an increasing trend in age at marriage can be anticipated in the country. If urban areas are centers for the innovation of new ideas, if urbanites have more opportunity to be exposed to the modernizing factors than rural ties. If urbanism is a way of life, then age at marriage in urban areas is expected to be higher than in rural areas and the increasing trend of age at marriage faster in urban areas than in rural areas.

Ecological differences, cultural differences and socio-demographic compositional differences have effects on individual's value judgments, individuals' decision-making process and individuals' outlook on social life, then differences in age at marriage between religions are expected to be observed. Specifically, differential pattern of urbanization, education, religious distribution, etc. create differences in the level of age at marriage as well as the trend of age at marriage. It has been found almost universally that persons belonging to difference socio- economic groups have different age at marriage (Bogue, 1969).

Thus the Study of socio-economic differentials of age at marriage is very important in understanding the mechanisms of regulating the marriage pattern. Under such circumstances there is a need for in insight into the differential pattern of the ages of marriage, particularly in Bangladesh where socio-economic transformation, if any, is a

recent phenomenon. Earlier analyses have shown some indication of temporal changes in proportions single as well as in the singulate mean age of marriage at the national level. Such changes should be accompanied by the change in the actual age of marriage. Furthermore, if any change in actual ages of marriage happens to occur at various subgroups of population, it may also occur at the national level.

This chapter investigates level and pattern of the differentials in the pattern of marriage by some socio-economic variables.

The specific objectives are:

(i) To asses the effects of various socio-economic phenomena on age at marriage and

(ii) To ascertain the temporal changes in the level and patterns of age at marriage by different socio-economic groups.

The analysis is based on the distribution of reported ages of marriage as well as on fertility level of the respondents with respect to such subgroups of population as residential status, education, religion, work status before first marriage, etc.

Bangladesh fertility surveys of 1989, Bangladesh demographic, and health Surveys of 2004 are the sources of such statistics. The analysis is performed on the basis of mean age of marriage, Quartiles and percentiles in order to look at the inherent pattern in the age at marriage distribution.

4.1: Trends in Age at Marriage

Table 4.1 shows some summary measures of location and dispersion of the empirical distribution of age at first marriage by current age (current age being the age of respondent at the time of survey). The important features of the table are these:

(i) Age at marriage has increased by about 0.7 years during the period of nearly 15 years from 14.8 years in 1989 to 15.01 years in 2004. Similarly the median age of

marriage has also decreased from about 15 years in 1989 to about 14 years in 2004. In 1989 25% of all marriages have occurred by age 13.7 years and 75% by age 16.7 years. Again in 2004, 25% of all marriages occurred by age 13.0 years and 75% by age 16.0 years. The value of the quartiles and percentiles also suggest that the increment in the overall age of marriage lies with in the vicinity of 2.0 years to 3.0 years from 1989 to 2004.

(ii) As expected higher age cohorts have shown lower age of marriage both in 1989 and 2004 which clearly shows an increasing trend of age at marriage over time. Such changes may be attributed to the influences of urbanization, expansion of female education and employment opportunities of females, etc.

(iii) The distribution of marriage by age cohorts seems to be more variable in 2004 than in 1989. Such phenomena are exhibited when we compare the standard deviation and coefficient of variations by age cohorts for these two time periods. This could be the effect of more unstable socio-economic condition in 2004 compared to 1989, the effect of which might have fallen on the overall marriage market.

(v) The average age at marriage has increased by nearly 1.1 percent during 1989-2004. Such changes are remarkable in every age cohorts. A change of 3.9 percent corresponding to the age cohort of 40-44 years is noteworthy. This perhaps indicates that ages of marriage of women belonging to this current age cohort have increased substantially during the period of 2004-1989. The relative changes in the quartiles suggest greater decrease in the age of marriage at which 50 % of all marriages have taken place than 25% and 75%. This could be an implication of relatively wide span of marriageable age as well as a little decrement in the pace of marriage during the study period.

Table 4.1: Summary measures of location and dispersion of age at marriage of females by current age of 1989(BFS) and 2004 (BDHS).

1989	Current age						
	20-24	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**Total**
Mean	15.38	15.23	15.02	14.60	14.18	13.86	14.84
1st quartile	14.10	13.82	13.62	13.43	13.23	13.04	13.65
Median	15.57	15.33	15.10	14.70	14.42	14.03	14.99
3rd quartile	17.38	17.12	16.89	16.38	15.88	15.53	16.66
S.D	2.37	2.71	2.75	2.54	2.28	2.18	2.45
C.V	0.15	0.18	0.18	0.17	0.16	0.16	0.17

2004	Current age								
	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Mean	13.04	14.48	15.43	15.31	15.36	15.02	14.74	14.28	15.01
1st quartile	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Median	13.00	14.00	15.00	14.00	14.00	14.00	14.00	13.00	14.00
3rd quartile	14.00	16.00	17.00	17.00	17.00	16.00	16.00	15.00	16.00
S.D	0.70	1.68	2.48	3.04	3.17	3.00	3.07	2.70	2.79
C.V	0.05	0.12	0.16	0.20	0.19	0.20	0.21	0.19	0.19

	Absolute change (1989-2004)						
	20-24	25-29	30-34	35-39	40-44	45-49	Total
Mean	0.05	0.08	1.34	0.42	0.56	0.42	0.17
1st quartile	-1.1	-0.82	-0.62	-0.43	-0.23	-0.04	-0.65
Median	-0.57	-1.33	-1.1	-0.7	-0.42	-1.03	-0.99
3rd quartile	-0.38	-0.12	-0.11	-0.38	0.12	-0.53	-0.66

	Relative change in percentage						
	20-24	25-29	30-34	35-39	40-44	45-49	Total
Mean	0.3	0.5	2.3	2.9	3.9	3.0	1.1
1st quartile	-7.8	-5.9	-4.6	-3.2	-1.7	-0.3	-4.8
Median	-3.7	-8.7	-7.3	-4.8	-2.9	-7.3	-6.6
3rd quartile	-2.2	-0.7	0.7	-2.3	0.8	-3.4	-4.0

4.2: Socio-economic Differentials of age at Marriage

This section deals with the effects of socio-economic characteristics on age at first marriages of the ever-married females of Bangladesh. It has been found almost universally that persons belonging to different socio-economic groups have different age at marriage (Bogue, 1969). It will be interesting to see how far this statement is true in the case of Bangladesh. It is usually assumed that the population of Bangladesh is homogeneous with in rural and urban strata. This study of socio-economic differentials may helping understanding whether there are any differentials emerging in age at marriage and may be used as a bench-mark to evaluate the change in age at marriage in Bangladesh.

Analysis of differentials in age at marriage is undertaken for such phenomena as religion, place of residence (Childhood and current), education of wife and husband, occupation of husband, region of residence and work status before first marriage. It is assumed that the aforesaid status ha snot changed much since first marriage of the respondents. This description of the differentials is kept limited to the mean age at first marriage of the ever married women currently aged 10-49.

4.2.1: Religion of Wife

The religious composition of a society is considered to be of immense importance because religions tend to be institutional embodiments of values and values often influence demographic processes (Sohidullh, 1980). Religion has a great hold on the people of Bangladesh. It plays an important role in declining the age at which a girl a considered suitable for marriage. Since different religions do not have the same views on marriages, one would expect significant difference in the mean age at marriage among various religious groups. Religious value systems, which influence individual values, are different between the non-Muslims and Muslims. Although the process of mate selection is the same for both non Muslims (mostly Hindus) and Muslims the

traits and the importance of the traits are somewhat different. The cast or sub caste similarity between the bride's and groom's family is an important trait for Hindus, whereas such considerations are absent among Muslims because of a more egalitarian social system. In addition social class with the castes or sub castes is another dimension of consideration. This also exists among Muslims. This produces a difference in searching time for a male and it is lower for the Muslims than for Hindus. In an indirect way, the unequal distribution of Hindu castes or sub castes over regions and place of residence also squeezes the marriage market for Hindus. In this section the investigation into the religious differentials in age at marriage are made in two broad religious groups, viz., Muslims and Non Muslims. Changes in the age at marriage during 1989 to 2004 are examined by age cohorts of ever married women belonging to those religious categories.

Table 4.2 represents the average age of first marriage in quinquennial age groups from ages 10 to 49 of ever married Muslims and non-Muslims women for the year 1989 to 2004 and the changes in such age at marriage during the period of 1989 to 2004. As expected younger cohorts have shown higher average age of marriage relative to older cohorts in both Muslim and non-Muslim population. In general, non-Muslims have higher average age of marriage than the Muslims in all cohorts, which may be due to the higher level of education and non availability of mates. The above mentioned phenomena are found both in 1989 and 2004.

There has been an increase of 0.08 years in average age at marriage among the Muslims during the period of 1989 to 2004. Such increment among the non-Muslims is slightly high (0.73 years) during the period. Once again the younger cohorts have shown greater changes in average age at marriage than the older cohorts in both the religious groups during the years of 1989 and 2004. The change of in non-Muslims seems to be more than the Muslims. The average age of marriage has increased by 0.46, 0.46 and 1.81 percents for the age cohorts of 20-24, 25-29 and 30-34 respectively among the Muslims during the period of study. While the average age of marriage has

increased by 1.77, 2.48 and 6.43 percents among the non Muslims for the respective age cohorts during the period of the study. Thus the religious differentials in age at first marriage do exist but do not seem to Very high. The difference in age at marriage may be due to the higher education among non-Muslims. It may be mentioned here that the Muslims as well as non-Muslims favor early age at marriage (Shahidullah, 1980). Their common view is that a girl should be married as soon as she reaches puberty or in other words, before her virginity is at stake. Religious, social and psychological attitudes and tendencies make early marriage a rule and obligations on the Bangladeshi parents (Kapadia, 1966).

Table-4.2 : Religious differentials in mean age at first marriage by current age of ever married women : BFS 1989 and BDHS 2004.

		Current Age						
		20-24	20-29	30-34	35-39	40-44	45-49	Total
1989	Muslim	15.3	15.1	14.9	14.5	14.1	13.8	14.8
	Non-Muslim	15.8	16.1	15.7	15.1	14.6	14.1	15.3
2004	Muslim	15.37	15.17	15.17	14.80	14.62	14.14	14.88
	Non-Muslim	16.08	16.50	16.71	16.46	15.56	15.30	16.03
Absolute change (1989-2004)								
Muslim		0.07	0.07	0.27	0.30	0.52	0.34	0.08
Non-Muslim		0.28	0.04	1.01	1.36	0.96	1.2	0.73
Relative change in percentage (1989-2004)								
Muslim		0.46	0.46	1.81	2.07	3.69	2.46	0.54
Non-Muslim		1.77	2.48	6.43	9.01	6.58	8.51	4.77

4.2.2 : Place of Residence

In demography, residence means the type of community ranging from the rural to the urban, in which people live (Kammyer, 1971). Difference exists in the ways of life in rural and urban places which have important implications for almost every aspect of human behavior including demographic behavior. Place of residence during childhood has an influence on the future behavior of a person because this is the time when he/she gets the first and permanent impression about his/her surroundings. At the individual level, the more urbanized, modernized population subgroups and individuals are likely to delay marriage more and marry less often than individuals with rural backgrounds.

In a direct way, as Simmel (1971) and Wirth (1983) assert, urbanism is a way of life. The normative orientation and cognitive orientation of people in urban areas are different from that of people in rural areas. Traditional values and peer group pressure are not strong in urban areas, where late marriage is an acceptable behavior for young women and their families.

In an indirect way, urban areas provide greater opportunities for education, as education is an essential factor for urban life, and they provide greater job opportunities. Therefore, place of residence affects age at first marriage through education and premarital work experience. These patterns of relationship have been observed in many societies (Ahmed, 1982).

In the present collection we study the differences in age at marriage by place of residence during childhood and current residence of wives.

Mean age of first marriage of all ever married women by current age and place of residence presented in table 4.3. The place of residence is categorized as childhood residence and current residence both of which are classified as rural and urban. The salient features of the table are as follows:

(i) Irrespective of place of residence and time, urban women in general have a higher average age of marriage than rural women. The overall age of marriage was 1.3

years higher in 1989 and about 1.38 years in 2004 in case of childhood residence. For current residential status the rural-urban difference is not very prominent, only 0.5 and 0.72 years respectively.

(ii) The percentage increase of the average age of marriage during 1989-2004 was 0.8% in rural area and 1.2 % in urban area with respect to childhood residence and such increments were 0.4% and 1.8% respectively in case of current residence. Thus the age of marriage in both rural childhood residence and rural current residence has increased during 1989-2004 but the relative changes remain almost the same. In case of urban residential status such relative change was found to decreases by about 2.8%.

(iii)The age of marriage by urban childhood residence is found to be higher than that of current urban residence. This is not unexpected, because women with urban childhood residence have longer exposer to urban life than the women with current urban residential status. Also women with current urban residence at the time of the survey might have been married while living in rural area. Such phenomena are found both in 1989 and 2004.

(iv) The percentage increase in age at marriage in both rural and urban area's are found to be remarkable in younger age cohorts than the older cohorts. This might be an indication of changes of age of marriage in recent times.

Thus age of marriage of women in Bangladesh as shown an increasing tendency over time in both rural and urban areas. Whatever changes in age at marriage are taken place in the country is a recent phenomenon. Such changes might be attributed to the changes in socio-economic variables particularly changes in the educational status and work status of women in the country.

Table 4.3 : Residential differentials in mean age at first marriage of all ever married women by current age : BFS 1989 and BDHS 2004.

		Current Age						
	Childhood Residence	20-24	20-29	30-34	35-39	40-44	45-49	Total
1989	Rural	15.2	15.1	14.9	14.5	14.2	13.8	14.7
	Urban	16.3	16.9	16.2	16.3	15.2	14.6	16.0
2004	Rural	15.28	14.96	15.14	14.86	14.5	14.16	14.81
	Urban	16.23	17.2	16.74	15.99	16.38	15.21	16.19
Absolute change (1989-2004)								
Rural		0.08	-0.14	0.24	0.36	0.30	0.36	0.11
Urban		-0.07	0.30	0.54	-0.31	1.18	0.61	0.19
Relative change in percentage (1989-2004)								
Rural		0.53	-0.93	1.61	2.48	2.11	2.61	0.75
Urban		-0.43	1.78	3.33	-1.90	7.76	4.18	1.19

		Current Age						
	Current Residence	20-24	20-29	30-34	35-39	40-44	45-49	Total
1989	Rural	15.2	15.0	14.7	14.4	14.1	13.8	14.7
	Urban	15.7	15.7	15.7	15.1	14.5	13.9	15.2
2004	Rural	15.27	14.95	15.05	14.71	14.41	14.10	14.76
	Urban	15.75	15.94	15.92	15.57	15.33	14.65	15.48
Absolute change (1989-2004)								
Rural		0.07	-0.05	0.35	0.31	0.31	0.30	0.06
Urban		0.05	0.24	0.22	0.47	0.83	0.75	0.28
Relative change in percentage (1989-2004)								
Rural		0.46	-0.33	2.38	2.15	2.20	2.17	0.41
Urban		0.32	1.53	1.40	3.11	5.72	5.40	1.84

4.2.3 Education of Wife and Husband

According to Dandeker (1967) education provides opportunities for personal advancement, awareness of social mobility and higher non familial aspiration. It also provides a new outlook, freedom from tradition, willingness to analyze institutions, values and patterns of behavior and greater rationalism. It also serves as a measure of social status in Bangladesh as in most other Asian countries (Welty, 1963; Yousuf, 1963). It has been found in Sri Lanka that by merely increasing the percentage and level of education, age at marriage has greatly increased (WFS, 1978). Basic literacy and very low levels of educational attainment however may not be sufficient to have any substantial effect on female's age at marriage.

It is hypothesized that schooling delays marriage and that has often been supported by many national studies (Glick and Carter, 1970). The process whereby education affects the timing of marriage is not fully understood because of the complex interrelations between education and other variables. In principle, the association of education with age at marriage is positive and is determined primarily by the number of years of school attendance. The longer the time spent in school, the later the entry into marriage and hence the older the age at entry into the first marital union (Hajnal, 1953; Smith, 1976; Hogan, 1978; Lee, 1982). Result from the World Fertility Survey of 1974 show that for 38 countries surveyed the singulate mean age at marriage for women with seven or more years of schooling is almost fore years higher than for uneducated women (UN, 1978). If the purpose of education is the development of carrier opportunities time spent in school may be compounded with further time spent in the labor market which may lead to further increase in marriage age.

The process of modernization in the developing countries may affect age at marriage not only by increasing the time spent in school but also by changing values (both parents and children's values) about the proper age to enter a marital union (Caldwell, 1980). Education and specially higher education is likely to encourage more

women to engage in a career, which in turn may delay marriage. Theoretically there is no direct link between the overall level of education and marriage prevalence one may hypothesis for example, that more educated women will have a better change of finding high status, high playing occupation and thus have a greater change of finding an appropriate mate. Moreover, it changes a persons value system (Inkeles, 1974) in regard to "whether to marry ", "when to marry" and "whom to marry". It provides a person with different aspirations in life and with a capability of pursuing them. Economically, education is perceived as a major route for increasing the value of human capital (Becker, 1976) in the marriage market as well as social life. This creates a direct impact on age at first marriage. A strong effect of education on age at marriage, directly or indirectly has been observed by many researchers (Von Elm and Hirschman, 1979, Martokoesemo, 1979 Yaukey and Thorsen, 1972, Jones, 1980).

This section investigates the educational variation in the average age at marriage of ever married women and trends in such age of marriage during the period of 1989 to 2004. Here, wives education is categorized into four groups, viz., no education, Primary education, high school or secondary (6-10 years of schooling) and higher (11+ years of schooling) education. The husbands' education is categorized into four groups, viz., no education, Primary education, high school or secondary (6-10 years of schooling) and higher (11+ years of schooling) education. For wives in both 1989 and 2004 the percentage of higher education is very low. On the other hand, for husbands in both 1989 and 2004 the percentage of higher education (11+ years schooling) is not very low.

Table 4.4: Percentage distribution of ever-married population by level of education.

	1989		2004	
Level of education	Wife	husband	Wife	husband
No school	63.5	45.6	38.6	36.0
Primary	21.8	20.7	29.6	25.4
High school (Secondary)	12.1	22.2	25.8	25.8
Higher	2.4	10.71	6.0	12.7

It seems that during 1989 to 2004 the Percentage of illiterate (no school) category) has decreased in the case of both husband and wife while the percentage of primary and higher education have increased. Such phenomena are expected to affect marriage age in the country.

Table 4.5 shows the educational differences on age at marriage by current age. The table indicates that age at marriage rises gradually with increased level of education both in 1989 and 2004. Young females of each educational status both in 1989 and 2004 have higher age at marriage. This is the indication of increased age at marriage over time.

For the women's education, during 1989-2004 average age at marriage has decreased by 0.15 years on the average for no education, 0.35 years for primary education and 1.3 years for high school but increases in higher education. This implies that the increase in age at marriage over time is highly associated with an educational group. The relative change is observed to be high for higher education level than with no education and than with primary education—in all age groups – with is expected.

It is also noticed from the table that the husbands' education does not seem to have a different effect from that of the wives' education on age at marriage. Husbands' of higher education have their wives' ages at marriage as high as 16.6 years in 1989 and 17.4 years in 2004. It is quite likely that the best educated wives means a delay in

marriage. The table also reveals that the average age of marriage of wives is the lowest who had no education and whose husbands have had no education. During 1989-2004 for husbands' education, the average age of marriage has decreased by 0.16 years for no education, 0.35 years for primary education and increased by 0.1 years for high school and 0.84 years for higher education respectively. The relative change is observed to be high for higher education than other educational statuses, which is expected.

The difference in the average age at marriage between no education and higher education in case of wife's education is 2.2 years in 1989 and 5.39 years in 2004. In case of husbands' education, the difference is 2.2 years in 1989 and 3.2 years in 2004. This indicates that the effect of wives' education on age at marriage is higher than husbands' education.

The effect of increases level of education on the age at marriage is clearly evident from data in table 4.4. Higher level of education is associated with increase age of marriage. Also changes in the level of education. However, the intensity of change varies with the change in the educational level. These phenomena are true for the educational levels of both husbands and wives.

Table 4.5 : Educational differentials in mean age at marriage of all ever married women by current age : BFS 1989 and BDHS 2004.

	Current Age							
	Women Education	**20-24**	**20-29**	**30-34**	**35-39**	**40-44**	**45-49**	**Total**
1989	None	15.0	14.7	14.5	14.2	14.0	13.7	14.4
	Primary	15.4	15.2	14.8	14.7	14.5	14.1	14.9
	Secondary	18.3	17.0	17.3	16.7	15.4	15.6	16.6
	Higher	16.2	17.01	16.95	16.4	15.75	15.5	16.7
2004	None	14.31	14.22	14.49	14.47	14.18	13.91	14.25
	Primary	14.72	14.64	14.91	14.77	14.53	14.21	14.55
	secondary	16.02	16.01	16.24	15.76	15.53	15.21	15.57
	Higher	18.44	20.35	21.12	20.03	20.84	20.28	19.64
Absolute change (1989-2004)								
None		-0.69	-0.48	-0.01	0.27	0.18	0.21	-0.15
Primary		-0.68	-0.56	0.11	0.07	0.03	0.11	-0.35
Secondary		-2.28	-0.99	-1.06	-0.94	0.13	-0.39	-1.03
Higher		2.24	3.34	4.17	3.63	5.09	4.78	2.94
Relative change in percentage (1989-2004)								
None		-0.46	-3.3	-0.1	1.9	1.3	1.5	-1.0
Primary		-4.4	-3.7	0.7	0.5	0.2	0.8	-2.3
Secondary		-12.5	-5.8	-6.1	-5.6	0.8	-2.5	-6.2
Higher		13.8	19.6	24.6	22.1	32.3	30.8	17.6

		Current Age						
	Husband Education	**20-24**	**20-29**	**30-34**	**35-39**	**40-44**	**45-49**	**Total**
1989	None	15.0	14.7	14.5	14.1	13.9	13.8	14.4
	Primary	15.2	15.0	14.5	14.2	13.9	13.6	14.6
	High school	15.6	15.4	15.2	15.0	14.6	14.2	15.1
	Higher	16.9	17.0	17.2	16.4	15.6	15.1	16.6
2004	None	14.45	14.30	14.56	14.45	14.11	13.74	14.24
	Primary	15.05	14.64	14.87	14.82	14.68	14.16	14.68
	high school	15.78	15.66	15.37	14.99	14.79	14.52	15.20
	Higher	17.58	18.90	18.70	17.16	16.46	16.20	17.44
Absolute change (1989-2004)								
None		-0.55	-0.40	0.06	0.35	0.21	-0.06	-0.16
Primary		-0.15	-0.36	0.37	0.62	0.78	0.56	0.08
high school		0.18	0.26	0.17	-0.01	0.19	0.32	0.10
Higher		0.68	1.90	1.50	0.76	0.86	1.1	0.84
Relative change in percentage (1989-2004)								
None		-3.7	-2.7	0.04	2.5	1.5	-0.04	-1.1
Primary		-1.0	-2.4	2.6	4.4	5.6	4.1	0.5
high school		1.2	1.7	1.1	-0.1	1.3	2.3	0.7
Higher		4.0	11.2	8.7	4.6	5.5	7.3	5.1

Chapter 5

The Age Pattern of Marriage: Application of Coale's Model

Chapter 5

The Age Pattern of Marriage: Application of Coale's Model

5.1: Introduction

It has been suggested that the age patterns of marriage could differ in terms of the age at which marriage begins the rate at which it progresses and the proportion of those who ultimately ever marry. In other words, the age patterns of marriage in different communities could differ only in origin, horizontal scale and vertical scale but still retaining the same functional form (Coale , 1971). The information in the observed marriage schedules can be effectively captured and concise description of the marriage process can be made by means of the parameters can, it turn, be used to smooth observed schedule of proportion ever married and to estimate the age structures of first marriage frequencies and risk of first marriage for the population concerned. Some of the above mentioned items of information can be indirectly estimated by making use of the model nuptiality schedule developed by Coale (Coale, 1971).

Analysis of marital status distribution in the preceding chapter reflects the fact that there might be a change in the age patterns of marriage, i.e., in the age of beginning of marriage, the pace of marriage, age-span of marriage and so on at least from the year 1981. Along with this, a change in the age of marriage is also expected during 1981-1999. These phenomena of age patterns call for the analysis of marriage patterns by means of nuptiality model in order to capture the inherent peculiarities underlying in the marriage pattern. Coale's model nuptiality schedule provides an excellent means of quantifying and of the above mentioned phenomena of age patterns of marriage (Coale , 1971). Not only that Coale's model nuptiality schedule provides a scope to smooth the observed distribution of ever married population but also lead to estimate the first

marriage frequencies by age and risks of first marriage. Thus the merits of using the Coale's nuptiality model are manifold: it captures the inherent peculiarities of marriage by giving the quantitative measures of the age at marriage begins, the pace at which marriage progresses and the ultimate population of persons ever married and leads to generate the age distribution of first marriage frequencies and risk of the first marriage.

The purpose of the present chapter is to analysis the marriage patterns and the changes there of by means of Coale's model nuptiality schedule. The objectives are:

(i) to estimate the parameters involving in the age patterns of marriage and

(ii) To evaluate the patterns of distributions of first marriage frequencies and risks of the first marriages.

Coale's nuptiality model is fitted to data on the age distribution of ever married populations of the year 2004. Attempts are made to capture the inherent peculiarities of the marriage pattern by estimating the parameters of the Coale's model for the division mentioned above . Furthermore, first marriage frequency by age is computed using the probability model given by Coale and McNeil (1972) and age patterns of risk of first marriage by means of model given by Coale(1971).

5.2: Parameters of the Coale's nuptiality model and their significance

The standard schedule of first marriage frequencies together with a schedule of proportion ever married and schedule of person-year lived in ever married status have been constructed by Coale' in interval of one-tenth of a year by making minor adjustments to the true schedule of first marriage frequencies recorded in Sweden from 1865 to 1869. The parameters which specify the marriage pattern in relation to the nuptiality schedule are as follows:

a_0 = The locations parameter or the origin of the curve, which is not the minimum age at marriage but rather the age which a consequential number of marriages first occur. More precisely, the model implies that about one percent of the women will eventually marry have done so by age a_0, so that a_0 is close to the first percentile of the distribution (Rodriguez and Truessell, 1980).

k= The scale parameter indicating the tempo of marriage (also the time scale at which first marriage takes place). Literally, k implies the number of year in the standard schedule into which one year of marriage in the actual population may be packed, and therefore, represents the rate of marriage relative to Swedish female standard, 1865-1869. When k=1.0 the first marriages will spread over a range of 40 years, so that a women who reaches the age of a_0+40 without ever heaving married is unlikely to do so. Therefore, k represents the rate (tempo) of marriage relative standard schedule. The first marriage range depends on the values of k. If k less than or greater than 1.0, this period of 40 years is reduced or extended proportionately i.e., if k is low, the rate of marriage (tempo) is high and first marriage range is short and vice versa.

c= The proportion who ultimately marry indicating the proportion ever married in a cohort fertility computed for each age group reflects the cumulative fertility rate of the age cohorts which, for women 45-49, may be assumed to be

completed family size. The completed family in the case of cohort fertility will be level of fertility when first marriages has effectively ceased.

In actual population a_0 varies from 10 to 18 years, k from about 0.25 indicating a very short time scale and a very steep rise in the proportion ever married by age, to about 1.75 indicating a very slow tempo, and the value of c is very close to unity in some populations where marriage is almost universal where as in others as low as 0.75 (Lestheaghe, 1971). To other measures can be derived using the values of a_0 and k. One A_0=40.k which measures the age span within which majority of first marriages occur and the other A=a_0+40k, the maximum age beyond which first marriage is unlikely to take place.

5.3: Estimation of the parameters and their implication

Fitting of the nuptiality schedule of an actual cohort is accompanied by the procedure given by Coale (1971). An outline of the estimation procedure is described bellow:

According to Coale determination of the parameters is based on a set of ratios of R_1, R_2 and R_3 computed from the distribution of ever married population. The set of ratios is defined as follows:

R_1= The ratio of proportion ever married in the first five year age interval in which marriage occurs to the proportion ever married in the second five year age group.

R_2= The ratio of proportion ever married in the second five year age interval to the proportion ever married in the third five year age interval and

R_3=The ratio of proportion ever married in the third five year age interval to the proportion ever married in the fourth five year age interval.

To define the ratios more succinctly, if a_0 lies between 10 to 14 then,

$$R_1 = \frac{\text{Proportion ever married } 10-14}{\text{Proportion ever married } 15-19}$$

$$R_2 = \frac{\text{Proportion ever married } 15-19}{\text{Proportion ever married } 20-24}$$

$$R_3 = \frac{\text{Proportion ever married } 20-24}{\text{Proportion ever married } 25-29}$$

A given value of any of this ratios (R_1, R_2 and R_3) can occur with differential combinations of k and a_0 but if two ratios (i.e., R_1 and R_2) are specified one combination of k and a_0 is possible. Hence k and a_0 can be estimated by locating (through interpolation) the values would yield the observed R_1 and R_2 or the observed R_2 and R_3. If the experience of the cohort fertility computed for each age group reflects the cumulative fertility rate of the age cohorts which, for women 45-49, may be assumed to be completed family size. The completed family in the case of cohort fertility will be the level of fertility were perfectly consistent with a transformed standard curve, the values of k and a_0 indicated by R_1 and R_2 and by R_2 and R_3 would be the same. A perfect fit is rare, the recommended procedure is to combine R_2 with R_1 if $R_1 > (1-R_3)$ and with R_3 if $R_1 < (1-R_3)$ (Coale, 1971). The value of c (proportion ultimately ever married)is estimated by determining the person years lived ever married at the beginning and end of the third five year age interval (20 and 25 if marriage begin between 10-14) in the transformed standard schedule with the estimated values of k and a_0. Specifically, one determines

$k.z_s(20-a_0)/k$ And $k.z_s(25-a_0)/k$

Where, z_s is the average number of person-years lived ever married. The difference between these two, divided by five is the proportion ever married in a cohort fertility computed for each age group reflects the cumulative fertility rate of the age

cohorts which, for women 45-49, may be assumed to be completed family size. The completed family in the case of cohort fertility will be the level of fertility subject to a curve characterized by calculated values a_0 and k and with an ultimate proportion ever married of 1.0. The required estimate of c is then

$$c=\frac{proportion \quad evermarried \quad 20-24}{\frac{k}{5}\left[z_s\left(\frac{25-a_0}{k}\right)-z_s\left(\frac{20-a_0}{k}\right)\right]}$$

The proportion ever married of age a is $G(a)=c.G_s[(a-a_0)/k]$ where, $(a-a_0)/k=x_s$ is the standardized age and $G_s(x_s)$ is the marriages at age a (annual on the time scale of x_s) is $c.g_s(x_s)$. But one year on the x_s scale is k years for the given cohorts fertility computed for each group reflects the cumulative fertility rate of age cohorts which, for women 45-49, may be assumed to the completed family size. The completed family in the case of cohort fertility will be level of fertility, hence $g(a)=(c/k)g_s[(a-a_0)/k]$. Similarly, $z(a)=c.k.z_s[(a-a_0)/k]$

Fitting of Coale's nuptiality model to actual data requires the distribution of ever married population by age. Such distribution of females of Bangladesh for the Bangladesh Demographic and Health survey 2004 are given in table 5.3.1. The distribution shows that the percentages of ever married females are different division in Bangladesh.

Table 5.3.1: Percentage distribution of ever married population by age of different division in Bangladesh: 2004

Age	*Female*					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
10-14	11.5	7.5	11.7	12.6	13.5	3.3
15-19	47.5	48.7	43.7	48.5	50.5	42.6
20-24	83.9	85.6	85.3	84.5	83.9	85.8
25-29	95.7	95.7	96.4	95.9	95.8	95.5
30-34	98.5	98.7	98.9	98.9	98.7	98.9
35-39	99.5	99.7	99.7	99.5	99.7	100
40-44	100	99.5	99.6	99.4	99.6	100
45-49	100	100	100	100	100	100
10-49						

Source: Bangladesh Demographic and Health survey -2004.

Table 5.3.2: Estimated values of the set of ratios R_1, R_2 and R_3

Division	*Female*		
	R_1	R_2	R_3
Barisal	0.242	0.566	0.877
Chittagong	0.154	0.569	0.894
Dhaka	0.268	0.512	0.885
Khulna	0.260	0.574	0.881
Rajshahi	0.267	0.602	0.876
Sylhet	0.077	0.497	0.898

According to the procedure outlined by Coale the values of R_1, R_2 and R_3 computed from the distribution of ever married population by age given in table 5.3.1 are presented in table 5.3.2 for females. It is worthwhile to mention here that through the model nuptiality schedule is intended for female population , the same can be fitted also the male population (Islam,1996) . Hill(1977) has pointed out the model gives very adequate fit to a variety of female nuptiality schedule and although some fall outside the ranges of model values tabulated by Coale, Abedin (1982) has found an

excellent fit of Coales model nuptiality schedule to a rural female population at sub national level.

Following the procedure mentioned earlier the values of the parameters a_0, k and c and that of A_0 and A for females for the year 2004 are estimated and presented in table 5.3.3. The highest values of a_0 is 12.08 in the Sylhet division and other divisions are the values of a_0 is 10 to 10.33. The highest value of k is 0.817 in the Chittagong division and the lowest value of k is 0.556 in Sylhet division. The quantity of marriage implied by the estimated value of the parameter c is very close to unity for all divisions. Hence marriage in Bangladesh has always remained universal; i.e., almost all females marry.

Table 5.3.3: Estimated values of the parameters of Coale's nuptiality model for Bangladesh.

Division	*Female*				
	a_0	k	c	A_0	A
Barisal	10.07	0.808	1.00	32.32	42.39
Chittagong	10.14	0.817	1.00	32.68	42.82
Dhaka	11.00	0.740	1.00	29.60	40.60
Khulna	10.33	0.740	1.00	29.60	39.93
Rajshahi	10.00	0.720	1.00	28.80	38.80
Sylhet	12.08	0.556	1.00	22.24	34.32

Source: Bangladesh Demographic and Health survey 2004.

The span of marriage indicated by A_0 is high at Chittagong division and low at low at Sylhet. The values of A reflect the maximum age beyond which first marriage is unlikely to take place. It is indicated that a female who reached the age of 34 years without having married for the first time is less likely to do so in Sylhet and it is 42 years in Chittagong.

5.4: Age structure of first marriage:

The first marriage by age denoted by g(a) is defined as the ratio of the number of the first marriages in the interval relative to the number of person-years lived in the interval. In other words, it is defined as the number of first marriages in the interval of age, say a to a+1 divided by the number of persons (irrespective of marital status) in the age interval. Values of g(a) have been computed for females with the help of the standard first marriage frequencies, $g_s(x_s)$ by the following equation.

$$g(a) = \frac{c}{k} \cdot g_s x_s$$

The values of g(a) thus found for females in single years of age are presented in table 5.4.1.Similar g(a) value can also be estimated from the closed from of analytical expression of the probability density function of age at first marriage given by Coale and McNeil(1972).

The graph of g(a) is depicted in figure 5.1 for females. It is observed from the distribution of first marriage frequencies, g(a) in table 5.4.1 that most of the marriages of females occur from age 11 to 29 in Barisal, from age 12 to 29 in Chittagong and Dhaka, from age 12 to 28 in Khulna, from age 11 to 27 in Rajshahi and from age 13 to 26 in Sylhet division.

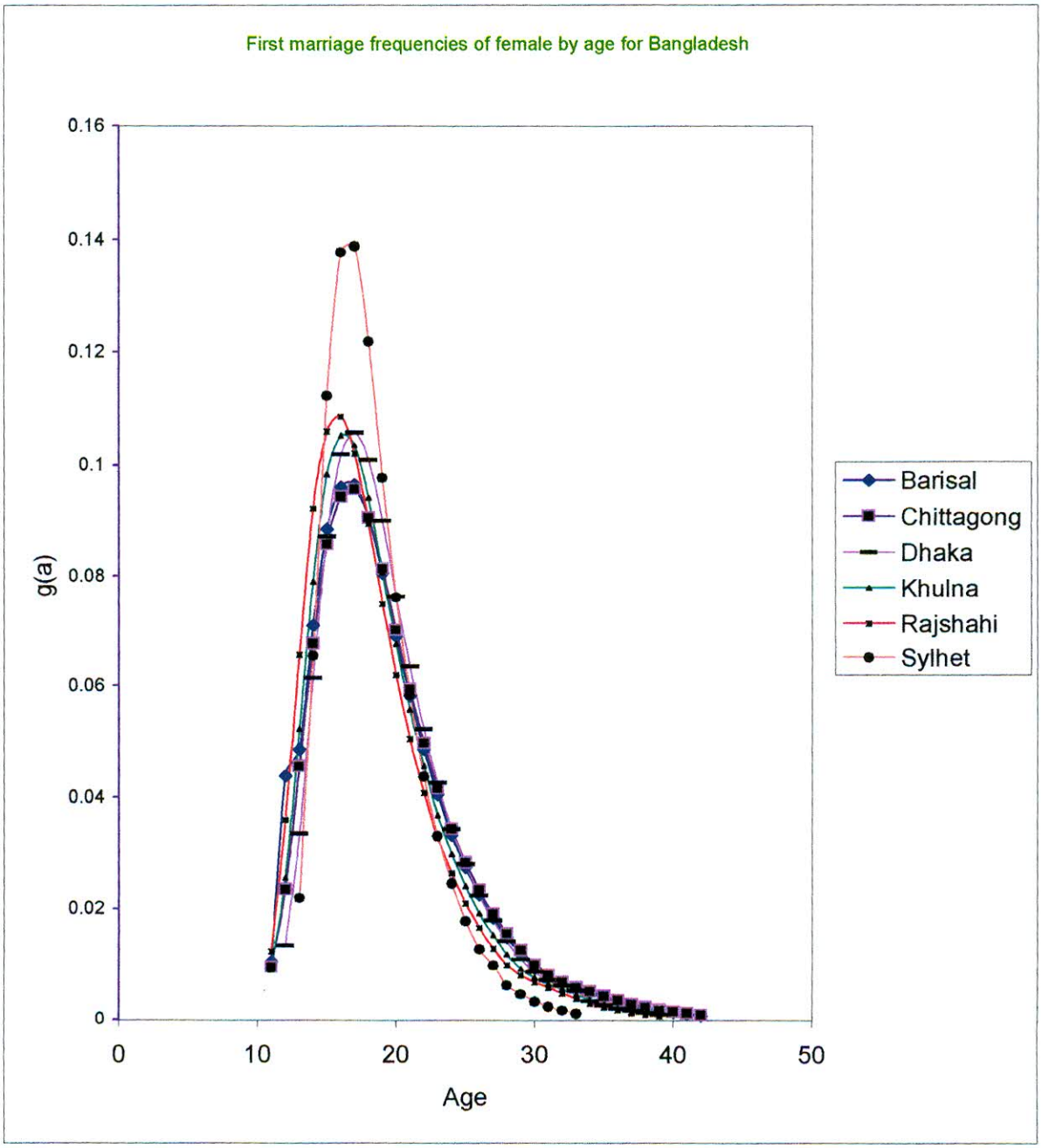
The rate of first marriage of females has been the highest at age 17 in Barisal, Chittagong, Dhaka and Sylhet division and at age 16 in Khulna and Rajshahi division. Thus it is apprehended that the peak age of first marriage of females has shifted from age 16 to 17 under study. Very few marriage of females occur after age 29 in Barisal, Chittagong and Dhaka divisions, after age 28 in Khulna, after age 27 in Rajshahi and after age 26 in Sylhet division. This is implies that marriage occurs at very early ages, the tempo of marriage is very high and first marriage is completed with in a short period of time.

It is evident that the first marriages for females occur at a low intensity at the initial age of marriage with an increasing tendency up to the peak age of marriage and after that the frequency of first marriage goes on decreasing. Figure 5.1 compares the patterns of first marriage frequency of females at different divisions in Bangladesh. This shows the first marriage frequency for female's increases steeply after age a_0 up to the peak age of marriage showing the sharp peak and decline rapidly for short age span indicating too high intensity of occurrence of first marriage. The frequency of first marriage decline slowly in later ages compared to the initial ages. The most crucial ages of first marriage of females are probably first few years of marriageable ages.

Table 5.4.1: First marriage Frequencies of females by age for Bangladesh.

Age	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
(a)	g(a)	g(a)	g(a)	g(a)	g(a)	g(a)
11	0.01043	0.00939	.....	0.00896	0.01230	.....
12	0.04385	0.02353	0.01335	0.02562	0.03598	.....
13	0.04858	0.04557	0.03344	0.05229	0.06561	0.02197
14	0.07089	0.06759	0.06138	0.07903	0.09220	0.06543
15	0.08850	0.08584	0.08716	0.09839	0.10588	0.11231
16	0.09600	0.09425	0.10185	0.10524	0.10856	0.13782
17	0.09653	0.09559	0.10565	0.10354	0.10205	0.13885
18	0.09053	0.09055	0.10092	0.09413	0.08948	0.12187
19	0.08045	0.08130	0.08996	0.08060	0.07497	0.09774
20	0.06884	0.06993	0.07623	0.06752	0.06192	0.07619
21	0.05818	0.05939	0.06352	0.05568	0.05055	0.05839
22	0.04867	0.04974	0.05222	0.04571	0.04080	0.04377
23	0.04051	0.04163	0.04261	0.03687	0.03268	0.03308
24	0.03321	0.03431	0.03427	0.02989	0.02638	0.02456
25	0.02741	0.02824	0.02790	0.02411	0.02099	0.01779
26	0.02251	0.02336	0.02240	0.01925	0.01658	0.01267
27	0.01837	0.01910	0.01788	0.01525	0.01278	0.009780
28	0.01488	0.01555	0.01407	0.01179	0.00985	.00799
29	0.01182	0.01249	0.01082	0.00922	0.00801	0.00624
30	0.00930	0.00983	0.00861	0.00758	0.00672	0.00465
31	0.00766	0.00799	0.00714	0.00643	0.00580	0.00332
32	0.00648	0.00672	0.00615	0.00556	0.00473	0.00233
33	0.00565	0.00580	0.005250	0.00454	0.00378	0.00172
34	0.00490	0.00509	.00423	0.00364	0.00294	0.00108
35	0.00402	0.00425	0.00335	0.00286	0.00222	.....
36	0.00329	0.00351	0.00263	0.00216	0.00172	.....
37	0.00263	0.00280	0.00198	0.00169	0.00136	.....
38	0.00204	0.00223	0.00159	0.00135	0.00096	.....
39	0.00161	0.00173	0.00123	0.00099	.....	.....
40	0.00133	0.00143	0.00088	.....	.....	.....
41	0.00102	0.00113	.....	.....	.....	.....
42	0.00073	0.00084	.....	.....	.....	.....

Figure 5.1: First marriage frequencies of females by age for Bangladesh.



5.5: Risk of first Marriage

The risk of marriage means the change of exposure to the marriage. It can be defined as the rate of first marriage at each age for those eligible for first marriage, i.e., those who are still single. Estimation of risk of first marriage can be made using the relation

$$r_s(x_s) = g_s(x_s)/[1 - G_s(x_s)]$$

Where, $r_s(x_s)$ is the standard risk of first marriage at age x_s, $g_s(x_s)$ is the standard first marriage frequency at age x_s and $G_s(x_s)$ is the standard proportion ever married up to age x_s. As standard earlier $x_s = (a - a_0)/k$ denotes the standardized age.

For an observed population knowing a_0, k and c the risk of first marriage say R(a) can be in term from the estimated relation

R(a)=g(a)/[c-G(a)]

Where $g(a) = c/k.g_s(x_s)$

= The first marriage frequency between ages a to a+1 and

$G(a) = c.G_s(x_s)$

= proportion ever married up to the exact age at which can be estimated from the standard schedule of proportion ever married $G_s(x_s)$ at x_s.

According to Coale's the risk of first marriage for an observed population can be estimated directly from the following double exponential model.

$$r(a) = \frac{0.174}{k}\exp(-4.41\exp(-0.309((a - a_0)/k)))$$

The r(a) function smoothes the values given by R(a). Therefore, R(a) and r(a) for females for different divisions are estimated and presented in table 5.5.1 and 5.5.2. In female population the risk of first marriage is observed to be lower at young ages compared to later ages. Such risk rises very steeply with in a very short span of marriageable age after the age of which a reasonable number of first marriages occur.

It increases very steeply from age 11 up to age 28 in Barisal, from age 11 up to age 28 in Chittagong, from age 12 up to age 27 in Dhaka, from age 11 up to age 27 in Khulna, from age 11 up to age 26 in Rajshahi, from age 13 up to age 24 in Sylhet. After that it approaches a horizontal asymptotic. R(a) values are ataractic in higher ages in all indicated divisions. The fact is that in higher ages, the risks of marriage are sensitive to errors in the cumulated values of first marriage frequencies and the first marriage arbitrary adjustment of cross-sectional data (Coale, 1971).

The pattern of r(a) for females is depicted in figure 5.2. It shows that the risk of first marriage rises steeply after the beginning age at marriage due to a very short span of marriageable ages, then it reaches the asymptotic. By age 24 in all divisions r(a) values almost reach asymptotes.

The function of R(a) values for females which as stated earlier. Again, noting that values of R(a) and r(a) must be mathematically less than unity, but some values of R(a) at the higher ages are found to be greater than one, this may be defective data.

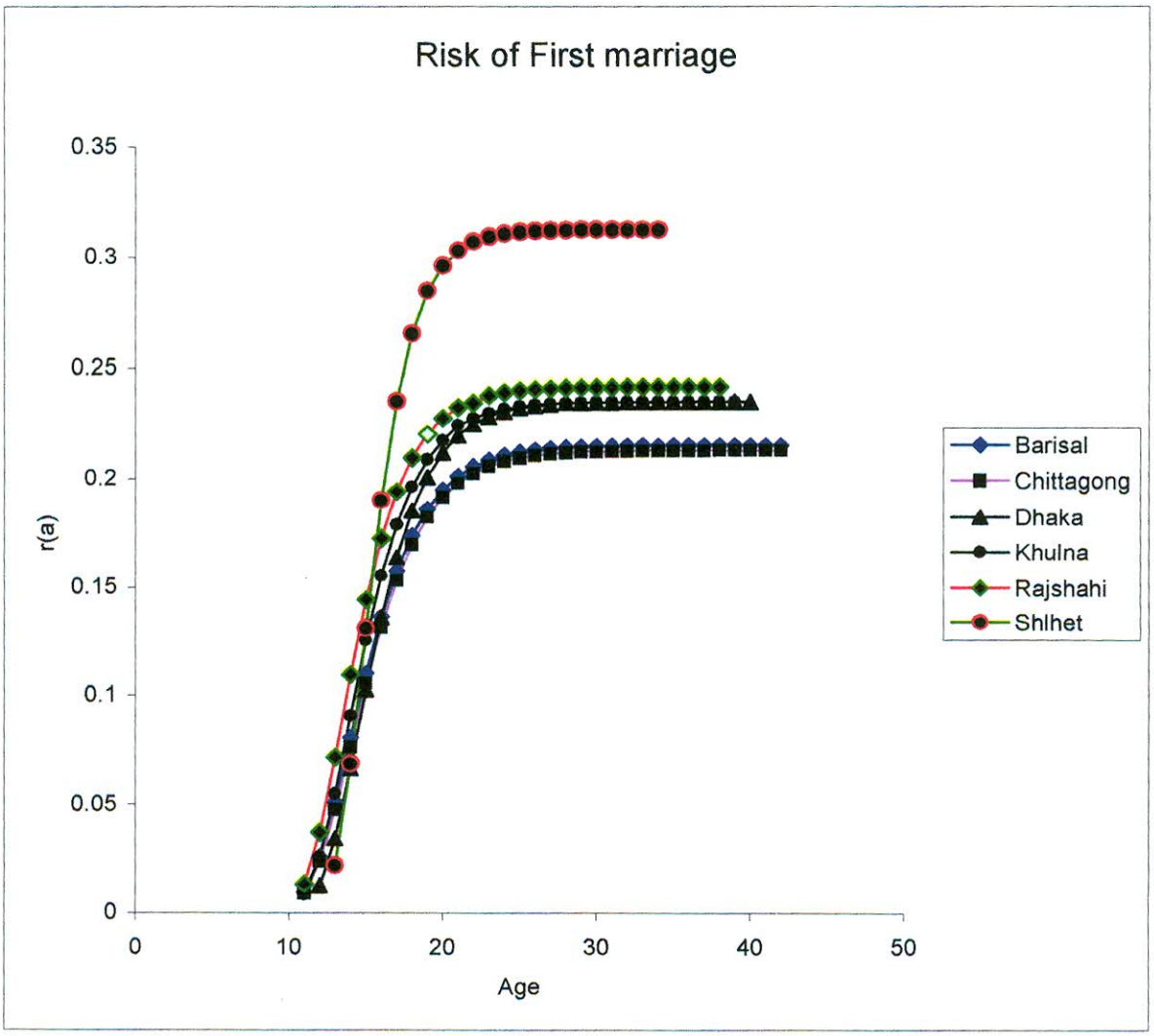
Table 5.5.1: Risk of first marriage of females by age of different divisions for Bangladesh –2004.

Age	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
(a)	R(a)	R(a)	R(a)	R(a)	R(a)	R(a)
11	0.01048	0.00943	.....	0.00899	0.01238	.....
12	0.04416	0.02400	0.01344	0.02613	0.03713	.....
13	0.05160	0.04815	0.03444	0.05547	0.07146	0.02219
14	0.08037	0.07595	0.06644	0.09019	0.10993	0.06906
15	0.11042	0.10570	0.10271	0.12514	0.14322	0.13079
16	0.13355	0.13061	0.13528	0.15394	0.17197	0.18858
17	0.15780	0.15277	0.16292	0.17898	0.19433	0.23501
18	0.17459	0.17005	0.18538	0.19641	0.20863	0.26533
19	0.18589	0.18205	0.20055	0.20610	0.21623	0.27970
20	0.19218	0.18868	0.20456	0.21292	0.22243	0.28950
21	0.19733	0.19390	0.21477	0.21779	0.22733	0.29612
22	0.20111	0.19769	0.21931	0.22280	0.22879	0.30083
23	0.20511	0.20192	0.22372	0.22477	0.23303	0.30836
24	0.20654	0.20367	0.22514	0.22833	0.23765	0.31213
25	0.20977	0.20584	0.23004	0.23183	0.24008	0.30862
26	0.21272	0.20937	0.23264	0.23386	0.24123	0.29707
27	0.21450	0.21143	0.23444	0.23418	0.23618	0.30893
28	0.21537	0.21255	0.23299	0.22802	0.22944	0.34894
29	0.21183	0.21074	0.22535	0.22300	0.23490	0.39524
30	0.20519	0.20440	0.22438	0.22953	0.25067	0.44647
31	0.20705	0.20315	0.23346	0.24637	0.28160	0.51030
32	0.21575	0.20976	0.25604	0.27604	0.30748	0.61461
33	0.23530	0.22425	0.28617	0.30106	0.33835	0.94505
34	0.26092	0.24875	0.30957	0.32962	0.37349	2.25940
35	0.27336	0.26919	0.33838	0.36405	0.41395	.....
36	0.30540	0.29311	0.37547	0.40030	0.49985	.....
37	0.33388	0.31617	0.41992	0.47902	0.81994	.....
38	0.36435	0.34953	0.53285	0.66176	1.18460	.....
39	0.42089	0.38857	0.75553	1.08330	.....	.....
40	0.55476	0.48957	1.42857	.....	.....	.....
41	0.81346	0.79075	.....	.....	.....	.....
42	1.77000	1.15684	.....	.....	.....	.....

Table 5.5.2: Risk of first marriage of females by age of different divisions for Bangladesh – 2004.

Age	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
(a)	r(a)	r(a)	r(a)	r(a)	r(a)	r(a)
11	0.00978	0.00878	.....	0.00842	0.01369	.....
12	0.02617	0.02406	0.01285	0.02621	0.03731	.....
13	0.05118	0.04773	0.03464	0.05514	0.07163	0.02213
14	0.08062	0.07634	0.06657	0.09070	0.10952	0.06851
15	0.11022	0.10560	0.10264	0.12552	0.14416	0.13098
16	0.13641	0.13162	0.13618	0.15549	0.17266	0.18993
17	0.15775	0.15326	0.16406	0.17904	0.19417	0.23503
18	0.17406	0.16994	0.18550	0.19648	0.20958	0.26556
19	0.18626	0.18243	0.20112	0.20897	0.22027	0.28483
20	0.19507	0.19158	0.21213	0.21755	0.22752	0.29646
21	0.20130	0.19806	0.21971	0.22441	0.23236	0.30338
22	0.20564	0.20266	0.22485	0.22733	0.23435	0.30743
23	0.20868	0.20584	0.22833	0.22996	0.23768	0.30977
24	0.21078	0.20806	0.23063	0.23171	0.23906	0.31112
25	0.21222	0.20960	0.23216	0.23288	0.23996	0.31190
26	0.21321	0.21075	0.23317	0.23365	0.24056	0.31235
27	0.21389	0.21138	0.23384	0.23415	0.24094	0.31260
28	0.21435	0.21188	0.23482	0.23449	0.24120	0.31275
29	0.21467	0.21222	0.23457	0.23471	0.24136	0.31286
30	0.21488	0.21246	0.23476	0.23485	0.24147	0.31288
31	0.21503	0.21262	0.23489	0.23495	0.24154	0.31291
32	0.21513	0.21273	0.23497	0.23501	0.24158	0.31293
33	0.21520	0.21281	0.23503	0.23505	0.24161	0.31294
34	0.21512	0.21286	0.23507	0.23508	0.24163	0.31294
35	0.21528	0.21290	0.23509	0.23510	0.24164	.....
36	0.21530	0.21292	0.23510	0.23511	0.24165	.....
37	0.21531	0.21294	0.23511	0.23512	0.24166	.....
38	0.21532	0.21295	0.23512	0.23513	0.24166	.....
39	0.21533	0.21296	0.23513	0.23513	.....	.....
40	0.21534	0.21296	0.23513	.....	.....	.....
41	0.21534	0.21297	.....	.....	.....	.....
42	0.21534	0.21297	.....	.....	.....	.....

Figure-5.2: Risk of first marriage of females by age of different divisions for Bangladesh: 2004



5.6: Conclusion

Analysis of age patterns of marriage by means of Coale's model nuptiality schedule has yielded some interesting results. It has been found that marriage still remains a universal phenomenon in Bangladesh. Early marriage prevails in the population and that marriage not only start early but progresses fast and are concentrated with in a short span of time at least in the female population.

The model has yielded proportions ever married which are very close to observed schedule. It is worth while to mention that under changing condition of marriage pattern application of Coale's Nuptiality Model to study the nuptiality behavior of Bangladesh population might be questionable. However, apart from this, Knowledge about the parameters which control the marriage pattern are well studied by means of Coale's model by providing quite a few interesting parameters to capture the inherent peculiarities of the marriage pattern of the country. The fact values of a_0 , k, c, A_0 and A and the values of r(a) and g(a) what have been generated recurring Coale's nuptiality model to Bangladesh population reflect that marriage in Bangladesh has began to show some changes from the recent past without much changes in the basic parameters of nuptiality.

Note: In 1961 the stipulated minimum age at marriage for females 14 to 16 years. Again, the Bangladesh population Council has recommended that a proposal should be developed in due course to rise age at marriage giving due consideration to the existing socio-economic conditions of the country (population Control and Family planning Division, 1976:15). Its recommended age at marriage for females is 18 to 25 years

Chapter 6

Study of Marriage Pattern Based on Nuptiality Table

Chapter 6

Study of Marriage Pattern Based on Nuptiality Table

6.1 Introduction

A Nuptiality table is one of the most important devices for investigating the marriage pattern and its dynamics in a society. A preliminary analysis of marriage pattern on the basis of proportions single by age imparts knowledge on how single persons diminish through the occurrence of marriage. On the other hand a refined analysis of the age patterns of marriage can be made with recourse to Coale's Nuptiality Model (Coale, 1971). However none of these analyses provide information on the dynamics of the marriage pattern and particularly on accepts like the expected number of years which remain to single persons of different ages for marriage for the first time. Such an aspect of nuptiality can be studied by constructing nuptiality tables. In this chapter, an attempt is made to analyze the marriage pattern by constructing two types of nuptiality tables viz. gross and net nuptiality tables.

The specific objectives are

(i) To investigate the changes, if any, in the pattern of first marriage probability by age of both males and females using actual distribution of proportion single and

(ii) To assess the averages number of years remain as single and their changes there of during the time periods under study.

Before analyzing the aforesaid aspects of nuptiality, a brief description of construction of gross and net nuptiality tables are given below:

6.2: Procedure of the construction of Nuptiality tables

The gross nuptiality table is essentially a single decrement table where the force of decrement is simply the marriage, while the net nuptiality table is a kind of double decrement table where both marriage and mortality are taken into account. Therefore, the construction of a gross nuptiality table requires the knowledge of first marriage frequency only, but a net nuptiality table, in addition to first marriage frequency, also requires the age pattern of mortality of the exposure population. Thus probability of first marriage and the probability of death of single persons by age from the basis of construction of nuptiality tables.

If data on first marriage frequency at different ages are available, first marriage rates by age can be computed and such rates can be converted into the first marriage probability by age. Unfortunately such data are not available for Bangladesh at least for the time points under study thereby an indirect estimate of first marriage probability is made from proportions single according to formula given by Merten (1965).

The formula states that

$$n(a) = \frac{S(a) - S(a+1)}{S(a)}$$

Where v(a) = probability of first marriage between ages a to a +1.

S(a) = proportion single at age a .

By utilizing the proportions single in the synthetic cohort (Agerwala 1962) and using the above equation, it is possible to calculate to basic function n(a) in nuptiality. Since S(a) is expected to be a decreasing function of age, smoothed value of proportion single should be used for the construction of nuptiality tables for the reasons that observed value may be distorted in proportions single are usually recorded in quinquennial age groups. The quinquennial are converted into proportions single S(a)

at exact age a, at an interval of five years, by graphic method. Such S(a) values are used to obtain estimates of n(a) values according to the formula mentioned above.

6.2.1: Construction of Gross Nuptiality Table

In the construction of gross nuptiality table the associated functions can be obtained in the following way.

Let n(a) = Probability of first marriage.

1-n(a) = Probability of not entering a first marriage, i.e. Probability of remaining single.

l(a) = Number single at an exact age a.

Thus l (a+5)=[1-n(a)]×l(a) with l(0)= 1,00,000 (say)

L(a)= Number of years lived as single between age a to a+5 or the mean number of never married population between a to a+5 in the nuptiality table.

= n/2[l(a)+l(+5)] where, n=5=length of age interval.

T(a) = total number of person-years lived beyond age a as never married.

$= \sum_{y=a}^{w} L(y)$,where w is the last age at which proportion single is observed.

E(a) = expected number of years lived as single at an exact age a

$= \frac{T(a)}{l(a)}$

While the values gives the number of single persons at an age a in a cohort, the E(a) values impart the ideas about the number of years expected to remain as single at an exact age a of that cohort without the effect of mortality.

6.2.2: Construction of Net Nuptiality Table

Construction of net nuptiality table is made using the same n(a) values in conjunction with p(a) = 1- q(a) where p(a) is the probability of survival between ages a to a+5 and q (a) is the probability of dying between a to a+5. The functions of net nuptiality tables are obtained in the following way

l' (a)=Number single and alive at an exact age a. Thus

l'(a+5)=[1-n(a)] [1-q(a)]× l'(a) with l'(a)= 1,00,000

L'(a) =Number of person-years lived as single and alive between ages a to a+5.

= n/2[l' (a)+ l'(a+5)]

T'(a) = Total number of person-years lived as single and alive above age a.

$=\sum_{y=a}^{w} L'(y)$, where w is the last ages at which proportion single is observed.

$E'(a)$ = expected number of years remaining before marriage or death to a single life aged a.

$$= \frac{T'(a)}{l'(a)}$$

Details of construction of gross and net nuptiality tables and some of its applications can be found in Merten (1965), Savland Glick (1969), Malakar (1971), Benzamin and Haycocks (1970), Kumar (1967), Shryock and Siegel (1973), Abedin (1982), Sattar (1990), NI Islam (1989) and in others.

For the present analysis both gross and net nuptiality tables are constructed females for the years 1961,1974, 1975, 1981 , 1989 and 2004 and also different divisions of Bangladesh.

The q(a) values i.e. the probability of death between ages a to a+5 which are used in the construction of net nuptiality table are taken from various life tables corresponding

to the period concerned as far as possible. The assumption involved in taking the mortality life tables for all population for the population in never married status (single status) is that mortality of the never married population is the same as the mortality of all population at various ages. These are as follows:

Period	Life table used
1961	Constructed from the PGE data of 1962-63 (ESCAP, 1981)
1974	Abridged life table for males and females in Bangladesh, 1974 (BBS, 1981)
1975	Abridged life table for males and females in Bangladesh, 1974 (BBS, 1981)
1981	Abridged life table for males and females in Bangladesh, 1981 (BBS, 1982)
1989	Abridged life table for males and females in Bangladesh, 1990 (BBS, 1991)
2004	Abridged life table for females in Bangladesh, 2004 (BDHS, 2004)

Gross and net nuptiality table provide much information such as the following :

(i) Probability of first marriage at an exact age a.

(ii) Number single at an exact age a .

(iii) Number single and alive at an exact age a.

(iv) Number of person-years lived as single between ages a to a+5.

(v) Total number of person-years lived as single and alive between ages a and a+5.

(vi) Total number of person-years lived beyond age a as never married.

(vii) Total number of person-years lived as single and alive above age a.

(viii) Expected number of years lived as single at an exact age a.

(ix) Expected number of years remaining before marriage or death to a single life aged a.

Of the aforesaid item the most important functions are the probability of the first marriage and the expected number of years remaining on the average to a single person to be married and thus have special interest. These functions impart knowledge on the dynamics of nuptiality prevailing in the country. Therefore the present analysis is based on the two functions viz.

(i) Probability of first marriage at an exact age a, n(a) computed from proportion single in quinquennial age groups and

(ii) Expected number of years remaining as single on the average, E(a).

6.3: Probability of first marriage

Table 6.3.1 presents the first marriage probability by age of females for the years 1961, 1974, 1981, 1975, 1989 and 2004. The table indicates that the general pattern of nuptiality rates remains more or less the same for all the time periods. They are initially small but increases rapidly until they reach a maximum at ages 10 to 30. The highest probability of first marriage was found at ages 15 to 25 in 1961, at ages 15 to 25 in 1974, 1981, at ages 15 to 30 in 1975, 1989 and 2004.

Table 6.3.1 Marriage rates n (a) for females by age

Age	1961	1974	1981	1975	1989	2004
0	----------	----------	----------	----------	----------	----------
5	0.14607	0.05208	0.03608	0.06736	0.01523	0.11400
10	0.50000	0.36263	0.34225	0.32222	0.25773	0.41196
15	0.84211	0.75862	0.69106	0.70492	0.58333	0.70825
20	0.86667	0.85714	0.78947	0.77778	0.76667	0.72368
25	0.37500	0.60000	0.62500	0.75000	0.79286	0.71429
30	0.20000	0.37500	0.33333	0.50000	0.75862	0.66667
35	0.17500	0.20000	0.20000	0.40000	0.42857	0.25000
40	0.15152	0.12500	0.12500	0.33333	0.25000	1.00000
45	0.10714	0.08571	0.07143	0.25000	0.13333	0.00000

Source: Bangladesh population Census 1961, 1974 and 1981

: Bangladesh fertility Survey 1975 and 1989

: Bangladesh Demographic and Health Survey 2004 (BDHS).

Table 6.3.2: Marriage rates n (a) for females by age in different divisions- 2004

Age	Division					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
11	0.002582	0.015793	0.006640	0.016429	0.024120	0
12	0.051895	0.034521	0.022459	0.038761	0.059029	0.009930
13	0.063096	0.059709	0.048803	0.070410	0.080159	0.042250
14	0.091335	0.087470	0.081318	0.102631	0.118597	0.094428
15	0.115999	0.111370	0.112710	0.130583	0.146080	0.148888
16	0.136556	0.132810	0.138715	0.153794	0.168140	0.191599
17	0.152383	0.149092	0.160501	0.171564	0.183234	0.222572
18	0.165352	0.161355	0.176014	0.184017	0.191606	0.239223
19	0.172301	0.170074	0.185166	0.189076	0.197104	0.246852
20	0.176930	0.173574	0.190802	0.193775	0.201236	0.250741
21	0.175824	0.178622	0.194949	0.197559	0.136355	0.262184
22	0.187202	0.180459	0.200118	0.200429	0.269735	0.262630
23	0.185915	0.182947	0.200830	0.202024	0.208214	0.266499
24	0.187325	0.185504	0.203140	0.205348	0.212626	0.267505
25	0.190174	0.186867	0.204469	0.208710	0.213885	0.260062
26	0.190701	0.190194	0.209555	0.208602	0.212571	0.257679
27	0.193251	0.190260	0.208470	0.206171	0.206763	0.277006
28	0.192358	0.190268	0.204406	0.200348	0.205684	0.310616
29	0.187634	0.187880	0.200708	0.201451	0.213490	0.340304
30	0.183543	0.182291	0.203438	0.209570	0.232289	0.374640
31	0.189138	0.185562	0.214519	0.227969	0.253035	0.417819
32	0.199600	0.192884	0.236053	0.251613	0.273732	0.519789
33	0.218568	0.208430	0.255041	0.267905	0.295434	0.736264
34	0.215770	0.228627	0.274323	0.288043	0.320203	1
35	0.267663	0.241925	0.296371	0.314249	0.357009	
36	0.269017	0.259816	0.323782	0.345083	0.517442	
37	0.290609	0.279910	0.366525	0.422096	0.512048	
38	0.314848	0.300940	0.454849	0.553922	0.998765	
39	0.375979	0.345291	0.619632	1	1	
40	0.472803	0.421233	1			
41	0.674603	0.568047				
42	1	1				

Table 6.3.2 presented the first marriage probability by age of females for the year 2004 in different divisions of Bangladesh. The table indicates that the general pattern of nuptiality rates remains more or less the same for all the time periods. They are initially small but increases rapidly until they reach a maximum at ages.

Therefore, probability of first marriage for females in different divisions are estimated and presented in table 6.3.2. In female population the probability of first marriage is observed to be lower at young ages compared to later ages. Such probability of first marriage pattern of nuptiality rates remains more or less the same for all the time periods. It increases very steeply from age 11 up to age 28 in Barisal, from age 11 up to age 28 in Chittagong, from age 12 up to age 26 in Dhaka, from age 11 up to age 25 in Khulna, from age 11 up to age 25 in Rajshahi, from age 12 up to age 24 in Sylhet. All marriage of females occur after age 42 in Barisal and Chittagong, after age 40 in Dhaka, after age 39 in Khulna and Rajshahi and after age 34 in Sylhet Divisions. This is implies that marriage occurs at very early ages at Sylhet division and marriage occurs at later ages in Barisal and Chittagong divisions.

Probability of first marriage for females by Age group in different divisions are estimated and presented in table 6.3.3. In female population the probability of first marriage is observed to be lower at young ages compared to later ages. The highest probability of first marriage was found at age 35 in Barisal, at age 40 in Chittagong, Dhaka, Khulna, and Rajshahi, at age 30 in Sylhet division. Implies that All marriage of females occur after age 35 in Barisal and after age 40 in Chittagong, Dhaka, Khulna and Rajshahi and after age 30 in Sylhet Divisions. Such that marriage occurs at very early ages at Sylhet division and marriage occurs at later ages in Barisal divisions.

Table 6.3.3: Marriage rates n (a) for females by age group in different divisions

Age	Division					
	Barisal	***Chittagong***	***Dhaka***	***Khulna***	***Rajshahi***	***Sylhet***
0	0	0	0	0	0	0
5	0.11500	0.075000	0.117000	0.126000	0.135000	0.033000
10	0.40678	0.445405	0.362401	0.410755	0.427746	0.406412
15	0.69333	0.719298	0.738899	0.699029	0.674747	0.752613
20	0.73292	0.701389	0.755102	0.735484	0.73913	0.683099
25	0.65116	0.697674	0.694444	0.731707	0.690476	0.755556
30	0.66667	0.769231	0.727273	0.545455	0.769231	1
35	1	0.666670	0.333333	0.200000	0.33333	0
40	0	1	1	1	1	0
45	0	0	0	0	0	0

6.4: Expected number of years remaining

The expected number of year remaining to marry to single persons of different ages of marriage denoted by E(a) and $E'(a)$ are presented in table 6.4.1 for females. Data in these tables provides such values after construction of both Gross and Net nuptiality tables for the time provides under study. The gross expected years remain denoted by E(a) are shown in the first part of the tables and at the second part the net number of years denoted by $E'(a)$ are shown. E(0) and $E'(0)$ respectively give information about the average number of years remain as single since after birth without and with effect of mortality.

Abedin (1982), found for the survey data of a rural community of Bangladesh that the expected number of years remaining single for males to be 24.35 years (gross) and 18.20 years (net) and for females to be 17.56 years (gross) and 13.72 years (net) in 1979. Sattar, M.A. (1990) also found from another survey of 1975 for a rural community of Bangladesh that the expected numbers of years remaining as single for males to be 18.02 years (net) at age 12 and for females to be 18.84 years (net) at age 10. Nurul Islam (1989) found from another survey the expected number of years single for males to be 25.62 years (gross) and 22.85 years (net) and for females to be 18.07 years (gross) and 16.42 years (net) in 1989.

In Table 6.4.1 the gross and net expected number of year's remains to marry by single females of different ages of marriage is presented. The average number of years expected to remain as single since after birth and without the effect of mortality (first panel of table 6.4.1: the gross nuptiality table) are observed to be 14.38 years in 1961, 16.21 years in 1974, 16.57 years in 1975, 16.90 years in 1981, 18.07 years in 1989 and 15.60 years in 2004. Such estimates seem to collaborate with singulate mean age at marriage (SMAM) found earlier. During the period of 30 years, that is from 1961 to 1989 the gross expected number of years remaining as single since after birth has increased by 3.69 years and the period of 15 years from 1989 to 2004 the gross expected number of years remaining as single since after birth has decreased by 2.47 years. Again it has increased by 2.52 years during the period of first 20 years that is from 1961 to 1981.

Table 6.4.1: Expected number of years remaining single of females based on gross and Net nuptiality tables

GROSS TABLE						
Age	Year					
	1961	***1974***	***1975***	***1981***	***1989***	***2004***
0	14.38	16.21	16.57	16.90	18.07	15.60
5	9.38	11.21	11.57	11.90	13.07	10.60
10	5.55	6.69	7.23	7.25	8.23	6.64
15	3.61	4.07	4.47	4.72	5.22	4.54
20	4.53	4.00	4.19	4.69	4.04	4.51
25	12.71	8.03	5.09	7.91	4.08	4.76
30	13.85	11.32	7.87	11.92	4.15	5.42
35	11.70	11.60	8.25	11.63	8.45	6.25
40	8.64	8.87	7.07	8.91	7.90	2.50
45	4.73	4.78	4.37	4.82	4.70	0.00

NET TABLE						
Age	Year					
	1961	***1974***	***1975***	***1981***	***1989***	***2004***
0	12.71	13.98	14.27	15.12	16.42	15.31
5	9.10	10.92	11.26	11.67	12.81	11.12
10	5.48	6.58	7.10	7.18	8.14	6.47
15	3.54	4.00	4.39	4.67	5.17	4.21
20	4.33	3.88	4.08	4.60	4.00	4.45
25	11.66	7.52	4.90	7.63	4.03	3.71
30	12.83	10.53	7.45	11.43	5.01	2.50
35	10.94	10.88	7.81	11.14	8.11	0.00
40	8.26	8.44	6.77	8.54	7.56	0.00
45	4.63	4.64	4.25	4.70	4.53	0.00

In Table 6.4.2 the gross and net expected number of years remains to marry by single females by age group in different division of marriage are presented. It is observed to be (Gross) table 15.67 years in Barisal, 15.72 years in Chittagong, 15.73 years in Dhaka, 15.53 years in Khulna, 15.41 years in Rajshahi and 16.20 years in Sylhet divisions. This implies that, the highest expected number of years remaining single of females in Sylhet and the lowest expected number of years remaining single of females in Raj6shahi divisions and observed to be (Net) table 14.82 years in Barisal, 14.86 years in Chittagong, 14.87 years in Dhaka, 14.68 years in Khulna, 14.57 years in Rajshahi and 15.31 years in Sylhet divisions.

Table 6.4.2: Expected number of years remaining single of females based on gross and Net nuptiality tables by age in different divisions

GROSS TABLE						
Age	Division					
	Barisal	***Chittagong***	***Dhaka***	***Khulna***	***Rajshahi***	***Sylhet***
0	15.67	15.72	15.73	15.53	15.41	16.20
5	10.67	10.72	10.73	10.53	10.41	11.20
10	6.73	6.38	6.81	6.68	6.64	6.49
15	4.63	4.50	4.27	4.60	4.73	4.22
20	4.46	4.62	4.27	4.47	4.36	4.47
25	4.83	4.59	4.72	4.94	4.64	3.72
30	4.17	4.42	4.77	6.59	4.42	2.50
35	2.50	5.83	5.83	6.50	5.83	0.00
40	0.00	7.50	2.50	2.50	2.50	0.00
45	0.00	2.50	0.00	0.00	0.00	0.00

NET TABLE						
Age	Division					
	Barisal	***Chittagong***	***Dhaka***	***Khulna***	***Rajshahi***	***Sylhet***
0	14.82	14.86	14.87	14.68	14.57	15.31
5	10.59	10.64	10.65	10.45	10.33	11.12
10	6.71	6.36	6.79	6.66	6.61	6.47
15	4.61	4.48	4.25	4.58	4.71	4.21
20	4.44	4.59	4.25	4.44	4.34	4.45
25	4.80	4.56	4.69	4.90	4.61	3.71
30	4.15	4.38	4.74	6.52	4.39	2.50
35	2.50	5.75	5.78	6.44	5.78	0.00
40	0.00	7.40	2.50	2.50	2.50	0.00
45	0.00	2.50	0.00	0.00	0.00	0.00

Table 6.4.3: Expected number of years remaining single of females based on gross and Net nuptiality tables

Age	Division											
	Barisal		Chittagong		Dhaka		Khulna		Rajshahi		Sylhet	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
0	15.67	14.82	15.72	14.86	15.73	14.87	15.53	14.68	15.41	14.57	16.20	15.31
5	10.67	10.59	10.72	10.64	10.73	10.65	10.53	10.45	10.41	10.33	11.20	11.12
10	6.73	6.71	6.38	6.36	6.81	6.79	6.68	6.66	6.64	6.61	6.49	6.47
15	4.63	4.61	4.50	4.48	4.27	4.25	4.60	4.58	4.73	4.71	4.22	4.21
20	4.46	4.44	4.62	4.59	4.27	4.25	4.47	4.44	4.36	4.34	4.47	4.45
25	4.83	4.80	4.59	4.56	4.72	4.69	4.94	4.90	4.64	4.61	3.72	3.71
30	4.17	4.15	4.42	4.38	4.77	4.74	6.59	6.52	4.42	4.39	2.50	2.50
35	2.50	2.50	5.83	5.75	5.83	5.78	6.50	6.44	5.83	5.78	0.00	0.00
40	0.00	0.00	7.50	7.40	2.50	2.50	2.50	2.50	2.50	2.50	0.00	0.00
45	0.00	0.00	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 6.4.4: Expected number of years remaining single of females based on gross nuptiality tables by age in different divisions-2004

Age	Division					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
11	8.33	8.48	8.43	7.78	7.26	7.41
12	7.35	7.61	7.48	6.90	6.43	6.41
13	6.72	6.86	6.64	6.16	5.80	5.47
14	6.14	6.27	5.96	5.59	5.26	4.69
15	5.71	5.82	5.44	5.17	4.91	4.13
16	5.39	5.49	5.07	4.88	4.66	3.76
17	5.17	5.25	4.80	4.67	4.50	3.54
18	5.01	5.08	4.62	4.53	4.40	3.41
19	4.90	4.96	4.50	4.44	4.32	3.32
20	4.81	4.88	4.41	4.36	4.26	3.24
21	4.74	4.80	4.34	4.29	4.20	3.16
22	4.65	4.73	4.27	4.23	3.79	3.11
23	4.60	4.66	4.21	4.16	4.00	3.04
24	4.54	4.60	4.14	4.09	3.93	2.96
25	4.47	4.53	4.07	4.01	3.85	2.86
26	4.40	4.46	3.99	3.94	3.76	2.69
27	4.32	4.39	3.91	3.85	3.64	2.45
28	4.23	4.30	3.81	3.72	3.46	2.19
29	4.12	4.19	3.66	3.53	3.23	1.96
30	3.96	4.04	3.46	3.29	2.97	1.71
31	3.73	3.83	3.21	3.03	2.72	1.44
32	3.49	3.59	2.95	2.78	2.47	1.11
33	3.23	3.33	2.71	2.54	2.21	0.76
34	3.00	3.08	2.46	2.29	1.93	0.50
35	2.68	2.84	2.21	2.01	1.60	
36	2.48	2.59	1.93	1.70	1.22	
37	2.21	2.33	1.61	1.33	0.99	
38	1.91	2.04	1.25	0.94	0.50	
39	1.56	1.70	0.88	0.49		
40	1.20	1.33	0.50			
41	0.83	0.93				
42	0.50	0.50				

6.5: Conclusion

The basic pattern of single life remaining at different ages obtained from the gross and net nuptiality tables are observed to be almost similar except those at early ages. The gross E(a) values are free from mortality effects compared to the net $E^{/}(a)$ values. This reflects itself in gross years being always higher than the net years.

A striking difference between the gross E(a) and the net $E^{/}(a)$ values at birth of females and absence of such difference at subsequent ages reflects the existence of high infant and early childhood mortality in Bangladesh.

The low E(a) values towards the end of marriageable ages of females suggest the low likelihood of continuation of single status in years ahead.
Thus the age patterns of marriage evident from the above discussion more or less confirm what has been reflected from the analysis using model nuptiality schedule and preliminary analysis with marital status distributions.

Analysis of marital status distributions age patterns of marriage by means of Coale's nuptiality model and dynamics of nuptiality by means of nuptiality tables all suggests that marriage pattern has been changing in Bangladesh. Of the parameters which control the age pattern of marriage the two viz. age of start of marriage and the pace of marriage has already shifted from some lower age to some higher age the reflection of which have already fallen on the marital status distributions- particularly on the distribution of single population. The concentration of single population has shifted from low ages to relatively high ages. However the age span of marriage and the ultimate age of marriage have not changed considerably thereby their effects do not have fallen much on the probability pattern and risk of first marriage. Nevertheless with the changing patterns of proportion single the singulate mean age at marriage (SMAM) has also change upwardly.

Thus the impression is that these have been a trend in upward change in the marriage pattern in Bangladesh. It is hard to say anything about the time point specifically from which such a trend has begun, but the evidence is that whatever change is noticed has probably started from 1980 and afterwards.

Chapter 7

Marriage Pattern and Some Issues Related to Adolescent Marriage

Chapter 7

Marriage Pattern and Some Issues Related to Adolescent Marriage

Introduction:

Adolescents, their parents and the community should be more aware of the negative consequences of early marriage, early pregnancy and large family size. In Bangladesh there has long been strong social pressure for the preservation of virginity until marriage. Which is one of the cultural characteristics of the great majority of people in the country irrespective of their religion. Sex out side marriage occurs only seldom, since pre-marital sex is looked down upon harshly in Bangladeshi society (Maloney and others, 1981). Marriage marks the beginning of the period of potential childbearing and therefore is considered the prime determinants of fertility in the face of the country of the relatively low contraceptive use rate. Among females almost 95 percent of marriage takes place before the end of their second decade of life. This densely populated country 0f 136.7 million people (SVRS, 2004) is also characterized by a high population growth rate (1.42 percent annually: BBS, 2004), high nuptiality and low age at marriage (N Islam, 1989). There has been a clear rising trend towards higher age at marriage over time (Islam and Islam, 1993).

Traditionally young age at marriage and early childbearing has been encouraged in Bangladesh. According to Aziz and Maloney, 1985) Bangladeshi Children, especially in rural areas, are socialized to assume their respective male and female roles well before puberty. This phenomenon has been observed more strictly among girls than boys, because of the impact of girls' behavior during adolescence both on their own reputation and that of their family. Before the end of childhood, a girl is expected to

begin learning proper decorum for females so that she will be able to a play the part well once puberty begins.

The most dangerous stage of life of a Bangladeshi girl is the period following the onset of menstruation when a number of changes occur in her body, making her physically mature. At this stage, several restrictions are imposed by society on her movements, dress, food and freedom to make her own choices. When a young girl grows up her parents keep her movements under surveillance. Such restrictions on the movement of unmarried girls and women sometimes serve to impede her education. She is advised at all cost to protect her virginity until marriage (Maloney and others, 1985).

In rural Bangladesh there are many social pressures to "marry off" pubescent girls (Aziz and Maloney, 1985). If the marriage of a pubescent girl is delayed her parents and sometimes the girl herself are made to feel guilty. Sometimes neighbors and even relatives criticize parents if they have not married off their daughters soon after the on set of menarche. In such a situation, parents of poor socio-economic standing may begin to think of their daughter as a burden. Other factors also have an impact on this situation. In the Bangladeshi cultural context, younger females are in higher demand than older females as potential brides and they require less dowry as well.

Despite such pressures there has been a growing concern in recent years that female children should not be married too young (Islam and others, 1795). Through a government order in 1976, the minimum legal age of marriage was fixed at 18 and 21 years for females and males respectively. However in the countryside, such requirements are hardly known and among those who do know about them, they have little impact on behavior (Islam and others, 1795).

Frequently, expert have expressed concern about the negative social, health and economic consequences of teenage marriage, adolescent childbearing, unintended pregnancies and in some societies, high levels of pre- and extra-marital conceptions(Bogue and others, 1977). Although such issues concerning adolescents are much publicized throughout the developed world (ESCAP, 1992), the concepts are relatively new in many developing countries such as Bangladesh.

This study examines the marriage pattern of adolescents and some socio-economic and behavioral characteristics of married adolescents in Bangladesh. It also analyses factors associated with adolescent marriage and draws out important policy implications from the findings of the study.

7.1: Age Patterns of Marriage

Marriage among females in Bangladesh is virtually universal. Very few women remain single throughout their lives as indicated in table 7.1.1 which shows the percentage distribution of single females in the population. The percentage who never married in the age group 45-49 years indicates the degree of permanent "Celibacy" that exits in the society. Thus, the table shows that celibacy in virtually non existent in Bangladesh. Most female have been married before age 20, with almost 100 percent getting married by the time they reach age 30. However table 7.1.1 also shows a remarkable change in the proportion of women single; it indicates a rising trend in age at marriage. The most remarkable rise in the proportion of never married females has occurred in the age groups 10-14 years and 15-19 years. The proportion of never married at ages 10-14 and 15-19 rose from 91.2 percent and 29.8 percent in 1975 to 88.6 percent and 52.1 percent respectively in 2004.

Table: 7.1.1 : Percentage distribution of females in Bangladesh who never married by current age in various surveys, 1975-2004.

Current age	1975 BFS	1983 CPS	1985 CPS	1989 BFS	1989 CPS	1991 CPS	1993-1994 BDHS	1996-1997 BDHS	1999-2000 BDHS	2004 BDHS
10-14	91.2	98.0	98.7	96.2	96.4	98.5	95.2	95.2	92.7	88.6
15-19	29.8	34.2	47.5	49.0	45.8	46.7	50.5	49.8	51.9	52.1
20-24	4.6	4.0	7.1	12.0	9.3	12.3	12.4	17.2	18.5	15.2
25-29	1.0	0.7	1.0	2.3	1.6	2.8	2.2	3.4	4.2	4.2
30-34	0.2	0.4	0.1	0.3	0.5	0.5	0.3	0.5	0.1	1.2
35-39	0.4	-	-	0.1	0.5	0.1	0.3	0.0	0.2	0.4
40-44	0.1	0.1	-	0.2	0.2	0.3	0.7	0.0	0.0	0.3
45-49	0.0	0.1	-	0.1	0.1	-	0.2	0.0	0.0	0.0

- = less than 0.1 percent. BFS = Bangladesh Fertility Survey. CPS = Contraceptive Prevalence Survey. BDHS = Bangladesh Demographic and Health Survey.

Data from the 2004 BDHS indicates that, among the 10205 sampled married females aged below 50 years; about 95 percent had been married when they were below age 20 and only 5 percent were married at 20 years of age or older (table 7.1.2). In Bangladesh the legal age of marriage is 18 years for the women; however a large proportion of marriages still take place. Thus it may be said that about 95 percent of marriages in Bangladesh are teenage or adolescent marriages. This leads to an exceptionally low mean age at first marriages, i.e.13.4 years.

It is evident from table 7.1.2 that most teenage marriages take place at the ages 13 to 15 Years; this age group accounts for 59 percent of the total marriages. More than 78 percent of teenage marriages occur at age 16 or younger. This pattern remains the same when the current age of married adolescents is controlled.

The highest mean age at marriage 14.62 was observed among women who were age 20-24 at the time of survey. The corresponding figures for the age groups 25-29, 30-34, 35-39, 40-44 and 45-49 are 13.58, 13.61, 13.82, 13.70 and 13.45 years

respectively. Among the married women who were currently aged below 20 (i.e. adolescents) at the time of the survey, 6.81 percent had been married by the age of 12.

Table 7.1.2 : Percentage distribution of ever married women in Bangladesh by age at first marriage and current age.

Current Age	Age at first marriage												Mean Age at first marriage
	10	11	12	13	14	15	16	17	18	19	20	20+	
10-14	0	0.71	20.71	52.85	25.71	0	0	0	0	0	0	0	13.04
15-19	0.19	0.95	8.89	22.77	20.60	20.08	13.69	7.54	4.35	0.89	0	0	14.48
20-24	0.22	0.63	4.45	22.07	15.07	14.44	12.80	10.17	7.49	5.13	3.76	3.72	14.62
25-29	0.34	0.84	5.86	28.92	15.35	13.41	9.64	6.56	6.16	2.63	2.83	7.40	13.58
30-34	0.39	1.00	4.76	28.60	16.82	12.73	9.87	7.34	5.72	2.86	2.57	7.29	13.61
35-39	0.88	1.08	6.41	30.74	16.41	13.58	8.64	5.81	5.54	4.18	1.75	4.932	13.82
40-44	1.01	2.02	8.52	33.75	14.00	12.65	9.62	5.82	4.38	2.53	1.60	4.05	13.70
45-49	0.83	1.30	10.69	40.74	15.90	10.79	7.25	3.44	2.79	1.58	1.30	3.34	13.45
10-49	0.48	1.04	6.81	28.85	16.42	13.95	10.36	6.96	5.44	2.97	2.14	4.52	13.94

7.2: Marital stability

Table 7.2.1 presents some summary measures of marriage dissolution and prevalence of remarriage of married adolescents and adults. Among the ever-married women who had been married below age 20 (during adolescence), 13.9 per cent of the first marriages were dissolved: 6.2 per cent as a result of husband's death, 6.0 per cent because of divorce and 1.7 per cent because of separation. The corresponding figure for the ever-married women who had been married at age 20 or older (during adulthood) was 8.5 per cent: 2.5 per cent as a result of husband's death, 4.0 per cent because of divorce and 2.1 per cent because of separation. This shows that the percentage of widowed and divorced women is higher among those who got married as

adolescents compared with those who married as adults. The percentage of women separated from their spouse is lower among those who got married as adolescents than those who married as adults. The results thus indicate that the overall marital dissolution rate is comparatively higher among those who married as adolescents than as adults.

Table 7.2.1 : Summary measures of some issues related to age at marriage

Item	Age at first marriage		
	Below 20	**20 and older**	**All**
Timing of marriage (%)			
Before menarche	30.5	26.2	30.3
After menarche	69.5	73.7	69.7
Same time			
Mean age at menarche (years)	14.51	-	-
Mean age at marriage (years)	14.48	22.39	15.0
First marriage status (%)			
Married	92.3	90.5	92.2
Widowed	4.4	2.5	4.3
Divorced	1.3	3.3	1.4
Separated	2.0	3.7	2.1
Remarriage after dissolution of first marriage (%)			
Yes	45.8	24.4	45.2
No	54.2	75.6	54.8
Average age (in years)at being:			
Widowed	27.1	33.3	29.2
Divorced	18.4	24.5	19.5

7.3: Socio-economic differentials of adolescent marriage

Table 7.3.1 provides the percentage distribution of married adolescents (i.e. age at marriage less than 20) by selected socio-economic characteristics along with the same type of data for married adults (i.e. age at marriage greater than or equal to 20) for comparison purposes.

The results indicate that, among the total number of married adolescents, 92.7 per cent have a rural background, with the remaining 7.3 per cent coming from an urban area. The corresponding figures for the adults are more or less of the same 96.9 per cent coming from a rural area and 3.1 per cent from an urban area. When the childhood types of residence are controlled, the percentage of married adolescents who had been born and brought up in a rural area is 86.6 per cent; the urban childhood type of residence contributes 13.4 per cent to adolescent marriages. The corresponding figures for married adults are 65.8 per cent and 34.2 per cent, respectively. It is evident, therefore, that teenage marriage is more prevalent in the rural rather than urban areas of Bangladesh.

As for region of residence, it may be observed that the frequency of adolescent marriage is highest in Rajshahi division (22.8 per cent) followed by Dhaka division (22.5 per cent) and Chittagong division (17.8 per cent), Khulna division (15.1 percent), Barisal division (12 percent), with the lowest incidence being in Sylhet division (9.8 per cent). The same pattern follows for age at marriage being 20 years and older. The corresponding figures for married adults are highest in Dhaka division (24.7 percent) and with the lowest incidence being in Barisal division (10.4 per cent).

Among the married adolescents, about 40 percent are illiterate or have no formal education; only 4 per cent have higher education. Among the married adults, about 18 per cent have had no formal education, whereas 46 per cent have had higher education.

This indicates that education may have a significant effect on teenage marriage, that is, education increases the age at marriage and consequently decreases the rate of adolescent marriage.

Almost 78.2 percent of the married adolescent's women not working outside the home; only 21.8 per cent have had some experience working for pay. Among the married adults, 74 per cent have not had working experience, with the remaining 36 per cent having had some experience working outside the home. This clearly indicates that women's work status has very little effect on age at marriage. This is mainly because employment opportunities are very limited in Bangladesh and very few women get the opportunity to engage themselves in any kind of income-generating work before marriage.

Table 7.3.1: Percentage distribution of married adolescents and adults in Bangladesh according to selected socio-economic characteristics

Background characteristics	Age at marriage	
	Below 20 (<20)	20 and older (≤ 20)
Place of residence		
Rural	92.7	96.9
Urban	7.3	3.1
Region of residence		
Barisal	12.0	10.4
Chittagong	17.8	23.9
Dhaka	22.5	24.7
Khulna	15.1	11.2
Rajshihi	22.8	13.7
Sylhet	9.8	16.0
Childhood residence		
Rural	86.6	65.8
Urban	13.4	34.2
Respondent's education		
No school/Madrasha (religious school)	39.6	18.0
primary	30.2	15.1
Secondary	26.0	21.4
Higher	4.2	45.6
Work status (outside the home)		
Yes	21.8	25.9
No	78.2	74.1

Husband's occupation		
Professional/administrative/sales/services	3.6	23.0
Unskilled labourer	33.1	26.1
Non-agricultural workers	8.0	6.4
businessman	22.8	28.8
Agricultural labourers	28.6	11.0
Unemployed	2.2	2.5
Others, or not stated	1.7	2.1
Husband's education		
No school/Madrasha (religious school)	37.1	14.5
Lower primary	26.0	13.5
Upper primary	26.0	20.7
Higher	10.9	51.3
Religion		
Muslim	89.7	75.3
Non-Muslim	10.3	24.7
Economic condition (dwelling construction)		
Poor	36.8	16.8
Middle	19.2	10.0
Upper	44.0	73.2
Total	100.0	100.0
N	10127	518

Among the married female adolescents, most of their husbands are illiterate, working as cultivators and day laborers. Only 11 per cent of the married adolescents reported that their husbands have had more than a primary-level education. The corresponding figure for the married adults is almost 51 per cent. About 74 per cent of the married adolescents' husbands were working as cultivators and day laborers as compared with to 48 per cent among the married adults. This indicates that adolescent marriage is prevalent mainly among illiterates. The data indicate that religion has a moderate effect on age at marriage. Hindus are less likely to be married below age 20 than their Muslim counterparts.

Since data on household income and other indicators of economic condition seem to be unreliable, the status of dwelling construction was used as a proxy variable for economic condition by categorizing the respondents into three classes. These are Poor (those whose dwelling is of ordinary construction), middle (those whose dwelling has walls or floors made with brick and roof made with metallic material) and upper (those whose dwelling is a modern concrete building). It has been observed that teenage marriages are most prevalent among the poor; 36.8 per cent of the respondents who had been married at ages below 20 were from the poor category described above. This corresponding Adult marriage is 16.8 percent. The corresponding figures for people assessed to be in the middle, upper classes were 19.2 per cent and 44 per cent, respectively, and adult marriages are 10 and 73 percent respectively. Thus, the prevalence of teenage marriage decreases in line with improvement in a person's economic condition. This indicates that the economic condition of adult marriage is good from teenage marriage.

7.4: Covariates of adolescent marriage

Logistic regression was use to identify the risk factor for adolescent marriage. In the model, age at first marriage was used as the dependent variable, which we dichotomized by assigning the value of 1 for age at marriage being less than 20 years and the value of 0 for age being 20 years and older; selected demographic and socio-economic characteristics were used as explanatory variables.

The explanatory variables considered in the model are as follows: place of residence, region of residence, childhood residence, respondent's education, husband's education, husband's occupation and work status of the respondent.

Table 7.4.1 gives the estimates of the logistic regression coefficients (**B**) corresponding to the independent variables, partial R and relative odds calculated for each category of the categorical variables. The category with relative odds of 1.00 represents the reference category for that variable. If the odds ratio is greater than unity, the probability of age at marriage occurring below 20 years is higher than that of age at marriage occurring at 20 years and older.

From the results of the logistic regression analysis, it appears that respondent's education is the most important factor that influences age at marriage being below 20 years, when the other variables are controlled. Differential analysis also substantiates this finding. The relative odds of no education, primary education and secondary education are found to be 3.2, 1.9 and 4.1 respectively. This shows that the likelihood of age at marriage being below 20 among women with no education, primary education and secondary education are 3.2, 1.9 and 4.1 times higher respectively, than that of more highly educated women. In part, this may be because the more highly educated women have a higher socio-economic status and live in urban areas. Thus, we conclude that age at marriage in Bangladesh could be raised by increasing the level of education for females.

Table 7.4.1 : Logistic regression of age at marriage below 20 years on selected socio-demographic factors, Bangladesh, 2004

Variables	Coefficient (B)	St. error of coefficient	Partial R	Odds ratio
Respondent's education	-	-	0.117	-
Higher	-	-	-	1.0
Secondary	3.182	.132		4.1
primary	3.089	.140		1.9
No education	2.585	.126		3.2
Husband's occupation	-	-	0.043	-
Did not work	-	-	-	1.0
Prof., Tech., Manag.	-1.927	.303		.14
Sales	-.221	.296		0.80
Agric-self employed	.271	.653		1.30
Agric-employee	.989	.315		2.68
Household & domestic	-.639	1.082		.58
Skilled manual	-.050	.297		.95
Unskilled manual	.792	.323		2.2
Region of residence				
Barisal	-	-	-	1.0
Chittagong	.632	.180		1.8
Dhaka	.199	.147		1.22
Khulna	.403	.146		1.49
Rajshahi	.794	.176		2.21
Sylhet	1.005	.166		2.73
Childhood residence				
(Urban)	-	-	-	1.0
Rural	.912	.091		2.4
Respondent's work status				
(Yes)	-	-	-	1.0
No	.224	.103		1.3

The analysis shows that husband's occupation is the second most significant factor influencing low age at marriage. The logistic coefficients indicate that the highest occurrence of low age at marriage was among Agric-employee followed by Did not work. The odds against low age at marriage among the wives of Agric-self employed, Agric-employee, and Unskilled manual are 1.30, 2.68 and 2.20 times respectively, higher than that of women whose husbands' Did not work. Prof. The odds against low age at marriage among the wives of Tech., Sales, Household & domestic, Skilled manual 0.14, 0.80, 0.58 and 0.95 times respectively, lower than that of women whose husbands' Did not work.

The analysis further shows that, with other covariates controlled, regional differentials in low age at marriage are also significant. The positive sign of each regression coefficient in table 7.4.1 suggests that, with reference to women who were living in Barisal division, the residents of Chittagong, Dhaka, Khulna, Rajshahi and Sylhet divisions were more likely to have been married at a young age. The logistic regression analysis implies that the occurrence of low age at marriage among women who lived in Chittagong, Dhaka, Khulna, Rajshahi and Sylhet divisions are 1.8, 1.22, 1.49, 2.21 and 2.73 times higher, respectively, than that of women who live in Barisal division. Thus, the occurrence of early marriage is the highest level of occurrence, followed by Sylhet division. This regional differentiation is observed because industrialization, urbanization and education did not evolve uniformly in all regions. For example, Chittagong division is the largest commercial and industrial area in the country. Dhaka division is relatively more urbanized and industrialized, having of a higher population density. Khulna division is comparatively less urbanized and industrialized, while Rajshahi division is rich in agricultural products and has more educational institutions than Khulna division. Demographic characteristics such as infant mortality and the sex-ratio of such deaths are also different for these regions (BFS, 1989).

As expected, the occurrence of low age at marriage is considerably higher in rural areas compared with urban ones. The analysis shows that rural women are almost 2.4 times more likely to be married earlier than urban women. There are some conceivable explanations for this difference. Females who migrated to urban areas were likely to have been married before they migrated. Most of them probably moved to the urban areas with their husbands who had employment there. The age at marriage for such women may be expected to be relatively low. In the case of married females who migrated to urban areas either with their parents or brothers before marriage, the age at marriage for them may also be expected to be lower, because their early socialization and their values related to family formation and family life may be somewhat different from females born and living in urban areas. Thus, migrant women might weigh down the actual age at marriage for urban areas (Ahmed, 1982).

The analysis indicates that the respondent's work status is the next most important determinant influencing low age at marriage. It has been observed that age at marriage below 20 years is likely to be 1.3 times higher among women who have never worked outside the home than those who had work experience. The primary cause for this situation may be the improvement in the socio-economic condition of the respondents as compared with others.

7.5: Conclusion

This study confirms that marriage is almost universal among females in Bangladesh there are very few women who remain single throughout their lives. As in various other developing agricultural societies, early female marriage is customary in Bangladesh. Most female have been married before age 20, with almost 100 percent getting married by the time they reach age 30. Data from the 2004 BDHS indicates that, among the 10205 sampled married females aged below 50 years; about 95 percent had been married when they were below age 20 and only 5 percent were married at 20 years of age or older. In Bangladesh the legal age of marriage is 18 years for the women; however a large proportion of marriages of still take place. Thus, it may be said that about 95 percent of marriages in Bangladesh are teenage or adolescent marriages. This situation gives rise to a very low age at marriage in Bangladesh. This leads to an exceptionally low Mean age at first marriages, i.e. 13.4 years. i.e. 18 years, established by the Government in 1976. Legislation on age of marriage, therefore, seems to be ineffective in delaying childhood marriage in Bangladesh. In a recent study have observed that a large majority of the rural community in Bangladesh are ignorant about the legal age for marriage and are even less concerned about the negative social and health consequences of adolescent marriage.

It has been observed that older cohorts of women in Bangladesh have a lower mean age at marriage than their younger counterparts, which confirms that there is a trend towards increasing age at marriage, but the rise is at a very slow pace. In these circumstances, as the existing legislation is not working well and the prevailing cultural and social norms are unlikely to foster a delay in marriage. Other avenues of possible policy intervention must be explored, such as the provision of increased opportunities for female education and employment outside the home for young women, both of which would be likely to delay marriage.

The results of this study indicate that the overall marital dissolution rate is comparatively higher among married adolescents than married adults. Thus, by raising the age at first marriage, greater marital stability could be achieved, provided no dramatic cultural transformation occurs in society.

Differential analysis shows that most of the married female adolescents have a rural background and have not had a formal education. Their husbands are also mostly illiterate and farmers by occupation. Logistic regression analysis identifies education, region of residence, place of residence (urban/rural), work status, husband's education and occupation as important covariates of teenage marriage.

The findings of our research hold implications for policy that could be useful in devising ways to solve the issues related to adolescent marriage and thus bring about a further reduction in fertility for Bangladesh. In order to enhance further the age at marriage and to reduce the rate of adolescent marriage, adolescents, their parents and the community should be made more aware of the negative health, social and economic consequences of early marriage, early pregnancy and large family size. This could be done through social mobilization, information, education and communication (IEC) campaigns, regular home visits by Family Welfare Visitors (FWVs) and Family Welfare Assistants (FWAs) (see article on pp. 15-26). In this context, the country's basic education system and its curricula should be redesigned to meet present day needs. Important would be education on family life, human sexuality, demographic, health, socio-cultural development, and the role of women in society, all of which are called for by the 1992 Bali Declaration on Population and Sustainable Development and the program of Action of the 1994 International Conference on Population and Development, both of which instruments Bangladesh is a signatory to. Education of girls as well as boys will not only ensure basic literacy for all, but also will provide a realistic basis for training women in income-generating activities and primary health

care. The Government should also take appropriate measures to create more employment opportunities for young women and make efforts to employ more young women in white-collar jobs, especially in the fields of health and education. As early adolescent marriage seems to contribute to a greater likelihood of marital dissolution, a voice for adolescent women in making decisions about marriage should at least be promoted, if it cannot be ensured.

Chapter 8
Marriage Implication on Fertility: Application of Bongaart's Model

Chapter 8

Marriage Implication on Fertility: Application of Bongaart's Model

Introduction:

The Study of determinants of fertility in a population is a complex process. While fertility behavior influences population growth, which has consequences towards pressures on resources, employment situations, health and other social fertilities, and other consequences, in turn, have great bearing on the socio-economic variables that affect fertility behavior. The issues are further complicated because the factors that are perceived to influence fertility are highly interrelated. The conceptualization of the determinants of fertility involves a multitude of factors that vary greatly in the intensity and direction of force they exert on fertility. The study of the relationship of fertility levels to specific economic, social and cultural variables in the low as well as high fertility countries has "led to the hypothesis that for the most part the same factors which are thought to account for the decline of fertility in the low fertility countries are, in a reverse sense also responsible for the continued high levels of fertility in the high fertility group" (Un, 1973). The determinants of fertility may be grouped into two: proximate determinants and Socio-economic determinants. Proximate determinants are those that have a direct bearing on fertility. Davis and Blake's (1956) framework of intermediate variables and later on Bongaart's model provides a systematic scheme for studying the proximate determinants of fertility which are analyzed in this chapter. Other determinants (Socio-economic determinants) can not directly influence fertility but must act on fertility through their effect on one or more of the proximate determinants: are already analyzed in previous chapter.

8.1: Proximate Determinants of Fertility

There has been a growing interest in quantifying the changes in fertility of Bangladesh in the recent past. Application of Bongaart's model for identification of changes in terms of proximate variables seems to be rewarding on many occasions. The model is necessarily multiplicative in nature and requires data, among others on proportion married, extent of use effectiveness of contraception, prevalence of induced abortion and lactation in fecundity. In this section, an attempt is mode to assess the above parameters of fertility change and their contribution thereof, with recourse to Bongaart's model for proximate determinants of fertility. The special interest of this section is to study the contribution of the index of proportion married on the decline of fertility. The model is discussed briefly below:

8.2: Bongaart's Model

In this model Bongaart's (1978) expressed TFR as the product of four indices measuring the fertility inhibiting effect of these four indices and the total fecundity (TF). The total fecundity rate is the average number of live births expected among women who during their entire reproductive period, remain married, do not use contraception, do not have any induced abortion and do not breastfeed their children (Bongaart's, 1982). Under Bongaart's framework four proximate determinants (indicated below) seem to be the most important and useful in general, to represent TFR. According to Bongaart's model the total fertility rate (TFR) can be written as,

$$\text{T FR} = C_m \times C_c \times C_a \times C_i \times TF$$

Where, C_m = The indices of proportion married

C_c = The indices of non contraception

C_a = The indices of induced abortion

C_i = The indices of lactational infecundability.

Each index indicates the extent to which fertility reduced from maximal level (i.e. TF= 15.3)[1] by the specific proximate determinants. The indices can only take the values between 0 and 1.If there is no fertility inhabiting effect of a given intermediate fertility variables, the corresponding index equal 1; if the fertility inhabiting is complete, the indices 0. The estimation procedure of the indices of intermediate fertility variables are as follows.

8.2.1: Index of Proportion Married (C_m)

The index of proportion married is estimated by the equation

$$C_m = \frac{\sum m(a).g(a)}{\sum g(a)}$$

Where, m(a)= The age specific proportion of female currently married

g(a)= The age specific marital fertility rate.

This equation can be written as

$$C_m = \frac{TFR}{TM} \quad \text{So that} \quad TFR = C_m \times TM$$

Where, TM= total marital fertility rate.

The index C_m gives the proportion by which TFR is smaller than TM, as the result of non-marriage, C_m =0, if no body is married and C_m=1, if all women are married during the entire reproductive period. Here $TM = \sum g(a)$= total marital fertility rate, equal to the number of births a woman would have at the end of the reproductive years if she were to bear children at prevailing age specific marital fertility rates and to remain married during the entire reproductive period (based on the fertility of married women age 15-49). If C_m=1, then TFR=TM and hence the difference between TM and TFR are accounted for by the effects of the marriage.

8.2.2 Index of Non - contraception (Cc)

To estimate the effect of contraception on marital fertility, the following equation expresses marital fertility as the interaction of contraceptive practice and natural fertility,

$$TM = C_C \times TNM \qquad (4)$$

Where, TNM is the total natural marital fertility rate which is equal to TM in the absence of contraception and induced abortion. Equation (4) simply states that TM is smaller than TNM by a proportion C_c, with the value of C_c depending on the prevalence of contraception, that is the extent of use effectiveness of contraception (induced abortion is assumed absent for the moment). When no contraception is practiced, $C_c = 1$ and when all non-sterile women in the reproductive years are protected by 100 percent effective contraception, $C_c = 0$ and then TM =0. If all couples who practice contraception are assumed non-sterile, the index C_c can be written as

$$C_c = 1 - s \times u \times e \qquad (5)$$

Where u is the average proportion of married women currently using contraception (average of age specific use rate), e is the average contraceptive effectiveness and value for s =1.08 obtained by Henry (1961) is likely to provide a good approximation for many countries (Bongaart's, 1978). To relate the index of contraception to the total fertility rate, equation (4) is substituted in equation (3) and becomes,

$$TFR = C_m \times C_c \times C_a \times TNM \qquad (6)$$

This equation gives the total fertility rate from the natural marital fertility rate by taking into account the fertility reducing impact of contraception and marriage measured by the index of C_c and C_m respectively .

8.2.3 Index of induced abortion (C_a):

Although reliable measurements of the prevalence of induced abortion is practiced in many societies, even in cases where good estimates are available, it has proven difficult to determine the abortion. Estimates of the number of births averted by induced abortion are largely based on numerical exercises using mathematical reproductive models. The most detailed studies of this topic have been mode by potter (1976), whose work has demonstrated that:

In the absence of contraception, an induced abortion averts about 0.4 births, while about 0.8 births are averted when moderately effective contraceptive is practiced. To generalize from this findings the births averted per induced abortion b, may be estimated with the following equation

$$b=0.4(1+u) \qquad (7)$$

A convenient overall measure of the incidence of induced abortion is provided by the total abortion rate (TA), equal to the average number of induced abortions per women at the end of the reproductive period, if induced abortion rates remain at prevailing levels through the reproductive period (excluding induced abortions to women who are not married). the reduction in fertility associated with a given level of total abortion rate is calculated as

$$A= b \times TA =0.4\,(1+u) \times TA$$

Where A equals the average number of births averted per women by the end of the reproductive years. The index of induced abortions is defined as the ratio of the observed total fertility rate (TFR), to the estimated total fertility rate without induced abortion, TFR+A.

$$\text{i.e. } C_a = \frac{TFR}{TFR + A} \qquad \text{.....(8)}$$

The index C_a equals the proportion by which fertility is reduced as the consequence of the practice of induced abortion (Note that C_a declines with

increasingly incidence of induced abortion). Modifying equation (6) accordingly, the relationship between TFR and TNM becomes

$$\text{TFR}= C_m \times C_c \times C_a \times TNM \qquad (9)$$

8.2.4 Index of lactational infecundability (C_i)

In modern western population lactation is generally short and many women do not lactate at all. In traditional societies in Africa, Latin America and Asia, lactation is usually long and lasts until the next pregnancy occurs. Lactation has an inhabiting effect on and thus increases the birth interval and reduces natural fertility (Potter, 1965). A typical average birth interval with lactation can be estimated to be 18.5 months (2). The ration of the average birth intervals without and with lactation is given by

$$C_i = \frac{20}{18.5 + i}$$

Where, i is the average duration (in months) of infecundability from birth to the first post-partum ovulation (menses).

An indirect estimate of i as developed by Bongaart's is given by

$$i=1.753 \exp (0.1396B-0.001872B^2)$$

Where, B is the duration of breast feeding. The relationship between lactation and the total natural marital fertility rate becomes $TNM = C_i \times TF$

Where TF is the total fecundity rate equal to the natural marital fertility rate in the absence of lactation. Then the model is represented including lactational infecundability as

$$\text{TFR}= C_m \times C_c \times C_a \times C_i \times TF$$

8.3. The Estimated Proximate Variables and Implications

On the basis of Bongaart's model given in equation 1, the estimated values of the measures and indices for different time points are presented in Table 8.3.1

Table 8.3.1: Estimate of different reproductive measures and indices of fertility.

Measures/ Indices	1975	1979	1981	1983	1985	1989	1991	2004
TFR	6.329	5.381	5.042	5.085	4.502	4.895	4.35	3.00
TM	7.368	6.331	7.206	6.134	5.568	6.236	6.40	4.16
TNM	7.906	7.121	6.017	7.462	7.284	8.685	10.09	8.01
TF	15.087	13.590	13.751	14.241	13.641	13.199	15.30	15.60
C_m	0.859	0.850	0.838	0.829	0.810	0.785	0.680	0.725
C_c	0.932	0.889	0.835	0.822	0.763	0.718	0.634	0.520
C_a	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
C_i	0.524	0.524	0.524	0.524	0.534	0.658	0.660	0.510

Source: BFS: 1975, 1989; BCPS: 1979, 1981, 1983, 1985, 1991; BDHS: 2004

The compliment of the indices represents the proportionate reduction in fertility attributed to the fertility determinant. The lower the estimated value of the indices the greater the fertility reducing effect. Thus the value of C_m in 1975 is 0.859, indicating that the proportion of women married reduces fertility by 14.1% , while the value of C_m in 1989 is 0.785, in 1991 is 0.680 and in 2004 is 0.725 indicating that the proportion of women married reduces fertility by 21.5% , 32% and 27.5% and C_c in 2004 is 0.520 indicating that the index of contraception reduces fertility by 48% and the index C_i indicates that the average estimated effect is very strong for the reduction in fertility by 49%. The reducing impact of contraception on fertility varies from one time point to another because of increases in use and effectiveness of the methods. In recent years, the use of contraception increased and as a result the average fertility reducing impact of contraception also increased. It is clear from table 8.3.1 that there is

a downward trend in C_m and C_c which indicates that in reducing fertility, the effect of proportion married and contraception are increasing.

Table 8.3.2: Estimate of different reproductive measures and indices of fertility in Different divisions in Bangladesh -2004

Measures/ Indices	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
TFR	2.900	3.700	2.900	2.800	2.600	4.800
TM	3.844	5.736	3.971	3.697	3.564	7.271
TNM	7.927	10.385	9.099	9.392	10.158	10.420
TF	16.293	18.188	20.053	21.405	23.068	21.599
C_m	0.752	0.685	0.691	0.696	0.676	0.603
C_c	0.485	0.552	0.436	0.394	0.351	0.698
C_a	1.000	1.000	1.000	1.000	1.000	1.000
C_i	0.488	0.538	0.480	0.477	0.475	0.528

Source: BDHS: 2004

The Total fertility rate has been the highest at Sylhet and lowest at Rajshahi division. the value of C_m at Barisal is 0.752, indicating that the proportion of women married reduces fertility by 25% , while the value of C_m at Chittagong is 0.685, Dhaka is 0.691, Khulna is 0.696, Rajshahi is 0.676 and Sylhet is 0.603 indicating that the proportion of women married reduces fertility by 32% , 31% , 31%, 33% and 40%. and C_c at Barisal is 0.485, Chittagong is 0.552, Dhaka is 0.436, Khulna is 0.394, Rajshahi is 0.351 and Sylhet is 0.698, indicating that the index of contraception reduces fertility by 52%, 57%, 61%, 65% and 30%. Thus the proportion of women married reduces fertility is highest in Sylhet division and lowest in Chittagong and Dhaka division.

8.4: Decomposition of the changes in Fertility and Contribution of Proximate Variables

Bongaart's model given by the equation (1) can easily be turned to a decomposition equation that allows the quantification of the contribution made by each of the four intermediate fertility variables to an observed change in fertility between two time points 0 and t. The basic equation is as follows:

$$\frac{TFR\ (t)}{TFR\ (0)} = \frac{C_m(t)}{C_m(0)} \times \frac{C_c(t)}{C_c(0)} \times \frac{C_a(t)}{C_a(0)} \times \frac{C_i(t)}{C_i(0)} \times \frac{TF\ (t)}{TF\ (0)}$$

Here, the two points of time are 1989 and 2004 and hence the above equations becomes

$$\frac{TFR\ (04)}{TFR\ (89)} = \frac{C_m(04)}{C_m(89)} \times \frac{C_c(04)}{C_c(89)} \times \frac{C_a(04)}{C_a(89)} \times \frac{C_i(04)}{C_i(89)} \times \frac{TF\ (04)}{TF\ (89)} \qquad (11)$$

Defining again,

$P_f = \frac{TFR(04)}{TFR(89)} - 1$ = Proportional change in TFR between 1989 and 2004

$P_m = \frac{C_m(04)}{C_m(89)} - 1$ = Proportional change in TFR due to a change in the index of marriage.

$P_c = \frac{C_c(04)}{C_c(89)} - 1$ = Proportional change in TFR due to a change in the index of contraception.

$P_c = \frac{C_a(04)}{C_a(89)} - 1$ = Proportional change in TFR due to a change in the index of induced abortion.

$P_i = \frac{C_i(04)}{C_i(89)} - 1$ = Proportional change in TFR due to a change in the index of lactational infecundability.

$P_r = \frac{TF(04)}{TF(89)} - 1$ = Proportional change in TFR due to a change in the remaining proximate determinants – natural fecundability, spontaneous

intrauterine mortality and permanent sterility.

Equation (11) can now be regarded as

$$P_f = P_m + P_c + P_a + P_i + P_r + I \qquad (12)$$

Here I represent an interaction factor. This equation simply states that a given proportional change in the TFR between 1989 and 2004 equal to the sum of the proportional fertility change due to the different intermediate fertility variables plus an interaction term. It is simply estimated by subtracting the sum of P_m , P_c, P_a, P_i and P_r from P_f . Equation (12) can now easily be turned into a decomposition equation for the absolute decline in TFR (2004) viz. TFR (2004) – TFR (1989) multiplying TFR (1989). The decomposition procedure for the TFR can easily be extended also to allow the decomposition of a change in the crude birth rate (CBR). The CBR is linked to its proximate determinants by the following equation

$$CBR = S \times C_m \times C_c \times C_a \times C_i \times TF \qquad (13)$$

Where S is an age-sex composition term calculated by $S = \frac{CBR}{TFR} - 1$

Defining again,

$P_b = \frac{CBR(04)}{CBR(89)} - 1$ = Proportional change in the CBR between 1989 and 2004

$P_s = \frac{S(04)}{S(89)} - 1$ = Proportional change in the CBR between due to a change in the age – sex composition.

Then it becomes,

$$P_b = P_s + P_m + P_c + P_a + P_i + P_r + I$$

Where, P_m , P_c, P_a, P_i and P_r are the values obtained earlier.

Table 8.4.1: Decomposition of changes in TFR by different measures and indices between 1975, 1989, 1991 and 2004.

Changing indices	Percentage of change			Distribution of Percentage change			Absolute change of TFR		
	1975-1989	1975-1991	1989-2004	1975-1989	1975-1991	1989-2004	1975-1989	1975-1991	1989-2004
C_m	.-8.615	-20.838	-7.643	-38.022	-66.641	-19.743	-0.546	-1.319	-0.374
C_c	-22.961	-31.974	-27.577	-101.337	-102.256	-71.234	-1.453	-2.024	-1.350
C_a	0	0	0	0	0	0	0	0	0
C_i	25.573	25.954	-22.492	112.865	83.002	-58.099	1.618	1.643	-1.101
TF	-12.514	1.412	18.191	-55.230	4.516	46.989	-0.792	0.089	0.890
I	-4.141	-5.823	0.809	-18.276	-18.622	2.090	-0.262	-0.369	0.040
TFR	-22.658	-31.269	-38.713	100.000	100.000	100.000	-1.434	-1.979	-1.895

Table 8.4.2 : Decomposition of the changes in CBR by different measures and indices between 1975 , 1989, 1991 and 2004.

Changing indices	Percentage of change			Distribution of Percentage change			Absolute change of TFR		
	1975-1989	1975-91	1989-2004	1975-89	1975-91	1989-2004	1975-1989	1975-1991	1989-2004
P_s	-18.597	-15.648	-13.81	-50.204	-47.757	-26.592	-8.740	-7.355	-5.596
C_m	-8.615	-20.838	-7.643	-23.257	-63.596	-14.552	-4.049	-9.794	-3.097
C_c	-22.961	-31.974	-27.577	-61.985	-97.583	-52.506	-10.792	-15.028	-11.174
C_a	0	0	0	0	0	0	0	0	0
C_i	25.573	25.954	-22.492	69.036	79.210	-42.824	12.019	12.198	-9.114
TF	-12.514	1.412	18.191	-33.782	4.309	34.635	-5.882	0.663	7.37
I	0.071	8.328	0.809	0.192	25.417	1.540	0.033	3.914	0.328
P_b	-37.043	-32.766	-52.522	100.000	100.000	100.000	-17.410	-15.400	-21.282

In table 8.4.1 the decomposition of the changes of all indices in TFR between 1975 by 1989 and 1975 by 1991 and 1989 by 2004 are presented. It indicates that TFR has declined by about 22.7% from 6.329 in 1975 to 4.895 in 1989 and 31.3% from 6.329 in 1975 to 4.35 in 1991 and 38.7% from 4.895 in 1989 to 3.00 in 2004. It also indicates that the decomposition of this decline in TFR between 1975 to 1989 has been nearly 8.6% decline due to decreases in the proportion of women married, about 23.0% decline due to an increase in contraceptive use an effectiveness but approximately 25.6 % increases due to decreases of the duration of lactational infecundability. The remaining proximate determinants together contribute about 12.5% decreases and by interaction factor decrease about 4.5% in TFR. Again the corresponding values are about 20.8%, 32.0% and 26.0% between 1975 to 1991 and the corresponding values are about 7.6%, 27.5% and 26.0% between 1989 to 2004. The remaining proximate determinants together contribute nearly 1.4% increase and 5.8% decrease by the interaction factors in 1975 to 1989 and the remaining proximate determinants together contribute nearly 18.2% increase and 0.80% increase by the interaction factors in 1989 to 2004. The decomposition results are standardized to add to 100%. The table also indicates that during 1975 to 1989 it has declined by 1.434 births per woman of which .545 births declined by proportion married, 1.453 births declined due to contraception, 1.618 births increases due to lactational infecundablity , 0.792 births declined by other proximate determinants and the interaction factor has declined 0.262 births. Again, during 1975 to 1991 it has declined by 1.979 births per women of which 1.319 births has declined by proportion married, 2.024 births declined due to contraception, 1.643 births increased by lactational infecundability , 0.089 births increased by other proximate determinants and 0.369 births declined by the interaction factor and during 1989 to 2004 it has declined by 1.895 births per women of which 0.374 births has declined by proportion married, 1.35 births declined due to contraception, 1.101 births decreased by lactational infecundability , 0.890 births increased by other proximate

determinants and 0.04 births increased by the interaction factor. It is clear from the table 8.4.1 that a decline in fertility by the proportion married made significant contributions to the overall fertility reduction and that the contraceptive use has the highest impact on reducing fertility. It is clear from Table-8.4.2 that the change in CBR by different intermediate fertility variables and age sex composition has also contributed to the change in CBR. It is indicated that in decreasing of CBR by the proportion of women married has about 23% of total decrease during 1975 to 1989 and about 64% during 1975 to 1991, about 15% during 1989 to 2004, about 62% by use of contraception during the period 1975 to 1989, about 98% during 1975 to 1991 and about 53% during 1989 to 2004. Also it has decreased about 4 births by proportions of women married during 1975 to 1989, about 10 births during 1975 to 1989 and about 3 births during 1989 to 2004. Also about 11 births by use of contraception out of 17 births during the period of 1975 to 1989 and about 15 births out of 16 during 1975 to 1991 and about 11 births out of 21 during 1989 to 2004.

8.5: The inhabiting Effect of marriage on Fertility

The approximate effect of marriage pattern on fertility can be measured by adopting Bongaart's Model (Bongaart's 1982). The model assume that women who are not currently married would experience the same fertility as their married counterparts, if they themselves were married as shown in table 8.5.1 which table includes the relevant data for 1975, 1989, 1991, 2004 and 2007. Column 1 gives the all women age specific fertility rates, averaged for the five year period prior to the survey. By multiplying these rates by the reciprocal of the proportions ever married at the time of the survey, an estimate is formed of hypothetical fertility in the absence of any postponement of marriage beyond age 15 which is shown in column 3. Column 4 shows the proportion who are currently married among those who are ever married. The reciprocal of these proportions multiplied by the rates in column 3 gives an estimate of hypothetical fertility in the absence of any postponement of marriage beyond age 15 and in the absence of divorce and widowed shown in column 5. In column 6, the reduction in fertility by marriage has shown.

Table-8.5.1 : Estimation of the Effect of Marriage Pattern on Fertility

Age	ASFR	Proportion ever married	ASEMFR	Prop. currently married among ever married	ASMER	
	1	2	3=1/2	4	5=3/4	6=1-1/5
1975						
15-19	0.1090	0.7020	0.1553	0.9231	0.1682	0.3520
20-24	0.2886	0.9540	0.3025	0.9466	0.3196	0.0970
25-29	0.2911	0.9900	0.2940	0.9303	0.3160	0.0788
30-34	0.2502	0.9980	0.2507	0.9097	0.2756	0.0922
35-39	0.1848	0.9960	0.1855	0.8468	0.2191	0.1565
40-45	0.1074	0.9980	0.1076	0.7888	0.1364	0.2126
45-49	0.0347	1.0000	0.0347	0.7105	0.0488	0.2889
$\sum_{15}^{49}$	6.3290		6.6515 0.3225		7.4185 0.7670	0.1469
1989						
15-19	0.1422	0.5095	0.2791	0.9439	0.2957	0.5191
20-24	0.2599	0.8797	0.2954	0.9415	0.3138	0.1718
25-29	0.2254	0.9771	0.2307	0.9362	0.2464	0.0852
30-34	0.1642	0.9968	0.1647	0.9319	0.1267	0.0707
35-39	0.1141	0.9985	0.1143	0.9002	0.1270	0.1016
40-45	0.0556	0.9982	0.0556	0.8428	0.0660	0.1591
45-49	0.0176	0.9989	0.0176	0.8070	0.0218	0.1927
$\sum_{15}^{49}$	4.8945		5.7870 0.8925		6.2370 0.4500	0.2152
1991						
15-19	0.1910	0.5330	0.3583	0.9586	0.3738	0.4890
20-24	0.2350	0.8770	0.2680	0.9422	0.2844	0.1737
25-29	0.2030	0.9720	0.2088	0.9489	0.2200	0.0773
30-34	0.1500	0.9950	0.1508	0.9343	0.1614	0.0706
35-39	0.0890	0.9990	0.0891	0.0948	0.0985	0.0965
40-45	0.0500	0.9970	0.0502	0.8581	0.0585	0.1453
45-49	0.0100	1.0000	0.0100	0.7746	0.0129	0.2248
$\sum_{15}^{49}$	4.6400		5.6760 1.0360		6.0475 0.3715	0.2327
2004						
10-14	0.0060	0.1071	0.0560	0.971429	0.0577	0.8960
15-19	0.1170	0.4733	0.2472	0.958413	0.2579	0.5464
20-24	0.1980	0.8482	0.2334	0.959128	0.2434	0.1865
25-29	0.1380	0.9581	0.1440	0.958748	0.1502	0.0815
30-34	0.0870	0.9878	0.0881	0.938306	0.0938	0.0731
35-39	0.0410	0.9966	0.0411	0.898649	0.0457	0.1044
40-45	0.0126	0.9966	0.0126	0.848101	0.0149	0.1547
45-49	0.0010	1.0000	0.0010	0.809302	0.0012	0.1907
$\sum_{10}^{49}$	3.00		4.1170 1.1170		4.3251 0.2081	0.3064
2007						
15-19	0.1017	0.4720	0.2155	0.9644	0.2234	0.5448
20-24	0.1715	0.8569	0.2001	0.9577	0.2090	0.1794
25-29	0.1352	0.9569	0.1413	0.9623	0.1468	0.0792
30-34	0.0910	0.9940	0.0915	0.9320	0.0982	0.0736
35-39	0.0343	0.9943	0.0345	0.9085	0.0380	0.0967
40-45	0.0115	0.9983	0.0115	0.8547	0.0135	0.1468
45-49	0.0019	0.9922	0.0019	0.8111	0.0024	0.1952
$\sum_{15}^{49}$	2.70		3.4819 0.7819		3.6564 0.1745	0.2616

In absolute term postponement of marriage in 1975, 1989, 1991, 2004 and 2007 is estimated to reduce fertility by 0.323, 0.893, 1.036, 1.117 and 0.78 births respectively. Again widowed and divorce by a further reduce fertility by 0.767, 0.450, 0.372, 0.208 and 0.175 births respectively in these years. The table also shows the effect of postponement of marriage on fertility by age. At these ages 15-19 the reduction of fertility by the postponement of marriage is being 0.352 births in 1975 , 0.519 births in 1989 , 0.489 births in 1991, 0.546 births in 2004 and 0.545 births in 2007. After the age 15-19 the rate has been decreasing up to the age 25-29 in 1975 and up to the age 30-34 in 1989, 1991, 2004 and 2007.After that the rates are found to gradually increase up to the marriageable ages. The effect of postponement of marriage on fertility in 2004 is higher than any other point of time. This implies that the age at marriage is higher and also the fertility is lower in 2004 than in the other study period. Again widowed and divorce have a major contribution on fertility reduction. This indicates that the contribution has been decreasing. This indicates that the amount of divorced and widowed has decreased in recent time. The table also indicates the reduction in fertility due to the effect of marriage pattern by 14.69%, 21.52%, 23.27%, 30.64% and 26.16% respectively in the years of 1975, 1989, 1991, 2004 and 2007. Thus the fertility reducing effect of marriage pattern has increased over time. Whatever be the causes of changing marriage patterns, their net effect has not been large. The table also shows that a downward effect on fertility at young ages caused by rising age at marriage has been balanced by an upwards effect at older ages caused by decreasing widowhood and divorce.

8.6: Conclusion

Application of Bongaart's Model clearly indicates that there is a downward trend in all the proximate. Between 1975 and 1989 the amount of decrement of fertility is about 23% , about 31% between 1975-1991 and about 38% between 1989-2004. This is primarily caused by in increased in the used of effectiveness of contraception.

Again the analysis of inhabiting effect of marriage on fertility it is observed that the effect of marriage on fertility is higher in recent times. The divorced and widowed has also significant contribution on fertility deduction. It is clear that whatever cause of changing marriage patterns, their net effect has been large. A downward effect on fertility at young age caused by rising age at marriage has been balanced by an upward effect at ordered ages caused decreasing widowed and divorced.

Chapter 9

Estimation of Contraceptive Prevalence Level Required to Achieve Target Fertility in Bangladesh.

Chapter 9

Estimation of Contraceptive Prevalence Level Required to Achieve Target Fertility in Bangladesh.

Introduction

Like so many developing countries Bangladesh emphahzes the importance of reducing fertility as part of her overall strategy to bring down the growth rate of population. Family planning programs at work in the country in order to achieve demographic goals through the reduction of fertility. The demographic goals of the country are usually formulated by the economic planners synchronized with economic developmental goals. The planners usually set target numbers of accepters of different family planning methods to be recruited in each case.

Unfortunately, there has always been a gap between the target fertility and its achievement at the terminal year of the target period in the country all its plan periods. The country has never gained either the desired level of fertility or the contraceptive prevalence rate (CPR) annual at achieving the fertility. For example, during the plan period 1980-85 the target fertility has been 4.1 children per woman (total fertility rate: TFR) and the desired level of CPR has been 38 percent; the achievement have been a TFR of 5.55 and CPR of 25 percent. Similarly is the case with TFR and CPR during the plan period of 1985-90. Such gaps have raised questions about the get estimation equation used to project CPR in order to achieve TFR at a desired level at the end of a plan period.

This chapter aims at, (i) ceteris peribus estimating the TFR for a given level of CPR and (ii) estimating the CPR is achieve the target fertility level (TFR) taking account the trends in a few proximate determinants of fertility.

9.1: Models:

Estimation of TFR for a given level of CPR is made by fitting a regression equation of the form

$$TFR = \alpha + \beta CPR + \varepsilon$$

Where TFR= Total fertility rate, CPR= Contraceptive prevalence rate and ε = the error term. Here α and β are two parameters. Estimates of α and β are made by the method of least squares using longitudinal data of TFR and CPR from 1979 to 2004. The practice of fitting regression equation to the data of TFR and CPR of which TFR is a dependent variable is not a new one. Bongaart's (1984) examining the strength of relationship between TFR and chapter by fitting a regression line of TFR on CPR for 83 countries around 1980. In this paper fitting an accomplished using longitudinal data instead of cross section data as used by Bongaart's.

Projection of CPR for the attainment of a specified level of fertility is made by means of Bongaart's target setting model (Bongaart's, 1984). The model is derived from Bongaart's original multiplication model relating TFR with a few proximate determinants of fertility (Bongaart's, 1978).

$$\text{T FR} = C_m \times C_c \times C_a \times C_i \times TF$$

Where C_m, C_c, C_a and C_i are the indices of proportion married, Noncontraception, induced abortion and lactational infecundability respectively and TF, the total fecundity. Each of the four indices various from 0 to 1, the model can be applied for target setting for the target year t with respect to the base year 0. That is

$$\frac{TFR\ (t)}{TFR\ (0)} = \frac{C_m(t) \times C_c(t) \times C_a(t) \times C_i(t) \times TF\ (t)}{C_m(0) \times C_c(0) \times C_a(0) \times C_i(0) \times TF\ (0)}$$

The above equation indicates that the reduction in fertility from TFR (0) to the target level depend a trend in all of the indices of proximate variables. The base year may be the present or recent year. Under the assumptions of no change in total fecundity,

absence or negligible effect of induced abortion and trends in the indices of C_m and C_i compensate each other the equation reduces to the form

$$\frac{TFR\ (t)}{TFR\ (0)} = \frac{C_c(t)}{C_c(0)}$$

$$\text{or,}\quad 1 - \frac{TFR\ (t)}{TFR\ (0)} = 1 - \frac{C_c(t)}{C_c(0)} = -\frac{C_c(t) - C_c(0)}{C_c(0)}$$

The above expression indicates that the proportional reduction in fertility (PRF) between 0 and t depends on the proportionate increase in CPR from 0 to t (on the assumption that with pace of development CPR increases). Now, since

$C_c = 1 - 1.08u \times e$ Where, u = contraceptive prevalence rate, e = effectiveness of contraception,

$$\text{Then}\quad 1 - \frac{TFR\ (t)}{TFR\ (0)} = 1 - \frac{C_c(t)}{C_c(0)} = 1 - \frac{1 - 1.08 \times u(t) \times e(t)}{1 - 1.08 \times u(0) \times e(0)}$$

$$= \text{PRF}$$

Since u(t) is the CPR among married women of reproductive age at the beginning of target year, t in which we are interested, we have

$$U(t) = \frac{1 - (1 - PRF) \times (1 - 1.08 \times u(0) \times e(0))}{1.08 \times e(t)}$$

On the assumption of equal effectiveness of contraception between the base and target years, we have the

$$U(t) = \frac{1 - (1 - PRF) \times (1 - 1.08 \times u(0))}{1.08}$$

Thus the impact data required for the estimation of u(t), the CPR at the target year t are

$$\text{PRF} = \frac{TFR(0) - TFR(t)}{TFR(0)}$$

And u(0), the CPR at the base year.

The trends at fertility and contraceptive prevalence are estimated by fitting the regression line and incorporating the target setting model for the population of

Bangladesh. The study was the data available from such servey as Bangladesh contraceptive prevalence surveys of 1979, 1981, 1983, and 1985 and Bangladesh Fertility surveys of 1975 and 1989 and BDHS 1999-2000 and 2004. These surveys cover the nationwide representative sample and the data provided by these surveys are taken to be nationality good quality.

9.2 Analysis of Results

(i) The actual contraceptive prevalence rate (CPR) and the total fertility rates (TFR) for the population of Bangladesh from 1979 to 2004 given biannually are shown in table 9.2.1. The regression of the TFR on CPR in this longitudinal data yielded a regression line of $\hat{TFR} = 7.823 - 0.0923CPR$

The degree of correlation seem to the high (r=0.92) and significant (at 1% level significant). Thus the temporal variation in fertility explained by CPR alone is nearly 85% remaining 15% of the total variation unexplained by CPR may be attributed to the effect of other proximate variables. Deviations from the regression line (execs fertility) and due partly to measurement errors and partly to variations in the other proximate determinants of which marriage is an important one. According to the regression, the TFR equals on average 7.82 births per women in the absences of contraception (CPR=0), and fertility declines at a rate of approximately 1.0 births per women for each 9% increment in the contraceptive prevalence rate. Under such relationship between TFR and CPR the replacement fertility requires a prevalence level of fertility can be achieved. The regression equation of TFR on CPR suggest that a TFR of 2.80 births per women can be achieved by the year 2009 if the level of CPR is raised to 60% and if the level of contraception is raised to 73% it is possible to achieve a target fertility level of 2.0 per women.

(ii) Estimation of contraceptive prevalence rates required to reach different levels of target fertility within the stipulated time period is shown in table 9.2.2. These rates are computed recursing Bongaart's target setting model taking 2004 as the base year when TFR is observed to the 3.00 and contraceptive prevalence and effectiveness are 0.58 and 0.86 respectively (BDHS, 2004).The prevalence rates are computed at the effectiveness level of 0.87 and 0.88 such effectiveness of contraception has already reached 3.00 in the year 2004. The data in the table indicates that if a TFR of 2.75 is to be achieve in 2010, CPR with 0.87 contraception effectiveness has to be raised to around 61% and with effectiveness of .88, 60% and that a TFR of 2.5 can be achieved in 2015 or at any time before or after 2015 by raising the CPR level of approximately 66 and 65 percent with 0.87 and 0.88 effectiveness of contraception respectively. The model eternals of contraceptive prevalence rate of nearly 74% with an effectiveness of 0.87 and 73 percent with 0.88 effectiveness to achieve a target fertility around 2.0 with year 2020.

Contrarily if the observed CPR is true then the model estimate of TFR should be 2.47 births per women instead of 3.00 births a reduction of 0.53 births per women. For the observed CPR of 35.0, 41.0, 47.0, 54.0 and 58.0 percents corresponding to the years 1991, 1994, 1997, 2000 and 2004 the estimated CPR are 35.07, 40.98 and 47.05,53.97 and 58 percents respectively for the TFR of 3.4, 3.4, 3.3, 3.3 and 3.00. Conversely, taking the observed CPR to the true the model estimates TFR of 4.59, 4.04, 3.48, 2.84 and 2.47 births per women respectively corresponding to the years of 1991, 1994, 1997, 2000 and 2004. If we take 2004 to be the base year and if we desire to achieve the replacement level of fertility by the year 2020 then according to the model estimate we have to attain a contraceptive level of around 74 percent with effectiveness of 0.87 and 73 percent with effectiveness of 0.88 an increase of nearly 15.7 and 14.86 percents respectively relative to the base year which is perhaps a far reaching target.

Table 9.2.1: Observed TFR and CPR from 1979 to 2004 and Express Fertility (TFR) Bangladesh.

Year	TFR	CPR	$\hat{TFR}$	Effectiveness	Excess TFR
1979	6.56	12.7	6.65	0.812	-0.09
1981	7.03	18.6	6.11	0.786	0.92
1983	6.08	19.1	6.06	0.839	0.02
1985	5.55	25.3	5.49	0.850	0.06
1987	5.30	29.6	5.09	0.845	0.21
1989	4.90	30.8	4.98	0.849	-0.08
1991	3.4	35.0	4.59	0.852	-1.19
1994	3.4	41.0	4.04	0.858	-0.64
1997	3.3	47.0	3.48	0.859	-0.18
2000	3.3	54.0	2.84	0.859	0.46
2004	3.00	58.0	2.47	0.860	0.53

$$\text{Excess TFR} = \text{TFR} - \hat{\text{TFR}}$$

$$\therefore \quad \hat{TFR} = 7.823 - 0.0923CPR$$

Table: 9.2.2 Estimated the Contraceptive Prevalence Level required to achieve Target Fertility with given level of Contraceptive Effectiveness relative to base year 2004 (In 2004 TFR=3.00, CPR= 0.58 & e= 0.86)

Target TFR	PRF	Required CPR to achieve TFR with contraceptive effectiveness		3.00 reduction in TFR from 2004	0.580 Increase in CPR (in%) from 2004	
		e(t)=0.87	e(t)=0.88		e(t)=0.87	e(t)=0.88
2.90	0.0333	0.589698	0.582997	0.10	0.97	0.30
2.80	0.0667	0.606063	0.599176	0.20	2.61	1.92
2.75	0.0833	0.614246	0.607266	0.25	3.42	2.73
2.70	0.1000	0.622428	0.615355	0.30	4.24	3.54
2.60	0.1333	0.638793	0.631534	0.40	5.88	5.15
2.50	0.1667	0.655158	0.647713	0.50	7.52	6.77
2.40	0.2000	0.671523	0.663892	0.60	9.15	8.39
2.30	0.2333	0.687888	0.680071	0.70	10.79	10.01
2.25	0.2500	0.696071	0.688161	0.75	11.61	10.82
2.20	0.2667	0.704253	0.69625	0.80	12.43	11.63
2.10	0.3000	0.720618	0.712429	0.90	14.06	13.24
2.00	0.3333	0.736983	0.728608	1.00	15.70	14.86

Chapter 10

Summary and Conclusion

Chapter 10

SUMMARY AND CONCLUSION

10.1: Summary and Conclusion:

The Present Study describes the marriage pattern and implication on fertility which has occurred in Bangladesh. The subject is treated demographically and then attempted to link with various social components. The national averages very often conceal considerable variation across various geographical units (e.g. district). The major reason for not studying districts level differential is that Bangladesh is a homogeneous society.

The study covers a period of nearly 32 years from 1975 to 2007. The trends in the marriage pattern as well as in the levels of fertility are examined for this period of study. Attempts are made to find the correlated components of marriage and fertility responsible for giving rise to such tends as are observed during the course of analysis.

In the analysis data are taken from Bangladesh Demographic and Health Surveys (BDHS) 2004 and 2007. Based on the indices of evaluation of age data can be said that the single year age distribution of population seem to suffer from age misreporting. However, these errors do not seem to be of such magnitude as to make the data unusable at the level of quinquennial age groups. The present study is based on the quinquennial age distributions and for the most part no attempt is made to adjust the reported age data. While fully cognizant of the problem involved it is felt that adjusting the overall age distribution without adjusting the corresponding marital status composition or the age at marriage distribution may lead to more serious distortions. It is not easy to correct the age errors present in the nuptiality data since first marriages are normally concentrated with in a narrow age span and any attempt to smooth the data may seriously distort the actual pattern (Sivamurthy and Seetharam, 1976).

The study experimented with various demographic and statistical techniques. Besides rates and proportions the analyses are based on Coale's Indices, Use of Coale's Nuptiality mode, Nuptiality tables following Merten and Bongaarts' model for proximate determinants of fertility. Of the statistical techniques Logistic regression analysis is worth mentioning. It is felt that if relevant statistics are available, then for better exposition of the linkages between demographic and socio-economic phenomena particularly with age at marriage and fertility and with fertility and variables related to women in development (e.g. education of women, work force participations) more sophisticated techniques need to be adopted. While the former method helps in decomposing the total effect into the individual effects the methods will help in finding the direct and indirect effects of the variables.

The temporal changes in various marital status categories viz. ever married, married, widowed and divorced are apparent. The distributions of population by age and sex at different marital status categories together with absolute and relative changes over time bear the evidence of changes in the marriage pattern over the years. Though the analysis covers a wide range of nearly 32 years, the changes in the marriage pattern are not clearly evident before the year of 1989. It is indicated that both timing and age span of marriage have increased appreciably but probably the pace and quantity of marriage have not change quietly. The age difference between the husbands and the wives also has not changed appreciably. The temporal effect on the dissolution of marriage through the incidence of divorce is not marked but through the incidence of widowhood has reduced a little, probably due to the improved mortality conditions over the time periods.

Of all the variables considered in the differential analysis of age at marriage, women's education has the strongest effect for explaining the variability in age at marriage. Although the average level of education is very low, education still has a

strong positive relationship with age at first marriage. The husbands' education also appears to be a strong determinant.

Childhood residence is also quite important, effecting age at first marriage through several other variables (education, work participation and current residence), though the direct effect is not as high as it was for education. Both the wife's and husband's childhood residence have similar effects on age at first marriage. So urban life does not have a strong impact on age at first marriage in recent year. Other factors of some importance include wife's pre-marital work, region, religion and husband's occupation. Region has in particular strong effect.

In sum the modernizing institutions education, urbanization and female work participation do have a strong impact on the transition to the first marriage even though there is a strong cultural tradition for early marriage. And that impact is consistent in direction (not in size) across different socio-cultural areas. There is no reason to dispute the relevance of findings to Bangladesh from recent cross-national studies that education, urbanization and non-agricultural employment (industrialization) have played a major role in increasing ages at marriage and will continue to do so in future. The present study has demonstrated that differentials like education, urbanization and occupation have substantial impact on age at marriage. But the prospect of rapid urbanization is not bright. The prospect of spreading formal education within a short period of time can not also be foreseen. Non-formal education can probably be spread out within a reasonable time period. Roles of women outside the home should also be strengthened and they should be allowed to work outside the home to earn their own livelihood. More legal action toward increasing age at marriage may not produce changes required for the lowering of fertility in the absence of social and economic supports.

Analysis of age patterns of marriage by means of Coale's model nuptiality schedule has yielded some interesting results. It has been found that marriage still remains a universal phenomenon in Bangladesh. Early marriage prevails in the population and that marriage not only start early but progresses fast and are concentrated with in a short span of time at least in the female population.

The model has yielded proportions ever married which are very close to observed schedule. It is worth while to mention that under changing condition of marriage pattern application of Coale's Nuptiality Model to study the nuptiality behavior of Bangladesh population might be questionable. However, apart from this, Knowledge about the parameters which control the marriage pattern are well studied by means of Coale's model by providing quite a few interesting parameters to capture the inherent peculiarities of the marriage pattern of the country. The fact values of a_0 , k, c, A_0 and A and the values of r(a) and g(a) what have been generated recoursing Coale's nuptiality model to Bangladesh population reflect that marriage in Bangladesh has began to show some changes from the recent past without much changes in the basic parameters of nuptiality.

The basic pattern of single life remaining at different ages obtained from the gross and net nuptiality tables are observed to be almost similar except those at early ages. The gross E(a) values are free from mortality effects compared to the net $E'(a)$ values. This reflects itself in gross years being always higher than the net years.

A striking difference between the gross E(a) and the net $E^{/}(a)$ values at birth of females and absence of such difference at subsequent ages reflects the existence of high infant and early childhood mortality in Bangladesh.

The low E(a) values towards the end of marriageable ages of females suggest the low likelihood of continuation of single status in years ahead. Thus the age patterns of marriage evident from the above discussion more or less confirm what has been reflected from the analysis using model nuptiality schedule and preliminary analysis with marital status distributions.

Analysis of marital status distributions age patterns of marriage by means of Coale's nuptiality model and dynamics of nuptiality by means of nuptiality tables all suggests that marriage pattern has been changing in Bangladesh. Of the parameters which control the age pattern of marriage the two viz. age of start of marriage and the pace of marriage has already shifted from some lower age to some higher age the reflection of which have already fallen on the marital status distributions- particularly on the distribution of single population. The concentration of single population has shifted from low ages to relatively high ages. However, the age span of marriage and the ultimate age of marriage not change considerably thereby their effects do not have fallen much on the probability pattern and risk of first marriage. Nevertheless, with the changing patterns of proportion single the singulate mean age at marriage (SMAM) has also change upwardly.

This study confirms that marriage is almost universal among females in Bangladesh there are very few women who remain single throughout their lives. As in various other developing agricultural societies, early female marriage is customary in Bangladesh. Most female have been married before age 20, with almost 100 percent getting married by the time they reach age 30. Data from the 2004 BDHS indicates that, among the 10205 sampled married females aged below 50 years; about 95 percent

had been married when they were below age 20 and only 5 percent were married at 20 years of age or older. In Bangladesh the legal age of marriage is 18 years for the women; however a large proportion of marriages of still take place. Thus, it may be said that about 95 percent of marriages in Bangladesh are teenage or adolescent marriages. This situation gives rise to a very low age at marriage in Bangladesh. This leads to an exceptionally low Mean age at first marriages, i.e. 13.4 years. i.e. 18 years, established by the Government in 1976. Legislation on age of marriage, therefore, seems to be ineffective in delaying childhood marriage in Bangladesh. In a recent study have observed that a large majority of the rural community in Bangladesh are ignorant about the legal age for marriage and are even less concerned about the negative social and health consequences of adolescent marriage.

It has been observed that older cohorts of women in Bangladesh have a lower mean age at marriage than their younger counterparts, which confirms that there is a trend towards increasing age at marriage, but the rise is at a very slow pace. In these circumstances, as the existing legislation is not working well and the prevailing cultural and social norms are unlikely to foster a delay in marriage. Other avenues of possible policy intervention must be explored, such as the provision of increased opportunities for female education and employment outside the home for young women, both of which would be likely to delay marriage.

The results of this study indicate that the overall marital dissolution rate is comparatively higher among married adolescents than married adults. Thus, by raising the age at first marriage, greater marital stability could be achieved, provided no dramatic cultural transformation occurs in society.

Differential analysis shows that most of the married female adolescents have a rural background and have not had a formal education. Their husbands are also mostly

illiterate and farmers by occupation. Logistic regression analysis identifies education, region of residence, place of residence (urban/rural), work status, husband's education and occupation as important covariates of teenage marriage.

The findings of our research hold implications for policy that could be useful in devising ways to solve the issues related to adolescent marriage and thus bring about a further reduction in fertility for Bangladesh. In order to enhance further the age at marriage and to reduce the rate of adolescent marriage, adolescents, their parents and the community should be made more aware of the negative health, social and economic consequences of early marriage, early pregnancy and large family size. This could be done through social mobilization, information, education and communication (IEC) campaigns, regular home visits by Family Welfare Visitors (FWVs) and Family Welfare Assistants (FWAs) (see article on pp. 15-26). In this context, the country's basic education system and its curricula should be redesigned to meet present day needs. Important would be education on family life, human sexuality, demographic, health, socio-cultural development, and the role of women in society, all of which are called for by the 1992 Bali Declaration on Population and Sustainable Development and the program of Action of the 1994 International Conference on Population and Development, both of which instruments Bangladesh is a signatory to. Education of girls as well as boys will not only ensure basic literacy for all, but also will provide a realistic basis for training women in income-generating activities and primary health care. The Government should also take appropriate measures to create more employment opportunities for young women and make efforts to employ more young women in white-collar jobs, especially in the fields of health and education. As early adolescent marriage seems to contribute to a greater likelihood of marital dissolution, a voice for adolescent women in making decisions about marriage should at least be promoted, if it cannot be ensured.

All ever married women in Bangladesh spent most of their reproductive lives in the married state. Therefore it may be inferred indirectly that marital disruption does not have much effect on fertility reduction in Bangladesh.

In a high fertility country like Bangladesh differential nuptiality patterns have great impact on population growth. The effects of marriage pattern and marital fertility on the overall fertility of Bangladesh examined by Coale's indices show greater influence of marriage pattern than marital fertility. However the change in fertility that has taken place in the country over time is contributed less by the change in marital fertility in comparison to the change in marriage pattern. Application of Bongaart's Model clearly indicates that there is a downward trend in all the proximate determinants. Between 1975 and 1989 the amount of decrement of fertility is about 23% , about 31% between 1975-1991 and about 38% between 1989-2004. This is primarily caused by and increased used of contraception.

Again the analysis of inhabiting effect of marriage on fertility it is observed that the effect of marriage on fertility is higher in recent times. The divorced and widowed has also significant contribution on fertility deduction. It is clear that whatever cause of changing marriage patterns, their net effect has been large. A downward effect on fertility at young age caused by rising age at marriage has been balanced by an upward effect at ordered ages caused decreasing widowed and divorced.

Deviations from the regression line (execs fertility) and due partly to measurement errors and partly to variations in the other proximate determinants of which marriage is an important one. According to the regression, the TFR equals on average 7.82 births per women in the absences of contraception (CPR=0), and fertility declines at a rate of approximately 1.0 births per women for each 9% increment in the contraceptive prevalence rate. Under such relationship between TFR and CPR the

replacement fertility requires a prevalence level of fertility can be achieved. The regression equation of TFR on CPR suggest that a TFR of 2.5 births per women can be achieved by the year 2015 if the level of CPR is raised to 65% and if the level of contraception is raised to 73% it is possible to achieve a target fertility level of 2.0 per women.

The model eternals of contraceptive prevalence rate of nearly 74% with an effectiveness of 0.87 and 73 percent with 0.88 effectiveness to achieve a target fertility around 2.0 with year 2020.

10.2: Policy Implications

An effective policy for increasing age at marriage is essential for Bangladesh. Why is it importance? The answer lies in the heart of the consequences of early marriage. First early marriage has a strong positive relation with fertility. Second early marriage increases marital dissolution by divorce, Third early marriage increases maternal mortality and infant mortality. These are common consequences related to the population structure of a country.

The present study has provided evidence that the age at marriage in Bangladesh is one of the lowest in the world. The population burden is an acute problem in Bangladesh. Much demographic research has shown an inverse relationship between age at marriage and fertility. That is the lower the age at marriage the higher the fertility (busfield, 1972; Bumpass, 1969). The government the undertaken an extensive family planning program to reduce population growth in the country. The success of this formal family planning program is still not clear when one reckons the balance between costs and benefits. On the other hand, a group of demographers and social

scientists have demonstrated the positive aspects of non family planning methods of population control such as increasing the age at marriage, increasing employment for women and the extension of education programs. The total impact of these factors has not been very significant on fertility in the country because of the low literacy rate for women few employment opportunities for women and the strong adherence to traditional values.

Legislation for a minimum age at marriage has been in existence for the last two decades but how far this legislation has been honored or obeyed by the people is questionable. One of the principal reasons for the failure of this legislation is unavailability of reliable statistics for dates of birth since there is no vital registration system for every part of the country. As a result the date of demographic events likes marriage, divorce, birth and death are not available on a national basis.

In order to achieve the desired transition in age at marriage; the government needs to have an effective plan for the improvement of women's status which will bring some independence for women to make their own decision about their lives. Apparently there are two ways by which a rapid transition can be achieved in the country. One is direct method: the introduction of effective legislation. The other is an indirect method: the introduction of alternatives for delaying marriage voluntarily by young girls. In order to make this first method effective, the government needs either to strengthen the vital registration system or to introduce a system of identification cards on which basic information, such as date of birth, date of marriage and place of residence will appear. The concept of identification cards is some what similar to the social security card in the United States. Perhaps Pakistan where the government has introduced such an identification card system will be a better example for the intended system. Although at the beginning the cost factor will be considerable in the long run this system will provide the government with a source of accurate and possibly adequate basic information of the population for different purposes of social

development policies. This system will control the tendency of falsifying ages at the time of marriage. In addition there should also be legislation for marriage registrars so that they do not provide marriage services until marriage patterns meet the legislative minimum age at marriage.

The second method involves a social development program. This should not necessarily be directed towards industrialization and urbanization but women's involvement in the social life outside their homes. This can be done by making plans for formal education as well as non-formal education. Expansion of formal education involves higher government expenditure so increasing non-formal and short term functional education programs of a higher utilitarian nature can be introduced, which will be less expensive. This can simultaneously increase the production in non-industrial sector as well as increase the literacy rate so that it is equivalent or perhaps superior to traditional in school education (Baldwin, 1974).

The study has shown that the level of fertility in Bangladesh is still high but a moderate change over the time period under study has occurred. Moreover because of built in momentum of the young age structure fertility in Bangladesh may continue to remain high showing declining tendency in future. Thus necessary action is called for to reduce further level of fertility in the country in order to achieve better living conditions in future.

Marriage is seen to be early and universal in Bangladesh. Age at marriage has been found to have significant effect on the completed family size. Thus an area of policy intervention seems to be a program for rising age at marriage for reducing fertility. But legislative measure alone may not be enough in rising age at marriage. Increase in the level of female education above secondary level along with other socio-economic facilities for females such as employment opportunities must be provided to rise the age at marriage. But with the existing low level of opportunities even for males

in an almost stagnant economy and with the current state of resources it remains doubtful how far the facilities as suggested above for increasing age at marriage can be accomplished.

It is possible that fertility level in Bangladesh may rise further following the introduction of universal primary education, because its fertility reducing effect through raising age at marriage will be minimal and by espousing the younger generation to rudimentary rules of hygiene and better dietary habits, it may generate higher fecundity without influencing traditional family formation habits (Sultan, A, 1980). But if population education is also introduced at this level of education where socio-economic disadvantages of having more children at the individual and family level will be taught, then people may be motivated to change their attitudes towards family size, which are formed early in the life. Since the level of education in Bangladesh is very low to show significant effect on the level of fertility further increase in the level of education in future, if continued to secondary or higher levels may ultimately exhibit considerable impact on the level of fertility.

To have an effect on the overall birth rate in Bangladesh it will be necessary and of paramount importance to find ways to reduce fertility of the rural and illiterate women. Although a family planning scheme was introduced in Bangladesh in the early part of the 1960's, its impact on the rate of growth of population is not yet being felt to a great extent. Thus more efforts and action in this direction are necessary to motivate people to have smeller families and extend more family planning facilities in order to abate the high rate of population growth in the country.

Proportion married, contraception and lactation play important roles in lowering the level of fertility from the expected natural one in Bangladesh. Thus with improvement in the mortality situation and nutritional status from socio-economic development in future, fertility may increase further unless counteracted by practices

of effective methods of family limitation. Of course decline in mortality may ultimately lead to lower the level of fertility as experienced else where. On the other hand increased modernization may modify cultural patterns that have served to reduce fertility, such as prolonged lactation which may also enhance fertility. Better organized family planning efforts are thus more essential in future.

Redistribution of socio-economic facilities such as medical facilities employment opportunities and educational facilities, especially for females will eventually reduce level of the regional variations in the level of fertility and hence reduce the overall level of fertility in the country. Integrated socio-economic development and family planning activities are thus necessary to slow down the rate of population growth. While socio-economic development will generate necessary motivation towards desire for smaller family size, family planning facilities will help in translating the desire.

Family planning activities are getting momentum in recent times in Bangladesh, as the main policy of the government is directed at slowing down the rate of growth of the population. Attitude as well as motivation and practice are likely to differ among the people of the regions. Thus the contribution of family planning activities on the level of fertility in general and the regional variations in fertility in particular needs careful study.

10.3: Concluding Remarks

In the face of formidable socio-cultural and economic constraints impressive progress has been made in some demographic areas particularly in the areas of marriage and fertility of the population of Bangladesh. Significant strides have been made in the areas of population policies and programs including the family planning activities. The study documented a change in the marriage pattern and significant and sustainable fertility decline over a decade or two more or less coherent with policy goals and targets. The achievement of the goals and targets see to depend largely on steady improvement in the basic conditions of life of the poor and neglected deprived sections of the population and not on family planning programs alone. It is suggested that greater participation of women in development activities might create conditions favorable to the pursuit of population goals. Since high level of fertility and limited work opportunities impede active involvement of women in development process, emphasis should be given to create job opportunities and improve the status of women through education while formulating population policies and programs. The observed decline in fertility and the recent and ongoing changes in marriage pattern however needed to be interpreted in context of socio-cultural history of Bangladesh. Traditions about stability of marriages and the extent of traditional respects could be the potent factor in fertility transition. Certain other factors such as customs relating to post-partum amenorrhea, abstinence and lactation as well as secondary sterility associated with nutrition and health could also be quite important and the extent to which population policies and programs could influence them need to be studied.

There is a need to study demographic trends particularly trends in marriage and fertility under the framework of "basic need strategy". The main objectives of "basic need strategy" among others are to eradicate poverty, unemployment, hunger and literacy is considered as a major precondition for achieving population goals and the participation of women in development. In view of recognition of basic need strategies

for national development planning, therefore there is a need to explore empirically the fertility reducing effect of basic need approach and study the impact of basic needs strategies on demographic trends and their linkages. There is also a need to determine the threshold levels of the variables concerned which affect marriage pattern and fertility substantially (e.g. education and work force participation of women) bearing in mind that thresholds are not free from culture, traditional attitudes and customs and values they are interdependent. Movement across the threshold of minimum well-being should receive special attention in population programs.

Finally, in view of the growing strains in the population resource equation budgetary allocation to meet basic needs and political stability, the tempo of implementation of the developmental programs remains much slower than necessary. Bangladesh is still facing a formidable problem increasing population growth. The past high fertility and declining motility have contributed to doubling the population in less than 30 years since 1981. Even if a sustainable reduction in fertility within the framework of demographic goal of NRR=1 is achieved by 2020 A.D the country's population will exceed 160 millions. Therefore, formidable problems persist.

The present study is a modest attempt to analyze the marriage and fertility situation of the country in context of prevailing socio-economic conditions. There is no doubt about the contributions of marriage and fertility and regulating population growth of the country. Considerable socio-economic transformations are needed for arresting demographic variables at the targeted levels. Reasonably and hopefully it is believed that in the light of finding of the study, policy makers and planners will show a congenial and judicious path for the development of Bangladesh.

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