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1. INTRODUCTION

Over the past 20 years, there has been an increasing interest about the levels and determinants of infant mortality since the health of infants is a critical concern to any nation. In "The State of the World's Children 1989", UNICEF decided that under five mortality rate is "the single most important indicator of the situation of a nation's children" (UNICEF, 1989a cited in Ergöçmen, 1991). With this decision, child survival has gained further importance and the infant mortality rate, expressed as the number of infants per 1000 live births that are expected to die before the end of the first year of life, was stated as one of the most important indicators of human development. Infant mortality rate is widely accepted as one of the most commonly used indicators of social and economic development of a population and the most sensitive indicator in relation to social and economic changes in society. Infant mortality rate is widely accepted as one of the most commonly used indicators of social and economic development of a population and the most sensitive indicator in relation to social and economic changes in society. While in the past, variables such as the GNP per capita and income per capita were used to measure the level of human development, today, more emphasis is being placed on health and human wellness variables such as infant mortality to measure a country's development status. The infant mortality rate is especially sensitive to distributive issues as well. Bajracharya (2003) states that it reflects not only the per capita stocks of food, clean water, medical care and so forth, but it also reflects the actual availability of such amenities to all segments of the population.

Additionally, since mortality level is still an effective measurement of the health status of the societies, child survival rates are considered as the most sensitive indicator of a nation's health status. At this point it may be helpful to give the definition of the concept of health. According to United Health Foundation (2001), "Health is ultimately the combination of our biology, the behaviors and choices that we make, the social environment in which we live, and our access to medical care resources". The health of infants is also an important measure of community well-

being and a predictor for the health of the next generation (U.S. Department of Health and Human Services, 2000 cited in Rhode Island Kids Count, 2002).

The determinants of health status are related to the socio-economic and political context of the societies and, as an important indicator of a nation's health status, the infant mortality rate is sensitive to demographic and socio-economic factors and health policy related differentials. Therefore, access to health care services is an important point. The literature on infant mortality has shown that the outcome of pregnancy is directly related to the quantity and quality of prenatal care due to the fact that improvements regarding the care of pregnant women have a significant impact on infant mortality rate. This means that utilization of prenatal care services by the pregnant women has considerable effect for reducing the incidence of infant mortality.

The literature also refers to many factors affecting access to prenatal care services which are classified as demographic factors, socio-economic factors, cultural factors and health policy related factors. Accessibility is a major determinant of greater use of health facilities and improvement in health conditions. Hope (1992) says that undoubtedly, an increase in child survival rates is closely tied to health care utilization. However, health care utilization by pregnant women is closely tied to health insurance, without which pregnant women are less likely to receive essential health care. In other words, uninsured women and their infants systematically use less medical care than insured ones and this means that more uninsured children will continue to die due to lack of access to prenatal and post-natal health care services. Hence, increasing the health insurance coverage may be regarded as one way to improve access to health care.

Thus, due to its close relationships with health and socio-economic level of the society and also its ability to reflect distributive effects, infant mortality is expected to attract particular attention in the coming years as well.

Furthermore, the loss of infants has received special attention because of some reasons besides mentioned above. Firstly, the life of a new born baby is completely dependent to the factors which are beyond it. Nevertheless, most of the infant deaths are preventable. This means that when the necessary measures are taken to save the life of the newborns, great improvements in the child survival rate can be possible. Secondly, the infant mortality has relatively a high proportion among all deaths. The probability of death before age one is generally very high. Thus, infant mortality has great influence on the average expectation of life. Lastly, there is little difference between the developing and developed countries regarding general mortality level. However, it is the fact that, in terms of infant mortality, the disparity between developed and developing countries, and also within the same population, is quite big (Ergöçmen, 1991).

Unlike general mortality level, Turkey still has moderately high infant mortality rate as a developing country. Despite considerable improvements in its child survival rates, the level of infant mortality in Turkey is not compatible with the socio-economic level of the country. As mentioned before, a high child survival rate would indicate a highly developed health care system. However, Turkey's existing health care system is far beyond being satisfactory in meeting the health needs of the people living in the country. The mortality in the first year of life, therefore, is still one of the most significant health problems in Turkey.

2. PURPOSE

The analysis of infant mortality rate still carries a great importance since, while crude death rates have fallen dramatically in many parts of the world, infant mortality rates remain high in some regions, including some parts of the developed world.

High infant mortality level has been a major problem in Turkey, too. It is a fact that the reduction in infant mortality rate in the country is noticeable, especially in the last a few decades; however, infant mortality level in Turkey is still far from the level reached by the developed countries.

It is well-known that a child in its first year of life is very sensitive to the factors around it; the survival of the new-born is, therefore, tied to the many factors. Since these factors vary from one society to another, each society ought to find its solution according to its own realities (Ergöçmen, 1991).

There is no doubt that health care has a profound impact on people's health outcomes and mortality even in the absence of significant economic improvement. In this connection, it is reasonable to ask how such care is most appropriately provided to the populations. This is a critical issue worldwide, and the answer will probably differ depending upon the culture and level of economy, and also of mortality and its causes (Kunitz, 1990). It is evident that causes of the most infant deaths are preventable with proper health care. In many studies, appropriate neonatal care has been found to be important in mitigating the risk factors in infant mortality.

By some researchers, health insurance is accepted as the most effective way to provide health services to particularly deprived populations. In other words, health insurance is often suggested as a crucial policy instrument for improving health outcomes especially in low-income populations. The primary pathway through which insurance influences health is by lowering the costs of health care since changes in

health care prices generally lead to increased utilization. However, strong empirical evidence on the effect of expanding health insurance is sparse.

Many earlier studies have explored the infant mortality decline in Turkey, but there has been little explicit focus on the role of health insurance per se. The ultimate purpose of this study is, therefore, to analyze the extent to which health insurance coverage affects the decline in infant mortality level in Turkey. Many national and international studies have provided sufficient evidence on the importance of antenatal care and also paid attention to the determinants of utilization of antenatal care services. However, few concentrated on a study of affects of the health insurance on the utilization of antenatal care services, thought essential to decline the infant mortality rate. Therefore, this thesis will study the factors affecting the health insurance coverage of households in Turkey. In addition, the impact of using health care services on infant mortality, on prenatal care services and the place of delivery will be explored. It is also essential to investigate the determinants of utilization of prenatal care services and of place of delivery. Furthermore, the problematic factors in receiving prenatal care and for place of delivery will be explored to draw a line for the health insurance.

In short, this study will question the propositions that whether

1. existence of health insurance can lead to large improvements in infant mortality, and

2. expansion of health insurance to the poor populations can narrow socio-economic differentials in infant mortality.

3. SOCIAL SECURITY AND HEALTH INSURANCE

3.1 Concept Of Social Security and Health Insurance

The Industrial Revolution in Western countries resulted in a new production system which has brought about a new society structure with new basic needs. The governments began to establish new governing systems and organizations according to the changes in the social, political and economic dynamics. Since the number of employees increased, their problems have also become more primary for the governments. Essential aspects of social and economic life began to surface as basic needs in the new society structure, one of which was “Social Security”.

In fact, the notion of “Social Security” can be accepted as a product of modern societies. The ultimate purpose of the social security is to provide minimum guarantee to the people lost their income source, permanently or temporarily, for continuation of labor force, and body and mental health (Yeğinboy and Taylan, 1993). According to Irwin (1962), also, social security emerged as an aim of modern societies in which “freedom from want” declared as a basic human right.

In the literature, there are various definitions of the social security. According to Ron et al. (1990), social security means the protection of society for its members against economic and social problems through public measures. Dilik (1991 cited in Oral, 2002) defines social security as the security of people against income lost or increase in expenses caused by the social risks. Tunçomağ (1982 cited in Oral, 2002) states that social security is an aggregation of the associations providing economic security to the people against some dangers. Alper (1999 cited in Oral, 2002) also considers that social security is to provide minimum standard of living to the individuals and the families exposed to the danger whatever the reason is.

In addition, the means of the social security are social insurance, social aids, and social services. While in social aids and services the source is partially or

completely met by the states, in social insurance, all insured have to contribute to the system (Oral, 2002).

According to Talas (1997 cited in Oral, 2002), in the social security system, the most developed and widely known means is the social insurance. Oral (2002) suggest that social insurance is an organization established by the state with obligatory contribution of the employees and employers in order to remove the risks to which the employees might be exposed.

As well as Russing (1986) states that the growth of health insurance, more generally the growth of insurance represents a major way that economic relations have been reshaped and reordered in the twentieth century. “In contrast to a highly competitive economy which operates in accordance with free and unregulated market forces, numerous regulations have been introduced to protect industry from the competition and risk of an unregulated market”. Growth of public insurance programs has undoubtly been in response to political forces as different groups in society wishing to protect their risks with subsidies from the government. No doubts this growth is also because of the fact that people have learned that insurance is a way to protect them against unexpected crisis. That is to say that it reflects the increased orientation to “The No-Risk Society”.

Additionally, according to Russing (1986), the most common conception of insurance is the view that it exists to reduce uncertainty. In fact, in this conception, “insurance is simply protection against risk” or “it is a way individuals have of coping with uncertainty”.

Concerning the definition of insurance, Russing (1986) and Tuncay (1992 cited in Oral, 2002) also consider that insurance is a mechanism by which society assumes responsibility for the individual’s welfare. In fact, insurance is a social and not only an economic and financial institution. As Russing (1986) suggest that insurance may be related to a concern with collective welfare and social order. “Whereas in the nineteenth century insurance ministered primarily to the needs of

economic man, in the twentieth century it became one of the main instruments by which law created a welfare-minded society". Hence, "the dynamic of an insurance-oriented society [is] toward a greater social direction and administration".

Russing (1986) further expresses that insurance contributes both to individualistic and collective outcomes. At the individual level, it provides protection against uncertainty, that is to say that it alleviates worry about the unanticipated consequences of one's behavior. At the collective level, insurance may go hand in hand with a concern for the welfare of others. For instance, by providing access to medical care, health insurance helps to facilitate the integration of individuals in society as due to utilization of medical care, individuals can participate in normal activities of society. Thus, the benefit of insurance, especially health insurance to the modern societies is not only economic and financial, and even it has important social benefits. It can also be viewed as a means reducing the conflict between groups in a society and helping to the integration of society.

Social security systems in modern societies do not provide security against to all risks but only to the risks occur frequently and cause the maximum lost. According to Oral (2002), the social risks can be grouped into three categories as occupational risks, physiologic risks, and socio-economic risks. The universally accepted ones are sickness, maternity, employment injury, unemployment, invalidity, old age and death within which sickness risks have extra importance since all people always desire to be healthy. Therefore, health insurance is one of the first insurance types joined to the scope of the social security.

Additionally, in many international agreements, the right of being healthy is recognized as a basic human right, and the protection of health is assigned to the states as far as possible; therefore, against to health risks, the states have developed various models. Although all models aim to provide health security to the insured, each state follows different methods (Oral, 2002).

Health insurance is a mechanism that protects the insured against the risk of the financial consequences of an uncertain illness or accident. The individual is

protected because his/her risk of illness or accident is pooled with the risk of other insurance scheme members. Since there is little probability that all members will fall sick within a short period of time, the group minimizes individual risks (Schneider and Dmytraczenko, 2003).

Health insurance may take different forms. The four most common types are community based, commercial, employer-sponsored, and government owned social health insurance. Table 3.1.1 summarizes these four health insurance types in terms of ownership, financial contributions, enrollment, and service arrangement.

TABLE 3.1.1 Types of Health Insurance

Ownership	Financial Contributions	Enrollment	Service Arrangement
Community-based Health Insurance	Premiums by individual members or by cooperatives, such as farmers' associations	Voluntary. Persons join as individuals, by household, or in groups	Directly through their staff and facilities or contracted with providers
Commercial Insurance	Regular personal participation fees of enrollees (premiums)	Voluntary. Persons join individually or in groups	Contracted mainly with private providers
Employer-sponsored Health Plans	Payroll deduction from formal sector employees and employer contributions	Voluntary, but can be compulsory for employees within an organization	Employer-owned health facilities or contracted with providers
Social Health Insurance	Funded by payroll deduction from formal sector employees and government sources	Often compulsory universal coverage for formal sector employees	Mainly public health facilities or contracted with providers

Source: Adapted from World Bank (1992) cited in Schneider and Dmytraczenko (2003)

3.2 Historical Progress of Social Security and Health Insurance

It is useful to give information about the historical development of insurance for well-defined contemporary insurance organization and current practices of insurance. Indeed, the improvement of insurance system is accepted as a process in which insurance organization responds to the defense and security needs of individuals. In fact, it is necessary to examine the improvement of insurance system together with the socio-economic development since contemporary insurance

understanding might be existed only the development of money economy and shopping (Nomer and Yunak, 2000).

Although the notion of social security began to be used after the Industrial Revolution, the need of human for social security in the history was provided by various measures. The Industrial Revolution with new production means, urbanization and the rise of working class had prepared the conditions for the development of contemporary social security system. The first measure of social security has been practiced with the necessities of Industrial Revolution. In that case, it is possible to say that the period before the Industrial Revolution might be named as the traditional history of social security. However, after Industrial Revolution, traditional measures can not respond to the needs, and a compulsory system had begun to be formed by the social insurance established by the government intervention (Çelik, 2002).

Increase in the number of employees, physiologic and occupational risks caused by new working conditions and living conditions of urbanization process had formed the substructure of the social security policies. At the beginning, the social security measures were put into practice in the industrialized and rich countries. First serious initiatives were stepped in Germany which was the richest country in Europe, and in 1880s social insurance organizations were established (Çelik, 2002).

The World War II is a turn point in the history of social security. The years following the war were the beginning of the Golden Age of the Social Security (Çelik, 2002).

According to TÜSİAD (1997), the improvement steps of the social security policies might be grouped crudely into four stages. First period includes the voluntary implementations of some agencies and trade unions which aimed to remove the negative effects of industrialization on the individuals. Second stage brought some guarantee of the labor force due to their contributions to the financing economy from 1880s and to the World War II. After the war, namely in the third

step, especially public expenditures had increased in order to provide the continuous of the rise of the income and the life standards of households. And finally, in the fourth stage, during 1975, it is clear that many countries have difficulties while meeting the desires of the individuals and looking for new social security policies for the problems.

Looking at the historical improvement of the insurance, it is possible to suggest that in the ancient times, namely in ancient Greek and Rome, the unions formed by the individuals coming together aimed to provide funeral expenses of died, or nautical law in the sea commerce might be given as a first example of the insurance. Coming to the Middle Age, it is seen that the guilds assisted to their members for compensation of damage arisen from fire, thieving, etc. Especially sea insurance, at the end of twelfth century, in Northern Italy, has developed, and the first transport insurance policy was prepared in Genoa in the fourteenth century. After the big fire in London in 1666, more progress has been made in the scope of fire insurance (Nomer and Yunak, 2000).

Nomer and Yunak (2000) emphasize that modern insurance companies began to originate in the seventeenth century. Especially nineteenth century with the industrial revolution raised the demand for insurance.

Although government health insurance is usually traced to the introduction of a national compulsory program in Germany in 1883, it actually had its origin in mutual-aid societies of Europe, some of which date to the thirteenth century (Russing, 1986). The compulsory national systems developed out of these societies.

"*The beginning of systematic sickness insurance are to be looked for in cooperative efforts of workers themselves [in the form of mutual relief or mutual aid]…thus a system of [national compulsory] insurance grew up out of a system of mutual help*" (Russing 1986).

By the time compulsory government insurance programs were introduced,

"*Europe was covered by a network of ... voluntary associations ...Associations of working men (and to a smaller extent other social groups such as salaried employees, farmers, etc.) for purposes of mutual aid and mainly in the cases of sickness, had reached a very substantial part of Europe's population. And these associations have played a very important role in European life. For that reason they have long attracted attention of government and legislation"* (Russing 1986).

These associations were not eliminated by the new government plans. On the contrary, they were incorporated into the state programs (Russing, 1986).

Additionally, according to Russing (1986), health insurance is a major institution in all industrialized countries, today most of which have universal or near-universal health insurance coverage. It became a responsibility of the government in 1883 when Bismarck introduced a compulsory program of health insurance for industrial workers in Germany, after which other European countries like Austria [1888], Hungary [1891], Norway [1909], Serbia [1910], Great Britain [1911], and Russia and Romania [1912] had introduced compulsory health insurance in their countries (Rubinow, 1913 cited in Russing, 1986). In the United States, the issue of national health insurance has also been seriously debated since just prior to World War I (Lubove, 1968; Russing, 1986; Oral, 2002).

4. SOCIAL SECURITY AND HEALTH INSURANCE IN TURKEY

4.1 Historical Progress of Social Security in Turkey

Since the beginning of 20th century, in the developed nations, social security system has been improved. On the other hand, developing countries had no chance to establish effective social insurance system and health insurance mechanisms like developed countries in 19th century.

According to Ekin et al. (1999), if the improvement steps of the social security policies are investigated, it could be easily realized that each country had a different history. And, in this study, the historical progress of social security and health insurance in Turkey is examined into two parts; first one is the Ottoman Empire period and second one is Republican period.

4.1.1 Ottoman Empire Period

The development of insurance in Turkey had taken shape in relation to its socio-economic structure and political developments (Nomer and Yunak, 2000). In the 19th century, there was no industrial movement in the Ottoman Empire, as it did in Europe. When paid attention to the land and tax system of the empire, it is possible to say that 19th century was early for the establishment of social security system in the Ottoman Empire because the Ottoman economy was based to a distributional order which has traditional and legal foundation for the prevention of capital saving. It is possible to state that poverty was widespread in the last period of the empire, which caused increase in the social aids delivered by the empire; for that reason, the traditional social security did not yet loose its function, as it did in Europe because urbanization experienced in the western countries was not seriously effective in the empire yet (Çelik, 2002). In other words, because the majority of the population was working in agriculture sector and handicrafts, it was seen unnecessary to take measure regarding social security (Kongar, 1989). According to

Nomer and Yunak (2000), in the Ottoman period, for many years, it was avoided having contact with the insurance system as religious belief, too.

In the ancient times of the Ottoman Empire, the root of the social security system was charity organizations (vakıf) supported by the empire. In the twelfth century, while many guilds directed these charity organizations, in the agriculture sector, there was Harvest Insurance. Later, as a social security foundation, Social Protection Association, Military Retirement Fund [1866], and Civil Servants Retirement Fund [1890] were formed. For the first time according to the international agreement, Social Insurance Organization was established in 1921 for the worker employed in the coal mine (Özcan, 1993).

However, increase in the number of workers, spread of industrialization and the progress in the scope of the social security prepared a substructure necessary for the establishment of the social security system. Thus, from the second half of the 19th century, work on the social security system has begun. And, small sized industrialization and the necessity for the protection of the workers against risks forced the empire to make local regulations (Çelik, 2002). Nevertheless, none of them thoroughly accepted as social security measure (Kongar, 1989). The most important restricted social security measures of this period were

1865 Dilaver Pasha Regulation (*Dilaver Paşa Nizamnamesi*) (for Ereğli Coal area),

1866 Military Retirement Fund (*Askeri Tekaüt Sandığı*),

1869 Madin Regulation (*Madin Nizamnamesi*),

1881 Retirement Fund for Civil Servants (*Sivil Memurlar için Emekli Sandığı*),

1890 Seyrisefain Retirement Fund (*Seyrisefain Tekaüt Sandığı*),

1909 Military and Civil Funds, and Retirement and Invalidity Funds for Workers and Officials of Dockyard Authority (*Askeri ve Mülki Sandıklar ile Tersane-i Amirenin İşçi ve Memurları için Emeklilik ve Mamüllük Sandığı*),

1910 Sickness and Injury Fund for Officials and Servants of Hicaz Railways (*Hicaz Demiryolu Memur ve Müstahdemlerine hastalık ve kaza halleri için Yardım Sandığı*), and

1917 Şirket-i Hayriye Retirement Fund (*Şirket-i Hayriye Tekaüt Sandığı*) (Kongar, 1989).

According to Nomer and Yunak (2000), the insurance system in Ottoman Empire might begin to develop after the political reforms in 1839. The fire emerged in 1870 in Istanbul had caused the destruction of almost three thousand dwellings and work places, and death of many people. This event called people's attention to the necessity and profits of insurance. Therefore, in 1871, Sultan Abdülaziz ordered the establishment of fire brigade organization. In 1872, The British insurance companies named as Sun, Northern and North British were opened. As the first French insurance company, La Fonciere came to the Ottoman Empire in 1878. And, in the following years, various insurance agents belonging to other countries were opened; and in the Ottoman Empire, in 1890, the number of insurance agents like mentioned above reached almost fifteen. After 1890, it was also continued the establishment of foreign insurance companies in the Ottoman Empire; and in 1891, Ünyon Insurance Company was established.

In terms of health services, in Ottoman Empire, while rich people benefited from the private physician service, the poor were able reach health care by means of charity organization (Oral, 2002).

4.1.2 Republican Period

After the declaration of Republic, efforts for the improvements of social security were continued. With the industrial movement in 1930s, working class had grown up much more and therefore establishment of stronger and national social security system emerged as a necessity. As a matter of fact those contemporary social security organizations in Turkey were established after World War II. In 1945, The Worker's Insurance Organization, and in 1949, The Government Employees

Retirement Fund were established by the government. In 1965, The Worker's Insurance Organization was renewed as Social Security Organization in order to secure workers outside the scope of insurance. And in 1971, The Social Insurance Agency of Merchants, Artisans, and Self- Employed were established (Çelik, 2002). Moreover, since 1976, a monthly salary has been given to the citizens aged 65 and over, and weak and without relations. In addition to these, as an additional social security organization, in 1961 OYAK (Army Aid Organization) was established (Kongar, 1989).

4.2 Social Security Organizations in Turkey

4.2.1 Social Insurance Organization (SSK)

Social Insurance Organization is a social security organization for private sector and blue-collar public sector workers, and functions both as an insurer and as a health care provider (WHO, 1996b).

In 1945, The Worker's Insurance Organization was established by government, and in 1965, it was renewed as Social Insurance Organization in order to secure workers outside the scope of insurance. Moreover, under the 1973 Social Insurance Law Relative to Agricultural Workers, the permanently employed in agriculture, with a work contract, have also become contributors and beneficiaries of Social Insurance Organization. Today, it is attached to the Ministry of Labor and Social Security (Oral, 2002).

The purpose for the establishment of the organization is to provide security against all risks in working life. Under the Social Insurance Act of 1964, the Social Insurance Organization is a state economic enterprise providing short-term medical and maternity benefits, employment related accident and occupational disease benefits, and long-term benefits in terms of old-age, disability and survivors pensions (Oral, 2002). It does not provide or pay for preventive services. Today, members

mainly use Social Insurance Organization services but are referred when needed to Ministry of Health, University and private health institutions (WHO, 1996b).

SSK health services are funded by premiums paid by employers and employees. Other source of funding is also income obtained through co-payments (10 percent for retired and 20 percent for employed) of drug costs for outpatients (WHO, 1996b).

4.2.2 The Government Employees Retirement Fund (Emekli Sandığı)

The Government Employees Retirement Fund is an organization provides social security to all government officials by means of social insurance system. The fund, primarily a pension fund for retired civil servants, also provides other benefits including health insurance. Among its activities, there is also an activity concerning public social aids. It was created in 1950, by merging all public institutions pension schemes, with a view to standardizing benefits and statutory requirements for all civil servants (Oral, 2002).

The Government Employees Retirement Fund covers old-age, death, invalidity, employment injuries and occupational diseases for civil servants in central government, local governments, and state economic enterprises. In addition to these long-term insurance benefits, it also provides short-term health and maternity benefits for its pensioners, their dependents, and their survivors. Medical care is obtained by contacting out services to Ministry of Health and university hospitals (Oral, 2002).

The fund is financed by contributions from civil servants and the State as employer; and attached to Ministry of Finance (Oral, 2002). There is no specific health insurance premium collected from either active civil servants or pensioners. The scheme is financed by general budget allocations. It pays for all health care needs of retired government employees with only a 10 percent drug co-payment paid by users (WHO, 1996b).

4.2.3 The Social Insurance Agency of Merchants, Artisans, and Self-Employed (Bağ-Kur)

The Social Insurance Agency of Merchants, Artisans, and Self- Employed was created in 1972 to provide coverage for the self-employed, namely people continue their job on their own responsibilities and are not dependent to any employers. According to law accepted in 1971, tradesmen, members of unlimited, limited, and joint-stock companies could be included in the security program of Bağ-Kur. Especially in agriculture employment, it plays a big role in terms of social security coverage (Oral, 2002).

In addition to invalidity, old-age and death insurances, the members have been benefiting from health insurance since 1986. And the laborers of the agriculture sector have also been benefiting from health insurance since 1999. The social insurance for merchants, artisans and self-employed was attached to Ministry of Labor and Social Security (Oral, 2002).

4.2.4 Others

Besides these social security institutions mentioned above, according to Social Security Law, there are some other social security organizations. By the developments in business and finance sector, banks, security firms, chambers of commerce, stock and commodity exchange companies and many other firms started to provide social security services for people. Private social security organizations have also similar benefits for workers and each one may carry out specific items according to their activities (Özcan, 1993).

4.3 Health Care System and Health Insurance Organizations in Turkey

4.3.1 A Historical Overview of Health Care System and Health Insurance Organizations

In the first years of the Turkish Republic, the health policies were considered important by the government since Turkish society had been devastated during the War of Independence. In addition to the effect of the war, the health system left to the Republic from the Ottoman Empire as an inheritance was not efficient.

In the Ottoman health care system, members of the army and the palace had health service priority. In the empire, "Hekimbaşılık" was a unit responsible for the management of the health services as today's Ministry of Health. However, this association was abolished in 1849 and, its duties were given to the Ministry of Medicine School. Despite the priority of the palace and army members in the health care, some measures had been taken to improve people's health. For example, in 1870, the first health attempt in the civilian field was made by the regulation suggested "country doctors" whose wages were paid by the local administrative. In this year, Ministry of Civilian Medicine Affair was also established. These local administrative also established "Guraba Hospitals" for the poor people by means of pious foundations (vakıf) but the number of these hospitals was not enough to reply to the health care needs of the people. In other words, in the Ottoman Empire, except for a few hospitals, which were founded for the modernization attempts, charity foundations provided health services but these were mostly traditional institutions (Özcan, 1993).

Thus, in the first years of the republic, the country lacked a coherent health care system. For this reason, the new government firstly established Ministry of Health and Social Aid (Özcan, 1993). The following years brought a rapid expansion of health provision; vertical programs and educational programs were established to control malaria, tuberculosis and other infectious diseases, and to train health personnel (WHO, 1996b).

Additionally, in 1945, the Social Insurance Organization (SSK) was established in order to provide health, disability and retirement benefits to workers. Furthermore, in 1950, The Government Employees Retirement Fund was created, primarily a pension fund for retired civil servants, and also provides other benefits including health insurance (WHO, 1996b).

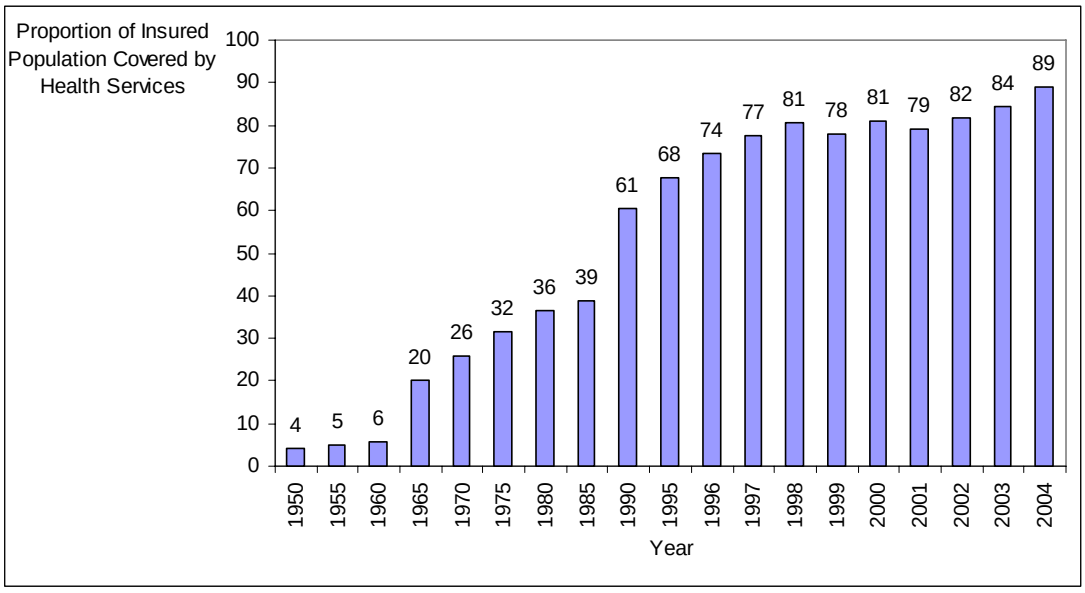
Health care in the early years of Republic left much to be desired. Contagious diseases were wide-spread throughout the country, and manpower was scarce and poorly qualified. This situation prompted the government to take drastic measures in the health care: sanatoria, maternity homes, and health care centers were opened. Although all these centers brought significant improvements, they could not reach people living in rural areas because they were established in cities. Moreover, there were no known health structures such as primary, secondary or tertiary care; health services were mainly based public hospitals. So, an important health reform was introduced in 1960s. Unsatisfied health indicators like infant mortality rate and life expectancy were the reason behind the reform. The Ministry of Health accepted a regulation named as “Law on Socialization of Health Services” which has been in force since 1961, with health offices at village level and health centers as the basic health care units in primary care (Unluoğlu and Ayrancı, 2003). Indeed, major progress in the provision of health services occurred in 1960’s with the 1961 "Basic Health Law". The main aim of the 1961 Basic Health Law was to socialize health services. Socialization of health services was defined as “providing health services free or partly free-of-charge at the point of delivery, by premiums paid by them, subsidies by the State, and allocations from public sector budgets”. Moreover, Social Insurance Agency of Merchants, Artisans, and Self- Employed was created in 1972 to provide insurance coverage for the self-employed (WHO, 1996b).

Thus, in Turkey, the compulsory health insurance was, for the first time, introduced in 1945 under the name of maternity insurance. Then, in 1950, the Government enacted legislation about the sickness insurance; and, in 1966, the content of these two laws was united (Kurtulmuş, 1998).

Except these three social security institutions mentioned above, the Ministry of Health, the Ministry of Finance, the Ministry of Defense, universities with supplementary budget, State-owned Economic Enterprises, municipalities, and some government organizations provide health services (Bertan and Özcebe, 1993). In addition to these, people can have private insurance in Turkey. Private health insurance is the country's fastest developing form of insurance. Those covered by private insurance are the employees of banks, insurance companies, chambers of commerce, computer companies and the like. Generally, employers pay the premiums in addition to their statutory obligation to pay SSK premiums. Furthermore, in the preparation period for transition to General Health Insurance System, the "green card" implementation has been started as a step toward ensuring equity in 1992. For the people, who are not under any health insurance and earn under the minimum wage level, the Green Card application was put into practice by which the aim of government is to provide free medical treatment for these insecure people (WHO, 1996b).

In addition, considering social insurance coverage with respect to health services, while the ratio of insured population covered by health services was 4% in 1950, it has been increased to 88.8% in 2004 (State Planning Organization, 2006).

FIGURE 4.3.1.1 Proportion of Insured Population Covered by Health Services, Turkey, 1950-2004



Compiled from data supplied by State Planning Organization, (2006)

4.3.2 Current Health Care System in Turkey

The Grand National Assembly is the ultimate legislative body and regulates the health care sector. The State Planning Organization (SPO) and the Ministry of Health (MoH) are two main bodies responsible for planning the health care services. The role of SPO is to define the macro policies. The Parliament enacts the related laws, and the SPO prepares the long-term health policy in five year development plans. And, the MoH is responsible for the implementation of defined policies. In every province,

> *"There is a provincial health directorate which is administratively responsible to the governor of the province and technically responsible to the MoH. Administrative responsibility mainly involves administration of personnel and estates management, whereas technical responsibility involves decisions concerning health care delivery, such as the scope and volume of services"* (WHO, 1996b).

The MoH is the major provider of hospital care and primary care. Different from other organizations, the MoH is the only provider of preventive health services. At the provincial level, health services provided by the MoH are administered by Provincial Health Directorates which are accountable to the Provincial Governors (WHO, 1996b).

Health centers and health posts mainly deal with primary health care within specified regions. The main functions of health centers are the prevention and treatment of communicable diseases; immunization; maternal and child health services, family planning; public health education; environmental health; diagnosis and treatment of cases subject to primary level of care; and the collection of statistical data (WHO, 1996b).

MoH operates secondary and tertiary hospitals, as well. These hospitals are technically responsible to the provincial health directorates and administratively to the governor in provinces. Hospital services are also provided by the Ministry of Defense, the Ministry of Labor and Social Security, some State Economic Enterprises, Universities, and the private sector but their total capacity is low.

However, since the referral mechanism is not well developed in Turkey, hospitals are usually used extensively for primary care (WHO, 1996b).

4.3.3 Mother and Child Health Care Services in Turkey

In Turkey, mother and child health (MCH) is accepted as one of the basic human rights. MCH services are mostly provided by the government run-referral system, including health stations in rural areas, health posts in urban areas, and health centers and hospitals. MCH services have been provided as an integral component of primary health care services since the law on socialization of health services enacted in 1961. And, the government began building village health stations and health posts, the number of which now total 11,877. Each health facility employs at least one midwife. Maternal and Child Health/Family Planning (MCH/FP) Centers are also common places where pregnant women access care, which are administered by Department of Maternal and Child Health Services. There exist 274 MCH/FP Centers in the country established for the primary purpose of improving maternal and child health status (Çelik and Hotchkiss, 2000). As MCH care services are accepted as integral part of primary health care, the service coverage also try to meet the needs of adolescents and men (Akın and Köseli, 1997).

At the primary health care level, the services include: counseling, information, education, communication and clinical services regarding reproductive health, including antenatal and post-natal care; safe delivery; family planning; monitoring, growth and development of children less than six years of age; immunization; family health; and early diagnosis and treatment of common infectious diseases. At the hospital level, in addition to these services further diagnosis and treatment for risks and complications because of pregnancy, delivery and infancy are provided (Akın and Köseli, 1997).

In addition to these routine services, the MoH have put into operation special MCH programs since 1985 in collaboration with several international organizations such as UNICEF, UNFPA, USAID, and GTZ. The aim of this implementation is to

improve MCH levels where the needs are greatest. This special MCH program includes expanded immunization program including eradication of poliomyelitis program, fluorine use in oral and dental health, safe motherhood and newborn care program, elimination of neonatal tetanus program, control of acute respiratory infections, control of diarrhea diseases, promotion of Baby Friendly Hospital Initiative, elimination of iodine deficiencies and promotion of iodized salt, phenylketonuria screening, in-service training program for medical staff, Management Information Systems, and information-education communication support project (Akın and Köseli, 1997).

In 1989, The Turkish intersectional committee for Child Survival and Development was established, and in 1990, its name was renewed as "Child Intersectional Board" which aims to monitor and supervise child health related activities and report regularly to the president. In addition, the Population Planning Advisory Committee (PPAC) was established in order to secure conformity to human rights, and to ethical and professional standards in the delivery of health care to mothers, family planning and related reproductive health services and to ensure responsible, voluntary and informed consent. This committee is directed by the MoH. And, in 1993, the Women's Health Advisory Board was established under the PPAC; and represented by also several members of the governmental and non-governmental organizations. Moreover, in 1995, the Second Health Project was implemented in collaboration with the World Bank in order to minimize the regional disparities; therefore, it covered the eastern and southeastern parts of Turkey where the need for MCH services is greatest; and continued to 2001 (Akın and Köseli, 1997).

The MoH have been further defined national targets and strategies in order to strengthen and improve MCH and family planning services and to reach the WHO "Health for All" targets by the year 2000. Thus, the MoH prepared 2 documents which were National Program of Action for Children and Women's Health and Family Planning Strategic Plan. The former aiming to realize the overall goals of the World Summit for Children at the national level was prepared in 1993 and updated in

1995. The second one was prepared in 1995 in order to help couples meet their reproductive goals by promoting optimum health, responsibility and family well-being and respecting the dignity of all persons and their right to access qualified reproductive health services (Akın and Köseli, 1997).

A critical feature of the public health care sector in Turkey is regional disparity. There exists discrepancy between the Western and the Eastern regions with respect to the availability and quality of health care services. Midwifes tend to be more concentrated in the West which is the most developed part of the country. For instance, the total number of the midwifes are 39,551; 18.5 percent of which work in three largest cities of Turkey– İstanbul, Ankara, İzmir while only 14.5 percent work in the 23 provinces of the East region where, therefore, the level of unmet need is higher. Health care centers are most concentrated in urban areas than in rural areas as well. Due to the disparities in the distribution of the quality of service delivery and health care personnel, the utilization of health care services in the East often reported to be quite low (Çelik and Hotchkiss, 2000).

In addition, the private sector plays a relatively minor role in the delivery of maternal health care services which includes mostly public physicians who are allowed to work in their private practices in the afternoons. While private sector is an important source of care in the West and in large urban areas, in rural areas traditional birth attendants are primary source of birth delivery care (Çelik and Hotchkiss, 2000).

5. EFFECTS OF HEALTH CARE UTILIZATION AND HEALTH INSURANCE COVERAGE ON INFANT MORTALITY

The need for health services is high both in early and old ages of people. Deprivation from the health services brings about high risk of getting sick and death. Today, access to health care is one of the basic human rights. United Nations General Assembly in the Convention on the Rights of the Child (1989b) states that

"State parties recognize the right of the child to enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. State parties shall strive to ensure that no child is deprived of his or her right of access to such health care services".

As a matter of the fact that infant mortality is related to many factors, including access to medical and health care. Many researches in literature highlight the importance of antenatal and postnatal care on infant and child survival. Regarding prenatal care, Hope (1992) points that

"Prenatal care beginning early in pregnancy and continuing on a regular basis is important to the health of both mother and infant. Early prenatal care provides an opportunity to detect and treat medical and obstetric problems and to advise the mother regarding nutrition and hygiene, and against the use of hazardous products such as recreational drugs, cigarettes and alcohol. Prenatal care can help prevent complications during pregnancy and labor".

According to Bang et al. (1999 cited in Liu et al. 2002), appropriate neonatal care has also been found by many studies as important in mitigating the risk factors in infant mortality since neonatal care is able to detect the incidence of infantile illness and leads to earlier treatment.

Furthermore, Maine and Rosenfield (1999) and Alexander and Kotelchuck (1996) in Chen et al. (2003) emphasize that many previous studies in developing and developed countries have demonstrated an association between antenatal care and pregnancy outcomes. As a matter of the fact that underutilization of maternal and child health services has been considered a crucial factor in maternal and infant

mortality in developing countries (Raghupathy, 1996 cited in Chen, 2003). Bloom et al. (1999) also found that there is a strongly positive influence of a high level of antenatal care on delivery at a health facility.

The results of the Forste's (1994) research on infant and child survival in Bolivia show that antenatal care, which is one of the most important factors directly affected infant and child survival, lowered the risk of death during the first two years of life. Forste states that "antenatal care received from a physician or other health care professional reduced the odds of death, including the neonatal period, by 1.2, compared to women who received no care at all".

In Kumar's (1993) study on low mortality in the state of Kerala in South India, it was stated that according to Mosley and Chen (1984), "infant mortality levels provide insight into overall mortality patterns". Infant deaths constitute about 30 percent of the all deaths in India, but 10 percent of those in Kerala. According to Kumar, there has been remarkable reduction in neonatal mortality in Kerala. The development of a health care system has been the most important factor in this decline because by means of this developed health care system, the majority of the population easily access to medical centers. By the immunization of pregnant women, and by ensuring that birth take place in hygienic conditions, tetanus can largely be prevented, which was an important causes of the neonatal death in India. In Kumar's study, Krishnan (1989) has argued that

"A number of simple interventions - such as immunization, proper antenatal care of mothers, and nutritional supplementation of children -implemented by a highly developed health infrastructure have been instrumental in reducing infant mortality in Kerala".

"Close to 90 percent of pregnancies receive antenatal care in Kerala, and the large majority of births take place in hospitals" (Kutty, 1989 cited in Kumar, 1993).

Toros and Kulu (1988) also consider that the availability of health services and consultation with a health professional during pregnancy plays a crucial role on infant survival in Turkey. This study showed that according to the results of the

"1983 Turkish Fertility, Contraceptive Prevalence and Family Health Status Survey", babies whose mothers did not take antenatal care and did not deliver in a health facility or by the assistance of health professional were 1.37 times more likely to die before reaching their first birthday than those whose mother utilized such health services. In rural areas, this picture worsens and the mortality risk increased to 2.2 times.

Ergöçmen et. al. (2005) also points that according to the results of "2003 Turkey Demographic and Health Survey" (TDHS), 81% of all mothers received at least one antenatal care from a health professional during the five years preceding the survey. According to the findings of the 1993 TDHS and 1998 TDHS, this proportion was 62% and 68%. These findings show that the proportion of mothers who did not receive any antenatal care has declined by 30 percentage points in the five years from 1998 to 2003. However, almost one-fifth of the mothers have not received any antenatal care. In addition, the proportion of taking adequate antenatal care was increased in the course of time. In 2003 this proportion was found as 40.6%, while it was 30.9% in 1998, and 24.8% in 1993. Furthermore, the findings of the 2003 TDHS has revealed that while 46%[1] of the women received adequate prenatal care, 35% of the mothers received inadequate prenatal care and 19% of them cannot receive any antenatal care. While in 1993 TDHS 38% of the mothers could not receive any antenatal care, in 1998 TDHS this percentage decreased to 31.9.

Moreover, taking antenatal care is changed by place of residence and regions in Turkey. As seen in TABLE 5.1, taking antenatal care is much more frequent in urban areas and in the Western region in Turkey (Ergöçmen et. al., 2005).

[1] The criterions used to describe the adequate antenatal care in the 2003 TDHS are receiving at least four antenatal care visits, the first visit made within the three months of pregnancy, and received antenatal care from a health professional. However, in the 1993 and 1998 TDHS the criterions were receiving at least five antenatal care visit, the first visit made within the three months of pregnancy, and received antenatal care from a health professional.

TABLE 5.1 Percentage Distribution of Women Utilized Antenatal Care according to Type of Place of Residence and Region, TDHS 2003

	Lack of Antenatal Care	Adequate Antenatal Care	Inadequate Antenatal Care	Total
Place of Residence				
Urban	11.8	56.0	32.2	100.0
Rural	34.4	25.4	40.1	100.0
Region				
West	8.8	63.1	28.1	100.0
South	14.9	44.4	40.7	100.0
Central	17.1	45.6	37.3	100.0
North	14.8	45.6	39.6	100.0
East	38.8	23.7	37.4	100.0
Total	18.9	46.4	34.7	100.0

Source: Ergöçmen et. al. (2005)

The conditions in which the births are delivered are also important for the health and survival of the newborns. In the study of Toros and Kulu (1988), it was pointed that according to the results of the "1983 Turkish Fertility, Contraceptive Prevalence and Family Health Status Survey", 58% of the last live births were delivered in places other than a health facility in Turkey. The regional and urban/rural differentiations were also critical. In urban areas and in the West, 63% of the last live births were delivered at a health unit, whereas in rural areas, 76% of the last live births and in the east, 84% of the last live births took place in places other than health units. According to the results of the same survey, only 62% of the last live births were also assisted by a doctor or midwife-nurse, while 16% were assisted by a traditional midwife and 22% by relatives or neighbors. 83% of the last live births were assisted by a health professional in urban areas, whereas it decreases to 43% in rural areas. In the West, this proportion was 85%, while in the East, it was only 34%.

According to Ergöçmen et. al. (2005), during the five years preceding the survey, about 77% of the births were delivered at a health facility. And, other births

were delivered at home more generally without assistance of health personnel. The place of delivery and assistance of delivery also vary according to region and place of residence. As seen in TABLE 5.2, the proportion of delivery at a health facility was much more frequent in the West and urban areas of Turkey. A child born in an urban area is 1.3 times more likely to have been delivered at a health facility than a rural child. In all regions, except the East where almost half of the births took place at home, the majority of births are delivered in a health facility.

TABLE 5.2 Place and Presence of Health Personnel during Delivery according to Type of Place of Residence and Region, TDHS 2003

	At Home without Health Personnel	At home with Health Personnel	At Health Facility	Total
Place of Residence				
Urban	4.8	9.3	84.5	100.0
Rural	4.9	30.1	63.7	100.0
Region				
West	3.8	4.3	91.0	100.0
South	10.4	10.3	77.4	100.0
Central	2.8	8.1	88.3	100.0
North	1.2	12.2	85.6	100.0
East	5.5	40.0	52.4	100.0
Total	4.8	16.4	77.4	100.0

Source: Ergöçmen et. al. (2005)

According to Addai (2000), the decision for using Mother and Child Health (MCH) services can be perceived as individual choice like any health care services. A review of the literature reveals that the utilization of MCH services in developing countries can be explained by three perspectives. The first explanation is regarding socio-demographic characteristics of individuals (Anderson and Newman, 1973 cited in Addai, 2000).

"The basic premise of this explanation is that people with the same socio-demographic attributes will seek health services equally, irrespective of their cultural background. This line of reasoning is based on the understanding that individuals behave within decision fields that parameters differ with their positions

in the stratification system. Low use of MCH services in the context of the characteristics perspective is explained away as a reflection of low levels of socio-demographic attributes such as education, occupation, age at birth and other such variables" (Addai, 2000).

A second perspective attributes the level of use of MCH services to the accessibility. "The accessibility hypothesis is based on the premise that access to health facilities and personnel is equally important in the use of MCH services, especially in developing countries." (Grant, 1990; Wong et al., 1987; Ademuwagun, 1977 cited in Addai, 2000). The third perspective is the cultural context within which decisions about use of services were made. It suggests that medical need is not only determined by presence of disease, but also by the cultural perception of illness. "What constitutes a threat to health, especially among pregnant women and children, tends to be culturally relevant" (World Bank, 1994; Sergent, 1982 cited in Addai, 2000).

Health services researchers accept that antenatal care is a crucial determinant of maternal and infant mortality; therefore, they have conducted studies examining factors which affect the utilization of antenatal care services (Chen et al., 2003). For example, in study of determinants of antenatal care's timing in Kenya, Magadi et al. (2000) suggest that desirability of a pregnancy and birth order are significantly associated with the timing of the first antenatal care visit. Furthermore, this research indicates that marital status and the desirability of a pregnancy are important determinants of the frequency of antenatal care (Chen et al., 2003). Another recent study conducted in California by Braveman et al. (2000) identified factors affect the utilization of antenatal care services among women with insurance that are unwanted pregnancy, a lack of schooling, and grand multi-parity. In other words, women with unwanted pregnancies, or women with five or more births, or those with less education tend to be less likely to have antenatal care (Chen et al., 2003). Moreover, Turkish research by Çelik and Hotchkiss (2000 cited in Chen et al., 2003) states that educational attainment, the number of previous pregnancies, health insurance coverage, ethnicity, household wealth, and geographic region have influence on women's use of antenatal care services.

The research of Addai (2000) about the determinants of use of MCH services in rural Ghana also reveals that cultural, socio-demographic, and accessibility variables are critical in shaping the use of MCH services in rural Ghana. As a matter of the fact that the utilization of MCH services seems to be shaped mostly by level of education, religious background and region of residence, and partially by ethnicity and occupation. According to Addai, another issue which needs attention for improved reproductive health in rural Ghana is National Health Insurance Scheme experimented in the country. The scheme makes compulsory to pay a premium for the public for availability and acceptability of health services. A fundamental problem with this scheme is that most people do not earn salaries, namely unemployed. People in rural areas especially women who need health services can not pay and this most probably bring to give up using MCH services.

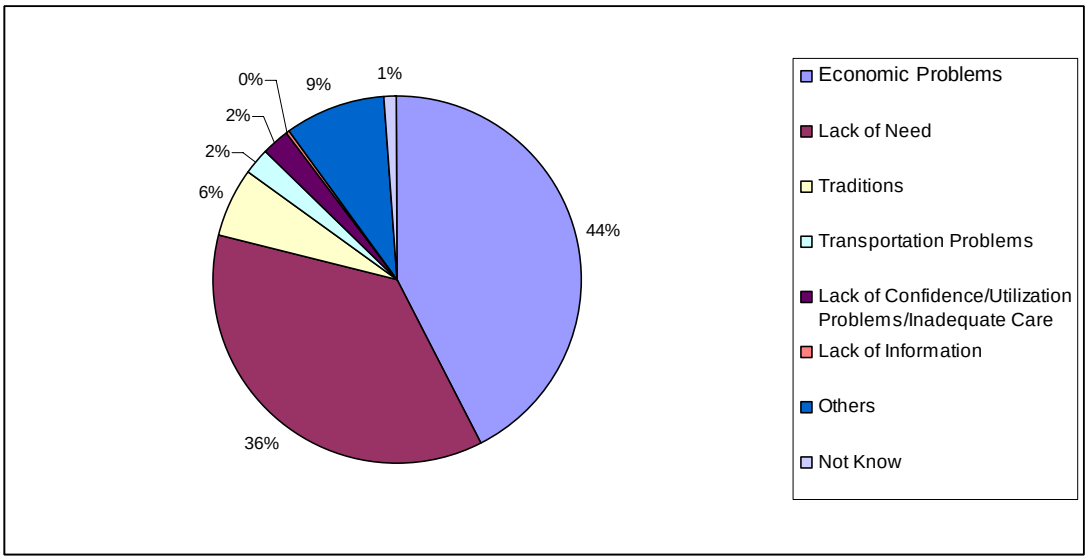
In addition, it is estimated that in the world each year almost 4 million neonates are dying due to the inadequate antenatal care (UNICEF cited in Ergöçmen et. al., 2005). The utilization of antenatal care services can be determined by many factors. Besides accessibility of health care services, various demographic and socio-economic factors affect the utilization of these services. And the socio-economic status of the women is one of the most important factors affecting the utilization (see Ergöçmen et. al., 2005).

The study of Ergöçmen et. al. (2005) has shown that younger women, educated women, and women with children of birth order three or lower are more likely to have received antenatal care in Turkey. Women are also covered by health insurance twice more likely to have received antenatal care than women are not covered by health insurance. Furthermore, younger women, educated women, insured women and women with children of birth order three or lower are more likely to give birth at a health facility (Ergöçmen et. al., 2005).

The findings about the factors caused lack of antenatal care demonstrate that economic problems are the primary reasons of lack of antenatal care in Turkey. According to the results of TDHS 2003, as seen in FIGURE 5.1, 4 of every 10

mothers have stated economic problems as the primary cause of lack of antenatal care (Ergöçmen et. al., 2005).

FIGURE 5.1 Percent Distributions of Reasons for Lack of Antenatal Care, TDHS 2003



Compiled from data supplied by Ergöçmen et. al. (2005)

Many national and international studies have provided sufficient evidence on the importance of antenatal care and also paid attention to the determinants of utilization of antenatal care services. However, few concentrated on a study of affects of the health insurance on the utilization of antenatal care services and even infant mortality rate. In the literature, by some studies health insurance is often suggested as a crucial policy instrument for improving health outcomes especially in low-income populations. Health insurance is also accepted as one of important determinants of infant mortality. The primary pathway through which insurance influences health is by lowering the costs of health care since changes in health care prices generally lead to increased utilization.

One of the studies related to infant mortality and access to medical care was conducted by Hughes (1988). In the study, Hughes states that the U.S. record on infant mortality is very poor when compared to that of other industrialized countries. The role of low birth weight in infant survival is critical since when compared to normal birth weight infants, babies born with low birth weight are 20 times more

likely to die in their first year of lives. According to Hughes, since 1950, the incidence of low birth weight in the U.S. has not substantially changed. While in 1950, 7.5% of all infant were born at low birth weight, in 1984, 6.7 of newborns were low birth weight. And, statistic of 1984 demonstrates only a 0.1% decline from that of previous year. Hughes further explains that high rates of infant mortality and low birth weight are related to several factors, including access to medical and health care. Several studies, such as Miller (1985), also show a link between low birth weight and access to medical and nutritional services. Hughes considers that mothers who receive no prenatal care are three times more likely to have a baby born with low birth weight than women who receive care. Despite the widespread acceptance of the importance of antenatal care, large numbers of women, especially low income women in U.S. do not receive necessary maternity care. For the poor families in U.S., health care costs are very expensive. Health insurance coverage, therefore, is essential for the accessibility of prenatal care. In recent years, however, access to care has been limited by the growing number of persons without health insurance.

Moreover, the objective of Liu et al.'s (2002) study was to assess the impact of National Health Insurance (NHI) on the utilization of neonatal care and childhood vaccination in Taiwan. The neonatal and infant mortality rates per 1000 live births were 3.7 and 6.6 in Taiwan by 1996, respectively, far below least-developed countries (53 and 72‰) and even lower than most developed countries (5 and 7‰) (WHO, 1996a; WHO ,1996c; Department of Health,1996). The reason for the low neonatal mortality level in Taiwan could be the high percentage of birth deliveries at health institutions. More than 96% of the neonates are born at a health facility. When compared with many developing countries, Taiwan has lower level of home births (63% vs. 4%) (Department of Health, 1996; WHO, 1996c). This means that health care system in Taiwan has progressed very well in the accessibility of delivery services (Liu et al., 2002). In Taiwan, two health services must be provided to all newborns to reduce infant mortality; four free neonatal care visits and vaccinations for infants under the age of 1 with the implementation of NHI. It is expected that NHI has a significant impact on care use, but, although care is free, not all newborns receive these preventive health services. According to the results of the study, in

Taiwan, regional differences in care use exist. Also, implementing NHI did not apparently affect the use of care. It is due to the fact that there is little variation in the care use for the northern neonates after NHI since the northern area is the most developed and populated region in Taiwan, most medical institutions and manpower are established in this region. This is naturally leading to a considerably higher availability and accessibility of health care use. Hence, there is little improvement in regional differences even with the implementation of NHI. Moreover, most newborn in this study live in the northern area, which represents 44% of the sample. As a result, due to the little changes and the largest sample in the northern area, the impact of the NHI on care use becomes insignificant. However, when it is further examined, it was found that implementing NHI did reduce the inequality of use of neonates' preventive care across the areas.

"This means that neonates in central and eastern Taiwan are relatively more likely to use these two preventive services than those in the northern area after the implementation of NHI...However, there seems to be no change in neonatal care use for southern neonates after NHI. This implies that the government needs to put more effort into improving the accessibility of childhood preventive care in this region, such as establishing more health facilities, advertising and promoting free preventive care, and educating parents about the importance of preventive care for their children's health" (Liu et al., 2002).

The study of Chen et al. (2003) also focuses on the determinants of antenatal care use in Taiwan and provides a comparison of access to care before and after NHI implemented in 1995. The results of the study demonstrate that antenatal care visits of mothers living in central area increased more than visits of those in the northern area. This shows that "the expansion of medical care in aboriginal areas and outlying islands may prove to be one of the NHI's best achievements". Thus, access to maternal health services improved significantly after the implementation of NHI program. Additionally, regardless of NHI implementation, women in some situation had more antenatal care visits than the average, which are having a highly educated husband, gaining more weight than average during pregnancy, experiencing the first pregnancy, carrying twins or triplets, having care provided by a doctor rather than other caregivers, and switching to another health care center during pregnancy. The trend toward delaying pregnancy is also causing a change in the care use

Another study regarding NHI Program in Taiwan was conducted by Chen et al. (2004). NHI Program started providing each child six well-baby care visits. The purposes of the study were to investigate the utilization level of the well-baby care visits and explore relevant factors. According to the results;

"36% of eligible children did not use any of the first four visits, 58% did not utilize the fifth, and 82% did not use the sixth in the late 1990s. It appears that the take up of these services is much less than satisfactory. Maternal awareness of and attitudes toward the services appeared to be the most important factors influencing utilization. These two factors not only were most influential, but also significantly contributed to disparities in utilization among different regions and type of residential districts".

The results further reveal that people in the east and rural areas in Taiwan tended to neglect child preventive care more than others, and people in the east might also have poor access to these services. And, the focal point of the study is that although NHI program remove financial barriers by providing cheap well-baby care visits, apparently, it is not effective for ensuring a high utilization rate. Thus, it is necessary to implement some other policy instruments for utilization of child preventive cares in NHI Program (Chen et al., 2004).

The Hope's (1992) study on child survival provides an assessment and analysis of the increasing rates of mortality among the children of low-income African-American families in the United States and the intensifying problem of improper health care which seems to have given rise to it. According to Hope, since 1940, infant mortality rates have declined. However, throughout this period African-American rates have remained about twice those of whites. In 1988, the white infant mortality rate was 8.5 per 1,000 live births while for African-Americans it was 17.6. However, the most disturbing fact about the disparity of causes between African-American and white infant deaths is that the most of African-American infants' causes of death are considered preventable with the proper health care. African-American infants in the United States die from curable conditions since they and their mothers get little or no health care during or after birth. However, health care utilization by children and pregnant women is closely tied to health insurance,

without which they are less likely to utilize needed medical care. The lack of health insurance is directly related to the inability to afford insurance. The source of funding for health care in the United States is employment-based third-party health insurance. However, because African-American people tend to experience higher unemployment rates, a few of them have access to health insurance. According to the Census Bureau, 14 per cent of whites and 21.8 per cent of African-Americans lacked health insurance in 1983. This study has also shown that the uninsured systematically uses less medical care than the insured population, and that they are less likely to seek care when seek. This means that more African-American children than white children will continue to die due to lack of access to prenatal and postnatal health care (Hope, 1992). Increase in the accessibility to health insurance is therefore regarded by many as one way to improve utilization of health care by the poor (Reinhardt, 1987 cited in Hope, 1992).

Another study regarding maternal health care utilization is also conducted by Çelik and Hotchkiss in 2000. The purpose of the research is to explore the individual-, household- and community-level factors that affect women's use of maternal health care services in Turkey. The data used for the study come from 1993 Turkey Demographic and Health Survey (TDHS). The results reveal that educational attainment, parity level, ethnicity, household wealth, and geographic region are significant factors that affect the utilization of health care services. Among household-level characteristics, the results provide strong evidence that having health insurance coverage increases the probability of both prenatal care use and choosing a modern delivery versus a traditional home delivery. This result is consistent with the findings of a study conducted by the MoH et al. in 1994, which demonstrates that having health insurance increased the utilization of health care services independent of the other factors (Çelik and Hotchkiss, 2000).

Moreover, the study of Hancıoğlu (2002) carried out with data of the 1998 TDHS reveals that health insurance increases the likelihood of using prenatal care and delivery services considerably. The effect of economic status continues even

after the presence of health insurance is controlled for. This demonstrates that cost is a major obstacle in regard to the use of reproductive health services in Turkey.

Furthermore, Winegarden and Murray carried out a study which examines mortality and fertility effects of the early health insurance programs sponsored by several European governments in the course of the demographic transition. The sample of the study includes data from for five countries - Belgium, Denmark, France, Germany and Sweden pertain to the 1875-1913 period. In the study, regression results were used as the basis for two sets of simulations - historical and counterfactual. The former provides a crucial test of the model; the latter, when compared with the former, serves as an approximate measure of the total impact of the health insurance on both mortality and natality. While the regression results of the study supported the expected pattern of partial effects, comparisons of the historical and counterfactual simulations clearly indicated that health insurance accelerated the down-trend in mortality; this effect varied in magnitude, but not in direction, among the sample countries. Hence, it should be emphasized that the role of health insurance with respect to the historical downtrends in mortality and fertility was surely overshadowed by other social, economic and biomedical factors (Winegarden and Murray, 2004).

In addition to these, Currie and Gruber studied the effect of public insurance for children on their utilization of medical care and health outcomes by exploiting expansion of the Medicaid[2] program to low-income children. These expansions doubled the fraction of children eligible for Medicaid between 1984 and 1992. Regarding this issue, Currie and Gruber have conducted two researches, the former was in 1994, and the latter was in 1996. The results of both study demonstrated that eligibility for Medicaid significantly increased the utilization of health care. Increased eligibility was also associated with a noticeable reduction in child mortality (Currie and Gruber, 1994; Currie and Gruber, 1996).

[2] Medicaid was launched in 1965 to replace a fragmented and grossly inadequate system of medical assistance programs. It offers reimbursements to states for a portion of the medical costs of low-income persons. Each state administers and operates its own program, establishing its own rules consistent with federal guidelines (Hope, 1992).

High rate of child mortality suggest that American children do not receive the same quantity or quality of health care as children in other developed countries since the infant mortality rate at 8 per 1000 in the United States is the highest in the developed world. According to Bloom (1990 cited in Currie and Gruber, 1996), as many as 30 % of the poor children are without health insurance. And, the debate about reforming the American health care system has increasingly emphasized health insurance for children (Currie and Gruber, 1996). Several recent researches have also revealed that children who are uninsured have lower utilization levels and worse health outcomes (Kasper, 1986; Short and Lefkowitz, 1992; Mullahy, 1994 cited in Currie and Gruber, 1996).

The simulated eligibility regression of the former study indicates that 20 percentage point rise in eligibility under Medicaid led to a 7% decline in the infant mortality (Currie and Gruber, 1994). Thus, the results of the studies have shown that being made eligible for Medicaid has significant effect on the utilization of health care, and increases in eligibility at the state level are associated with significant reduction in child mortality.

The Japan is also currently enjoying the world's lowest infant mortality rate (4.6 / 1000 live births). The economic situation could partially explain it because the infant mortality rate is twice as high in the richest country of the world, the USA in which medical expenditure per capita is twice that of Japan. In this connection, it is possible to mention two important systems that are believed to have played a central role in child health promotion in Japan: *Boshi Techo* and *Kenko Hoken*. The *Boshi Techo* (Mother and Child Health Handbook) first introduced in 1942 has provided newly pregnant women with free periodic maternal check ups, maternity and childbearing education and well-baby care services. It is issued at regional government offices free of charge. All medical personnel also use this booklet as the common source of medical information about mother and child health. All people in Japan are covered either by *Kenko Hoken* (National Health Insurance) or Employee's Health Insurance. Almost all workers in Japan must pay a certain portion of their salaries a deposit to the responsible bodies. Because most medical facilities and

practitioners participate in this insurance system, every mother easily access to those facilities. 90% (for the insured) and 70% (for the family) of the cost of health services is paid by the government or the responsible bodies for employee's insurance. People whose income is at the level of poverty can also obtain government support for medical costs. Thus, in Japan, with *Boshi Techo* and *Kenko Hoken,* every pregnant women and child has inexpensive (often free) and equal access to the health care system. This easy accessibility has played a great role in improving child health in Japan (Sakakihara and Kobayashi, 1993).

Furthermore, the study of Dow and Schmeer (2003) evaluates the effect of health insurance on infant and child mortality in Costa Rica. In the 1970s, national health insurance was adopted in Costa Rica, which expanded insurance coverage of children from 42% in 1973 to 73 % in 1984. During this period, the infant and child mortality rates also declined rapidly, however, this trend may be related to other changes during this period.

Caldwell (1986 cited in Dow and Schmeer, 2003) has argued that national health insurance was one of the important elements of Costa Rica's success in achieving low infant and child mortality levels with contribution of high education levels and a strong primary care focus.

However, Dow and Schmeer further explores that the base of quantitative evidence is small and mixed regarding the magnitude of health improvements which can be caused by insurance-induced increases in health care utilization. And, Dow and Schmeer continued;

"As in the larger literature on the maternal, household, and community- level factors associated with child health, research has been hampered by problems of unobserved heterogeneity. For studying the effect of health insurance on health, the central such concern arises from the endogeneity of insurance, and resulting biases may be difficult to even sign. Adverse selection, in which sicker individuals seek out insurance, can lead to underestimation of insurance effects. However, in many developing countries positive selection may also be important, as civil service and other jobs with insurance benefits often select unobservably healthier and higher socio-economic status individuals, leading to overestimation of insurance effect".

And, the results of the Dow and Schmeer's (2003) study demonstrate that insurance has a strong county-level relationship with mortality before controlling other time-varying factors. However, many other variables were changing along with insurance, making causal inferences highly sensitive. The results of the study point to maternal, household and access to care variables as crucial factors. After controlling these variables, it is possible to reject the hypothesis that insurance played a major role in the decline of infant and child mortality in Costa Rica.

6. A GENERAL OVERVIEW OF INFANT MORTALITY

6.1 Infant Mortality and Its Components

Infant mortality is the probability of death before the age one. It is estimated as the percentage of those who die within their first year compared to all live births. Infant mortality is divided into several parts because its causes and determinants are known to be significantly different at the earlier and later ages of infancy.

The neonatal and post-neonatal mortality are two main components of infant mortality. While death of infants in the first month of life (28 days) is called as neonatal mortality, those occurring during the remainder of the first year of life (5 – 52 weeks) is called as post-neonatal mortality.

The breakup of the infant mortality as neonatal and post-neonatal aims to separate its endogenous and exogenous components which are the signs of biological and socio-environmental factors. While the neonatal mortality is mostly a function of endogenous factors like maternal biological characteristics, health status and problems during pregnancy and child birth; post-neonatal mortality is a more sensitive indicator of the exogenous factors, namely basic environment in which an infant lives. During the post-neonatal period, an infant's health is affected by inadequate housing, food, sanitation, and accidental injuries (Hughes, 1988). Thus, the contribution of each of these components is very critical in the efforts in bringing the infant mortality down.

Due to easy control of the environmental factors, large reductions in the post-neonatal mortality are possible. However, it is a fact that reduction in the neonatal mortality is relatively difficult. The developed countries have made good progress regarding infant mortality, especially post-neonatal mortality by controlling environmental factors. In developing countries, however, both neonatal and post-neonatal mortality are still problems, and the share of post-neonatal mortality in infant mortality is high compared to that of developed countries (Ergöçmen, 1991).

In addition to these two components of infant mortality, deaths occurring to the live-births in the latter part of the prenatal period (after 28 weeks since conception) and early neonatal deaths (first week after birth) are named as perinatal mortality (HUIPS, 2004). In perinatal mortality, the underlying factors for deaths in prenatal period and in the first week after birth are very similar and differ from the factors responsible for both neonatal and post-neonatal mortality.

6.2 Levels and Determinants of Infant Mortality in the World

Infant mortality rate is used as sensitive and powerful index of socio-economic indicators of development. It is also used as an indicator of health status of a community. The reduction of infant and child mortality helps to reduce the fertility by the way of decreasing the desired number of children, as well. The analysis of infant mortality rate is further significant since while crude death rates have fallen dramatically in many regions of the world, infant mortality rates remain high in those regions, including some parts of the developed world. And, pediatrician Marsden Wagner of the World Health Organization has also said that "Infant mortality is not a health problem. Infant mortality is social problem with health consequences." (U.S. National Commission to Prevent Infant Mortality, 1988).

The 20th century witnessed large declines in mortality levels in almost all countries of the world regardless initial levels, socio-economic circumstances and development strategies. Whereas, in economically more developed countries, the declines were appearing at the end of the 19th century, in the developing countries dramatic declines took place after the end of the Second World War with the developments in the field of public health and medicine (Sandhya, 1991). The magnitude of decline in the developing countries was even so impressive that caused to happen widespread speculation during 1960s and 1970s that the mortality gap between the developed and developing countries would narrow significantly by the end of the 20th century. Some of these reductions occurring in countries with relatively low gross national product also encouraged this view (Ahmad et al., 2000).

There are significant differences between the developed and developing countries not only with regard to general mortality rate but also with regard to infant mortality rate. Consequently, both national and donor resources were aimed to further decline in the mortality levels, and therefore, for decades, the focus of international public health concern has been on reducing child mortality. Many countries have implemented special programs to speed the decrease in infant mortality rates with the collaboration of WHO and other international agencies since 1970s (Sandhya, 1991). For example, various child survival programs like USAID's Child Survival Initiatives set some strategies for achieving certain child mortality targets among participating countries (Ahmad et al., 2000).

The Demographic and Health Survey, the largest study which collects information on the mortality and health of children, has data on many factors relevant to the level and trends in infant mortality in the world today. With data from 104 data set comparisons from 62 developing countries and over 1 million interviews, the Demographic and Health Survey has provided data that most accurately represents trends today (Bajracharya, 2003).

However, with economic reversals, political instability and advents of the AIDS epidemic progress in reducing child mortality have slowed down over the last few decades in some parts of the world, namely in the African Region and the South-East Asia Region. Though, Botswana, Namibia, Niger, Zambia in Africa; the Democratic People's Republic of Korea in South East Asia; and Papua New Guinea in the Western Pacific have even experienced increases in child mortality (Ahmad et al., 2000).

As mentioned above, there have been substantial reductions in infant and child mortality in many countries for a long time. On the other hand, levels of infant and child mortality remain unacceptably high in many parts of the world. According to Lopez (1994 cited in Lopez, 2000), in the mid-1980s, almost 15 million children under the age of five years died each year, representing 30% of all deaths worldwide and up to half of all deaths in many countries. The analysis of mortality trends by

Ahmad et al. (2000) reveals that globally, the number of child deaths declined from over 13 million in 1980 to about 10.5 million in 1999. Of the 10.5 million deaths, almost 36% in Africa, 33% in South East Asia, 14% in Eastern Mediterranean, 10% in the Western Pacific, 4% in the Americas, and 2% in Europe were come. On average about 15% of newborn children in Africa are expected to die before reaching their fifth birthday. The corresponding figures for many other parts of the developing worlds are in the range 3-8%, and that for Europe is under 2%. Over the past decade, the number of under five year olds dying has fallen by 2.2 million or 17.5% worldwide. And over the past half-century the risk of a child dying before five has fallen from 25% to 7%.

In addition, according to Claeson et al. (2000), in 1998 almost 2.5 million children under age five died in India. Between the mid-1980s and early 1990s, significant progress was made regarding child mortality; however, recent data have indicated that the decline in child mortality rates is slowing.

The infant mortality rate is a critical development indicator, reflecting combined effects of economic development, technological change, including health interventions, and the socio-cultural environment. Many of these deaths are preventable with health technology. Most biomedical and social scientists identify infectious diseases and malnutrition as the main causes of high infant and child mortality in poor populations. However, it is important to note that child mortality is consequences of biosocial interactions. By the advances in biomedical sciences, 97% of the newborns will survive, but reaching this potential is strongly dependent upon the social circumstances in which children are born (Mosley and Chen, 1984). In other words, although at the individual level biological factors are the principal causes of infant mortality; at the collective level these causes have important social determinants. For example, Behm (1981 cited in Sufian, 1990) has argued that

"There are biological explanations for higher infant mortality of children born to mothers of extreme ages, and for higher risk of children of a high birth order. On the other hand, it is socially explainable that women in low socioeconomic groups have an early, high and extended fertility, so a larger proportion of their births occur in group of greater risk".

This disparity in infant mortality rates among the countries cannot also simply be attributed to just differences in poverty and incomes. Many studies have attempted to study the effect of per capita income and general economic growth on the infant mortality rate. However, results have clearly shown that there is no direct relationship between income per head and infant mortality rates. The structure of studies today have changed and the focus now has shifted to socio-economic factors, including factors that are related to health care, education level and gender inequity (see Bajracharya, 2003).

In the literature, the levels, determinants and differentials of child mortality have been the subject of the many studies. Thus, many of the proximate variables that affect infant mortality have been identified, which can be organized into three parts as demographic factors; social and cultural factors and antenatal and delivery care; and environmental factors. Demographic factors generally include age at marriage, maternal age and parity, and birth interval. Socio-economic and cultural factors contain socio-economic status, type of family, occupation of mother and father, education of mother, prenatal care, delivery and child care, and infant feeding practices. Lastly, environmental factors include accessibility to medical facility, sanitation and availability of safe drinking water (Sandhya, 1991).

There are established regularities between infant mortality and the variations such as settlement area, father's and mother's work status and education, income, religion, ethnicity, access to health care etc.

The study of Rutstein (2000) by using Demographic and Health Survey data in developing countries revealed that fertility behavior, nutritional status and infant feeding, use of health services by mothers and child, environmental health conditions, and socio-economic status had a role in the infant mortality trends.

One of researches conducted in India also provided a framework for analyzing factors that contributed to infant mortality, which included proximate

factors (such as non-medical factors and medical care during the antenatal period, care at birth, and preventive and curative care in the post-natal period); maternal factors (age, parity, and birth intervals); and household- and community-level factors (water, sanitation and housing). The study revealed that a significant decline in infant mortality rate is possible without significant improvement in economic development. On the other hand, reproductive health services; perinatal care; improved breastfeeding practices; immunization; home-based treatment of diarrhea; and timely introduction of supplementary foods would significantly reduce high infant mortality rates in India (Jain and Visaria, 1988 cited in Claeson et al., 2000).

Furthermore, education has been found to be one of the most important determinants of infant and child mortality. Akşit and Akşit (1989) states that towards the end of the 1970s, Caldwell demonstrated that maternal education was not a proxy for socio-economic variables like income, occupation and wealth but rather an indicator of social and psychosocial transformations at individual, household, and community level. That is to say that educated women were autonomous, responsible and decision-making agents with knowledge and skills to ensure the greater likelihood of survival of their children. This finding gave rise to many studies and further analyses of data, both at the individual and aggregate level, have shown a significant effect of education on infant and child mortality (see Sufian, 1990). However, there are also anomalous findings that challenge the powerful position of maternal education as a predictor variable (see Akşit and Akşit, 1989).

6.3 Levels and Determinants of Infant Mortality in Turkey

Turkey like many other developing countries has experienced a sharp decline in mortality since World War II. The country has dual structure from the point of mortality; while adult mortality is close to the developed country standards, infant and child mortality rates are quite above the rates of developed countries. In other words, despite a general decline in mortality, infant mortality is still high in Turkey, even when compared to that of many other developing countries.

Population censuses and sample surveys are two main sources of information for estimating infant mortality level in Turkey. For the first time, the 1970 census included questions about the total number of deaths before the age one that make infant mortality measurement possible. The first nationwide demographic survey was "Birth and Death Rates in Turkey, 1963" which also provided data for infant mortality rate. And, these prove that infant mortality studies in Turkey have began in 1960s.

Additionally, the Turkish government has become aware of the infant mortality problem of the country too late. It is possible to understand this issue by taking a look at five year development plans of the country. For the first time, in the Fifth Five Year Development Plan (1985-1989), the Turkish government put down a policy concerning infant mortality reduction. Nevertheless, this concern did not result in significant policy implementation except for vaccination campaign and some local efforts (Ergöçmen, 1991).

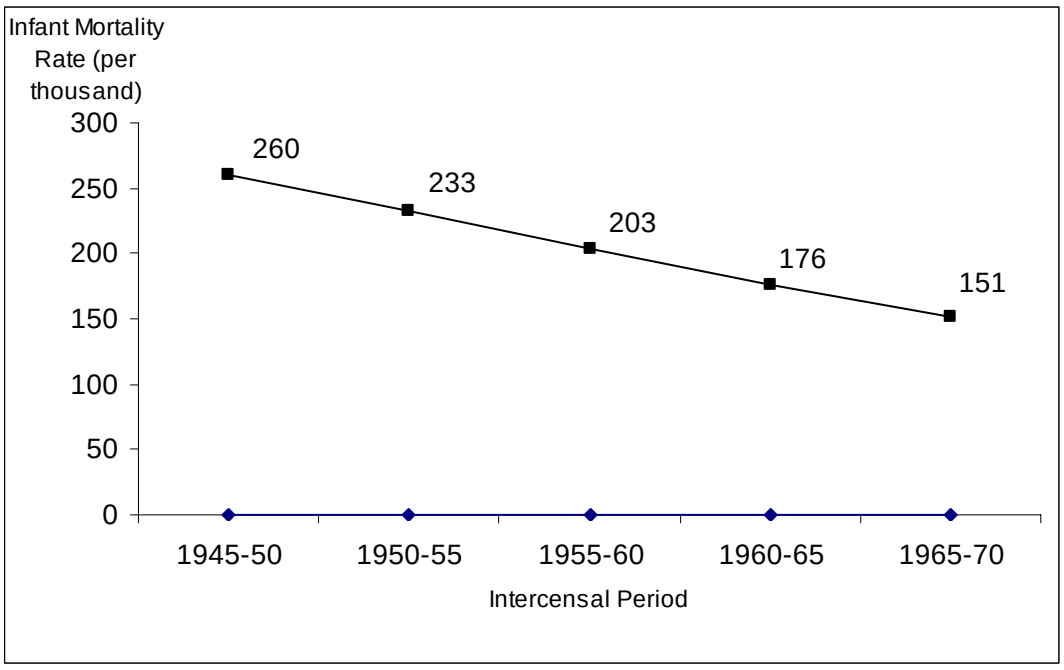
According to the results of 1963 demographic survey, the infant mortality rate in Turkey was 247 per 1000 live births based on one year preceding the survey. However, it is claimed that "this figure to be upward estimated due to the errors of retrospective questioning" (Fişek, 1969 cited in Ergöçmen, 1991).

"The Turkish Demographic Survey 1966-1967" also is a source of information for estimating infant mortality level on a regional and nationwide basis. The results of the survey revealed that the infant mortality rate was 153 per 1000 live births. For the urban regions of the country, it was calculated as 113 per 1000 live births and, for the rural regions, it was 168 per 1000 live births. Additionally, it was 143‰ for the West, 138‰ for the South, 197‰ for the Central, 141‰ for the North, and 127‰ for the East region. However, Cerit (1989) emphasized that the mortality results of the survey is low since the rate of the East region was unacceptably the lowest one among all regions of the country (Ergöçmen, 1991).

Another study on infant mortality level for Turkey was conducted by Shorter and Macura in 1982. The aim of the study was to estimate the levels for the years between 1945 and 1970. As seen in FIGURE 6.3.1, the results indicated that for the second half of the 1940s, the infant mortality rate was above 200‰ and there has been a decline in infant mortality rates after 1960s; below 200‰.

After 1970s, Turkey has experienced remarkable reduction in infant mortality rates. According to the results of "1978 Turkish Fertility Survey" (1978 TFS), which was conducted by Hacettepe University Institute of Population Studies as a part of Demographic and Health Survey Program, the infant mortality rate was calculated as 134 per 1000 live births.

FIGURE 6.3.1 Infant Mortality Rate, Shorter and Macura, 1945-70



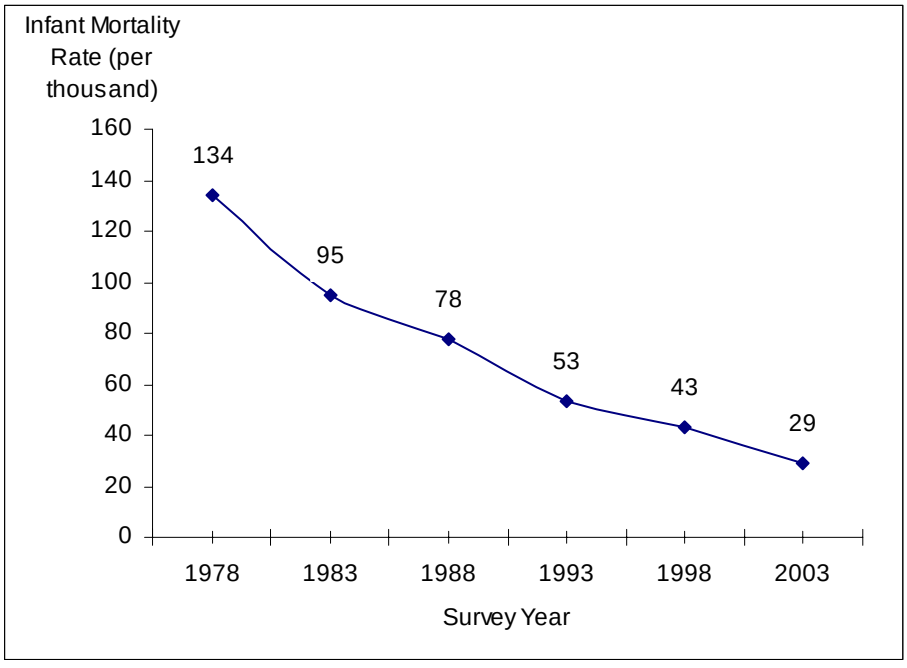
Compiled from data supplied by Shorter and Macura (1982)

Following 1978 TFS, "1983 Turkish Fertility, Contraceptive Prevalence and Family Health Survey" (1983 THS) demonstrated that the infant mortality rate in Turkey was reduced to 95 per 1000 live births. Hence, while 40 years ago 3 out of 10 newborn babies did not survive to age one, this figure was fallen to 1 out of 10 (Cerit and Akadlı, 1988). In addition, according to the estimation of "1988 Turkish

Population and Health Survey", the infant mortality rate was 78 per 1000 live births (Ergöçmen, 1991). The results of the demographic surveys on infant mortality rates conducted in 1993, 1998 and 2003 were in turn in order 53, 43, and 29 per 1000 live births (HUIPS, 2004). Hence, these results of the surveys reveal that in Turkey there has been a substantial improvement about child survival especially since 1970s.

In addition, great regional variations in infant mortality rates in accordance with various socio-economic and cultural characteristics in different parts of the country are observed throughout Turkey. As seen in FIGURE 6.3.3, the most significant differences are between the West and the East. The mortality risk of infants born in the East is higher than those born in the West. According to the results of 2003 TDHS, while the rate is 22 per 1000 live births (below the country level) in the West, in the East, where poor socio-economic conditions prevail with a low level of development, the rate is rising 41 per 1000 (above the country level) live births.

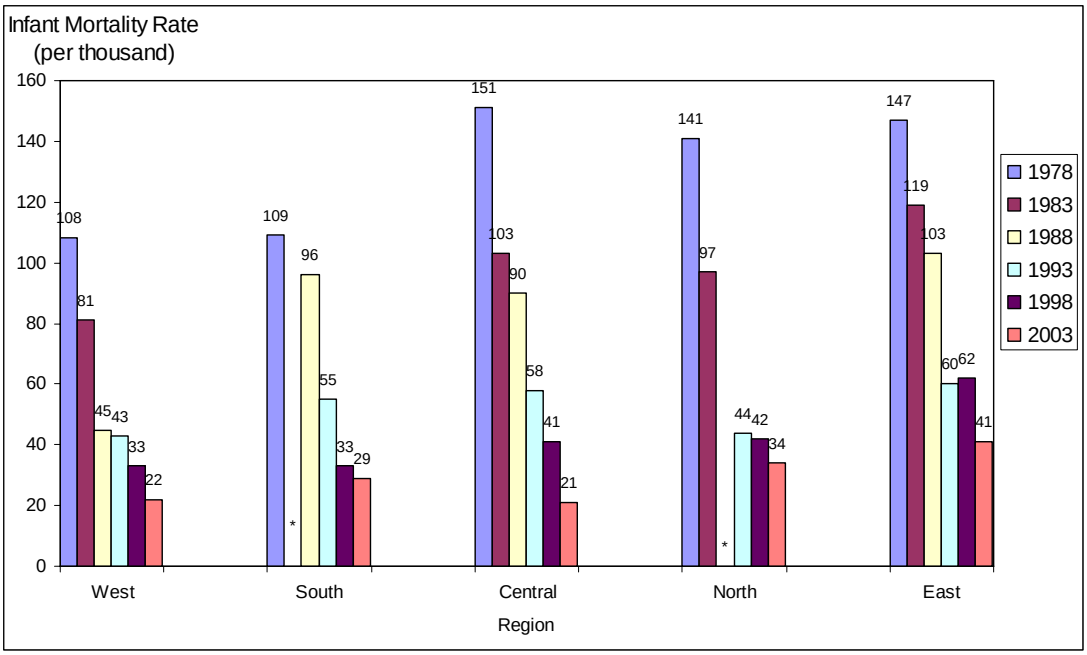
FIGURE 6.3.2 Infant Mortality Rate, Demographic Surveys, 1978-2003



Compiled from data supplied by Cerit and Akadlı (1988); Ergöçmen (1991); HUIPS and General Directorate of MCH/FP (2004)

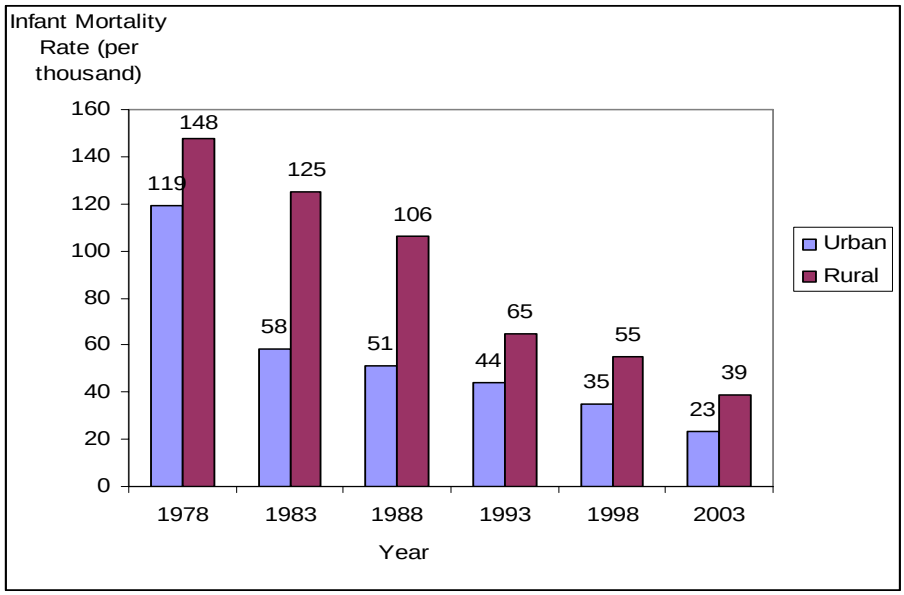
Besides regional disparities, there also exits differences in infant mortality rates on the basis of urban and rural settlement in Turkey. In the rural areas of the country the infant mortality rate is higher than the infant mortality in the urban areas. As seen in FIGURE 6.3.4, infant mortality in rural areas was twice the infant mortality in urban areas. The gap between the two settlements has increased in comparison to the 1972-1977 period. Hence, it is possible to suggest that the substantial improvement in urban infant mortality rate has contributed more to the reduction in infant mortality rate for overall Turkey. From 1970s to the late 1980s, while the decline in rural infant mortality has been only 27.4 percent, the decline in urban infant mortality has been 58 percent for the same period (Ergöçmen, 1991).

FIGURE 6.3.3 Infant Mortality Rate according to Regions, Demographic Surveys, 1978-2003



Compiled from data supplied by Akın and Köseli (1997); HUIPS and Macro International Inc. (1999); HUIPS and General Directorate of MCH/FP (2004)
*Less than 10 observations.

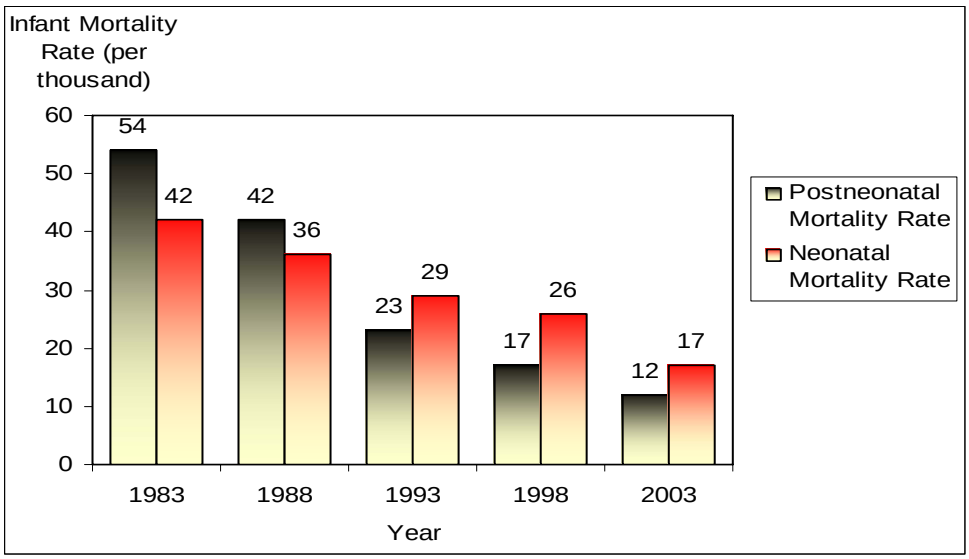
FIGURE 6.3.4 Infant Mortality Rate according to Type of Place of Residence, Demographic Surveys, 1978-2003



Compiled from data supplied by Ergöçmen (1991); HUIPS and General Directorate of MCH/FP (2004)

Furthermore, the share of post-neonatal mortality in Turkey was higher than the share of neonatal mortality in general (Cerit and Akadlı, 1988; Ergöçmen, 1991). As seen in Figure 6.3.5, however, this situation has changed after in 1990s in the contrary direction. That is to say that the share of neonatal mortality rate became higher than the share of the post-neonatal mortality rate, reflecting the situation of developed countries. As mentioned before, while the neonatal mortality is mostly a function of endogenous factors like maternal biological characteristics, health status and problems during pregnancy and child birth; post-neonatal mortality is a more sensitive indicator of the exogenous factors, namely basic environment in which an infant lives. The higher share of neonatal mortality in total infant mortality rate indicates that Turkey has achieved a certain extent to control exogenous factors of infant mortality. The rural/urban and regional differentiations exist for these two components of infant mortality as well.

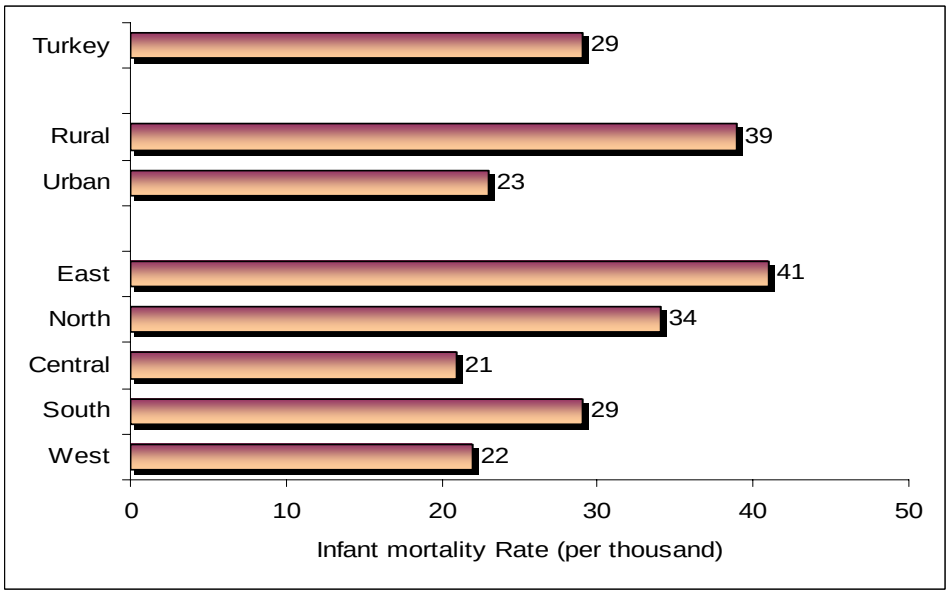
FIGURE 6.3.5 Post-neonatal and Neonatal Mortality Rates, Demographic Surveys, 1983-2003



Compiled from data supplied by Cerit and Akadlı (1988); Ergöçmen (1991); HUIPS and General Directorate of MCH/FP (2004)

As seen in Figure 6.3.6, the 2003 TDHS has shown that in Turkey, there has been remarkable decline in infant mortality rates recently. However, the current infant mortality rate of the country is still moderately higher than that of developed countries.

FIGURE 6.3.6 Infant Mortality Rate according to Regions and Place of Residence, TDHS 2003



Source: HUIPS (2004)

In addition to findings about the level of the infant mortality in Turkey, there exist also studies tried to reveal the causes and determinants of infant mortality.

Akşit and Akşit (1989) reviewed and integrated international and Turkish researches on infant and child mortality. They emphasized that the socio-cultural and biomedical determinants of infant and child mortality in Turkey has remained to be studied, whereas multivariate explanatory models of infant and child mortality were few in number.

In Akşit and Akşit (1989), it is stated that after establishing variations in infant mortality, an attempt was made by Goldberg and Adlakha (1969) and Adlakha (1970) with a survey conducted in Ankara. They tried to explain infant mortality by parent's socio-economic characteristics, mother's life style, and location of the household whether the house is in "gecekondu" areas of the city or not. During the univariate analyses it was demonstrated that uneducated mothers had 171 infant deaths while mothers with higher than primary education reduced their infant mortality 58 per 1000. Fathers with higher than primary education had infant mortality rate of 77 per 1000, and mothers' high exposure to mass media declined it to 76 per 1000. However at the multivariate analysis stage variables reduced to five as couples' community at birth, socio-economic status, housing, media consumption and wife's social exposure index. Results of their study revealed that socio-economic status, media consumption and wife's social exposure mediated the effects of community of birth and residence and had their own net effects on infant mortality.

Furthermore, Cerit conducted an analysis of the determinants of infant mortality. This study of Cerit (1975 cited in Akşit and Akşit, 1989) has concluded that the education level of parents, their occupation and the characteristics of community of residence were the most significant factors determining infant mortality. However, the urban and rural residence seemed to be the primary determinant, whereas parents' education and work status were secondary factors. Moreover, socio-economic determinants, pneumonia, diarrhea, protein-calorie defiance and rickets were widely seen as biomedical causes of infant mortality.

Another study aimed at to link socio-economic and biomedical determinants of infant mortality was carried out by Tezcan (1985 cited in Akşit and Akşit, 1989). It was a local area study in Etimesgut which is rural district near Ankara where health services have been socialized since 1965. All births and deaths of the 1970-1974 periods in Etimesgut were analyzed and the average cohort infant mortality rate for this period was found as 94.4 per 1000. Mother's and father's age, father's occupation, place of residence, pregnancy order, sex of infants, previous child death, place of delivery, accessibility to health care, medical causes of infant deaths are the single variables of the study. The frequency order of medical causes of infant deaths was pneumonia, gastroenteritis, low birth weight, and other infectious diseases. And, the frequency order of the social causes were ignorance of mother, indifference of families, fatalism, delay in going to hospital and difficulty of transformation. The medical and social causes of infant deaths are expected to be closely related with socio-economic and cultural characteristics of households and communities in the district. On the basis of variable analyses, the most effective variable was father's occupation which is followed by previous child experience, distance to a health centre and type of community of residence, etc.

The study of Toros and Kulu (1988) has also examined the infant mortality in Turkey. The data used in the study was obtained from "1983 Turkish Fertility, Contraceptive Prevalence and Family Health Status Survey". In the research it has been founded that one of the factors most affecting infant mortality was the mother's education level. Educated mothers tend to provide better quality care for their children which are securing infants' health. The analyses also demonstrated relatively lower levels of mortality for infant of educated fathers. Maternal age at birth, under 18 and over 35 years; intervals between two live births of less than 2 years; and consanguineous marriages were also the factors have an adverse effect on infant mortality. Furthermore, utilization of health services decreases the infant mortality. A decline of 21 per 1000 was observed on the infant mortality rate of a woman who consulted health personnel during the last pregnancy and delivered in a health facility or with the assistance of health personnel. According to regions and

place of residence, significant differences were seen in the rates of medical examinations before deaths and the rates of deaths occurring in hospital. In areas experiencing high infant mortality, the proportions of both infants examined before death and those infant deaths in hospitals were lower than those for other areas. Even though all factors examined in this research are interdependent, education appeared as the most important variable on the infant mortality reduction. Therefore, Toros and Kulu emphasized that the inclusion of girls into formal education, the distribution of health care information and the development of a social consciousness may improve infant mortality and the general health situation in Turkey.

In Turkey, neither GNP per capita nor other socio-economic development indicators can explain the high infant mortality rates. Countries with a general mortality rate similar to that of Turkey have a much lower infant mortality rate (Adlakha, 1970; Shorter and Macura, 1982; Gürsoy-Tezcan, 1992). Akşit and Akşit (1989) also consider that "the historical relationship between income and mortality during economic development can be highly variable, yet it is puzzling that Sri Lanka with one-third of the Turkish GNP has half the Turkish infant mortality".

In addition to these, Gürsoy-Tezcan (1989) has suggested that

"Scientists often try to explain mortality by stating the existence of a relationship between mortality figures and selected socio-economic variables. The manner in which these variables affect mortality and the way they are interconnected with cultural practices, national and global policies and ideologies, however, are left unexplained".

With this consideration, the study of Gürsoy-Tezcan tried to explain both the implications of national policies and the local cultural factors operating together to determine child health in Turkey. And, Göçkent (a pseudonym) in İstanbul, which represents rapid and increasing urbanization trend of the country and has low-income population, was chosen as a sample area. In this research, the father's education emerged as a more significant determinant on infant mortality than the mother's education since "the women are considerably restricted in their movements and subject to the authority of their husbands in making daily decisions". Patrilocal

extended household type, women's strictest attitude towards abortion and heavy smoking and drinking habits of the household members were other variables have an adverse effect on the infant mortality. Gürsoy-Tezcan considers that this study has shown that only the attitude of women towards abortion contributing to high child mortality experience is linked to the individual attributes of the mother. Other three factors - father's education, household composition and smoking and drinking by household members are all beyond the mother's control. Therefore, exploring father's life experiences and attitudes may yield even more significant results in explaining child health, survival and mortality. According to Gürsoy-Tezcan, this shift of focus from mothers to fathers will facilitate the discussion and analysis of the relationship between the state and the family, religion and democracy and their influence on child health at national and international levels.

On the other hand, Riddle (1996) has also conducted a study regarding Turkish child mortality puzzle in order to determine what characteristics might make a Turkish women more vulnerable to experiencing higher rates of child mortality. The purpose of this research was twofold. Firstly, the Gürsoy-Tezcan model was applied to the 1993 TDHS by using OLS regression in order to examine the effectiveness of paternal and household characteristics as predictors of child mortality. Secondly, variables not included in the Gürsoy-Tezcan model but available in 1993 TDHS were incorporated into the model. Riddle considers that although the Gürsoy-Tezcan model has shed much-needed light on the importance of household context for a woman's child mortality index, its findings should be noted with caution because the findings of her study are based on a small and geographically restricted sample and therefore can not be generalized to the Turkish population. And, the size and probability based sample design of the 1993 TDHS provides a more representative sample.

The results of the assessment of the net effects of the Gürsoy-Tezcan predictors has shown that except the smoking behavior variable, all of the measures were statistically significant. Only the smoking behavior variable had an extremely small effect. The TDHS model also determined that contrary to Gürsoy-Tezcan's

findings, mother's education is a significant determinant of the child mortality. Moreover, woman's television viewing habits and her past experiences of abortions, miscarriages, and stillbirths as maternal-centered variables are crucial factors of child mortality. These results conflict with Gürsoy-Tezcan's conclusion that such individual level variables are not as important as other contextual variables in determining a woman's child mortality experience.

Another study regard to determinants of infant mortality is the Ph. D. dissertation by Ergöçmen (1991). The aim of the study is to investigate the social and demographic determinants of infant mortality in Turkey. The results of the study have revealed that short birth interval, environmental conditions and maternal characteristics are the main factors of the infant mortality. According to Ergöçmen, birth interval less than two years is associated with high infant mortality. Related to environmental conditions, the existence of sewerage system, hygienic toilet conditions and practices, and uncontaminated water supply are the significant factors of the infant deaths due to contagious diseases. As regards maternal characteristics, mother's education level, number of children, age at birth, excess fertility and whether the birth is planned or not are the significant determinants of the infant survival. Furthermore, the lack of knowledge in the treatment of the diseases and environmental conditions are the factors affecting child mortality.

7. MATERIAL AND METHODOLOGY

7.1 Assumptions and Hypotheses

The assumptions put forward and hypotheses tested in this study are presented below. The hypotheses are put as null hypotheses[3].

7.1.1 Assumptions

1. Data include information about women's current health insurance coverage status. However, it does not include any information about the starting date of the women's health insurance coverage. For this reason, it is not possible to know that whether the woman is covered by health insurance during her pregnancy period or not. Therefore, in this study it is assumed that woman's current health insurance coverage status is valid for her pregnancy in the last five years prior to survey, if she had any.

2. Similarly, data include information about husband's current health insurance coverage status, but, it does not include any information about the starting date of the husband's health insurance coverage. For this reason, it is not possible to know that whether the husband is covered by health insurance or not during woman's pregnancy period. Therefore, in this study, if the woman is not covered by health insurance by the time of the survey but her husband is, it is assumed that husband's current health insurance coverage status is valid for woman's pregnancy in the last five years prior to survey.

[3] Researchers may frame hypotheses in terms of a null hypothesis. The ordinary way of talking about a hypothesis is to predict relationships. By contrast, the null hypothesis predicts that there is no relationship. Researchers use the null hypothesis with a corresponding hypothesis called the alternative hypothesis which says that a relationship exists. The null hypothesis approach appears to be a backward way of testing hypothesis. If evidence supports the null hypothesis, then the researcher concludes that there is no relationship. This implies that the alternative hypothesis must be false. If the evidence rejects the null hypothesis, then the alternative hypothesis becomes a possible explanation (Neuman, 1997).

3. Data do not include any information about health insurance coverage status of infants born during the five years preceding the survey. Therefore, it is assumed that current health insurance coverage status of mother and/or her husband is also valid for that of their infants.

7.1.2 Hypotheses

1. Current health insurance coverage status has no effect on receiving antenatal health care services during pregnancy period.

2. Current health insurance coverage status has no effect on place of delivery.

3. Utilization of antenatal health care services during pregnancy period has no effect on the survival of the infants up to age one.

4. Place of delivery has no effect on the survival of the infants up to age one.

5. Current health insurance coverage status has no effect on the survival of the infants up to age one.

6. Expansion of health insurance coverage to the poor population has no effect on narrow socio-economic differentials in infant mortality.

7.2 Data

The data used in this study have been taken from the "Turkey Demographic and Health Survey 2003" (TDHS 2003) which was conducted by Hacettepe University Institute of Population Studies, in collaboration with the General Directorate of Mother and Child Health/Family Planning, Ministry of Health (HUIPS, 2004).

TDHS 2003 is a nationally representative survey of 10,836 households and 8,075 ever-married women age 15-49. A weighted, multi-stage, stratified cluster sampling method had been used for sampling of TDHS 2003. The sample of the survey is self-weighted, that is; the probability of selection at each stratum is constant. Two questionnaires were applied; one to the household and other to the ever-married women. Ever-Married Women Questionnaire is the essential part of this survey which contains many factual and attitudinal questions. All women at ages 15-49 who were present in the household on the night before the interview were eligible for the individual questionnaire (HUIPS, 2004).

In the household questionnaire, list of the household members were taken to determine the "de jure" population of the Survey and to identify the eligible women for the individual interview. Basic socio-economic information about each member of the household including some properties and facilities of the house were also obtained with this questionnaire.

The individual questionnaire was applied to ever-married women under age 50 and covered detailed information on birth history, fertility regulation, fertility preferences and marital history as well as some background characteristics like age, birth place, level of education and etc.

The TDHS 2003 provides a complete birth history of women. However, the detailed information concerning antenatal care, delivery conditions, breastfeeding and immunization is available only for the live births during last five years preceding the Survey.

Hence, the primary purpose of the TDHS 2003 was to generate recent and reliable information on levels and trends of fertility, infant and child mortality, family planning, maternal and child health and nutrition. In addition, the survey collected information on respondent's knowledge of sexually transmitted diseases and HIV/AIDS. Collecting these types of information were seen as essential for making informed policy decisions, and for planning, monitoring, and evaluating

programs in reproductive health. The TDHS 2003 sample was designed to allow for analyses at the national level, by urban-rural residence, and for each of five regions in the country. The TDHS 2003 sample also allows doing analyses for some of the survey topics for the 12 geographical regions (NUTS1[4]). The data are intended for use by policy makers and program managers to evaluate and improve family planning and health programs in Turkey (Tezcan, 2004).

7.3 Method of Analysis

The main objectives of this study are to analyze the extent to which current health insurance coverage status affects the survival status of infants, and to examine whether expansion of health insurance coverage to the poor population in Turkey can narrow socio-economic differentials in infant mortality. For this reason, firstly, it will be useful to make descriptive analysis as a preliminary step. And then, regression analysis will be applied since it is one of the most extensively used methods of determining relationships among the variables. At this point, it may be useful to give brief information about what descriptive and regression analyses are.

Firstly, descriptive statistics describe numerical data by summarizing the information about the variable(s) into a single number. They can be categorized by the number of variables involved: univariate, bivariate, or multivariate (for one, two and three or more variables). The easiest way to describe the numerical data of one variable is with a frequency distribution (Neuman, 1997). The frequencies procedure can also be used to describe one or more variables.

"Frequency distributions are tabular or graphical presentations of data that show each category for a variable and the frequency of the category's occurrence in the data set. Percentages for each category are often reported instead of, or in addition to, the frequencies" (Green et al., 2000).

In addition to the frequency tables, the bivariate percentage tables will be used in this study. The table is based on cross-tabulation; that is, the cases are

[4] The Nomenclature of Territorial Units for Statistics.

organized in the table on the basis of two variables at the same time. Bivariate tables usually contain percentages (Neuman, 1997).

"A two-way contingency table analysis evaluates whether a statistical relationship exists between two variables" (Green et al., 2000). This is similar to the frequency distribution, except that it is for each combination of the values of two variables (Neuman, 1997). A two-way contingency table consists of two or more rows and two or more columns. The cells in the table, which are the combinations of the levels of the row and the column variables, contain frequencies. Analyses of two-way contingency tables focus on these cell frequencies to evaluate whether the row and column variables are related (Green et al., 2000). There are three ways to percentage a table: by row, by column, and for the total. The first two are more often and help to show relationships. It is rare to percentage a table on the basis of the total since it says little about a bivariate relationship (Neuman, 1997).

Additionally, in this study, chi-square will be used as a measure of association in descriptive statistics to test the hypotheses. It can be used for nominal or ordinal data and has an upper limit of infinity and a lower limit of zero, meaning no association (Neuman, 1997).

Besides, in this study, logistic regression will be used as the method of multivariate analysis since the dependent variable (whether infant is alive or not) is dichotomous. Logistic regression regresses a dichotomous dependent variable on a set of independent variables. It is useful for situations in which it is desirable to be able to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables. It is similar to a linear regression model but is suited to models where the dependent variable is dichotomous and the independent variables can be interval level or categorical; if the dependent variable are categorical, they need to be dummy or indicator coded. Logistic regression coefficients can be used to estimate odds ratios for each of the independent variables in the model (SPSS/PC, 2002).

The logistic regression model estimates a model of the form;

$$Y=\beta_0 + \beta_1X_1 + \beta_2X_2 +..... B_nX_n$$

$$F(Y) =E(Y) =Pr(Y=1) = 1 / 1+e^{-Y}$$

$$\text{Logit } p_i = b_0 + b_ix_i,$$

where pi is the estimated probability of a particular event occurring to an individual with a given set of characteristics, x_i , b_0 is a constant that defines the probability, p_0 , for an individual with all x_i set to zero, and b_i are the estimated coefficients (Addai, 2000).

However there is usually more than one factor that affects a certain outcome as it is in the case of infant mortality, and, in this study, due to the variety and number of predictors, logistic multiple regression is selected as the method of analysis.

The dependent variable of this study is survival status of infants born during the five years preceding the survey. And the independent variables are as follows;

1. Current health insurance coverage status
2. Utilization of antenatal care
3. Utilization of antenatal care services from a doctor
4. Utilization of antenatal care services from a nurse/midwife
5. Utilization of antenatal care services from a traditional midwife
6. The reason for not receiving antenatal care
7. The number of the antenatal care visits during pregnancy
8. Timing of the first antenatal check during pregnancy
9. The reason of the first antenatal check
10. Place of delivery
11. Assistance during delivery

12. Assistance during delivery by doctor
13. Assistance during delivery by nurse/midwife
14. Assistance during delivery by relative/friends
15. Main reason for not having birth in a health institution
16. Type of place of residence (Urban/Rural)
17. Geographic region (West, South, Central, North and East)
18. Mother's education level
19. Mother's age at birth of child
20. Birth order number of children
21. Preceding birth interval
22. Household wealth index
23. Mother's mother tongue

In addition to these independent variables, vaccination of children and child morbidity prevalence and treatment variables like acute respiratory illness and fever can be useful predictors regarding health and survival status of children. However, immunization and child morbidity variables are excluded from this study since the questions related with these variables were only asked to the survived children in TDHS 2003. In other words, data do not include any information about the vaccination and morbidity status of dead children.

All variables used in this study are from the Ever-married Woman Questionnaire of TDHS 2003. Similarly, information regarding the health insurance coverage status can only be obtained from the questions asked in the ever-married women questionnaire. In this questionnaire, there are two questions regarding health insurance coverage status. First one is the question regarding health insurance coverage status of ever-married women in 'Women's Working Status' section of the individual questionnaire. The question was asked to all interviewed ever-married women age 15-49. By asking this question, it was tried to obtain whether woman is covered by any health insurance or not. If the answer to the question was yes, then it was asked that according to which schedule the woman has health insurance, if it is SSK, Emekli Sandığı, Bağ-kur, Private, Green Card or other. This question covers

also both to have health insurance either of her own or through her husband and any other member of the family (HÜNEE, 2003).

Second one is the question regarding health insurance coverage status of husbands which was asked in 'Background Characteristics of Husband' section of the individual questionnaire. This question was asked to all interviewed ever-married women age 15-49. Similarly, in this question, it was asked whether woman's husband is covered by any health insurance or not. If the answer to the question was yes, then it was asked that according to which schedule the woman's husband has health insurance, if it is SSK, Emekli Sandığı, Bağ-kur, Private, Green Card or other (HÜNEE, 2003).

The results of TDHS 2003 weighted[5] data reveal that while almost 34 percent of the ever-married women age 15-49 were not covered by any health insurance, 66 percent of them had any health insurance coverage either of her own or through her husband and any other member of the family by the time of the survey. Besides, according to the results of the respondents, 32 percent of their husbands have not any health insurance coverage and the percent of the husbands covered by any health insurance program were 68.

However, TDHS 2003 Ever-married Woman Questionnaire does not include any information about current health insurance coverage status of births in the five years prior to survey. The important point is that since the observation unit of this study is all infants born in the five years preceding the survey, the health insurance coverage status of the ever-married women and that of their husbands cannot be used for the analyses of this thesis. Therefore, the health insurance variable of the ever-married women and that of their husbands were added to the variables of children age under-five data set. And, status of children was assigned according to that of their mother's and/or father's.

[5] TDHS 2003 sample is not a self-weighted one. A disproportionate number of sample units were chosen from some of the strata since there would have been inadequate numbers of observations for these areas if the target number of households had been proportionally allocated across regions (Türkyılmaz, 2004).

Because, the health insurance coverage distribution of the husbands and ever-married women as mentioned above are different, the information from both current health insurance coverage statuses of mothers and fathers were merged and then a single variable for children was created. By this way, the health insurance coverage status of the all births in the five years preceding the survey was obtained, and, the health insurance coverage status of infants was inferred from that of their mothers and/or fathers. That is, if either mother or father was covered by health insurance, the child was accepted as covered as well. And, this new variable will be used for the analyses of utilization of antenatal care, place of delivery and survival status of infants.

It may be useful to remind that by these questions it is only possible to have information about current health insurance coverage status. In other words, the questionnaire does not include any other question about the starting date of the health insurance coverage. For this reason, it is not possible to know since when the mother and father have been covered by any health insurance. Therefore, as mentioned before, it was assumed that mothers' and fathers' current health insurance coverage status is valid for woman's pregnancy period of any live birth during the last five years, if there is any.

Besides, in children age under-five data set of TDHS 2003, there is also infants who have not completed their first age yet by the time of the survey. That is to say, these children are not exposed to the infant mortality event; namely, their exposure period to the event has not been over yet. Due to this reason, for some descriptive and logistic regression analyses, it is necessary to exclude these infants from the data. To do this, "current age of child" variable in the children age-under five data set of TDHS 2003 was used. According to TDHS 2003 weighted data, 18 percent of the all live births in the five years preceding the survey have not completed their first age yet by the time of the survey. This variable includes 6 categories as infants age 0, 1, 2, 3, 4, and infants dead. By recoding, from this current age of children variable, a new variable was created with two categories. First

category includes infants age 0, and the second one covers the all other infants, namely infants age 1, 2, 3, 4 and infants dead. By using this new variable in the "select cases" function of SPSS, all these infants were filtered and excluded from the analyses.

Additionally, for analyzing whether expansion of health insurance coverage to the poor population in Turkey can narrow socio-economic differentials in infant mortality, "household wealth index" variable will be used in the analyses. In this study, the definition of "poor population" is made according to this variable. In the children age under-five data set of TDHS 2003, the household wealth index variable includes 5 categories as poorest, poorer, middle, richer and richest. However, in this study, in order to facilitate the analyses, the categories of the household wealth index variable were reduced to 3, and a new household wealth index variable was created with poor, middle and rich categories. The poor category of the new variable includes poorest and poorer categories; and the rich category of the new variable includes the richest and richer categories.

8. FINDINGS AND ANALYSES

8.1 Results of Descriptive Analyses

In this part of the study, the results of the descriptive analyses about current health insurance coverage status, infant survival and utilization of antenatal care and delivery services will be given by summarizing the information from TDHS 2003.

8.1.1 Current Health Insurance Coverage Status

Before examining the relationship between health insurance coverage and child survival, it may be useful to say a few things about the current health insurance coverage status of mothers, fathers and children. Firstly, according to the results of the TDHS 2003, as seen in Table 8.1.1.1, the percent distribution of mothers covered by any health insurance by the time of the survey is 59. While about 41 percent were not covered by any health insurance program, almost six of each ten respondents have stated that they have health insurance coverage either directly or indirectly (husband or other family members) by the time of the survey.

TABLE 8.1.1.1 Percent Distribution of Current Health Insurance Coverage Status of Mothers*, TDHS 2003

Current Health Insurance Coverage Status	Percentage	Number**
No	40.7	1864
SSK	26.8	1077
Emekli Sandığı	8.1	403
Bağ-Kur	8.3	332
Private	0.5	18
Green Card	15.5	820
Other	0.1	4
Total	100.0	4518

* In this table, a woman with more than one child in the five years preceding the survey may appear more than one time.
** In this study, the number of observations given in all tables is obtained from unweighted data.

Secondly, the descriptive results of the TDHS 2003 reveals that, as seen in Table 8.1.1.2, by the time of the survey, while almost 61 percent of fathers had health insurance coverage, 39 percent of them were not covered by any health insurance program.

TABLE 8.1.1.2 Percent Distribution of Current Health Insurance Coverage Status of Fathers, TDHS 2003

Current Health Insurance Coverage Status	Percentage	Number
No	39.3	1804
SSK	27.7	1100
Emekli Sandığı	8.0	402
Bağ-Kur	9.5	377
Private	0.5	17
Green Card	15.0	810
Other	0.1	4
Total	100.0	4514

TABLE 8.1.1.3 Percent Distribution of Births in the Five Years Preceding the Survey by Current Health Insurance Coverage Status of Mothers and Fathers, TDHS 2003

Current Health Insurance Coverage Status	Percentage	Number
Only Father	4.2	184
Only Mother	2.7	120
None	36.5	1680
Both	56.6	2533
Total	100.0	4517

Furthermore, according to the descriptive results, as seen in Table 8.1.1.3, while the percent of children whose only fathers have health insurance coverage was almost 4, the percent of children whose only mothers covered by health insurance was almost 3 by the time of the survey. Additionally, while the percent of children whose neither fathers nor mothers have health insurance coverage was 37, the

percent of children whose both mothers and fathers covered by health insurance was 57 percent by the time of the survey.

At this point, it is useful to remind that in this study, as mentioned before, the observation unit is the infants born during the five years preceding the survey. However, data used in this study do not include any information about current health insurance coverage status of infants. Therefore, in this study the health insurance coverage status of infants is assumed as the same with that of their mothers and/or fathers. When the results of descriptive analyses about the current health insurance coverage status of mothers and fathers (see Table 8.1.1.1 and Table 8.1.1.2) are examined, it is seen that the proportions are different. Because of this, the information from both current health insurance coverage status of mothers and that of husbands was merged and then a single variable regarding health insurance coverage status was created for the infants born in the five years prior to survey. That is, if either mother or father was covered by health insurance, the child was accepted as covered as well, and the rest of the analyses of this study were made according to this variable.

TABLE 8.1.1.4 Percent Distribution of Current Health Insurance Coverage Status of All Births in the Five Years Preceding the Survey, TDHS 2003

Current Health Insurance Coverage Status	Percentage	Number
No	36.6	1680
SSK	28.6	1138
Emekli Sandığı	8.4	414
Bağ-Kur	9.1	362
Private	0.6	22
Green Card	16.7	887
Other	0.1	4
Total	100.0	4507

As seen in Table 8.1.1.4, according to the results of the data, almost 37 percent of the children born in the five years preceding the survey were not covered

by any health insurance program, and, 63 percent had health insurance coverage through their mothers and/or fathers.

It may also be useful to give brief information about current health insurance coverage status of children in the five years preceding the survey in terms of geographic region and type of place of residence[6]. As seen in Table 8.1.1.5, to reside in eastern region and in rural areas have a negative association with current health insurance coverage status of children. In the western part of the country, almost 32 percent of the children born in the five years preceding the survey were not covered by any health insurance program, and, this percentage increases to 43 in the eastern part of the country. Besides, while half of the children (almost 54%) reside in rural areas had health insurance coverage, almost 69 percent children reside urban areas were covered by any health insurance program.

TABLE 8.1.1.5 Percent Distribution of Current Health Insurance Coverage Status of All Births in the Five Years Preceding the Survey by Geographic Region and Type of Place of Residence, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Geographic Region				
West	31.8	68.2	100.0	957
South	37.2	62.8	100.0	589
Central	31.5	68.5	100.0	629
North	25.0	75.0	100.0	368
East	43.0	57.0	100.0	1964
Type of Place of Residence				
Urban	31.4	68.6	100.0	3043
Rural	46.5	53.5	100.0	1464
Total	36.6	63.4	100.0	4507

[6] The region and type of place of residence information are also current (at the time of the survey) status of children and mothers. They do not reflect the place of residence at the time of the pregnancy and/or delivery.

8.1.2 Utilization of Antenatal Care and Delivery Services, and Current Health Insurance Coverage Status

It is also useful to give some descriptive information about the utilization of antenatal care and delivery services by health insurance coverage status from the data. In this study, in terms of antenatal care, whether received any antenatal care, the number of visits made, the stage of pregnancy at the time of the first visit, the type of provider, and the reason for not receiving antenatal care will be examined. Moreover, delivery services are tried to be explored on the basis of place of delivery and the person assisting to the delivery. And, the main reason for not having birth in a health institution will also be analyzed.

Firstly, the number of antenatal visits during pregnancy period is one of the good indicators of the utilization of the antenatal care services by mothers. As seen in Table 8.1.2.1, the results of the descriptive analysis regarding all live births during the five years preceding the survey demonstrates that while almost 23 percent of the mothers never had any antenatal care visit, the majority of them (almost 77%) had at least 1 antenatal care visit during their pregnancy, and nearing half of them had four or more visits.

TABLE 8.1.2.1 Percent Distribution of Births in the Five Years Preceding the Survey by Number of Antenatal Care Visits, TDHS 2003

Number of Antenatal Care Visits	Percentage	Number
No	23.2	1210
1	8.5	404
2	9.5	456
3	9.3	401
4+	49.5	2050
Total	100.0	4521

Furthermore, when the relationship between receiving antenatal care and health insurance coverage status is examined, as seen in Table 8.1.2.2a, while almost

31 percent of mothers received at least one antenatal care visit during pregnancy in the five years preceding the survey were not covered by any health insurance program, almost 69 percent of them had health insurance coverage. Besides, more than half of the mothers (54%) who were not received any antenatal care visit, were not covered by any health insurance program.

TABLE 8.1.2.2a Percent Distribution of Births in the Five Years Preceding the Survey according to Utilization of Antenatal Care during Pregnancy by Health Insurance Coverage Status, TDHS 2003

Whether received Antenatal Care	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
No	54.3	45.7	100.0	1202
Yes	31.2	68.8	100.0	3294
Total	36.6	63.4	100.0	4496

TABLE 8.1.2.2b Percent Distribution of Births in the Five Years Preceding the Survey according to Health Insurance Coverage Status by Utilization of Antenatal Care during Pregnancy, TDHS 2003

Whether received Antenatal Care	Current Health Insurance Coverage Status		
	No	Yes	Total
No	34.5	16.7	23.2
Yes	65.5	83.3	76.8
Total	100.0	100.0	100.0
Number	1676	2820	4496

Moreover, as seen in Table 8.1.2.2b, while almost 35 percent of mothers, who were not covered by any health insurance program, did not receive at least one antenatal care visit during pregnancy in the five years preceding the survey, almost 17 percent of mothers, who had health insurance coverage, did not receive at least

one antenatal care visit during pregnancy. That is to say, non-using of antenatal care for the mothers not covered by health insurance is twice more than non-using of antenatal care for the mothers covered by health insurance.

Beyond the descriptive analysis about the using of antenatal care during pregnancy by current health insurance coverage status, the results of chi-square[7] tests show that, as seen in Table 8.1.2.3, the p-value is significant ($p<0.01$). That is, there is a significant relationship between utilization of antenatal care during pregnancy and current health insurance coverage status. According to this result, it is possible to infer that health insurance coverage status has a significant effect on the utilization of antenatal care by mothers. That is to say, mothers covered by any health insurance program received more antenatal care visit during pregnancy than those have not any health insurance coverage.

TABLE 8.1.2.3 Results of the Chi-square Tests for Utilization of Antenatal Care during Pregnancy in the Five Years Preceding the Survey by Current Health Insurance Coverage Status, TDHS 2003

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	167.487	.000

Secondly, timing of first antenatal visit for pregnancy is also important indicator for adequate antenatal care. The results of the descriptive analyses regarding all births in the five years preceding the survey reveal that, as seen in Table 8.1.2.4, almost 69 percent of the mothers have made first antenatal visit in the third months of their pregnancy.

[7] Chi-square is more likely to establish significance to the extent that the relationship is strong, the sample size is large, and/or the number of values of the two associated variables is large. A chi-square probability of 0.05 or less is commonly interpreted by social scientists as justification for rejecting the null hypothesis that the row variable is unrelated to the column variable.

TABLE 8.1.2.4 Percent Distribution of Births in the Five Years Preceding the Survey by Timing of First Antenatal Care Visit, TDHS 2003

Timing of First Antenatal Check (month)	Percentage	Number
0	3.4	109
1	28.4	879
2	22.4	701
3	15.3	524
4	11.6	403
5	6.3	212
6	6.4	213
7	3.1	126
8	2.4	87
9	1.0	38
Total	100.0	3292

Moreover, Table 8.1.2.5 presents the results about the association between timing of first antenatal check for pregnancy and current health insurance coverage status. According to the results, while 26 percent of the mothers started first antenatal care visit in the third months of their pregnancy was not covered by any health insurance program; almost 74 percent of them had any health insurance coverage. Besides, more than half of the mothers (almost 60%) made first antenatal care visit after the third months of the pregnancy were covered by any health insurance program.

TABLE 8.1.2.5 Percent Distribution of Births in the Five Years Preceding the Survey according to Timing of First Antenatal Visit for Pregnancy by Health Insurance Coverage Status, TDHS 2003

	Current Health Insurance Coverage Status			
Months Pregnant At Time of First Visit	No	Yes	Total	Number
Less than 3 months	26.5	73.5	100.0	2201
4+ months	41.1	58.9	100.0	1073
Total	31.0	69.0	100.0	3274

Thirdly, the descriptive analysis of the data about the antenatal care provider demonstrates that, as seen in Table 8.1.2.6, while more than two third of the mothers (71%) received at least one antenatal care visit from a doctor, almost one of each five mothers received at least one antenatal care visit from a nurse/midwife for all their births during the five years preceding the survey.

TABLE 8.1.2.6 Percentage of Sources of Antenatal Care during Pregnancy among Live Births in the Five Years Preceding the Survey, TDHS 2003

Antenatal Care Provider	Percentage	Number
Doctor	71.2	3083
Nurse/Midwife	17.5	689
Traditional Birth Attendant	*	11
Other	*	13

* The findings are based on less than 25 unweighted observations.
Note: This table includes all responses if more than one source of antenatal care was mentioned for the same pregnancy.

TABLE 8.1.2.7 Percentage of Source of Antenatal Care Provider during Pregnancy according to Current Health Insurance Coverage Status of Children born in the Five Years Preceding the Survey, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Antenatal Care Provider				
Doctor	29.9	70.1	100.0	3066
Nurse/ Midwife	36.3	63.7	100.0	687
Traditional Birth Attendant	*	*	100.0	11
Other	*	*	100.0	13
No Antenatal Care	54.3	45.7	100.0	1202

* The findings are based on less than 25 unweighted observations.
Note: This table includes all responses if more than one source of antenatal care was mentioned for the same pregnancy.

Besides, Table 8.1.2.7 shows that 70 percent of mothers, who received at least one antenatal care visit from a doctor for all live births in the five years preceding the survey, had health insurance coverage. And this proportion decreases almost 46 percent for the mothers never received any antenatal care visit during

pregnancy. Additionally, while more than half of the mothers (54%), who never received any antenatal care, were not covered by any health insurance program, almost 30 percent of mothers, who received antenatal care from a doctor, have no any health insurance coverage.

Lastly, when the reasons for not receiving antenatal care are examined, Table 8.1.2.8 presents that for almost 44 percent, "monetary reasons", for 41 percent, "no need", and for almost 7 percent, "traditions" have been expressed by respondents as the first three important obstacles.

TABLE 8.1.2.8 Percentage of Reasons for not receiving Antenatal Care during Pregnancy in the Five Years Preceding the Survey, TDHS 2003

Reason	Percentage	Number
Monetary reasons	43.9	558
No need	41.3	478
Traditions	6.7	85
Problems in using health institutions	5.5	70
Accessibility problems	4.4	50
Distrust institutions	*	8
Poor service	*	1
Don't know where to go	*	3
Other	7.6	86
Don't know	*	11

* The findings are based on less than 25 unweighted observations.
Note: This table includes all responses if more than one reason for not receiving antenatal care was mentioned for the same pregnancy.

The association between the reasons for not receiving antenatal care and health insurance coverage status is also examined. The results of the data show that, as seen in Table 8.1.2.9, almost 55 percent of mothers, who have expressed "monetary reasons" as the first obstacle, were not covered by any health insurance, while 54 percent of mothers, who have expressed "no need" as the second obstacle, were not covered by any health insurance, and, 57 percent of mothers, who have expressed "traditions" as the third obstacle, has no any health insurance coverage. In short, more than half of the mothers, who have expressed "monetary reasons", "no

need" and, "traditions" as the first three important obstacles for not using antenatal care services during pregnancy in the five years prior to survey, have no health insurance coverage.

TABLE 8.1.2.9 Percentage of Reasons for not receiving Antenatal Care during Pregnancy in Five Years Preceding the Survey according to Current Health Insurance Coverage Status, TDHS 2003

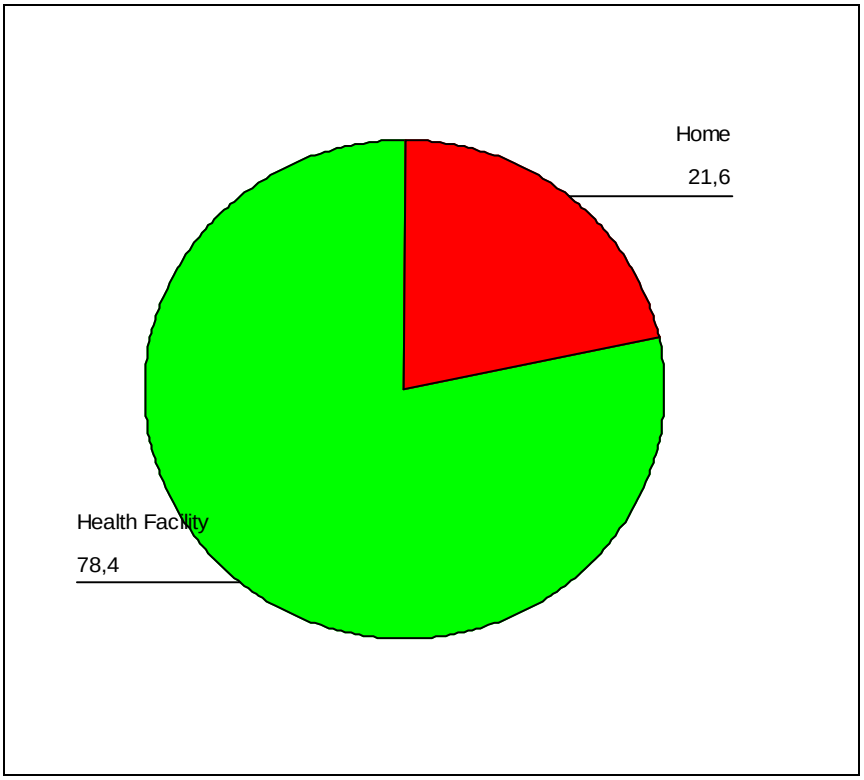
	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Reason				
Monetary reasons	54.4	45.6	100.0	555
No need	54.1	45.9	100.0	474
Traditions	56.5	43.5	100.0	82

Note: This table includes all responses if more than one reason for not receiving antenatal care was mentioned for the same pregnancy.

In addition to these, as mentioned above, in this study, the descriptive results of the utilization of delivery services are given.

Firstly, place of delivery is a good indicator of the utilization of the delivery services by mothers. Figure 8.1.2.1 shows that almost four-fifth of the live births in the five years preceding the survey was delivered at a health facility. And the remaining births were home deliveries. That is to say, in Turkey almost 1 of each 5 mothers had given delivery at places other than health units in the five years preceding the survey.

FIGURE 8.1.2.1 Percent Distribution of Births in the Five Years Preceding the Survey by Place of Delivery*, TDHS 2003



* In this study, all births delivered outside the health facility accepted as the home deliveries.

TABLE 8.1.2.10a Percent Distribution of Births in the Five Years Preceding the Survey according to Place of Delivery by Current Health Insurance Coverage Status, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Place of Delivery				
Health Facility	30.8	69.2	100.0	3338
Home	57.4	42.6	100.0	1160
Total	36.6	63.4	100.0	4498

Furthermore, as seen in Table 8.1.2.10a, while almost 31 percent of the mothers, who gave birth at a health facility in the five years preceding the survey, were not covered by any health insurance, this percentage increases to 57 for the

home deliveries. In other words, more than half of the mothers, who delivered at home, have no health insurance coverage.

Moreover, as seen in Table 8.1.2.10b, while almost 34 percent of the mothers, who were not covered by any health insurance, gave birth at home in the five years preceding the survey, this percentage decreases to almost 15 for the mothers covered by health insurance. In other words, home delivery for the mothers not covered by health insurance is twice more than home delivery for the mothers covered by health insurance.

TABLE 8.1.2.10b Percent Distribution of Births in the Five Years Preceding the Survey according to Current Health Insurance Coverage Status by Place of Delivery, TDHS 2003

	Current Health Insurance Coverage Status		
	No	Yes	Total
Place of Delivery			
Health Facility	66.1	85.5	78.4
Home	33.9	14.5	21.6
Total	100.0	100.0	100.0
Number	1676	2822	4498

In addition to the descriptive analyses of the place of delivery by current health insurance coverage status, it will be useful to apply chi-square tests to be able to make inferences about the relationship between place of delivery and health insurance coverage status. And, Table 8.1.2.11 shows that the p-value ($p<0.01$) is significant. In other words, health insurance coverage status was effective on whether a delivery was given at health facility or not, and, mothers, who have health insurance coverage, tended to more give birth at a health institution.

TABLE 8.1.2.11 Results of the Chi-square Tests for Place of Delivery among Births in the Five Years Preceding the Survey by Current Health Insurance Coverage Status, TDHS 2003

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	211.051	.000

Secondly, according to the descriptive results of the data, as also seen in Table 8.1.2.12, only 0.5 percent of all live births were delivered with no assistance in the five years preceding the survey. In other words, 99.5 percent of mothers have taken assistance during delivery. Additionally, the percentage of deliveries with assistance of a doctor was 47, of a nurse/midwife was 73, of traditional birth attendant was 9, and of relative/friends was 11.

TABLE 8.1.2.12 Percentage of Attendant Assisting during Delivery among Births in the Five Years Preceding the Survey, TDHS 2003

Attendant Assisting Delivery	Percentage	Number
Doctor	46.9	1878
Nurse/Midwife	72.9	3168
Traditional Birth Attendant	9.0	528
Relative/Friend	11.0	569
Other	1.9	77
No Assistance	0.5	30

Note: This table includes all responses if more than one person assisting delivery was mentioned for the same pregnancy.

TABLE 8.1.2.13 Percentage of Attendant Assisting Delivery according to Current Health Insurance Coverage Status of Children Born in the Five Years Preceding the Survey, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Attendant Assisting Delivery				
Doctor	26.4	73.6	100.0	1864
Nurse/Midwife	33.3	66.7	100.0	3147
Traditional Birth Attendant	60.6	39.4	100.0	526
Relative/Friend	54.7	45.3	100.0	567
Other	14.3	85.7	100.0	77
No Assistance	50.0	50.0	100.0	30

Note: This table includes all responses if more than one source of antenatal care was mentioned for the same pregnancy.

Moreover, Table 8.1.2.13 demonstrates that almost 26 percent of mothers, who delivered with assistance of a doctor, were not covered by any health insurance. While the half of the mothers, who delivered with no assistance, was not covered by

any health insurance, it is interesting that this percentage increases to almost 61 for the mothers who delivered with the assistance of traditional birth attendant. And, more than half of the mothers, who delivered with the assistance of relative/friend, has no health insurance coverage as well.

Lastly, when the main reason for not having birth in a health institution is examined, the descriptive analysis reveals that, as seen in Table 8.1.2.14, almost 36 percent of the mothers have thought that having birth in a health institution is expensive. This result demonstrates that the economic reasons were the most important ones for the respondents. On the other hand "no problems with birth" has been expressed by 13 percent of mothers as the second important obstacle. And, almost 8 percent of the mothers have stated that their deliveries happened suddenly.

TABLE 8.1.2.14 Percent Distribution of Main Reason for not having Birth in a Health Institution among Live Births in the Five Years Preceding the Survey, TDHS 2003

Reason	Percentage	Number
Expensive	35.7	425
No problem with birth	13.3	166
Happened suddenly	8.4	81
No reason	7.0	71
Distrust of health personnel	6.4	72
Traditions	5.6	60
Accessibility reason	5.5	52
Problems in using health institution	4.4	48
Husband/family didn't take her to a facility	1.2	17
Other	12.6	137
Total	100.0	1129

Besides, according to the results of the analysis for the association between the main reason for not having birth in a health institution and health insurance coverage status, as seen in Table 8.1.2.15, the majority of the mothers (63%), who have thought that having birth in a health institution is expensive, were not covered by any health insurance. And almost half of the mothers (48%), who has been expressed "no problems with birth" as the second reason for not having birth in a

health institution, have health insurance coverage. 56 percent of the mothers, who delivered suddenly, have no any health insurance coverage, too.

TABLE 8.1.2.15 Percent Distribution of Reasons for not giving Birth in Health Institution in the Five Years Preceding the Survey according to Current Health Insurance Coverage Status, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Reason				
Expensive	62.5	37.5	100.0	424
No problem with birth	51.8	48.2	100.0	165
Happened suddenly	56.3	43.7	100.0	81
No reason	54.1	45.9	100.0	71
Distrust of health personnel	52.7	47.3	100.0	72
Traditions	72.9	27.1	100.0	60
Accessibility reason	66.0	34.0	100.0	52
Problems in using health institution	42.1	57.9	100.0	48
Husband/family didn't take her to a facility	30.0	70.0	100.0	11
Other	54.2	45.8	100.0	136
Total	57.8	42.2	100.0	1126

8.1.3 Utilization of Antenatal Care and Delivery Services, and Survival Status of Infants

Utilization of antenatal care and delivery services by mothers is one of the crucial determinants of the infant survival. Due to this reason, in this study, infant survival status is tried to be explored in terms of utilization of antenatal care, place of delivery and assistance to delivery by using TDHS 2003 data.

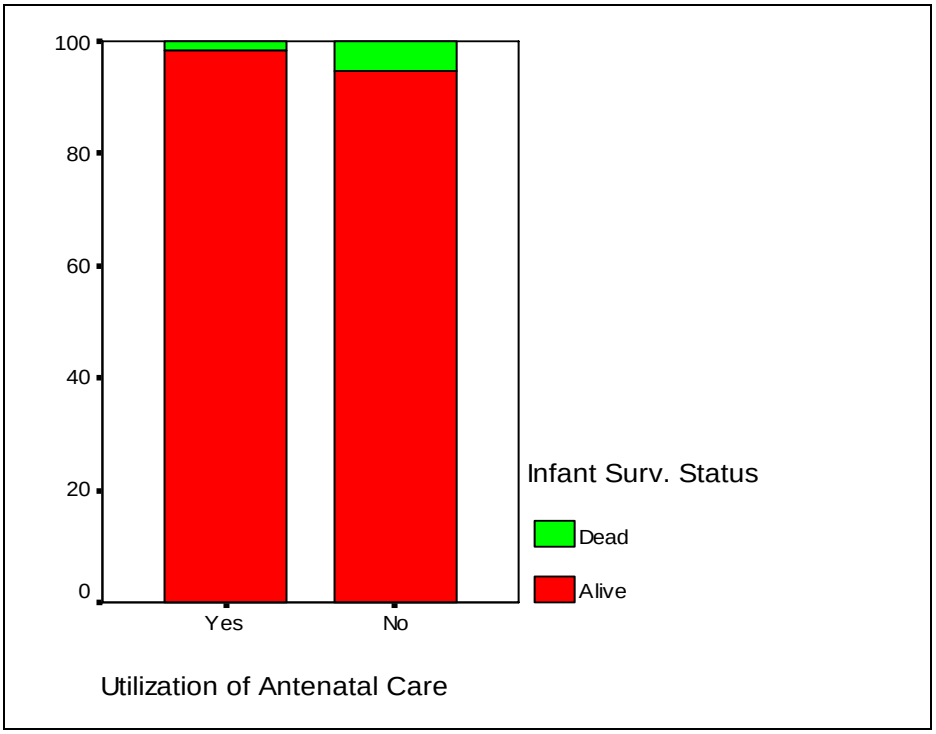
Firstly, it will be useful to give information about the survival status of all live births in the five years preceding the survey. Table 8.1.3.1 shows the share of the infant and child deaths. According to the results, 3.2 percent of the all live births in the five years preceding the survey have been stated as dead by their mothers by the time of survey. And, the share of the infant dead is 2.8 percent among them.

TABLE 8.1.3.1 Percent Distribution of Survival Status of Births in the Five Years Preceding the Survey, TDHS 2003

	Percentage	Number
Infant Dead	2.8	145
Child Dead	0.4	16
Alive Births	96.8	4372
Total	100.0	4533

Secondly, when the effects of the receiving antenatal care on infant survival is examined, as seen in Figure 8.1.3.1, babies of the mothers who never utilized any antenatal care during pregnancy in the five years prior to the survey, were almost 3 times more likely to die before reaching their first birthday (5.3% versus 1.8%).

FIGURE 8.1.3.1 Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey according to Utilization of Antenatal Care, TDHS 2003



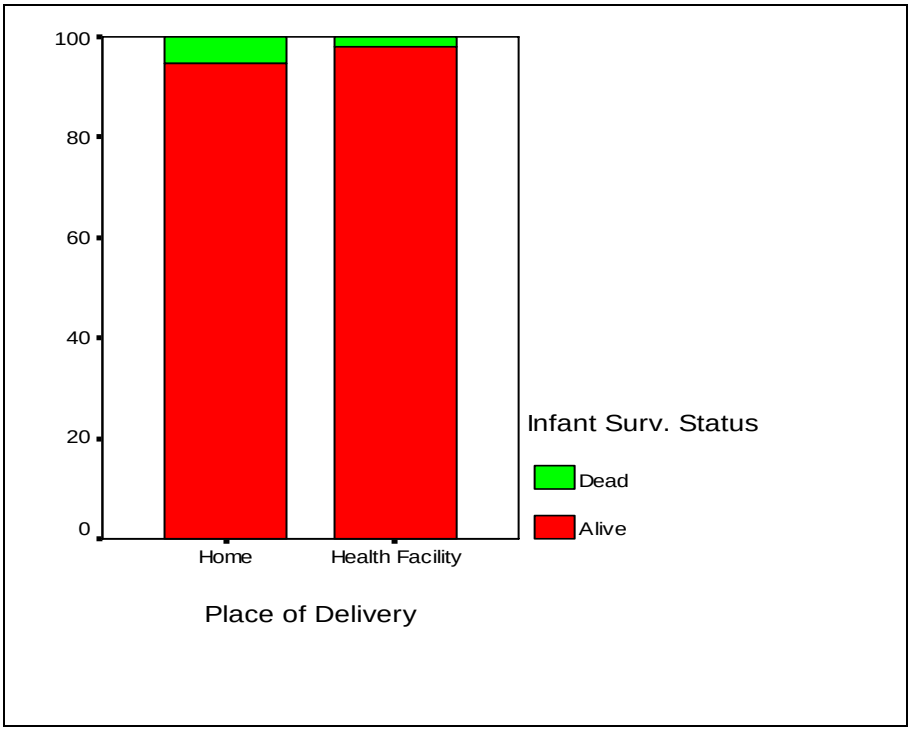
Furthermore, it will be useful to explore the relationship between receiving antenatal care and survival status of infants by using chi-square tests. As seen in Table 8.1.3.2, the p-value ($p<0.01$) is significant. According to this result, it is

possible to infer that there is a significant statistical relationship between receiving antenatal care and survival status of infants. That is to say, the utilization of antenatal care plays an important role in infant survival. When mothers utilized antenatal care during their pregnancy, infants have less risk of dying.

TABLE 8.1.3.2 Results of the Chi-square Tests for Survival Status of Infants in the Five Years Preceding the Survey according to Utilization of Antenatal Care, TDHS 2003

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.806	.000

FIGURE 8.1.3.2 Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey by Place of Delivery, TDHS 2003



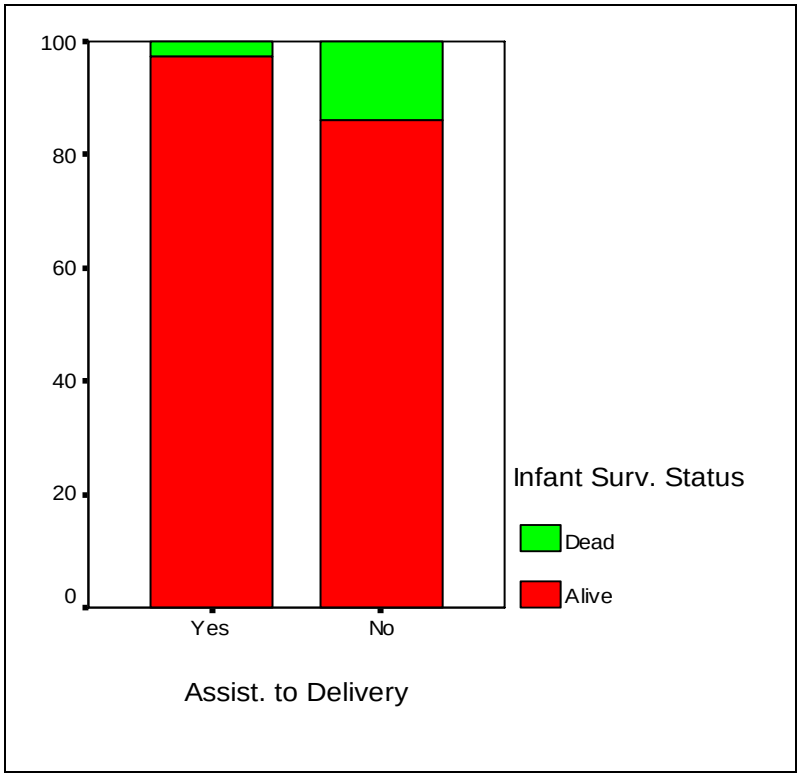
Thirdly, it is useful to examine the association between place of delivery and infant survival. According to the results of Figure 8.1.3.2, while the dead risk of infants whose mothers give birth at home is 5.3 percent, the dead risk of infants whose mothers give birth at health facility is 1.9 percent. This result demonstrates that babies of mothers who give births outside the health facility were 3 times more likely to die before reaching their first birthday.

Beyond the descriptive results of the survival status of infants by place of delivery, chi-square tests show that, as seen in Table 8.1.3.3, the p-value ($p<0.01$) is significant. That is, there is a significant association between the survival status of infant and whether the place of delivery was home or health facility. According to this result, it is possible to infer that the place of delivery has a significant effect on the survival status of infants. That is to say, infants delivered at health facility have more chance to survive than those delivered outside the health units.

TABLE 8.1.3.3 Results of the Chi-square Tests for Survival Status of Infants in the Five Years Preceding the Survey by Place of Delivery, TDHS 2003

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.689	.000

FIGURE 8.1.3.3 Percent Distribution of Survival Status of Infants in the Five Years Prior to Survey by Assistance to Delivery, TDHS 2003



Lastly, when the influence of assistance to delivery on infant survival is examined, Figure 8.1.3.3 presents that, the death risk of babies whose mothers did not take any assistance during delivery was almost 14 percent, and, this percent decreased to almost 3 for the infants whose mothers took assistance during delivery in the five years preceding the survey. That is, babies whose mothers gave birth without any assistance are almost 5 times more likely to die before reaching their first birthday.

8.1.4 Survival Status of Infants and Current Health Insurance Coverage Status

In this part of the study, utilization of antenatal care, place of delivery and assistance during delivery are tried to be explained according to survival status of infants. While doing this, the current health insurance coverage status of them is taken into consideration. And then, the association between survival status of infants and health insurance coverage status will be explored.

Firstly, the results of the descriptive analysis of the data reveals that the proportions of infant dead according to utilization of antenatal care, place of delivery and assistance during delivery do not differ in terms of current health insurance coverage status. As seen in Table 8.1.4.1, when the survival status of infants, who were deprived of any health insurance program, is examined, it is seen that the death risk of infants was 1.9 percent when the mothers received antenatal care. Yet, this risk increased to 5 percent when the mothers did not receive any antenatal care. And, when the survival status of infants, who were covered by any health insurance program, is examined, the results (see Table 8.1.4.1) show that the death risk of infants was 1.8 percent when the mothers received antenatal care. Yet, this risk increased to 5.3 percent when the mothers did not receive any antenatal care. That is to say, the death risk of infants is differing by whether the mother received antenatal care or not. However, to have health insurance coverage did not increase the probability of infant survival. When the results of the Table 8.1.4.1 are examined, it is also seen that there are no substantial variations in the death risks of infants

according to place of delivery and assistance during delivery by current health insurance coverage status.

TABLE 8.1.4.1 Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey According To Utilization of Antenatal Care, Place of Delivery and Assistance during Delivery by Current Health Insurance Coverage Status, TDHS 2003

	Current Health Insurance Coverage Status							
	No				Yes			
	Infant Survival Status				Infant Survival Status			
	Alive	Dead	Total	Number	Alive	Dead	Total	Number
Whether received ANC								
No	95.0	5.0	100.0	646	94.7	5.3	100.0	556
Yes	98.1	1.9	100.0	1030	98.2	1.8	100.0	2264
Total	97.0	3.0	100.0	1676	97.6	2.4	100.0	2820
Place of Delivery								
Home	95.3	4.7	100.0	653	93.9	6.1	100.0	507
Health Facility	97.9	2.1	100.0	1023	98.2	1.8	100.0	2315
Total	97.0	3.0	100.0	1676	97.6	2.4	100.0	2822
Assistance to delivery								
No	81.8	18.2	100.0	14	90.0	10.0	100.0	16
Yes	97.1	2.9	100.0	1660	97.7	2.3	100.0	2803
Total	97.0	3.0	100.0	1674	97.7	2.3	100.0	2819

TABLE 8.1.4.2a Percent Distribution of Current Health Insurance Coverage Status by Survival Status of Infants in the Five Years Preceding the Survey, TDHS 2003

	Survival Status of Infants			
	Alive	Dead	Total	Number
Current Health Insurance Coverage Status				
No	96.7	3.3	100.0	1680
Yes	97.4	2.6	100.0	2827
Total	97.2	2.8	100.0	4507

Lastly, Table 8.1.4.2a shows that 3.3 percent of infants who were not covered by any health insurance, have been stated as dead by mothers, while 2.6 percent of them, who has health insurance coverage, have been stated as alive by mothers by the time of survey. That is to say, there is very little difference between infants who are covered and not covered by health insurance in terms of survival status.

Furthermore, Table 8.1.4.2b demonstrates that 42 percent of infants who have been stated as dead by mothers, were not covered by any health insurance, while almost 58 percent of them who have been stated as dead by mothers, have health insurance coverage by the time of the survey. That is to say, more than half of the dead infants (58%) covered by health insurance.

TABLE 8.1.4.2b Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey by Current Health Insurance Coverage Status, TDHS 2003

	Survival Status of Infants		
	Alive	Dead	Total
Current Health Insurance Coverage Status			
No	36.4	42.2	36.6
Yes	63.6	57.8	63.4
Total	100.0	100.0	100.0
Number	4364	143	4507

Beyond the percent distribution of survival status of infants in the five years preceding the survey by current health insurance coverage status, the results of significance tests show that, as seen in Table 8.1.4.3, the p-value is equal to .200 - that is, the results are not significant at the 0.05 level. According to this result, it is possible to infer that health insurance coverage status has no effect on the survival of the infants up to age one. That is to say, whether covered by any health insurance or not, infants have nearly the same probability of death in the five years prior to the survey.

TABLE 8.1.4.3 Results of the Chi-square Tests for Survival Status of Infants in the Five Years Preceding the Survey by Current Health Insurance Coverage Status, TDHS 2003

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,645	.200

8.1.5 Household Wealth Index, Current Health Insurance Coverage Status and Survival Status of Infants

One of the main objectives of this study is to examine whether expansion of the health insurance coverage to the poor population in Turkey can narrow the socio-economic differentials in infant the mortality or not. Therefore, this part of the study covers the association among the household wealth index and survival status of infants according to current health insurance coverage status. In other words, to what extent expansion of the health insurance coverage affects the socio-economic differentials in infant mortality will be explored.

First of all, it may be useful to give brief information about the percent distribution of the households in Turkey according to their wealth index. However, in this study, since the observation unit is all births in the five years preceding the survey, wealth index information will be given for only the households which have at least one live birth in the five years-period prior to the survey. Thus, the results of the TDHS 2003 reveal that, as seen in Table 8.1.5.1, almost 46 percent of the households have been “poor”, and 35 percent of them have been “rich”. About 19 percent of them have also been classified as “middle” according to wealth index.

TABLE 8.1.5.1 Percent Distribution of All Births in the Five Years Preceding the Survey according to Household Wealth Index, TDHS 2003

	Percentage	Number
Poor	46.3	2226
Middle	18.8	790
Rich	34.9	1517
Total	100.0	4533

Moreover, when the relationship between household wealth index and survival status of infants is examined, the TDHS 2003 data shows that, as seen in Table 8.1.5.2a, the babies of poor families were about 1.9 and 2.2 times more likely to die before reaching their first birthday than those of middle and rich families.

TABLE 8.1.5.2a Percent Distribution of Household Wealth Index by Survival Status of Infants in the Five Years Preceding the Survey, TDHS 2003

	Survival Status of Infants			
	Alive	Dead	Total	Number
Household Wealth Index				
Poor	96.1	3.9	100.0	2226
Middle	97.9	2.1	100.0	790
Rich	98.2	1.8	100.0	1517
Total	97.2	2.8	100.0	4533

Additionally, the TDHS 2003 data shows that, as seen in Table 8.1.5.2b, while 64 percent of the dead babies were poor, this percentage decreases to almost 14 and 22 for the middle and the rich categories.

TABLE 8.1.5.2b Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey by Household Wealth Index, TDHS 2003

	Survival Status of Infants		
	Alive	Dead	Total
Household Wealth Index			
Poor	45.8	64.1	46.3
Middle	19.0	13.7	18.9
Rich	35.2	22.2	34.8
Total	100.0	100.0	100.0
Number	4388	145	4533

Furthermore, Table 8.1.5.3a reveals the association between household wealth index and current health insurance coverage status. According to the descriptive results of TDHS 2003 data, by the time of the survey, while about 81 percent of babies of rich households were covered by health insurance, half of babies of poor households (50.2%) had health insurance coverage. Table 8.1.5.3a also shows that more than half of the babies of the middle households (63%) were covered by health insurance.

TABLE 8.1.5.3a Percent Distribution of Household Wealth Index by Current Health Insurance Coverage Status of Births in the Five Years Preceding the Survey, TDHS 2003

	Current Health Insurance Coverage Status			
	No	Yes	Total	Number
Household Wealth Index				
Poor	49.8	50.2	100.0	2213
Middle	36.9	63.1	100.0	85
Rich	18.8	81.2	100.0	1509
Total	97.2	2.8	100.0	4507

TABLE 8.1.5.3b Percent Distribution of Current Health Insurance Coverage Status of Births in the Five Years Preceding the Survey by Household Wealth Index, TDHS 2003

	Current Health Insurance Coverage Status		
	No	Yes	Total
Household Wealth Index			
Poor	63.1	36.7	46.3
Middle	19	18.7	18.8
Rich	17.9	44.6	34.9
Total	100.0	100.0	100.0
Number	1680	2827	4507

Moreover, as seen in Table 8.1.5.3b, according to the descriptive results of TDHS 2003 data, by the time of the survey, while about 63 percent of babies, who had no health insurance coverage, were poor, almost 18 percent of them were rich. Table 8.1.5.3b also reveals that this percentage is 19 for the babies included in the middle wealth index category.

TABLE 8.1.5.4 Percent Distribution of Survival Status of Infants in the Five Years Preceding the Survey by Household Wealth Index According To Current Health Insurance Coverage Status, TDHS 2003

Current Health Ins. Coverage Status		Survival Status of Infants			
		Alive	Dead	Total	Number
No	Household Wealth Index				
	Poor	96.1	3.9	100.0	1102
	Middle	96.9	3.1	100.0	300
	Rich	99.3	0.7	100.0	278
	Total	96.8	3.2	100.0	1680
Current Health Ins. Coverage Status		Survival Status of Infants			
		Alive	Dead	Total	Number
Yes	Household Wealth Index				
	Poor	96.2	3.8	100.0	1111
	Middle	98.6	1.4	100.0	485
	Rich	97.9	2.1	100.0	1231
	Total	97.4	2.6	100.0	2827

Lastly, when the association among the household wealth index and survival status of infants according to current health insurance coverage status is examined, the results of the descriptive analysis of the data reveals that the proportions of infant death in the poor households do not differ according to current health insurance coverage status. As seen in Table 8.1.5.4, while the death risk of babies of the poor families, who were deprived of any health insurance program, was 3.9 percent, this risk was 3.8 percent for the babies of poor households covered by any health insurance program by the time of the survey. According to this result, the mortality level of the babies of the poor families in Turkey does not differ despite their health insurance coverage, namely poor babies whether covered by health insurance or not

had higher level of death risk than their counterparts in the middle and rich categories. That is to say, expansion of the health insurance coverage to the poor population in Turkey cannot narrow the socio-economic differentials in infant mortality. Furthermore, while the death risk of babies of the families included in middle wealth index category and covered by health insurance was 1.4 percent, this risk increased to 3.1 percent for those babies who have not health insurance coverage. According to this result, survival status of babies of households in the middle wealth index category differs according to their health insurance coverage status. Moreover, it is interesting that, as also seen in Table 8.1.5.4, the babies of rich families covered by health insurance were 3 times more likely to die than those of rich families not covered by health insurance (2.1% vs. 0.7%).

8.2 Results of Logistic Regression Analysis

In this part of the study, the results of the logistic regression analyses are presented. However, before giving and discussing the regression results, it may be useful to remind that the dependent variable of this study is the survival status of infants which is a bivariate event; whether infant is alive or dead. Therefore, there is a dichotomy of “alive” versus “dead”. Because of this type of dependent variable, logistic regression may be the most appropriate technique of analysis, and, due to the variety and number of predictors, logistic multiple regression is selected as the method of analysis for this study.

It may also be useful to give detailed information about the dependent variable and predictor variables of the study put into the multiple logistic regression analysis. All variables selected for the regression model are presented in detail in Table 8.2.1. Based on the available data file, whether received antenatal care, received antenatal care from doctor, from nurse/midwife, from traditional birth attendant, and from others, place of delivery, whether taking assistance during delivery, assisting delivery by doctor, by nurse/midwife, by traditional birth attendant, by relative/friend, and by others were some of the independent variables regarding maternal health care services. Moreover, as socio-economic variables,

current health insurance coverage status, mother's education level and household wealth index were used in the logistic regression models. Mother's mother tongue, region, and type of place of residence were also included in the regression logistic models as community environment variables. In addition to these, as bio-demographic variables preceding birth interval, birth order number and age of mother at birth of child were selected. Besides, among the independent variables, as also seen in Table 8.2.1, preceding birth interval, birth order number, mother' s age at birth, mother's mother tongue, mother' s education level, household wealth index and region are the categorical variables, and, the rest of the variables are bivariate variables.

Before putting variables into the regression model, it is useful to make a collinearity tests. "Collinearity is a problem that arises when independent variables are correlated with one another". Low levels of collinearity are not generally problematic, but a tolerance of less than 0.10 indicates a serious collinearity problem and certainly results in coefficients that are not statistically significant (Menard, 1995). In this study, the collinearity test[8] was also made to determine whether a correlation exists between independent variables. As seen in Table 8.2.2, when the tolerances are examined, it is seen that there is no serious collinearity problem among the independent variables of the regression analysis.

In the multiple logistic regression analysis, several methods can be implemented for selecting the independent variables. Method selection allows specifying how independent variables are entered into the analysis. Using different methods, you can construct a variety of regression models from the same set of variables. In this study, independent variables were put into the regression analysis utilizing the "forced entry method". With this method, any variable in the variable list is entered into the model in a single step (SPSS/PC, 2001).

[8] Although tolerance is not available in SPSS logistic regression, it can be obtained by calculating a linear regression model using the same dependent and independent variables as they are used in the logistic regression model. Since the concern is with the relationship among the independent variables, the functional form of the model for the dependent variable is irrelevant to the estimation of collinearity (Menard, 1995).

TABLE 8.2.1 Variables of Multiple Logistic Regression Analysis

Variable Name	Variable encoding
Dependent Variable	
Survival status of infants	Alive=0, Dead=1
Independent Variables	
Current health insurance coverage status	No=0, Yes=1*
Whether received antenatal care	No=0, Yes=1*
Antenatal care from doctor	No=0, Yes=1*
Antenatal care from nurse/midwife	No=0, Yes=1*
Antenatal care from traditional birth attendant	No=0, Yes=1*
Antenatal care from other	No=0, Yes=1*
Place of delivery	Home=1, Health facility=2*
Whether received assistance during delivery	No=0, Yes=1*
Assistance during delivery by doctor	No=0, Yes=1*
Assistance during delivery by nurse/midwife	No=0, Yes=1*
Assistance during delivery by trad. birth att	No=0, Yes=1*
Assistance during delivery by relative/friend	No=0, Yes=1*
Assistance during delivery by other	No=0, Yes=1*
Preceding birth interval	First-order births=0**, <24 months=1, ≥24 months=2*
Birth order number	7+=1, 4-6=2, 2-3=3, 1=4*
Mother's age at birth	≤18=1, ≥35=2, 19-34=3*
Mother's mother tongue	Other=1, Kurdish=2, Turkish=3*
Mother' s education level	No educ./Primary incomplete=0, First level primary=1, Second level primary=2, High school and higher=3*
Household wealth index	Poorest=1, Poorer=2, Middle=3, Richer=4, Richest=5*
Region	East=1, North=2, Central=3, South=4, West=5*
Type of place of residence	Rural=1, Urban=2*

* In the multiple logistic regression analysis, the last category of the all independent variables was selected as the reference category.

** Preceding birth interval means "percentage of births in the five years preceding the survey by specified grouped number of months since the preceding birth". It covers all second-and higher-order births that occurred in the 0-59 months preceding the interview (Rutstein and Rojas, 2003). In this study, due to the large number of observations (34% of the all live births in the five years preceding the survey), first-order births were also included as a category in the logistic regression analysis.

TABLE 8.2.2 Testing for Collinearity

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0,219	0,042		5,264	0,000		
Current health insurance coverage	0,004	0,005	0,012	0,710	0,478	0,878	1,139
Whether received antenatal care	-0,022	0,014	-0,059	-1,567	0,117	0,169	5,910
Antenatal care from doctor	0,008	0,013	0,023	0,619	0,536	0,182	5,503
Antenatal care from nurse/midwife	-0,003	0,008	-0,006	-0,320	0,749	0,689	1,451
Antenatal care from trad.birth att.	-0,033	0,050	-0,011	-0,668	0,504	0,970	1,031
Antenatal care from other	-0,010	0,041	-0,004	-0,238	0,812	0,982	1,019
Place of delivery	-0,004	0,012	-0,011	-0,355	0,723	0,268	3,734
Assisting delivery	-0,078	0,036	-0,036	-2,197	0,028	0,910	1,099
Assisting delivery by Doctor	-0,006	0,006	-0,018	-0,932	0,351	0,611	1,636
Assisting delivery by nurse/midwife	-0,026	0,008	-0,073	-3,316	0,001	0,494	2,023
Assisting delivery by trad.birth att.	-0,021	0,013	-0,037	-1,563	0,118	0,431	2,320
Assisting delivery by relative/friend	0,006	0,012	0,013	0,546	0,585	0,443	2,258
Assisting delivery by others	-0,004	0,018	-0,003	-0,212	0,832	0,985	1,015
Preceding birth interval	-0,007	0,004	-0,039	-1,718	0,086	0,473	2,113
Birth order number	-0,008	0,005	-0,046	-1,855	0,064	0,390	2,563
Mother's age at birth	-0,011	0,004	-0,039	-2,433	0,015	0,951	1,052
Mother's mother tongue	-0,003	0,006	-0,009	-0,482	0,630	0,671	1,491
Mother's education	0,000	0,003	0,002	0,091	0,927	0,553	1,809
Wealth Index	-0,002	0,002	-0,017	-0,810	0,418	0,559	1,789
Region	0,001	0,002	0,006	0,319	0,750	0,710	1,408
Type of Place of Residence	-0,001	0,006	-0,004	-0,226	0,821	0,817	1,225

In the logistic regression analysis, indicator coding is used to represents the different possible values of the categorical variables and indicates the presence or absence of a categorical attribute. It is only one of several ways of treating design variables in logistic regression analysis. The use of a different coding scheme for the indicator variables does not change the results of the analysis. One alternative is called as “simple” coding which was also used in logistic regression analysis of this study. “With simple contrasts, logistic regression coefficients for the design variables are identical to the coefficients produced with indicator coding, only the intercept changes” (for other alternatives, see Menard, 1995).

This study questions two propositions that whether

1. existence of health insurance can lead to large improvements in infant mortality, and
2. expansion of health insurance to the poor population in Turkey can narrow socio-economic differentials in infant mortality.

In this study, for the first proposition four multiple logistic regression models were constructed.

The first multiple logistic regression model of the first proposition examines the relative effects of the selected predictors on determination of survival status of infants for the five years period preceding the survey. This multiple logistic regression model also includes current health insurance coverage status as an independent variable. Similarly, the second and the third multiple logistic regression models of the first proposition assesses the relative importance of the selected variables on determination of survival status of infants. However, in these models, health insurance coverage status variable was used as a selection variable. The selection variable function is used for selecting a subset of cases for analysis (SPSS/PC, 2001). In this study, the second multiple logistic regression model includes only the infants covered by health insurance, and the third multiple logistic regression model covers only the children have not health insurance coverage by the

time of the survey. In the rest of the study, “the first logistic regression model” will refer to the regression analysis that assess the relative effects of the all selected predictors (including current health insurance coverage as an independent variable) on determination of survival status of infants. Similarly, “the second multiple logistic regression model with health insurance” means the regression analysis that examines the relative importance of the selected predictors on survival of the infants covered by health insurance, and “the third multiple logistic regression model without health insurance” will refer to the regression analysis that investigates the impact of selected characteristics on survival of infants not covered by health insurance.

Besides, it is crucial to state that these three multiple logistic regression models include all live births in the five years preceding the survey. In other words, in these regression models, there are also infants who have not completed their first age yet by the time of the survey. That is to say, these children are not exposed to the infant mortality event; namely, their exposure period to the event has not been over yet. Due to this reason, it may be useful to construct one more logistic regression model by excluding these infants from the analysis. By this way, it may possible to reach better results. In the rest of the study, “the fourth multiple logistic regression model for children above age 1” will refer to the regression analysis for the infants exposed to the infant mortality event that assesses the relative effects of the all selected predictors (including current health insurance coverage as an independent variable) on determination of survival status of infants .

In addition to these, for the second proposition of the study, three multiple logistic regression models were constructed. These multiple logistic regression models of the second proposition also examine the relative effects of the selected predictors, especially the relative effects of current health insurance coverage status on determination of survival status of infants for the five years period preceding the survey. However, in these models, household wealth index variable was used as a selection variable. As mentioned before, household wealth index variable includes three categories as poor, middle and rich. Therefore, the first regression model for the second proposition includes only the babies of the poor families; the second one

covers only the babies of families in the middle wealth index category, and the third one includes the babies of rich families. In the rest of the study, these three logistic regression models for the second proposition are named as “multiple logistic regression model for the poor”, “multiple logistic regression model for the middle”, and “multiple logistic regression model for the rich”.

The logistic regression analysis includes also some summary statistics for selected cases, the goodness of fit of the model (the chi-square statistics), and a comparison of observed and predicted values (or classification) of cases (Menard, 1995).

In this study, it may also be useful to present these summary statistics before discussing the results of the multiple logistic regression analyses.

Firstly, it will be presented the summary statistics of “the first multiple logistic regression model”. The total number of the selected cases in this regression model is 4533. The number of the cases included in the analysis is 4491, while the number of missing cases is 42. That is, only about 1 percent of the all cases are not included in the model.

Moreover, according to the results of the tests of model coefficients, as seen in Table 8.2.3, for the 4491 cases, the model fits well. Model χ^2 = 79.120, and it is statistically significant (p= 0.000).

TABLE 8.2.3 Omnibus Tests of Model Coefficients for the First Multiple Logistic Regression Model

		Chi-square	df	Sig.
Step 1	Step	79.120	34	0.000
	Block	79.120	34	0.000
	Model	79.120	34	0.000

Additionally, as seen in Table 8.2.4, according to the Nagelkerke R square value, this model can only estimate about 9 percent of the variation in the infant mortality.

TABLE 8.2.4 Model Summary for the First Multiple Logistic Regression Model

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	910.331[a]	0.019	0.089

[a] Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Furthermore, as reflected in Table 8.2.5, the independent variables of the first logistic regression model allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, 97 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.5 Classification Table[a] of the First Multiple Logistic Regression Model

		Predicted		
		Survival Status of Infants		Percentage
Observed		Alive	Dead	Correct
Survival Status of Infants	Alive	3986	0	100.0
	Dead	107	0	0.0
Overall Percentage				97.4

[a] The cut value is 0.5.

Secondly, the total number of the cases in "the second multiple logistic regression model with health insurance" is 2827. The number of the cases included in the analysis is 2817, while the number of missing cases is 10. That is, only 0.2 percent of the all cases cannot be examined in the model. And, the number of unselected cases is 1706 which are the infants not covered by health insurance by the time of the survey.

Besides, according to the results of the tests of model coefficients, as seen in Table 8.2.6, for the 2817 cases, the model fits well. Model χ^2 = 65.735, and it is statistically significant (p= 0.001).

TABLE 8.2.6 Omnibus Tests of Model Coefficients for the Second Multiple Logistic Regression Model with Health Insurance

		Chi-square	df	Sig.
Step 1	Step	65.735	33	0.001
	Block	65.735	33	0.001
	Model	65.735	33	0.001

Furthermore, as seen in Table 8.2.7, the Nagelkerke R square value indicates that this model can explain 12 percent of the variation in the infant mortality.

TABLE 8.2.7 Model Summary for the Second Multiple Logistic Regression Model with Health Insurance

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	518.305[a]	0.025	0.124

[a] Estimation terminated at iteration number 20 because maximum iterations have been reached. Final solution cannot be found.

TABLE 8.2.8 Classification Table[d] of the Second Multiple Logistic Regression Model with Health Insurance

		Predicted					
		Selected Cases[a]			Unselected Cases[b, c]		
Observed		Surv. Stat. of Infants Alive	Dead	Percentage Correct	Surv.Stat. of Infants Alive	Dead	Percentage Correct
Survival Status of Infants	Alive	2533	0	100.0	1473	2	99.9
	Dead	62	0	0.0	47	0	0.0
Overall Percentage				97.6			96.8

[a] Selected cases Current health insurance coverage status of children EQ 1.
[b] Unselected cases Current health insurance coverage status of children NE 1.
[c] Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
[d] The cut value is 0.5.

Additionally, as reflected in Table 8.2.8, the independent variables of "the second logistic regression model with health insurance" allow classifying the cases

(into the categories of the dependent variable) with a very high degree of accuracy. In other words, almost 98 percent correct indicates that the accuracy of prediction is very high.

Thirdly, in the third logistic regression model without health insurance, the total number of the selected cases is 1680. The number of the cases included in the analysis is 1674, while the number of missing cases is 6. That is, only about 0.1 percent of the all cases are not included in the model. And, the number of unselected cases is 2853 which are the infants covered by health insurance by the time of the survey.

In addition, according to the results of the tests of model coefficients, as seen in Table 8.2.9, for the 1674 cases, the model fits well. Model χ^2 = 52.793, and it is statistically significant (p= 0.016).

TABLE 8.2.9 Omnibus Tests of Model Coefficients for the Third Multiple Logistic Regression Model without Health Insurance

		Chi-square	df	Sig.
Step 1	Step	52.793	33	0.016
	Block	52.793	33	0.016
	Model	52.793	33	0.016

Moreover, Table 8.2.10 indicates that according to the Nagelkerke R square value, this model can estimate almost 15 percent of the variation in the infant mortality.

TABLE 8.2.10 Model Summary for the Third Multiple Logistic Regression Model without Health Insurance

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	518.305[a]	0.025	0.146

[a] Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Furthermore, as reflected in Table 8.2.11, the independent variables of the regression model allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, 97 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.11 Classification Table[d] of the Third Multiple Logistic Regression Model without Health Insurance

		Predicted					
		Selected Cases[a]			Unselected Cases[b, c]		
		Surv. Stat. of Infants		Percentage	Surv. Stat. of Infants		Percentage
Observed		Alive	Dead	Correct	Alive	Dead	Correct
Survival Status of Infants	Alive	1453	0	100.0	2554	1	99.9
	Dead	45	0	0.7	63	0	0.5
Overall Percentage				97.0			97.5

[a] Selected cases Current health insurance coverage status of children EQ 0.
[b] Unselected cases Current health insurance coverage status of children NE 0.
[c] Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
[d] The cut value is 0.5.

Fourthly, in the fourth multiple logistic regression model for children above age 1, the total number of the selected cases is 3697. The number of the cases included in the analysis is 3662, while the number of missing cases is 35. That is, only about 1 percent of the all cases are not included in the model.

Moreover, according to the results of the tests of model coefficients, as seen in Table 8.2.12, for the 3662 cases, the model fits well. Model $\chi^2 = 78.703$, and it is statistically significant ($p = 0.000$).

TABLE 8.2.12 Omnibus Tests of Model Coefficients for the Fourth Multiple Logistic Regression Model for Children above Age 1

		Chi-square	df	Sig.
Step 1	Step	78.703	30	0.000
	Block	78.703	30	0.000
	Model	78.703	30	0.000

Additionally, as seen in Table 8.2.13, according to the Nagelkerke R square value, this model can only estimate about 9 percent of the variation in the infant mortality.

TABLE 8.2.13 Model Summary for the Fourth Multiple Logistic Regression Model for Children above Age 1

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	867,729	0.023	0.094

Furthermore, as reflected in Table 8.2.14, the independent variables of the first logistic regression model allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, 97 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.14 Classification Table[a] of the Fourth Multiple Logistic Regression Model for Children above Age 1

		Predicted		
		Survival Status of Infants		Percentage
Observed		Alive	Dead	Correct
Survival Status of Infants	Alive	3249	0	100.00
	Dead	107	0	0.00
Overall Percentage				96.8

[a] The cut value is 0.5.

In addition to these, the total number of the selected cases in "the multiple logistic regression model for the poor" is 2226. The number of the cases included in the analysis is 2201, while the number of missing cases is 25. That is, only about 1 percent of the all cases are not included in the model.

Moreover, according to the results of the tests of model coefficients, as seen in Table 8.2.15, for the 2201 cases, the model fits well. Model $\chi^2 = 50.984$, and it is statistically significant ($p < 0.05$).

TABLE 8.2.15 Omnibus Tests of Model Coefficients for the Multiple Logistic Regression Model for the Poor

		Chi-square	df	Sig.
Step 1	Step	50.984	30	0.010
	Block	50.984	30	0.010
	Model	50.984	30	0.010

Additionally, as seen in Table 8.2.16, according to the Nagelkerke R square value, this model can only estimate about 10 percent of the variation in the infant mortality.

TABLE 8.2.16 Model Summary for the Multiple Logistic Regression Model for the Poor

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	529.080	0.027	0.101

Furthermore, as reflected in Table 8.2.17, the independent variables of the logistic regression model for the poor allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, almost 97 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.17 Classification Table[d] of the Multiple Logistic Regression Model for the Poor

		Predicted					
		Selected Cases[a]			Unselected Cases[b, c]		
Observed		Surv. Stat. of Infants Alive	Dead	Percentage Correct	Surv.Stat. of Infants Alive	Dead	Percentage Correct
Survival Status of Infants	Alive	1825	0	100.0	2161	1	100.0
	Dead	67	0	0.0	40	0	0.0
Overall Percentage				96.5			98.2

[a] Selected cases Wealth Index EQ 1.
[b] Unselected cases Wealth Index NE 1.
[c] Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
[d] The cut value is 0.5.

Additionally, the total number of the selected cases in “the multiple logistic regression model for the middle” is 790. The number of the cases included in the analysis is 785, while the number of missing cases is 5. That is, only 0.6 percent of the all cases are not included in the model.

Moreover, according to the results of the tests of model coefficients, as seen in Table 8.2.18, for the 785 cases, the model fits well. Model $\chi^2 = 53.762$ and it is statistically significant ($p < 0.05$).

TABLE 8.2.18 Omnibus Tests of Model Coefficients for the Multiple Logistic Regression Model for the Middle

		Chi-square	df	Sig.
Step 1	Step	53.762	30	0.005
	Block	53.762	30	0.005
	Model	53.762	30	0.005

Additionally, as seen in Table 8.2.19, according to the Nagelkerke R square value, this model can estimate about 37 percent of the variation in the infant mortality.

TABLE 8.2.19 Model Summary for the Multiple Logistic Regression Model for the Middle

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	102.705	0.067	0.367

Furthermore, as reflected in Table 8.2.20, the independent variables of the logistic regression model for the middle allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, almost 98 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.20 Classification Table[d] of the Multiple Logistic Regression Model for the Middle

Observed		Predicted: Selected Cases[a] Surv. Stat. of Infants Alive	Dead	Percentage Correct	Predicted: Unselected Cases[b, c] Surv.Stat. of Infants Alive	Dead	Percentage Correct
Survival Status of Infants	Alive	757	0	100.0	3202	28	99.1
	Dead	15	1	5.7	87	4	4.2
Overall Percentage				98.0			96.5

[a] Selected cases Wealth Index EQ 2.
[b] Unselected cases Wealth Index NE 2.
[c] Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
[d] The cut value is 0.5.

Lastly, the total number of the selected cases in "the multiple logistic regression model for the rich" is 1517. The number of the cases included in the analysis is 1505, while the number of missing cases is 12. That is, only almost 0.8 percent of the all cases are not included in the model.

Moreover, according to the results of the tests of model coefficients, as seen in Table 8.2.21, for the 1505 cases, the model does not fit well. Model $\chi^2 = 35.894$, and it is not statistically significant ($p>0.05$).

TABLE 8.2.21 Omnibus Tests of Model Coefficients for the Multiple Logistic Regression Model for the Rich

		Chi-square	df	Sig.
Step 1	Step	35.894	29	0.177
	Block	35.894	29	0.177
	Model	35.894	29	0.177

Additionally, as seen in Table 8.2.22, according to the Nagelkerke R square value, this model can estimate about 16 percent of the variation in the infant mortality.

TABLE 8.2.22 Model Summary for the Multiple Logistic Regression Model for the Rich

	-2 Log Likelihood	Cox Snell R Square	Nagelkerke R Square
Step 1	204.267	0.025	0.160

Furthermore, as reflected in Table 8.2.23, the independent variables of the logistic regression model for the rich allow classifying the cases (into the categories of the dependent variable) with a very high degree of accuracy. That is to say, almost 98 percent correct indicates that the accuracy of prediction is very high.

TABLE 8.2.23 Classification Table[d] of the Multiple Logistic Regression Model for the Rich

		Predicted					
		Selected Cases[a]			Unselected Cases[b, c]		
Observed		Surv. Stat. of Infants Alive	Dead	Percentage Correct	Surv.Stat. of Infants Alive	Dead	Percentage Correct
Survival Status of Infants	Alive	1405	0	100.0	2577	4	99.8
	Dead	24	0	0.0	83	0	0.0
Overall Percentage				98.4			96.7

[a] Selected cases Wealth Index EQ 3.
[b] Unselected cases Wealth Index NE 3.
[c] Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
[d] The cut value is 0.5.

After giving brief information about these summary statistics of the multiple logistic regression models, it is essential to present the results of these models in order to asses the relative importance of the selected predictors on determination of survival status of infants.

At the beginning, it is necessary to state that according to the results of descriptive statistics of TDHS 2003 weighted data, 118 infant deaths were observed for the five years period preceding the survey. Therefore, the results of the logistic

regression models should be interpreted with caution since they are based on a small number of observations and may, therefore, be statistically unstable.

Firstly, the results of the first logistic regression model will be discussed. As seen in Table 8.2.24, the data suggest that controlling for the other variables, the most important predictors of determination of survival status of infants are assisting delivery by nurse/midwife, preceding birth interval, mother's age at birth of the child and household wealth index. The effect of these variables on the survival status of infants is significant at 0.05 level. The equation for the logit of the survival status of infants is

Y= -1.7511-1.0069(Assisting by nurse) + 0.5369(Preceding birth inter. <24) +0.8330(Mother's age at birth ≤ 18) + 1.1138(Wealth index_Richer)

According to the regression results, assisting delivery by nurse/midwife is significant on infant mortality, but the relationship is reverse. There is evidence to suggest that the odds of death risk of infants whose mothers did not take assistance during delivery by nurse/midwife are about 63% lower than their counterparts in the reference group. That is to say, according to the data, infants whose mothers did not take assistance during delivery by nurse/midwife, have about 63% lower risk of dying than those whose mothers have taken assistance during delivery by nurse/midwife. Here, it may be useful to state that, according to the results of TDHS 2003 data, half of the mothers (50%) who took assistance during delivery by nurse midwife also received assistance during delivery by doctor. And, about 78 percent of the mothers who took assistance during delivery by doctor also received assistance during delivery by nurse/midwife. That is to say, 22 percent of the mothers who took assistance during delivery by doctor did not receive assistance during delivery by nurse/midwife. Besides, the 38 percent of the mothers who did not take assistance during delivery by nurse midwife received assistance by doctor.

Furthermore, the influence of various bio-demographic characteristics on survival chances of infants is well known, and the results of the regression analysis confirm most of the expected relationships. Mother's age at birth of the child plays a

TABLE 8.2.24 Results of the First Multiple Logistic Regression Model, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Current health insurance coverage			
No	0,1409	0,5091	1,1513
Yes*	1,0000	1,0000	1,0000
Whether received antenatal care			
No	-0,7419	0,3245	0,4762
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	0,3892	0,5913	1,4758
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,2075	0,6126	0,8126
Yes*	1,0000	1,0000	1,0000
Antenatal care from traditional birth attendant			
No	-17,5101	0,9989	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-16,7851	0,9987	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	0,0516	0,9126	1,0530
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-0,6811	0,3643	0,5061
Yes*	1,0000	1,0000	1,0000
Assistance to delivery by doctor			
No	-0,3491	0,2719	0,7053
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-1,0069	0,0018**	0,3654
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-0,5981	0,2082	0,5499
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	-0,0816	0,8576	0,9216
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	-0,3669	0,7108	0,6929
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	-0,0501	0,9780	0,9512
< 24 months	0,5369	0,0264**	1,7107
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	0,1172	0,9495	1,1243
4-6	-0,0512	0,9777	0,9501
2-3	-0,1219	0,9464	0,8853
1*	1,0000	1,0000	1,0000

Mother' s age at birth			
≤ 18	0,8330	0,0133**	2,3002
≥ 35	0,4159	0,2282	1,5158
19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	-0,0700	0,9011	0,9324
Kurdish	0,2457	0,4581	1,2785
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-0,3899	0,4238	0,6771
First level primary	-0,2592	0,5243	0,7716
Second level primary	-0,9097	0,1874	0,4026
High school and higher*	1,0000	1,0000	1,0000
Household wealth index			
Poorest	1,1175	0,0575	3,0572
Poorer	0,9346	0,1092	2,5461
Middle	0,8819	0,1271	2,4155
Richer	1,1138	0,0438**	3,0460
Richest*	1,0000	1,0000	1,0000
Region			
East	-0,1812	0,5857	0,8342
North	-0,1670	0,7431	0,8462
Central	-0,3361	0,3132	0,7145
South	-0,2087	0,5760	0,8117
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	-0,0915	0,6901	0,9126
Urban*	1,0000	1,0000	1,0000
Constant	-1,7511	0,0762	0,1736

* Reference category.
** $p<0.05$

vital role on the survival status of infants. As seen in Table 8.2.24, infants whose mothers' age less than 18 years-old at birth are 2.3 times more likely to die than their counterparts in the reference group. According to the results, infants whose mothers' age above 35 years-old at birth, have 50% higher risk of dying than those whose mothers' age between 19 and 34 at birth as well.

Additionally, infants having birth intervals less than 24 months with their siblings have 70% higher death risk (odds=1.7107). That is, controlling for the other variables, preceding birth interval more than 24 months has increased the survival of the infants up to age one. Here, it is necessary to mention that "the first-order children" are also included in the model as a category of preceding birth interval variable since almost 34 percent of the all births in the five years preceding the

survey were the first-order children. When these children are not assigned a category, the regression model selects them as missing cases, and thus almost one-third of the all births in the five years preceding the survey are excluded from the analysis. Due to this reason, first order children were included in the logistic regression model.

Another significant predictor of the infant mortality is the household wealth index with richer category. The evidences show that controlling for the other variables, compared with richest category; infants in the richer and poorest wealth index categories are 3 times as likely to die. The infants in the middle and poor index categories are also about 2.5 times more likely to die than their counterparts in the reference category.

In addition to these significant determinants of the infant mortality, it may be useful to say a few things about the other predictors in the regression analysis which have no significant association with infant survival. As seen in Table 8.2.24, except assisting delivery by nurse/midwife, preceding birth interval, mother' s age at birth and household wealth index, there is no another variable shows significant relationship with the infant mortality.

It is essential to state that current health insurance coverage status has no strong effect on the survival status of the infants as well. That is to say, p value is larger than 0.05, then the result of the regression analysis fail to reject the null hypothesis and it is possible to conclude that health insurance coverage status has no effect on the infant mortality level in Turkey for the five year period preceding the survey. However, it is still possible to evaluate the odds of the health insurance variable. According to results, infants not covered by health insurance have 15% higher risk of dying than those covered by health insurance in the reference category.

Another interesting result is that, as seen in Table 8.2.24, controlling for other variables, utilization of antenatal care services by mothers has no effect on the survival status of infants. Looking at odds ratios of antenatal care variables, it is seen that infants whose mothers did not utilize antenatal care during pregnancy, have

almost 50% lower death risk than their counterparts in the reference category. According to this evidence, the regression result fails to reject the null hypothesis that utilization of antenatal health care services during pregnancy period has no effect on the survival status of infants.

Similarly, infants whose mothers did not received antenatal care from nurse/midwife, have almost 20% lower that risk than those whose mothers have taken antenatal care from nurse/midwife. On the other hand, infants whose mothers did not take antenatal care from a doctor, have about 50% higher risk of dying than those whose mothers have taken antenatal care from a doctor. Besides, when the results of receiving antenatal care from traditional birth attendant and from others variables are examined, it is seen that it is not possible to make logical inferences. The one reason of this may be the small number of observations. As also seen in the descriptive analyses of this study, only 0.3 and 0.4 percent of the mothers received antenatal care from traditional birth attendant and from other persons.

Additionally, according to the regression results, hospital or home deliveries do not bring about difference in terms of survival status of infants. Controlling for other variables, the odds of infants delivered at home have only 0.05% higher risk of dying than those delivered at a health facility. Thus, the result of regression analysis fails to reject the null hypothesis that place of delivery has no effect on the survival of infants up to age one.

Table 8.2.24 also presents that according to regression result, it is interesting that controlling for other variables, infants whose mothers never take assistance during delivery, have almost 50% lower risk of dying than their counterparts in the reference category. This finding may be due to the small number of observations. When the results of descriptive analyses examined, it is seen that almost all women (99.5%) stated that they had taken assistance during delivery in the five years preceding the survey. The situation is not different for the other variables regarding the person assisting delivery. For example, according to the regression results, not taking assistance from traditional birth attendant, relative/friends and other persons

increase the survival chance of the infants (odds=0.5499, odds=0.9216, and odds=0.6929).

Moreover, according to the results of this study, birth order of the infant has no significant effect on the survival status of them, but the odds ratios of the variable demonstrate that controlling for the other variables, high-birth-order infants have more risks of dying than those in the reference category. In other words, 7 and higher- birth-order infants have 12% higher risks of dying than those first-order children. However, it is interesting that, as seen in Table 8.2.24, in other sub-groups (2-3 and 4-6 birth order), the survival chances of the infants increase when compared with the reference category.

Table 8.2.24 presents the survival status of infants by mother's mother tongue, level of mother's education, urban-rural residence and region as well. The strong relationship between survival chances of infants and the level of education of their mothers is not revealed by the regression results of this study. The regression results even demonstrate that, as seen in Table 8.2.24, the probabilities of dying are lower for infants of mothers with lower educational levels.

In addition to these, it is generally expected that infants living in the Western region and urban areas have more survival chance than those living in the East and in the rural. However, this expectation is not also met by the regression result of this study. Controlling for all other variables, it is seen that infants living in the Eastern region and in rural areas have less risk of dying than their counterparts in the reference category (odds=0.8342 and odds=0.9126). Infants living in Northern, Southern and Central region of Turkey have also more chances of survival compared with those living in Western region as well.

Lastly, it is expected that mother tongue variable may have effect on the infant mortality level. However, the results of the regression analysis show that mother's mother tongue has no relationship with the survival status of infants. When the odd ratios are examined, it is seen that infants whose mothers' mother tongue was

Kurdish, are almost 1.3 times more likely to die than those whose mothers' mother tongue was Turkish. And, infants in the "other" category of the mother tongue have more chance of survival than their counterparts as well.

Secondly, when the results of the second regression model for infants covered by health insurance are examined, it is seen that the results of the second model are not very different from those of the first model. While in the first model assisting delivery by nurse/midwife, preceding birth interval, mother's age at birth of the child and household wealth index are most significant predictors of the analysis, in the second model again assisting delivery by nurse/midwife, preceding birth interval, and also mother's education level and type of place of residence are found as the most important determinants of the infant survival status. The equation for the relationship between survival status of infants and the predictors is

Y= -1.7974-0.9055 (Assisting by nurse) +0.7702 (Preceding birth intv. ≤24) - 2.2166 (No education) - 0.6483 (Rural residence)

Similar to the result of the first regression model, as seen in Table 8.2.25, in the second logistic regression model with health insurance, the results show that infants whose mothers did not take assistance from nurse/midwife, have 60% lower risk of dying than those in the reference category. Besides, as a bio-demographic variable, preceding birth interval is also found to be one of the most important predictors of the infant mortality. Infants having birth intervals less than 24 months with their siblings are 2.2 times more likely to die than those having birth intervals more than 24 months. That is, controlling for the other variables, preceding birth interval more than 24 months has increased the survival of the infants covered by health insurance up to age one.

Moreover, according to the results of the second regression model with health insurance, mother's education level has significant influence on the infant survival. However, the relationship is not found to be at the expected direction. That is, as seen in Table 8.2.25, infants whose mothers have no education, have almost 70%

lower risk of dying than those whose mothers have higher educational level. Infants of mothers with first and second level primary educational level have also more survival chance compared with those of mothers with higher education.

Additionally, Table 8.2.25 shows that type of place of residence has strong relationship with the survival status of infants covered by health insurance. It is generally expected that infant mortality would be higher in the rural residence. However, according to the results of the second regression model, the direction of the relation is reverse. As seen in Table 8.2.25, there is evidence to suggest that infants living in rural residence of Turkey for the five years period preceding the survey have about 50% lower risk of dying than their counterparts in the reference group, namely infants living in urban areas.

When the mother's age at birth and household wealth index variables are examined, it is seen that they have insignificant relationship on infant survival in the second model. However, it is noteworthy to say a few things about their odds ratios. Table 8.2.25 presents that infant of teenage mothers and whose mothers' more than 35 years-old, are in turn twice and 1.9 times more likely to die than their counterparts in the reference group.

The evidences show also that controlling for the other variables, household wealth index has no effect on the survival status of infants covered by health insurance in the second regression model. Compared with the reference category, namely richest category; infants in the richer wealth index category are 3 times more likely to die, while those in the middle wealth index category are 1.4 times more likely to die. Besides, infants in the poorest and poorer index categories are in turn 2.5 and 2.1 times more likely to die than their counterparts in the reference category.

TABLE 8.2.25 Results of the Second Multiple Logistic Regression Model with Health Insurance, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Whether received antenatal care			
No	-0,1316	0,8876	0,8767
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	-0,0481	0,9565	0,9531
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,1821	0,7213	0,8335
Yes*	1,0000	1,0000	1,0000
Antenatal care from traditional birth attendant			
No	-18,1663	0,9994	0,0000
Yes	1,0000	1,0000	1,0000
Antenatal care from other			
No	-16,6034	0,9988	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	-0,7508	0,2617	0,4720
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-0,3731	0,7375	0,6886
Yes*	1,0000	1,0000	1,0000
Assisting delivery by doctor			
No	0,0895	0,8235	1,0936
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-0,9055	0,0202**	0,4044
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-1,1701	0,1221	0,3103
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	-0,3891	0,5763	0,6777
Yes*			
Assisting delivery by other			
No	-0,0578	0,9540	0,9439
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	-17,5496	0,9987	0,0000
< 24 months	0,7702	0,0161**	2,1601
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	-16,9032	0,9987	0,0000
4-6	-17,0987	0,9987	0,0000
2-3	-17,2941	0,9987	0,0000
1*	1,0000	1,0000	1,0000
Mother' s age birth			
≤ 18	0,7030	0,2039	2,0198
≥ 35	0,6377	0,1349	1,8921

19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	-1,3356	0,3373	0,2630
Kurdish	0,4800	0,3048	1,6160
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-1,2166	0,0466**	0,2962
First level primary	-0,1254	0,7843	0,8822
Second level primary	-0,8802	0,2755	0,4147
High school and higher*	1,0000	1,0000	1,0000
Household wealth index			
Poorest	0,9278	0,1572	2,5289
Poorer	0,7508	0,2408	2,1187
Middle	0,3454	0,5955	1,4126
Richer	1,1023	0,0519	3,0112
Richest*	1,0000	1,0000	1,0000
Region			
East	-0,0681	0,8859	0,9342
North	-0,2957	0,6194	0,7440
Central	-0,4144	0,3299	0,6608
South	-0,2927	0,5738	0,7462
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	-0,6483	0,0364**	0,5229
Urban*	1,0000	1,0000	1,0000
Constant	-1,7974	0,9984	0,1657

* Reference category.
** $p<0.05$

When the regression results of other variables except the ones above are examined, it is seen that other variables in the second regression model almost have the same results with the variables in the first model with a few exception. For example, in the second regression model, infants whose mothers did not take antenatal care from a doctor, have 5% lower death risk than those whose mothers have taken antenatal care from a doctor. Furthermore, in the second regression model, infants delivered at home for the five years period prior to the survey have 53% lower risk of dying than those delivered at a health facility. In addition, infants whose mothers did not take assisting during delivery by doctors have almost 1 percent lower death risk than their counterparts in the reference group.

Thirdly, according to the results of the third regression model for infants not covered by health insurance, there are evidences to suggest that controlling for other variables, assisting delivery by doctor and by nurse/midwife, and type of place of

residence were found as the significant predictors of the infant mortality. The equation for the relationship between survival of infants and predictors is

Y= -6.5596-1.2943 (Assisting by doctor) -1.4623 (Assisting by nurse) +0.7426 (Rural residence)

As seen in Table 8.2.26, the results of the third regression model without health insurance show that infants whose mothers did not take assistance during delivery by doctor, have 73% lower risk of dying than those whose mothers had taken assisting delivery by doctor. Besides, infants whose mothers did not take assistance during delivery by nurse/midwife, have 77% lower risk of dying than those in the reference category.

In addition to these, type of place of residence has strong relationship with the survival status of infants not covered by health insurance. It is generally expected that infant mortality would be higher in the rural areas. According to the results of third regression model for infants have no health insurance, infants living in rural areas are 2.1 times more likely to die than their counterparts in the reference category. However, as mentioned before, according to the results of the second regression model for the infants covered by health insurance, type of place of residence has also strong relationship with the survival status of infants but the direction of the relation is reverse. That is to say, infants living in rural residence of Turkey for the five years period preceding the survey have about 50% lower risk of dying than their counterparts in the reference group, namely infants living in urban areas. From these results, it is possible to infer that the important point for the survival of the infants is not to live in rural or urban areas but to have health insurance coverage status.

When the regression results of other variables-except the ones mentioned above are examined, it is seen that some variables in the third regression model without health insurance almost have the same results with the variables in the second regression model with health insurance with a few exception. For example, as seen in Table 8.2.26, in the third regression model, infants whose mothers did not

take antenatal care from a doctor, are almost 3 times more likely to die than those whose mothers have taken antenatal care from a doctor. In the third regression model without health insurance, infants delivered at home for the five years period preceding to the survey are also 3.2 times more likely to die than those delivered at a health facility. Furthermore, infants whose mothers did not take assisting during delivery by relative/friend, are 1.2 times more likely to die than their counterparts in the reference group.

Furthermore, Table 8.2.26 presents that the results of the third regression model without health insurance show that mother's mother tongue has no relationship with the survival status of infants. When the odd ratios are examined, it is seen that infants whose mothers' mother tongue was Kurdish, have 30% lower risk of dying than those whose mothers' mother tongue was Turkish. And, infants in the "other" category of the mother tongue are 1.4 times more likely to die than their counterparts in the reference category as well.

Moreover, it is generally accepted that mother's education level has significant influence on the infant survival. However, according to the results of third model there is no strong relationship between mother's education and infant survival. When the odds ratios are examined, as seen in Table 8.2.26, it is possible to state that infants, whose mothers have no education, are 1.3 times more likely to die than those whose mothers have higher educational level. Infants of mothers with first and second level primary educational level have also more survival chance compared with those of mothers with higher education.

Additionally, infants having birth intervals less than 24 months with their siblings are almost 1.3 times more likely to die than those having birth intervals more than 24 months.

TABLE 8.2.26 Results of the Third Multiple Logistic Regression Model without Health Insurance, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Whether received antenatal care			
No	-1,7363	0,2031	0,1762
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	1,0755	0,4188	2,9314
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,1424	0,8428	0,8673
Yes*	1.000	1.0000	1.0000
Antenatal care from traditional birth attendant			
No	-17,9539	0,9989	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-15,2619	0,9994	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	1,1656	0,1243	3,2077
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-1,6908	0,1332	0,1844
Yes*	1.0000	1.0000	1.0000
Assisting delivery by doctor			
No	-1,2943	0,0432**	0,2741
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-1,4623	0,0265**	0,2317
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-0,3258	0,6318	0,7219
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	0,1928	0,7695	1,2127
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	-17,5473	0,9986	0,0000
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	2,0279	0,3747	7,5982
< 24 months	0,2281	0,5629	1,2562
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	1,6507	0,4835	5,2104
4-6	1,3155	0,5736	3,7266
2-3	1,3307	0,5591	3,7838
1*	1,0000	1,0000	1,0000

Mother' s age at birth			
≤ 18	0,7066	0,1226	2,0271
≥ 35	0,0997	0,8703	1,1048
19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	0,3381	0,6360	1,4023
Kurdish	-0,3566	0,4915	0,7000
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	0,2971	0,7604	1,3459
First level primary	-0,6826	0,4510	0,5053
Second level primary	-1,1600	0,4099	0,3135
High school and higher*	1,0000	1,0000	1,0000
Household wealth index			
Poorest	17,2515	0,9970	3,1E+07
Poorer	17,1313	0,9970	2,8E+07
Middle	17,2759	0,9970	3,2E+07
Richer	16,5954	0,9971	1,6E+07
Richest*	1,0000	1,0000	1,0000
Region			
East	-0,2318	0,6324	0,7931
North	-0,2139	0,8404	0,8075
Central	-0,3123	0,5899	0,7317
South	-0,0806	0,8886	0,9226
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	0,7426	0,0471**	2,1013
Urban*	1,0000	1,0000	1,0000
Constant	-6,5596	0,9943	0,0014

* Reference category.
** $p<0.05$

In addition to these, it is useful to remind that these three multiple logistic regression models include all live births in five years preceding the survey. In other words, in these regression models, there are also infants who have not completed their first age yet by the time of the survey. That is to say, these children are not exposed to the infant mortality event; namely, their exposure period to the event has not been over yet. Due to this reason, it may be useful to make logistic regression again by excluding these infants from the analysis. By this way, it may be possible to reach better results. Table 8.2.27 presents the results of the multiple logistic regression model for infants exposed to the infant mortality event.

TABLE 8.2.27 Results of the Fourth Multiple Logistic Regression Model for Children above Age 1, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Current health insurance coverage			
No	0,1107	0,6052	1,1171
Yes*	1,0000	1,0000	1,0000
Whether received antenatal care			
No	-0,7970	0,2922	0,4507
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	0,4865	0,5033	1,6266
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,2163	0,6013	0,8055
Yes*	1,0000	1,0000	1,0000
Antenatal care from traditional birth attendant			
No	-17,5397	0,9989	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-16,9832	0,9988	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	0,1704	0,7162	1,1858
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-0,7352	0,3358	0,4794
Yes*	1,0000	1,0000	1,0000
Assisting delivery by doctor			
No	-0,3389	0,2879	0,7126
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-1,0308	0,0013**	0,3567
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-0,5509	0,2445	0,5764
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	0,0045	0,9920	1,0045
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	-0,2760	0,7820	0,7588
Yes*	1,0000	1,0000	1,0000

Preceding birth interval			
First child	0,0673	0,9704	1,0696
< 24 months	0,5368	0,0272**	1,7105
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	0,1663	0,9284	1,1809
4-6	0,0209	0,9909	1,0211
2-3	-0,0343	0,9849	0,9663
1*	1,0000	1,0000	1,0000
Mother' s age at birth			
≤ 18	0,7759	0,0214**	2,1726
≥ 35	0,4065	0,2421	1,5015
19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	-0,0419	0,9413	0,9590
Kurdish	0,2870	0,3912	1,3325
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-0,4120	0,3975	0,6623
First level primary	-0,2457	0,5456	0,7822
Second level primary	-0,8316	0,2294	0,4354
High school and higher*	1,0000	1,0000	1,0000
Household wealth index			
Poorest	1,1859	0,0441**	3,2736
Poorer	1,0049	0,0848	2,7316
Middle	0,8950	0,1219	2,4472
Richer	1,1301	0,0410**	3,0959
Richest*	1,0000	1,0000	1,0000
Region			
East	-0,1139	0,7326	0,8923
North	-0,1436	0,7787	0,8663
Central	-0,3128	0,3487	0,7314
South	-0,1699	0,6502	0,8438
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	-0,1055	0,6468	0,8999
Urban*	1,0000	1,0000	1,0000
Constant	-1,6894	0,0889	0,1846

* Reference category.
** p<0.05

As seen in Table 8.2.27, the data suggest that controlling for the other variables, the most important predictors of determination of survival status of infants are assisting delivery by nurse/midwife, preceding birth interval, mother's age at

birth of the child and household wealth index. The equation for the logit of the survival status of infants is

Y= -1.6894-1.0308(Assisting by nurse) + 0.5368(Preceding birth inter. <24) +0.7759(Mother's age at birth ≤ 18) + 1.1859(Wealth index_Poorest) +1.1301 (Wealth index_Richer)

The evidences show also that current health insurance coverage status has no effect on the survival status of infants. All results of this logistic regression model for children above age 1 are the same with the results of the first logistic regression model. That is to say, to exclude infants who have not completed their first age from the regression analysis does not make difference in the results.

In addition to these, as mentioned above, to analyze whether expansion of health insurance to the poor population in Turkey can narrow the socio-economic differentials in infant mortality, three multiple logistic regression models were constructed. Table 8.2.28 presents the results of the logistic regression model for the poor babies. According to results of Table 8.2.28, the significant predictors on the infant survival of the poor families are assisting delivery by nurse/midwife and assisting delivery by doctor. The equation for the logit of the survival status of infants is

Y= -7.3588-1.0638(Assisting by doctor)-1.3442(Assisting by nurse)

However the relationship is not at the expected direction. The logistic regression results for the poor babies demonstrate that the odds of death risk of infants whose mothers did not take assistance during delivery by nurse/midwife are 74% lower than their counterparts in the reference group. There is also evidence to suggest that infants whose mothers did not take assistance during delivery by doctor have almost 65% lower death risk than their counterparts in the reference group. That is to say, according to the data, infants whose mothers did not take assistance during delivery by nurse/midwife and by doctor have lower risk of dying than those whose mothers have taken assistance during delivery by these health professionals.

TABLE 8.2.28 Results of the Multiple Logistic Regression Model for the Poor, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Current health insurance coverage			
No	0,1542	0,5534	1,1667
Yes*	1,0000	1,0000	1,0000
Whether received antenatal care			
No	-0,6555	0,5142	0,5192
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	0,2483	0,7970	1,2818
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,2998	0,6542	0,7409
Yes*	1,0000	1,0000	1,0000
Antenatal care from traditional birth attendant			
No	-17,6805	0,9989	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-16,2144	0,9995	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	0,3910	0,5203	1,4784
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-0,9746	0,2506	0,3774
Yes*	1,0000	1,0000	1,0000
Assisting delivery by doctor			
No	-1,0638	0,0451**	0,3451
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-1,3442	0,0153**	0,2607
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-0,5031	0,3803	0,6046
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	-0,0579	0,9172	0,9438
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	0,3478	0,7456	1,4160
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	-17,5428	0,9993	0,0000
< 24 months	0,3854	0,1969	1,4702
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	-17,6027	0,9993	0,0000
4-6	-17,8989	0,9992	0,0000
2-3	-18,0024	0,9992	0,0000
1*	1,0000	1,0000	1,0000

Mother' s age at birth			
≤ 18	0,8079	0,0491	2,2431
≥ 35	-0,5371	0,3257	0,5844
19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	-0,4637	0,5022	0,6289
Kurdish	-0,1333	0,7533	0,8752
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-0,5202	0,5529	0,5944
First level primary	-0,5018	0,5493	0,6055
Second level primary	-18,0040	0,9970	0,0000
High school and higher*	1,0000	1,0000	1,0000
Region			
East	0,2055	0,6796	1,2281
North	-0,2648	0,7393	0,7674
Central	0,1562	0,7488	1,1690
South	0,3698	0,4625	1,4474
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	-0,1520	0,5911	0,8590
Urban*	1,0000	1,0000	1,0000
Constant	-7,3588	0,9970	0,0006

* Reference category.
** $p<0.05$

Furthermore, the results of Table 8.2.28 show that current health insurance coverage has no significant relationship with the infant mortality. That is, health insurance coverage status of poor families has no effect on the survival status of poor infants. According to this result, it is possible to claim that expansion of the health insurance coverage to the poor population in Turkey cannot narrow the socio-economic differentials in infant mortality. Thus, the result of regression analysis fails to reject the null hypothesis that expansion of the health insurance coverage to the poor population in Turkey has no effect on narrow the socio-economic differentials in infant mortality.

Moreover, the logistic regression results for the families in the middle wealth index category, as seen in Table 8.2.29, suggest that current health insurance coverage is not a powerful determinant on the infant survival. According to the results of this regression model, only mother's age at birth is a significant predictor on the infant mortality. Infants whose mothers' more than 35 years-old are almost 12 times more likely to die than their counterparts in the reference group.

TABLE 8.2.29 Results of the Multiple Logistic Regression Model for the Middle, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Current health insurance coverage			
No	-0,8418	0,2396	0,4309
Yes*	1,0000	1,0000	1,0000
Whether received antenatal care			
No	2,3927	0,2361	10,9434
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	-1,6050	0,3809	0,2009
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	-0,8343	0,5133	0,4342
Yes*	1,0000	1,0000	1,0000
Antenatal care from traditional birth attendant			
No	-17,4586	0,9994	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-14,2076	0,9994	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	0,5838	0,6671	1,7928
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	-10,1577	0,9997	0,0000
Yes*	1,0000	1,0000	1,0000
Assisting delivery by doctor			
No	0,3210	0,7068	1,3785
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-0,9270	0,2690	0,3957
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	0,6250	0,7108	1,8683
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	0,2279	0,8754	1,2560
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	-29,8562	0,9975	0,0000
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	17,2112	0,9927	3,0E+07
< 24 months	0,7674	0,2850	2,1541
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	19,8555	0,9916	4,2E+08
4-6	18,9944	0,9920	1,8E+08
2-3	18,4204	0,9922	1,0E+08
1*	1,0000	1,0000	1,0000

Mother' s age at birth			
≤ 18	1,5945	0,1497	4,9257
≥ 35	2,4841	0,0026**	11,9909
19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue		0,5171	
Other	1,6111	0,2610	5,0084
Kurdish	0,0578	0,9519	1,0595
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-1,0139	0,5076	0,3628
First level primary	-0,1015	0,9343	0,9035
Second level primary	-16,9798	0,9969	0,0000
High school and higher*	1,0000	1,0000	1,0000
Region			
East	0,7371	0,3557	2,0898
North	0,9314	0,5623	2,5380
Central	-1,6994	0,1840	0,1828
South	0,2645	0,7930	1,3028
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	28,6960	0,9914	2,9E+12
Urban*	1,0000	1,0000	1,0000
Constant	-53,0019	0,9985	0,0000

* Reference category.
** $p<0.05$

As seen in Table 8.2.29, the equation for the logit of the survival status of infants for this regression model is

Y= -53.0019+2.4841(Mother’s age at birth≥35)

Furthermore, the logistic regression model for the infants of rich families, Table 8.2.30 was constructed. However, as mentioned before, this regression model does not fit well. That is to say, this regression model is not statistically significant. Due to this reason, in this study, there is no interpretation related with the results of this logistic regression model.

TABLE 8.2.30 Results of the Multiple Logistic Regression Model for the Rich, TDHS 2003

Independent Variables	B	Sig.	Exp(B)
Current health insurance coverage			
No	1,1056	0,1413	3,0211
Yes*	1,0000	1,0000	1,0000
Whether received antenatal care			
No	-18,0145	0,9976	0,0000
Yes*	1,0000	1,0000	1,0000
Antenatal care from doctor			
No	16,6195	0,9978	1,7E+07
Yes*	1,0000	1,0000	1,0000
Antenatal care from nurse/midwife			
No	0,3688	0,5511	1,4460
Yes*	1,0000	1,0000	1,0000
Antenatal care from other			
No	-15,8652	0,9989	0,0000
Yes*	1,0000	1,0000	1,0000
Place of delivery			
Home	-1,2926	0,3079	0,2746
Health facility*	1,0000	1,0000	1,0000
Whether received assistance during delivery			
No	20,5589	0,9996	8,5E+08
Yes*	1,0000	1,0000	1,0000
Assisting delivery by doctor			
No	0,3434	0,5977	1,4097
Yes*	1,0000	1,0000	1,0000
Assisting delivery by nurse/midwife			
No	-0,8888	0,1010	0,4112
Yes*	1,0000	1,0000	1,0000
Assisting delivery by traditional birth attendant			
No	-18,8886	0,9982	0,0000
Yes*	1,0000	1,0000	1,0000
Assisting delivery by relative/friend			
No	-1,4076	0,3817	0,2447
Yes*	1,0000	1,0000	1,0000
Assisting delivery by other			
No	-17,1520	0,9976	0,0000
Yes*	1,0000	1,0000	1,0000
Preceding birth interval			
First child	-17,2609	0,9989	0,0000
< 24 months	1,2002	0,0405**	3,3208
≥ 24 months*	1,0000	1,0000	1,0000
Birth order number			
7+	-16,9877	0,9989	0,0000
4-6	-17,3810	0,9989	0,0000
2-3	-17,4003	0,9989	0,0000
1*	1,0000	1,0000	1,0000
Mother' s age at birth			
≤ 18	-0,1768	0,8589	0,8380
≥ 35	0,5752	0,4748	1,7776

19-34*	1,0000	1,0000	1,0000
Mother' s mother tongue			
Other	-16,6372	0,9978	0,0000
Kurdish	1,4721	0,0532	4,3583
Turkish*	1,0000	1,0000	1,0000
Mother' s education			
No education/Primary incomplete	-1,4259	0,2418	0,2403
First level primary	-0,1009	0,8537	0,9040
Second level primary	-0,0725	0,9232	0,9301
High school and higher*	1,0000	1,0000	1,0000
Region			
East	-0,8523	0,2538	0,4264
North	-0,0365	0,9622	0,9641
Central	-0,5673	0,3763	0,5671
South	-17,2139	0,9951	0,0000
West*	1,0000	1,0000	1,0000
Type of place of residence			
Rural	-1,0197	0,0429**	0,3607
Urban*	1,0000	1,0000	1,0000
Constant	-53,0019	0,9985	0,0000

* Reference category.
** $p<0.05$

9. CONCLUSION AND DISCUSSION

This study is confined to investigate the influence of health insurance coverage status on infant survival in Turkey. In general, studies about child survival show that infant mortality rates vary with a various number of variables. The literature on child survival has also shown that an increase in infant survival is closely tied to health care utilization. The outcome of pregnancy is directly related to the quantity and quality of prenatal care, and the improvements regarding the care of pregnant women have a significant impact on infant mortality rate. That is to say, utilization of antenatal care and delivery services by the pregnant women has considerable effect for reducing the incidence of infant mortality.

In this study, the findings of the descriptive analyses also reveal that there is significant relationship between utilization of health care services by mothers during pregnancy and the survival of the babies up to age one. In other words, infants whose mothers received antenatal care and infants delivered at health facility have less probability of dying than those whose mothers never received antenatal care and delivered outside the health units for the five-year period prior to the survey.

Besides, according to the literature, accessibility is a major determinant of greater use of health facilities and improvement in health conditions. In this respect, health care utilization by pregnant women may be closely tied to health insurance coverage. The findings of descriptive analyses of this study support this view as well. According to the results, health insurance coverage status shows significant relation on utilization of antenatal care and delivery services by mothers. That is, mothers covered by any health insurance program are more inclined to utilize antenatal care and delivery services for the five-year period preceding the survey than mothers with no health insurance coverage.

Some studies also suggest that health insurance is the most effective way to provide health services to particularly deprived populations. However, the results of the descriptive analyses of this study demonstrate that expansion of health insurance

to the poor population in Turkey cannot narrow socio-economic differentials in infant mortality.

Beyond these descriptive analyses, in this study, 7 multiple logistic regression models were constructed. The first 4 multiple logistic regression models examines the relative effects of the selected predictors on determination of survival status of infants for the five years period preceding the survey in Turkey. In addition, the other 3 logistic regression models assess whether the expansion of the health insurance to the poor population in Turkey can narrow the socio-economic differentials in infant mortality.

The results of the first regression model reveal that assisting delivery by nurse/midwife, preceding birth interval, mother's age at birth of the child and household wealth index are the mainly operating factors on infant mortality. The influence of various bio-demographic characteristics on survival chances of infants is well known, and the results of the first regression model confirm most of the expected relationships. Preceding birth intervals less than 24 months between births are associated with high infant mortality. Besides, infants whose mothers' age less than 18 years-old and above 35 years-old at birth are more likely to die. Additionally, infants living in the wealthy households have more survival chance. According to the data, assisting delivery by nurse/midwife is also significant predictor of infant survival. However, the relationship was not found at the expected direction. That is, infants whose mothers did not take assistance during delivery by nurse/midwife, have lower risk of dying than those whose mothers have taken assistance during delivery by nurse/midwife.

According to the results of the second regression model that includes only infants covered by a health insurance, similarly, assisting delivery by nurse/midwife and preceding birth interval were found as the most important determinants of the infant survival status. The evidences in this model indicate that the effects of assisting delivery by nurse/midwife and the preceding birth interval variables on

infant survival show similarities with the ones in the first regression model.

Additionally, mother's education level and type of place of residence are the other most important predictors of the infant mortality. However, the relationship of them with the infant mortality was not at the expected direction. That is to say, the findings put forward that infants living in urban areas and of higher educated mothers have less survival chances.

The findings of the third regression model that investigates infants not covered by health insurance suggest that survival status is determined by assisting delivery by doctor, assisting delivery by nurse/midwife, and type of place of residence. The evidences in this model indicate that the influence of assisting delivery by nurse/midwife variable on infant survival show similarities with the ones in the first regression model. Additionally, infants of mothers who did not take assistance during delivery by doctor are less likely to die than those mothers' delivery assisted by a doctor.

It is also generally expected that infant mortality would be higher in the rural areas. Third regression model's results support this view and, infants living in rural areas have more risk of dying than their counterparts reside in urban areas.

The results of the fourth multiple logistic regression model for children above age 1 suggest that controlling for the other variables, the most important predictors of determination of survival status of infants are assisting delivery by nurse/midwife, preceding birth interval, mother's age at birth of the child and household wealth index. The evidences show also that current health insurance coverage status has no effect on the survival status of infants. All results of this logistic regression model for infants exposed to the event are the same with the results of the first logistic regression model. That is to say, to exclude infants who have not completed their first age from the regression analysis does not make difference in the results.

Furthermore, the results of the regression models for analyzing whether expansion of health insurance to the poor population in Turkey can narrow socio-economic differentials in infant mortality show that current health insurance coverage has no significant relationship with the infant mortality. That is, health insurance coverage status of poor families has no effect on the survival status of poor infants. According to this result, it is possible to claim that expansion of the health insurance coverage to the poor population in Turkey cannot narrow the socio-economic differentials in infant mortality.

As also seen from the findings above, the present study clarifies that controlling for other variables; health insurance coverage status has no significant effect on the infant survival among children born during the five years period preceding the survey. According to the findings of the regression models, it is not possible to explain the variation in infant mortality with health insurance coverage in Turkey. Thus, the results of regression analysis fail to reject the null hypothesis, and conclude that there is insufficient evidence to be sure that the variance explained by the model is not attributable to random sample variation. However, this does not mean that there is no relationship between health insurance coverage status and the survival status of infants, but this means that if there is a relationship, the data and/or the method of analysis have insufficient evidence to be confident that it exists. Here, it is essential to state that according to the results of TDHS 2003 weighted data, 118 infant deaths were observed for the five years period preceding the survey. Therefore, the results of the logistic regression models should be interpreted with caution since they are based on small number of observations and may, therefore, be statistically unstable.

Furthermore, it may be useful to study high infant mortality problem of Turkey within the dynamics of a broader cultural context. As Gürsoy-Tezcan (1992) stated that instead of the manner that tries to explain infant mortality problem of Turkey by stating the relationship between mortality figures and selected socio-economic predictors, it may be useful to study these variables by taking into

consideration their interconnection with cultural practices, ideologies, and national and global policies.

Additionally, as mentioned above, some studies suggest that health insurance is the most effective way to provide health services to particularly deprived populations. However, it can be suggested that the health insurance system in Turkey is different from the in developed countries. In Turkey, the health insurance coverage is not the only way for using health services. According to the findings of this study, it may be possible to claim that in Turkey the health insurance coverage is not the most effective way to provide antenatal care and delivery services to the mothers since there may be mothers received antenatal care and delivery services with their own means, in spite of deprivation of health insurance; or there may be mothers never received those health care services, though they covered by health insurance. In this respect, cultural perception of illness also plays a crucial role. What constitute a threat to health among mothers and children tends to be differing from culture to culture.

Lastly, this study utilizes a cross-sectional data source. This implies that mothers and their infants are examined at one time period, namely for the five-year period preceding the survey, and so it is not possible to capture the changes within the relationship between health insurance coverage and infant mortality across time. Therefore, further studies need to be conducted to understand the prevailing high infant mortality problem of Turkey.

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