CHAPTER I

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Newborn is the earliest stage of postnatal life and is usually defined as the first month of life by having its duration from birth to 28 days (Hughes, J.G. and J. F. Griffith, 1984). It is synonymous with the term, neonates. So, this period is simply known as Neonatal period or Newborn period.

One may express body size in various ways, height, girth, mass or volume of the body. When growth may be described as an increase in the size of the body, development may be described as changes which occur in the structure and functioning of cells and tissues as they grow. It has been revealed that growth and development in cells and tissues include the process of hypertrophy, an increase in cell size; hyperplasia an increase in cell numbers by mitosis; differentiation into different types of cells which perform different functions; organization of tissues into organs and organ systems (Simpkins and Williams, 1987).

Growth rate varies in different organs and tissues and at different times throughout the life. It has also been said that the fastest rate after birth occurs in the self-accelerating phase. Afterwards the growth rate slows down, beginning at the inflexion point of the self-retarding phase.

It has been understood that the pattern of specialized development followed by any cell is regulated by genetic and environmental factors. However, the genotypes differ from one individual to another and this is one reason why the rate and pattern of growth and development varies among humans. Substances which influence growth and development are called growth regulators and include hormones as well as a variety of other substances called organizers. Diet is known as one of the most influential environmental factors affecting growth and development (Simpkins and Williams, 1987).

The period of gestation that is the time during which the fetus grows and develops inside the uterus and usually lasts about 9 months. At the end of this period a
series of events called labor resulting in parturition, that is, birth of the baby takes place.

It is not easy to assess the growth of a fetus, because it is small and enclosed within the uterus and its growing tissues are very delicate. However, x-ray and ultrasound have been used successfully to assess certain aspects of fetal growth. It is said that the velocity curve of height and weight begins a considerable time before birth and its peak velocity of length is reached at about 18 weeks of postmenstrual age (Tanner, 1978). Growth in weight of the fetus follows the same general pattern, except that its peak velocity is reached much later say usually at the 34th postmenstrual weeks.

It has been pointed out that the rate of growth of the fetus slows down during the last 4 weeks of the birth takes place. It has also been revealed that the velocity of the growth in length is not very great during the first two months of fetal life. During the period of embryo, differentiation of the originally homogenous whole into regions- head, arm and so forth, occurs, and also histogenesis, the differentiation of cells into specialized tissues such as muscle or nerve (Harrison, et. al., 1990).

The high rate of the growth of the fetus compared with that of the child is largely due to the fact that cells are still multiplying.

It has been revealed that maternal size is to some extent reflected in fetal size, small mothers tending to have small babies and vice versa (Snow, 1989). Further, it has been pointed out that a large uterus will to some extent facilitated the growth of a small genotype embryo but a small uterus severely constraint the growth of a large genotype embryo.

The most dramatic changes of infancy, it is said, coincide with the development of central nervous system (Simpkins and Williams, 1987). Several reflexes are usually observed at birth or shortly after, persists for different period of time and section. Birth persistence of the reflexes unduly, or their absence, may indicate some abnormality in the central nervous system.

Children are born with immunity to only a few diseases, and because they lack immunity, they contract more of these diseases than older people do. Diseases like measles and mumps, for example, can strike people of any age and usually people get them at childhood and thus acquire immunity to them preventing later occurrences.
The placenta is the prenatal tree of life. The blood vessels of the mother and capillaries of the embryo, which should extend into the villi, connect intimately in this remarkable organ. It also functions for breathing, digesting and excreting for the multiplying cells as they form into the functioning fetus. It is accepted that how well nourished a woman is before, during, and after pregnancy can affect her child's development. A woman ideally should be well-nourished as she begins her pregnancy.

A pregnant woman finds it difficult to overcome previously existing nutritional deficiencies (Klarke-Steward, et.al., 1985). Her caloric needs increase by about 20%; and therefore, a pregnant woman must eat about 2000 calories daily in carefully chosen food. Moreover, her need for protein and riboflavin increase by 45%, calcium and vitamin C increase by 100%. So important is nutrition to fetal development that children conceive during cool weather of autumn and winter seem to be heavier and healthier.

Pregnancy is a physiological process but it can impose considerable risks both to the mother and her unborn child. In his book, “Care of the Newborn”, Singh, M. (1991) mentioned adequate antenatal care and maintenance of optimal nutrition by proper dietary advice are crucial for favourable outcome of pregnancy. During pregnancy, the mother must eat for herself and for the growing fetus. She should consume additional 25 percent calories (as compared to her per-pregnancy food intake) and 25 g proteins by taking fresh green vegetables, pulses and legumes, milk and milk products and seasonal fruits. She should avoid taking any drug as far as possible, during first trimester of pregnancy which is a period of organogenesis. During second half of pregnancy, she should receive regular supplements of iron and folic acid daily. In order to conserve the energy expenditures, mother should be advised adequate physical rest and relaxation during last trimester of pregnancy, so that energy is spared for the growth of the fetus. Every pregnant woman must receive two doses of tetanus toxoid, which may be given any time but the second dose must be received at least 2 weeks before the anticipated time of delivery. Suggestions are also that she must be emotionally and physically prepared and motivated for breast-feeding during the pregnancy (Singh, 1991).
Patterned by genes, nurtured in the womb, and launched by labor and delivery, the fetus enters the newborn period. Throughout the life span of an individual, this is the most vulnerable period and is of greatest danger as regards survival and freedom from handicap. During this period, many threats exist, including congenital malformations, low birth weight and birth damage. Infections rank high on the list of dangers and their prevention and treatment are of the utmost importance. (Hughes, J.G. and J.F. Griffith, 1984).

As opposed to geriatrics, death during this period truly represents a nipping of life in the bud and sequelae of various neonatal hazards manifest as a life long disability. The most childhood deaths occur during this period or during the first year of life. So as to reduce neonatal mortality and to ensure complete freedom from physical and mental handicaps later in life, pediatrics are increasingly concerned with research into the causes and treatment of many threatening conditions that appear at these times (Singh, M. 1991).

The health of the newborn must be guarded from the conception. Maternal health before conception, the genetic endowments of sperms and ova, maternal milieu and maternal infections have profound influence on the outcome of pregnancy (Singh, M. 1991).

Faulty development and malformation may result from harmful elements in the embryonal and fetal environment. During the interval from fertilization to delivery of the newborn, the growing organism may be insulted by a very great number of exogenous prenatal factors, such as maternal infections, endocrine disorders, nutritional disorders, chemical – toxin exposure, radiation exposure and fetal abnormalities (Hughes, J.G. and J.F. Griffith, 1984). Moreover, injuries incurred during the embryonic period (gestation age from conception to 12 weeks) may cause an arrest of development and serious malformations. On the other hand, during the period of fetal development (gestational age 12 to 40 weeks) intrauterine injuries or insults have an effect similar to that incurred during postnatal life. Regardless of the type of offending influence or the time during gestational life that the injury occurs, the developing organism may be compromised by depression or deviations of normal growth and development patterns.
Of course, most of the neonatal deaths were not due to the birth process itself, rather the leading factors associated with this death was, and still is, low birth weight. Prematurity, defined as birth prior to 37 weeks gestation, may cause additional complications that increase the chances of neonatal death. However, an infant, small for gestational age (low birth weight), is usually at greater risk of death than a premature child of the expected weight for gestational age (Bogin, B. 1988).

Low birth weight, without prematurity is the result of growth retardation during fetal life. The cause of this growth retardation may be congenital problems with the fetus, placental insufficiency, maternal undernutrition, or disease. However, most low birth weight, with or without prematurity, is associated with socio-economic conditions. The incidence of low birth weight in the developed nations is 5.9 percent of all live births; in the poorer developing nations the incidence is 23.6 percent (Bogin, B. 1988).

When the fetal life and, as well the newborns, have been emphasized as the most important and crucial stage for an individual’s future health prospect, it is appropriate to take up serious research programmes, covering a large number of populations specially in a developing country like India. The present thesis may be taken as a beginning of such a proposed study programme, specially by selecting the Meitei population, which is one of the largest populations of the state of Manipur.

A brief review of literatures and also the aims and objectives of the present study will be followed in the next chapter.