

CHAPTER 1

Modern Concepts of Child Care

CHAPTER OUTLINE

- Introduction to Pediatrics and Pediatric Nursing
- Difference between Adult and Child
- Factors Affecting Child Health

INTRODUCTION TO PEDIATRICS AND PEDIATRIC NURSING

Children are the future of the nation and ensuring their healthy growth and development ought to be a prime responsibility of all societies. Every child has right to lead a healthy and disease-free life. The physical, mental and social wellbeing of a child largely depends upon the family and the society or country to which she or he belongs. With more than a third of its population below the age of 18, India has the largest child population in the world. Approximately two million under-five children die in India every year (UNICEF's State of the World's Children Report, 2007).

This represents about one-fourth of the global burden of infant and child deaths. The health indicators of the country reflect poor maternal and child health conditions, along with practices of early marriage, childbirth during adolescence child abuse and child labor in the country.

Pediatric is a branch of medical science which deals with the care of children from conception to adolescence in health and illness. It comes from Greek word '*pedopais*' meaning 'a child' and '*iatros*' meaning 'a healer'. Pediatrics covers the age group from 0–18 years of age.

Pediatric nursing is the specialized zone of nursing practice concentrating in the care of children during wellness as well as illness. It includes preventive, promotive, curative and rehabilitative care of children. Pediatric nursing aims in giving

assistance, care and support to the growing and developing children to achieve their individual potential for functioning with fullest capacity. Pediatric nursing requires concept of the developmental aspects of children and the physical and psychological differences between children and adults. Pediatric nurses must also recognize the role that families play in maintaining child's health and reflect family-centered care in practice (Taylor, 2006).

DIFFERENCE BETWEEN ADULT AND CHILD

Children are not little adults. There are many differences between children, adolescents and adults in terms of physiological, anatomical, cognitive, social and emotional development which all impact on the way illness and disease present in children and young people, as well as the way health care is provided (Fig. 1.1).

Anatomical and Physiological Differences

- **Larger body surface area:** Children have a proportionately larger body surface area (BSA) than adults. Smaller patient has greater ratio of surface area to size. As a result, children are at greater risk of excessive loss of heat and fluids.
- **Thinner skin:** Children have thinner skin than adults. Their epidermis is thinner and under-keratinized, compared with adults.

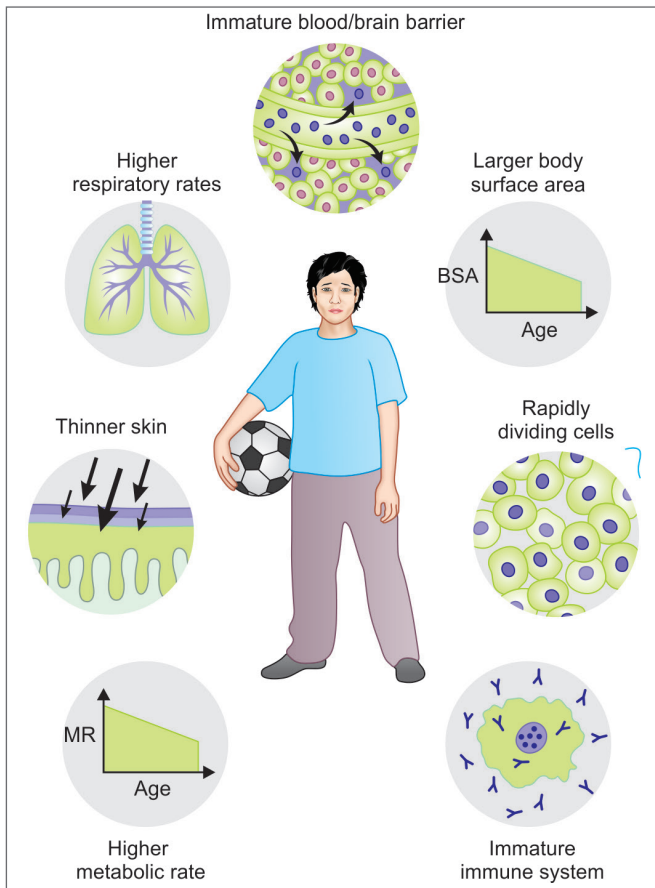


Fig. 1.1: Biological differences in children

- **Rapidly dividing cells:** Children's cells divide more rapidly than adults to assist in their rapid rate of growth. As a result, children are more susceptible to the effects of radiation than adults.
- **Higher HR and RR:** Children have higher heart rates and respiratory rates than adults. In newborns, heart rate is 110–160 beats/min and respiratory rate is 35–40 breaths/min. Higher respiratory rates lead to proportionately higher minute volumes. Hence, children have a greater risk of infection through pulmonary route.
- **Immature blood brain barrier:** Children have immature blood-brain barriers and enhanced central nervous system (CNS) receptivity. Therefore, children may demonstrate a prevalence of neurological symptoms.
- **Higher metabolic rate:** Due to higher metabolic rate, they are more susceptible to contaminants in food or water and have greater risk for increased loss of water when ill or stressed.
- **Immature immune system:** Greater risk of infection, less herd immunity from some infection.
- **Mouth:** Infants tongue is large. Nasal and oral airway passages are relatively small, making the babies more prone

to airway obstruction. They are nose breathers till 6 months of age making them susceptible to breathing difficulty in respiratory infections.

- **Eyes:** No tears in early infancy due to poor functional development of lachrymal gland.
- **Eustachian tube:** It is short and straight in children (10° in children and 40° in adults). Air sinuses are not well developed. Sore throat extends to otitis media because of the closeness of it to throat.
- **Trachea:** Short and narrow trachea under 5 years of age. Hence, they are susceptible to foreign body aspiration.
- **Glomerular filtration rate:** Concentration of urine in newborn is 800 mOsm/L whereas in adults it is 1400 mOsm/L. GFR and tubular functions are lower in neonates than adults because of low blood supply to kidney, smaller pore size and less filtration power across nephron. GFR is 38 mL/min in neonate whereas 125 mL/min in adult.
- **Alimentary tract:** Water absorption is poor. Feces of the child is watery. Dehydration leads to circulatory failure within 24 hours if treatment is inadequate.
- **Hepatic function:** Liver is immature in newborn. Production of albumin, clotting factors and vitamin K are less. Iron reserve is also less.
- **Central nervous system:** 90% of brain growth takes place by 2 years of age. Nerve endings in the retina (rods and cones) are poorly developed. Thus the images are blurred and colorless for few weeks.

Psychosocial Differences

Although adults continue to develop psychosocially, their values/behavior/social circles are generally far more defined and stable, whereas children and adolescents are rapidly developing and exploring the world around them and picking up cues from their environment to aid in that development (Fig. 1.2).

Children develop psychosocially through distinct stages mentioned by Erikson during their periods of development. Adult also passes through psychosocial changes till old age but they are more concerned with social relationship, achievement and self-esteem. Children and adolescents are still developing their ability to recognize and manage their emotions or feelings, and this can be influenced by many social and environmental factors. For infants and young children, their emotional bond of affection or 'attachment' to their caregivers is crucial for their emotional development.

Cognitive Differences

Children develop intellectually through various stages of cognitive development according to Piaget. Adults attain cognitive maturity though there are individual differences (Fig. 1.3).

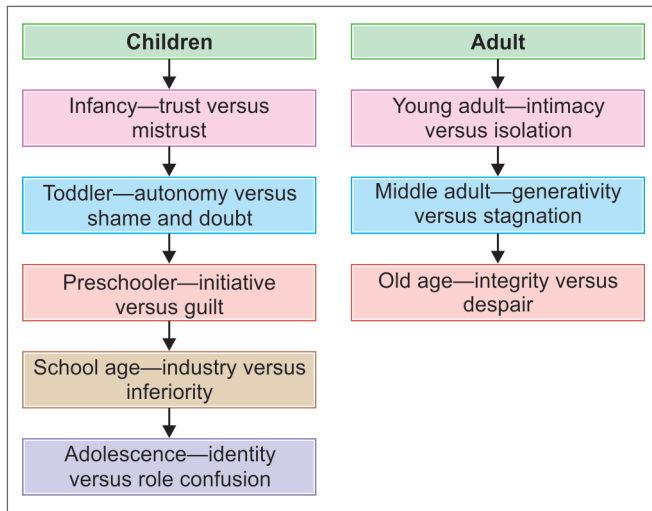


Fig. 1.2: Stages of psychosocial development in children and adult





Sensorimotor (0–2 years)	Preoperational (2–6 years)	Concrete operational (6–12 years)	Formal operational (12 years adult)
The infant explores the world through direct sensory and motor contact. Object permanence and separation anxiety develop during this stage.	The child uses symbols (words and images) to represent objects but does not reason logically. The child also has the ability to pretend. During this stage, the child is egocentric.	The child can think logically about concrete objects and can thus add and subtract. The child also understands conversation.	The adolescent can reason abstractly and think in hypothetical terms.
			

Fig. 1.3: Cognitive changes from childhood to adulthood

Play Differences

During infancy, child engages in sensorimotor, solitary or onlooker play. Toddlers play alone with toys but other children may be present and play alongside. Preschoolers play with other children which may be pretend play or dramatic play. School age children may engage in outdoor play. Adolescents

play various competitive sports and games. Adults play indoor games like table tennis, badminton, chess, etc. but may also engage in competitive sports.

Disease Manifestation

Children are more prone to sickness frequently due to immature systems than adults who are physiologically mature and immunologically competent. Common illnesses in childhood are fever, respiratory infections, bronchial asthma, diarrhea, vomiting, congenital deformities, etc. Fatal diseases include leukemia, thalassemia, meningitis, nephrotic syndrome, Wilms' tumor or hydrocephalus.

In adulthood, common diseases are diabetes mellitus, hypertension, hepatitis, cancer, cardiovascular accidents, encephalitis, coronary artery diseases, renal failure, etc.

FACTORS AFFECTING CHILD HEALTH

Children are the most vulnerable population who face unusually high health risks as they grow. Major contributors to child health are:

- **Maternal health:** Healthy mother with good nutritional status gives birth to a healthy baby. Child health may be impaired in case of inadequate nutrition or health problems during pregnancy.
- **Low birth weight:** Children born with low birth weight often have an impaired immune function, which put them into higher risk of infection and death.
- **Nutrition:** Children getting adequate quantity and quality of food grow healthy and are less prone to develop health problems. Malnutrition causes poor growth and they have more chances of infection. Inadequate breastfeeding and poor complementary feeding may lead to malnutrition.
- **Environment:** Environmental health factors contribute significantly to the incident of child mortality around the world. Inadequate sanitation, poor ventilation and housing condition, unsafe water supply and lack of good personal hygiene practices add to the development of various health problems.
- **Socioeconomic conditions:** Parental education, profession, income, housing, urban and rural living have great impact on health of children. Well economic condition of the family aids in good health facility and, therefore, children encounter less health problems.
- **Health policy of government:** Sound health policy of the government helps in reducing health problems in children.

KEY MESSAGE

- Child health protection involves maintaining child rights, formulation of child health policies and programs.
- WHO, UNICEF and Government of the country play major role in protecting children and sustain good health.

ASSESS YOURSELF

- Define Pediatric Nursing.
- List down the factors affecting child health.
- Differentiate between adult and child in terms of growth and development.

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