1 Introduction to Pediatrics

> *"We are guilty of many errors and many faults. But our worst crime is abandoning the children, neglecting the foundation of life. Many of the things we need can wait, the child cannot. Right now is the time his bones and flesh are being formed, his blood is being made, and his senses are being developed. To him we cannot answer tomorrow, his name is TODAY".*
>
> **— Gabriela Mistral**

Pediatrics is a branch of medical science that deals with health care and diseases of children from birth to 18 years of age. The word pediatrics (also spelled paediatrics) and its cognates means "healer of children", they derive from two Greek words *pais* (child) and *iatros* (doctor or healer). *The aim of pediatrics is to ensure that every child is able to achieve his full potential for physical growth and mental development*. It is the dream and wish of every parent that their child should be tall, mentally sharp or smart and endowed with a charming personality and good manners. Children are indeed foundation of a nation. There is an increasing evidence to suggest that seeds of most adult diseases namely obesity, metabolic syndrome X, type 2 diabetes mellitus, stroke and osteoporosis are sown in childhood. Healthy children grow to become healthy and strong adults who can actively participate in the developmental activities of the nation.

> *"I wish you could realize that destiny of our beloved land lies not with us but in our children"*
>
> **— Mahatma Gandhi**

Pediatrics deals with promotion of health and well-being of children and not merely diagnosis and treatment of diseases of children. Pediatricians and pediatric nurses should, therefore, provide health promotive, preventive, curative and rehabilitation services to children from birth through adolescence.

Differences between the Health Care of Children and Adults

1. Children are dependent and at the mercy of parents and health care professionals to look after their nutritional and health care needs. Educated, well-informed, economically independent and adjusted parents can provide better health care to their children.
2. Children cannot explain or express their discomfort and therefore identification and diagnosis of the diseases may be delayed if parents are not intelligent, observant and concerned. Pediatricians need greater clinical acumen and skills to diagnose diseases in children because they depend upon the second hand information or history provided by the parents or caretakers.
3. The children are not mini-adults. The differences in the nature and manifestations of illnesses in children and adults are based on the anatomic, physiologic and psychologic differences between the immature child and the mature adult.
4. Childhood period is characterized by rapid physical growth and mental development. Depending upon the developmental status, diseases behave differently at different age groups. Diseases produce non-specific symptoms and signs and take a more serious course in newborn babies and infants.
5. Diseases in children may adversely affect physical growth and mental development of children. Children with recurrent or chronic diseases are prone to develop nutritional problems and stunting.
6. Because of their wide range of body sizes (ranging in body weight from 1.0 kg at birth to over 50 kg at adolescence) and developmental status at different ages, they need medical equipment of different sizes and sophistication.
7. Nutritional and caloric needs of children per unit body weight are higher because they need extra

energy for rapid physical growth and higher level of their physical activity. Nutritional disorders are more common in children compared to adults. Their needs for fluids, electrolytes, calories and micronutrients are calculated on the basis of their age and body weight.

8. Children are more vulnerable to develop infections (especially diarrhea, respiratory infections, exanthematous illnesses) and parasitic infestations due to lack of immunity (because of their first contact with a pathogen), poor environmental sanitation and overcrowding. They are likely to develop frequent infections during first 6 months of their entry to a creche or play school because of contact with other children. In general, children are prone to fall sick frequently during first 5 years of life.
9. Congenital malformations, developmental disorders including genetic and chromosomal disorders are mostly seen in childhood. Cancer and malignant disorders do occur in children but they are more common among elderly people. Atherosclerosis, coronary artey disease and type 2 diabetes mellitus occur in adults but their seeds are often sown in early life due to poor fetal growth (intrauterine growth retardation) and over nutrition or unhealthy lifestyle during childhood.
10. Children are more likely to have accidents, poisonings, animal and insect bites due to their ignorance, innocence and curiosity.
11. Children are not mini-adults because they have anatomical and functional immaturity of various body organs at different stages of life. They rapidly develop life-threatening medical emergencies due to their physiological instability. Children are like flowers, they can rapidly wither following an acute illness but are endowed with tremendous recuperative capabilities and when tended with love, care, compassion and due concern for their physiological handicaps, they bloom back to life with equal case.
12. The drug dosages in children are calculated on the basis of their age, body weight or surface area. In view of small doses in young infants, the safety margin of drugs is small and hence extra caution and care should be taken to administer drugs to children.
13. Vital signs vary in children depending upon their age. Body temperature is maintained within the narrow range of 98.2°F ±0.7°F (36.8°C ±0.4°C) at all ages. However, temperature is more labile and unstable in newborn babies and young infants. Vital signs at different age groups are shown in **Table 1.1**.
14. Above all, sick children should be treated as "children" because unlike adults children do not realise that they are "patients". You must adopt a non-structured approach and play attitude while providing nursing care to children to elicit their cooperation. Children are delicate and they should be handled with utmost care, compassion and tender love.

> *"Children are not merely small adults and to understand children it is not enough to extrapolate from adults."*
>
> **— John Apley**

Age-Groups in Children

Pediatricians look after children from birth up to 18 years of age. Till recently, adolescents or children between 12 and 18 years were neither looked after by internists (adults physicians) nor by pediatricians. In most developed countries in the West, adolescents are being looked after by pediatricians and there are separate male and female wards for adolescent children. In India, many pediatricians provide ambulatory or OPD care to adolescent children but no adolescent wards have been created as yet.

Table 1.1 Vital signs of children at different ages

Vital signs	*Age groups*			
	Neonates (Term baby)	*Infants (up to 1 year)*	*2 to 5 years*	*Above 5 years*
Temperature (oral °F)	98.2 ± 0.7	98.2 ± 0.7	98.2 ± 0.7	98.2 ± 0.7
Heart rate (beats/min)	120–160	80–120	70–110	60–90
Respiratory rate (rate/min)	40–60	25–40	20–30	15–18
Blood pressure (mm Hg)	60/40	70/50	90/50	110/80

Vital signs should be recorded when child is quiet and resting.
Heart rate and breathing rate in a neonate are double of an adult.
Blood pressure in a neonate is one-half of an adult.

Neonates Children between birth and up to 28 days of life are called newborn babies or neonates. They are delicate and have distinctive health problems with high morbidity and mortality demanding specialized healthcare facilities.

Infants Children between birth and up to their first birthday are called infants. They should be provided exclusive breastfeeding (not even water should be given) up to first 6 months of life and continued breastfeeding for at least one year but preferably longer.

Toddlers Children between 1 and 3 years are called toddlers because during this period they are crawling, cruising and walking with unsteady steps. They are most vulnerable to nutritional disorders and growth faltering because they are started on complementary or weaning foods and are exposed to a variety of infections with increased risk of diarrheal disorders. Adequacy of nutrition or optimal nutrition during 0–3 years of age is most crucial for optimal physical growth and brain development. It is believed that the linear growth or height achieved at the age of 3 years is a good predictor of ultimate adult height or stature.

Under-five children Children between the age of 0–5 years are called under-five or under-5 children. They are specially vulnerable to a variety of vaccine-preventable diseases, diarrheal disorders and respiratory infections.

Preschool children Children between 3 and 6 years are called preschool children when they go to a play school or crèche. They are vulnerable to nutritional disorders, respiratory and GI infections and vaccine-preventable diseases. Most of the brain growth is completed by 6 years.

School-going children Children between 6 and 12 years are called school-going children when they are in a regular school. After entry to the regular school, the risk of intercurrent infections among healthy children becomes minimal. During this period, their growth velocity is slow.

Adolescents Adolescence is a phase of childhood which is characterized by rapid physical growth, sexual maturation and emotional development. The physical changes and sexual maturation during adolescence are triggered by hormonal changes. Girls mature both sexually and emotionally earlier than boys by two years. In girls, pubertal changes take place between 10 and 16 years. A large majority of girls begin their sexual development at the age of 10 years and have their first menstrual period around 12 years of age. The average boy starts puberty around 12 years and achieves sexual maturity during 14–18 years. When full sexual maturation is achieved, the epiphyses of the long bones fuse with their diaphyses and there is no further linear growth or increase in height. After completion of puberty, the girl becomes a woman and a boy becomes a man.

BASIC NEEDS OF CHILDREN

Every human being has basic or fundamental needs for survival and fulfillment of his role in society. Depending upon their importance and relevance as the child grows, they can be depicted as a pyramid (**Figure 1.1**). The higher or celestial needs emerge as the lower needs are satisfied.

1. Love, Tender Care and Protection

We all need love from cradle to grave from different people throughout our lifespan. Love is the energizing elixir of life. Mother provides unconditional selfless love to her child without any expectation; which is the highest form of true love or compassion. Just as food is necessary for the body, love is necessary for the soul. The gentle touch, cuddling and caressing of the baby by her mother, transmits exhilarating electromagnetic messages to the baby. The nurse should visualize the mother as a role model to provide comfort and transmit healing thoughts and vibrations to the ailing child.

Unlike offspring's of other mammals, human baby is dependent and at the mercy of her caretakers during first 3 to 5 years of life. They need constant care and protection against environmental vagaries (heat or cold), physical comfort, relief of pain, toilet needs, bathing, personal hygiene, clothing, etc.

2. Physiologic Needs of Air, Water and Food

Human beings (rather all living beings) cannot survive without air, water and food. We cannot survive beyond

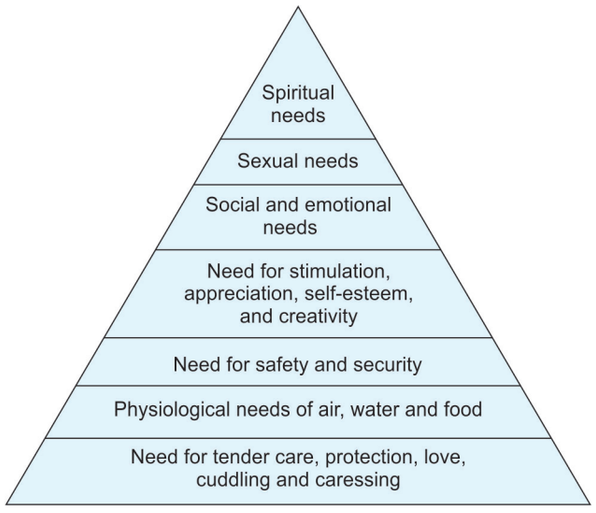

Figure 1.1 Pyramid of basic needs of children

few minutes without oxygen, few days without water and few weeks without food. And children are at the mercy of their parents or caretakers to look after these basic needs and they are at a greater risk to suffer from their ill effects earlier due to their lack or deficiency compared to adults. Children should be provided with unpolluted air, safe drinking water and balanced age-appropriate food with adequate amounts of macro- and micronutrients to ensure that they achieve their optimal physical growth and mental developmental potential.

3. Safety and Security

Because of their dependence, curiosity and lack of skills, children need close supervision and protection against hazards of physical injuries, accidents, choking, poisonings, animal bites, etc.

4. Stimulation, Appreciation and Creativity

Our brain is stimulated by virtue of our special senses, i.e. what we see, hear, feel through touch, smell and taste. Stimulation should begin from fetal life and continue throughout childhood both at home and school. Preschool years (birth–5 years) are most critical for maturation of brain and development of skills because almost adult size of the brain is achieved by the age of 5 to 6 years. Instead of bookish rote memory, children should be encouraged to develop self-confidence, power of observation, curiosity and creativity.

5. Social and Emotional Needs

Children learn various traits, habits and attributes by watching various role models in their vicinity like parents, relatives, friends, teachers, clerics and politicians. You can mold your child depending upon your own perceptions and values in life. You must have a vision and a dream as to what attributes and qualities your child should have as he or she grows up to become a responsible adult in the society which is full of virtues and vices. Parents must set a good example for their children to emulate. They must be reared with love, security and discipline without any rejection or favoritism, over-protection and over indulgence. Children should grow to develop a well-groomed personality, emotional maturity and necessary interactive or social skills. They should evolve as confident, self-reliant, self-assertive, enthusiastic adults with mental peace and poise.

6. Sexual Needs

During adolescence, children go through a variety of physical, emotional and sexual changes to become adults. They need family life and sex education to handle this crucial phase of life to become responsible adults having basic information regarding sexual anatomy, dangers of promiscuity, drug abuse, safe sex and importance of contraception and family planning. Sex is a fundamental need for procreation and promotion of human progeny.

7. Spiritual Needs

Health is not merely absence of disease, it is boundless energy, enthusiasm, happiness, peace of mind, success and loving relationships. It is achieved by a state of equilibrium between body, mind and soul. Spiritual awakening is the ultimate goal of human life, an awareness which distinguishes us from animals. Spirituality does not mean following any religion, rituals, symbols or code of conduct. Human values of spirituality are based on love, compassion, sharing and caring for fellow human beings and seeing God or super power in all living beings. Society is at commercial cross roads and what we need is that our children should become good human beings—caring and concerned for the needs of others. The nurse should be aware of all the aforementioned basic needs of children so that she is able to effectively look after children and guide their parents during different phases of life both in health and during the disease.

HEALTH CARE OF CHILDREN

Nurse should not be concerned merely to treat sick children but should have knowledge and skills to provide supportive health care for promotion and maintenance of health and prevention of illnesses in children.

Health Promotion and Maintenance

All children whether normal or high-risk, should be helped to achieve their optimal growth potential and wellness by providing health, family life and nutrition education to parents, school teachers, and community at large. During every contact with a health care worker, the family should be given advice for importance of balanced nutrition, need for nutritional supplements, safe drinking water, personal hygiene and environmental sanitation to promote health of children.

Prevention of Illness

Nurse should provide health and nutrition education and ensure administration of timely vaccinations to children and their families. She should have the knowledge and understanding about the common modes of occurrence of diseases (like air-borne, water-borne, blood-borne, close physical or sexual contact, through pathogens, pollutants, toxins, nutritional

deficiency states, etc.) and underlying predisposing factors like poor personal hygiene, unsatisfactory environmental sanitation, breeding of mosquitoes, house flies and other vectors, lack of safe drinking water, poor housing facilities, and overcrowding.

Restoration of Health and Rehabilitation

Although promotion of health and prevention of illness are far more important to ensure welfare of a large number of children in the society but most of the time of a nurse in our country is spent in restoration of health of sick children by supporting their treatment and rehabilitation in the ambulatory clinic or hospital. She provides care and comfort to children with acute illnesses, life-threatening emergencies and chronic disease states demanding prolonged care, emotional support and rehabilitation. For effective delivery of curative services, the nurse works under direct guidance and supervision of a pediatrician or a pediatric superspecialist.

> *"Keep the patient under best conditions like fresh air, plentiful space, nutritious food, warmth, clean surroundings, solitude and allow nature to heal the patient."*
>
> **— Florence Nightingale**

Child Health Problems

The leading health problems of children in developing countries include nutritional disorders such as low birth weight babies, infections and infestations, developmental and genetic disorders, behavior problems and conduct disorders. Children suffer from a large number of preventive disorders.

1. **Nutritional disorders** Malnutrition is the core health problem in children in developing countries. According to the State of World's Children, UNICEF 2012 data, 28% newborns are low birth weight (<2500 g), 43% of under-5 children are underweight and 48% are stunted in India. Children are vulnerable to develop nutritional disorders because they are dependent on their parents and caretakers to look after their nutritional requirements. Their caloric and protein requirements are much higher (3 times of an adult per unit body mass) to sustain their rapid growth velocity and meet the nutritional demands of physical activity and intercurrent infections. The various factors leading to high incidence of nutritional disorders include poor health status, education and dignity of mothers, increased risk of infections because of poor socioeconomic status, lack of healthy living conditions, overcrowding, pollution and unsafe drinking water. Apart from nutritional deficiencies, other deficiency disorders include deficiencies of oxygen (hypoxia because of birth asphyxia, respiratory and cardiac disorders), water (dehydration due to vomiting and diarrhea), vitamins and trace minerals and hormones (deficiency of thyroxine and growth hormone). In affluent sections of society, overnutrition or obesity is emerging as a public health problem.
2. **Infections and infestations** In developing countries, children are vulnerable to develop frequent day-to-day infections because of greater opportunities (overcrowding, unhealthy living conditions, poor hygiene and sanitation) and greater vulnerability (poor immunity due to nutritional disorders) to develop infections. Undernourished children are more susceptible to develop infections and are likely to have slower recovery, increased severity and higher mortality. Occurrence of frequent infections, further compromises the nutritional status thus setting up a vicious cycle of malnutrition—infections—malnutrition. Infections may occur from a variety of pathogens including viruses, bacteria, spirochetes, fungi and parasites.
3. **Developmental disorders** Most of the developmental disorders manifest during infancy and childhood. They include genetic diseases or inborn errors of metabolism, chromosomal disorders, congenital malformations and learning disability.
4. **Accidents and poisonings** By virtue of their ignorance and innocence, children are vulnerable to develop home accidents (falls, burns, scalds, electric shock) and ingestion of poorly stored medicines and chemicals like kerosene, lye, insecticides, etc. There is increasing incidence of automobile accidents among adolescents because of drunken driving and macho behavior. Because of various social factors and unemployment, drug abuse is assuming public health relevance in certain societies.
5. **Allergic, hypersensitivity and autoimmune disorders** In developed countries, because of control of infections by virtue of better living conditions and environmental sanitation, allergic disorders are assuming greater importance. The common allergic disorders include skin allergy or atopy, food allergy, allergic rhinitis, bronchial asthma, post-infectious disorders, collagen vascular or connective tissue disorders.
6. **Degenerative disorders** Most degenerative disorders occur among aging population but their seeds are sown during childhood. Children with asymmetric intrauterine growth retardation and metabolic

syndrome X are more vulnerable to develop atherosclerosis, insulin resistance and coronary artery disease during adulthood. Rare degenerative disorders in children include progeria and degenerative disorders of central nervous system.

7. **Neoplasms** Benign cysts and neoplasms are common in children while malignant disorders are a leading cause of mortality in elderly subjects. Hematologic malignancies are common in children and can be managed effectively with modern chemotherapy and stem cell transfusion.
8. **Psychogenic and psychosomatic disorders** Children are prone to manifest a number of behavior abnormalities, habit and conduct disorders due to unsatisfactory parenting, marital discord and psychodynamic issues. Common behavior and developmental disorders include breath-holding spells, nocturnal enuresis, attention seeking behavior, food fussiness or "blackmailing" tactics, anxiety, depression, conversion reaction, attention deficit hyperactivity disorders (ADHD), autism spectrum disorders (ASDs), and substance abuse, etc.

Hospital Care of Sick Children

Children wards and hospitals for sick children should have their distinct identity with necessary facilities and features to make them child-friendly. There should be both small cots with railings as well as standard adult beds for older children. Each bed should be provided with a centralized source of oxygen and suction. Due to shortage of nurses and to avoid separation anxiety and fear of strangers and strange environment, mother or a lady attendant should be allowed to stay with the child round-the-clock. A comfortable padded bench and a locker should be provided next to the bed for the comfort of mother or attendant. Two bays adjacent to the nursing station should be provided to admit moderately sick children requiring intravenous fluid therapy and close monitoring by the nurses. These patients should be visible to the nurses from the nursing station through the glass walls. The ward should be decorated with colorful soft toys and innovative designs of indigenous cartoon characters on the walls. A procedure room should be available in each unit to undertake diagnostic and therapeutic procedures. Each pediatric unit should be provided with 3 to 4 independent rooms with an attached bathroom for isolation of children who are immunocompromised or suffering from contagious diseases. They should be provided with gowning and handwashing facilities. In each pediatric unit, provision must also be made for a pantry and formula room to dispense special diets. A well-equipped Pediatric Intensive Care Unit (PICU) with all the essential monitoring and therapeutic electronic equipment should be provided to look after critically sick children with life-threatening medical disorders. On an average, 20% beds should be earmarked for pediatric emergencies, i.e. a 100-bedded children ward should have a 20-bedded PICU.

> *"The art of medicine consists of amusing the patient while nature cures the disease."*
>
> **— Voltaire**

Children should be provided with home-friendly ambience in the hospital. Efforts should be made to keep them busy and in good mood. A play room with necessary toys and indoor games should be available. Play room should be located in the corner of the ward so that the noise produced by the children while playing does not disturb the more sick children. There should not be any fixed times of play for the hospitalized children. A social worker or a play therapist (play lady) should organize and supervise the play activities. A dining room is an essential requirement because children do eat better in the company of other children. Children are fussy in their food habits and their fussiness becomes worse when they are sick. Dining room with a TV set and other ancillary facilities does encourage and motivate sick children to eat better. The washrooms and toilet facilities should cater to the needs of children as well as their mothers and attendants. Children should be provided with a colorful and clean dress from the hospital which should be changed daily. Bed linen and sheets must be changed daily because children are more likely to soil them. The colorful dress of the nurses and avoidance of white coat by the doctors are likely to enhance nurse–child and doctor–child relationship and cooperation.

THE CHILD IN THE HOSPITAL

Hospital stay is difficult and challenging for a child at any age. There is stress and discomfort of illness as well as stay in the unfamiliar surroundings of the hospital. They are exposed to unpleasant experience of bitter medicines, procedures and painful injections. They are likely to miss their friends and family members, they often get scared and bored. Children may not understand why they are in a hospital and may have false beliefs about what is happening to them. Both sickness as well as hospital stay are likely to adversely affect the growth and development of children. A hospital stay is likely to affect different children in

different ways, depending upon the age, awareness, temperament or personality of the child, for example, whether child is easy-going and self-confident or shy and unsure in unfamiliar circumstances. There is a need for using a different approach in handling children of different ages to minimize the adverse effects of hospitalization and to ensure easier and faster adaptation to stressful mileau of the hospital.

Birth to 1 Year Old

- This is the age for fast development of skills like rolling, sitting, crawling and standing or walking with support.
- Infants need sensory-stimulation, e.g. music, body positions, touch, toys, interaction and sunlight.
- They are likely to have stranger anxiety, it is important that mother or a familiar member should stay with the child.

1 to 2 Years

- They are disturbed by change in their daily routines of bathing, feeding and sleeping.
- They continue to develop new gross and fine motor skills which are adversely affected both by the illness and hospital stay.
- Children of this age do not fully understand why they are in the hospital.
- They develop anxiety and stress due to contact with a number of strangers.
- Children are developing trust in their caregivers during this age period which is compromised because many new faces are involved in their care and they are exposed to several challenging experiences.

2 to 5 Years

- It is stressful to be away from home and familiar daily routines.
- Children may believe that they did something wrong and that is why they are in the hospital.
- They are afraid to go through unpleasant routines and procedures.
- They know more about their bodies but their understanding is limited.
- Language skills are developing fast but may misunderstand words they hear.

5–12 Years

- Being away from home, school and friend is stressful.
- There is anxiety, fear, and pain of injections and procedures.
- They are scared of surgical procedures.

12 Years and Older

- Being away from home, school and friend is often stressful.
- Adolescents need privacy which is adversely affected.
- Teenagers are more aware and concerned about the long-term effects of illness.

Role of Nurses and Parents in Handling Hospitalized Children

There are many ways that parents, nurses and health care professionals can help children cope with inconveniences and stresses of a stay in the hospital. When you provide assurance and comfort to reduce the anxiety and stress of hospital stay, it is associated with faster recovery and shorter stay in the hospital.

Getting Ready for the Hospital

In case of planned or elective admission to the hospital, parents can help their child to buffer or cushion the anticipated experience. Depending upon the age of the child, he or she can be explained about the need for hospitalization, the nature of health team and their roles, various routines and likely procedures to be conducted. The procedures can be explained on dolls, animals or simulators. Parents must exhibit stoic courage and confidence, to serve as role models to the child. Talk to the child about any anxiety, fears, various concerns and misunderstandings. They must be told about their likely experience in the hospital in a simple positive way without any deceptions and lies. Address their worries and queries in a simple matter of fact manner.

Visitors

In order to reduce the anxiety and stress, it is important that mother or a caretaker from the family is allowed to accompany the child in the hospital, which is a standard practice in India and many developing countries. Familiar faces are reassuring to build the confidence of the child. In view of shortage of nurses in developing countries, the attendant can be guided and trained to provide simple nursing chores. Phone calls, internet chats and visits by family members, siblings and friends help the child to stay connected to his or her world outside the hospital.

Familiar Objects from Home

The favorite objects, toys and stuffed animals should be packed and taken to the hospital along with other

essential articles of daily care and need. These objects help to provide comfort and bonding to the child.

Play and Dining Room Facilities

The hospital environment should simulate the familiar home environment of the child. Hospitalized children should be provided with a variety of indoor games and fun activities in a dedicated play room under the supervision of a social worker. Play activities and interactive games can take the child's mind away from pain, anxiety and illness. It helps the child to stay stimulated and encouraged to have normal development. It is also a good idea to have a dinning room in children ward, where children are motivated to eat better and develop friendship with other inmates of the ward.

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2 The Art of Pediatric Nursing

> *"The trained nurse has become one of the great blessings of humanity, taking a place beside the Physician and Priest."*
> **— Sir William Osler**

ATTRIBUTES OF A PEDIATRIC NURSE

Nursing is a noble profession and should be undertaken by those who are endowed with an inherent interest and inclination to provide care, comfort and solace to fellow human beings. Nursing is an art and act of devotion as it deals with care and healing of a living being, the temple of God's spirit. It is not an easy job but it is a worth doing job which gives immense satisfaction. *The nurse should not consider her job as a profession but as a mission in life to provide tender loving care (TLC) to the suffering humanity*. The pediatric nurse should have genuine love for children and a special knack to handle them in a playful manner to elicit their best cooperation. She should establish a good rapport with children under her care despite the fact that she has to perform certain unpleasant tasks like giving injections, setting up an intravenous line, inserting a catheter or a nasogastric tube. She should be caring, compassionate and considerate to look after children with love and delicate handling in a methodical and systematic way. She should interact and communicate both with children and their parents in a relaxed manner without showing any hurry, worry and anger. She should have the expertise to undertake all the pediatric nursing chores with due competence and confidence. Apart from having uptodate knowledge and skills to perform all the essential nursing tasks, she should be a good human being with a genuine concern for children and their parents. She must have an alert mind and a warm heart. The key attributes of a good pediatric nurse are listed in **Box 2.1**.

> *Remember the first dictum of patient care is "Do No Harm."*
> **— Florence Nightingale**

> *"Patients many forget your name, but they will never forget, how you made them feel."*
> **— Maya Angelou**

Communication is the Key for Successful Nursing

The nurse should have the art of listening more and talking less to obtain information regarding the onset and evolution of the disease process and underlying environmental factors and family dynamics. She should have the ability to establish and maintain a sound rapport with the family. She should provide an opportunity to parents to ventilate their feelings and concerns in order to relieve their tension and anxiety, and assist them to understand and resolve their own problems. The key components of communication are listed in **Box 2.2**.

NURSING DUTIES AND SKILLS

> *"Observe, record, tabulate and communicate. Use your five senses".*
> **— Sir William Osler**

The objectives of pediatric nursing include promotion of health, prevention of illness, care of unwell, disabled and critically sick children. The key nursing roles include advocacy, promotion of safe environment, management of sick children, research, and participation in shaping health care policies for welfare of children.

1. **General nursing care** To provide a comfortable and a clean bed and to look after the needs of personal hygiene by daily sponging, brushing of teeth, changing the clothes, making the hair, etc. *Caring indeed is the essence of nursing*. She should supervise feeding and nutrition of sick children and provide them comfort, company and play activities. She should be an advocate for welfare of children, maintain privacy and confidentiality in all health matters.

Box 2.1 The key attributes of a good pediatric nurse

- Knowledge, skills and professionalism.
- Caring, empathetic and compassionate.
- Communication skills.
- Self-confidenec with emotional stability and serenity under all odds.
- Flexible and adaptable to acept responsibility with an attitute of "Never say never".
- Interpersonal skills, love for children and sense of humor.
- Physical endurance and stamina because nursing is a tough and demanding profession.
- Quick response with calm demeanor and problem solving skills.
- Respectful, disciplined and responsible.
- Attention to detail, competent and confident.
- Good record keeper.

Box 2.2 Principles governing effective communication by the nurse

- Interview should be conducted in a cordial and warm atmosphere with a genuine expression of concern and liking for the family. The tone of dialogue should be pleasant and poised without any tinge of abruptness and rudeness. She should be relaxed and endowed with patience.
- Speak in a simple language without any medical jargons and in keeping with the education and intellectual level of the parent or attendant.
- Communicate in a language with which the family is comfortable by asking simple short questions in a relaxed manner.
- Nurse should speak less and listen more (God has given us one mouth and two ears!).
- Establish empathy and genuine concern with parents and their children.
- Nurse should accept the parents and their child as they are without any judgement or evaluating their actions as 'bad' or 'wrong'.
- Nurse should assist parents to express their concerns, worries, anxiety and other negative emotions to enable them to get a sense of relief and release of pent up emotions and tension.
- School-going and adolescent children should be encouraged to talk and explain their health problems, concerns, worries and fears.

2. **Monitoring of vital signs** Temperature, pulse/heart rate, breathing rate and blood pressure should be checked and monitored as per the frequency recommended by the attending doctor. She should be able to identify any deterioration in the condition of the child under her care and inform the pediatrician promptly and without any delay.
3. **Administration of fluids, electrolytes, blood and blood components and drugs** In newborn babies and young infants, there is an increased risk of over administration of fluids, electrolytes and drugs due to low margin of safety. They should be administered with the help of a mini-burette or infusion pump and mini-syringes (insulin, tuberculin syringe). The nurse should exercise due vigilance and caution to prevent avoidable therapeutic mishaps.
4. **Diagnostic and therapeutic procedures** She should be able to collect samples of blood and body fluids for screening and diagnostic purposes. She should make necessary arrangements and assist the doctor to undertake various diagnostic and therapeutic procedures like endoscopies, tissue biopsies, bone narrow aspiration, lumbar puncture, paracentesis, assisted ventilation, exchange blood transfusion, etc. Informed consent of the family should be taken before undertaking a procedure.
5. **Nursing procedures** She should have the specialized skills to perform various pediatric nursing procedures independently. A higher level of precision and skills are required in performing procedures in newborn babies and young infants. The common pediatric procedures include giving various injections, setting up an IV line, doing hydrotherapy, inserting a catheter, providing nasogastric feeds, undertaking bowel wash, pre- and postoperative care, dressing wounds, relieving pain, etc.
6. **Resuscitation skills** She should have the necessary training, expertise and confidence to resuscitate a child with apnea or cardiac arrest by providing bag and mask ventilation and chest compressions. She should be able to manage a child who develops anaphylaxis following administration of a drug or blood transfusion.
7. **Specialized nursing and monitoring skills** The critically sick children admitted in the pediatric and neonatal ICUs demand high levels of skills and competence by specially trained pediatric nurses. High quality of supportive and nursing care is mandatory to salvage children with life-threatening emergencies. She should be able to provide nursing care to children with coma, shock, status epilepticus, status asthmaticus and multi-organ failure.

> *"Constant attention by a dedicated nurse is as important as a major operation by a surgeon."*
>
> **— Dag Hammarskjold**

She should be able to provide nursing support and chest physiotherapy to children on assisted ventilation, peritoneal dialysis, phototherapy, etc. The critically sick children need comprehensive and frequent monitoring of vital signs, blood gases and acid-base parameters, input-output of fluids and electrolytes, medications, and body weight changes.

8. **Vaccinations** She should have an up-to-date knowledge and skills to administer various vaccines and store them under strict cold chain conditions. She should have the skills to take various anthropometric parameters and record them on the Road-to-Health cards.
9. **Prevention of nosocomial infections** Sick children admitted to the pediatric ward and especially those admitted to an intensive care unit are very vulnerable to develop life-threatening infections from health care professionals and other potentially infected patients. Strict handwashing, barrier nursing, asepsis and isolation strategies should be used to prevent nosocomial infections.
10. **Universal precautions** In view of the increasing incidence of acquired immunodeficiency syndrome (AIDS), it is recommended that every patient admitted to the hospital should be considered as potentially infected with HIV and "universal precautions" should be followed by the nurses and other health care professionals to safeguard against the risk of contracting HIV and Hepatitis B infection.
11. **Tutoring and record keeping** The registered nurse (RN) should provide "on the job" supervision and training to student nurses, organize their duties and workload responsibilities. She should maintain an accurate monitoring record of patients under her care and hand over a written report after completion of a duty shift.
12. **Advocacy for children** The nurse administrator should serve as an advocate for welfare of children at all levels—home, school, well child clinic, ambulatory clinic or doctor's office, hospital, intensive care unit and community at large. She should provide guidance and know how to patients and their families to maintain healthy living habits in order to promote optimal health and good quality of life.
13. **Evidence-based nursing competencies** The nurse should be conversant and aware of Cochrane databased evidence for care of healthy and sick children. She should be able to implement changes and strategies in her nursing practice on the basis of scientific evidence. The nurse must have knowledge and expertise to access latest information and critically analyze research data.

THE NURSING PROCESS

2

> *"Nurses are the heart, soul and face of our healthcare system."*
>
> — Meharban Singh

Nursing process is a coordinated plan or frame of work which is followed by a nurse in the care of all patients and is considered as a foundation of their practice by professional nurses. Nursing process is a continuous process or an algorithm which is followed in sequential steps for care of children. The rationale of each step is based on nursing theory. The five basic steps of nursing process include assessment, nursing diagnosis, planning of care, implementation or intervention and evaluation or monitoring **(Figure 2.1)**. The nursing process provides an organized format to deliver holistic or comprehensive nursing care to sick children. **Table 2.1** shows an example of nursing process in a child suspected to have poststreptococcal glomerulonephritis.

Assessment

Interview should be conducted with due courtesy and in a relaxed manner keeping in mind the education and understanding of the parent or attendant and age of the child. The child must be assessed along with his family, parents, friends and environment. History is taken to assess family dynamics, socioeconomic status, environmental conditions, concept of personal hygiene, educational status of parents, number of siblings, availability of safe drinking water, and living conditions, etc. The onset, duration and evolution of disease process are assessed. Physical examination is conducted to assess anthropometry (weight, length or height and head circumference), vital signs (temperature, pulse or heart rate, breathing rate, blood pressure), hydration and nutritional status. Developmental status of the child and presence of any neuromotor disability is recorded. Activity, behaviour, general well-being, level of consciousness, feeding behavior and excretory functions (stool consistency and frequency, urinary

> *"Children should not be fragmented into systems, organs, tissues, cells and DNA. They must be viewed in totality (body, mind, heart and soul) and that too not in isolation but in context with the dynamics of environment, family, friends and society".*
>
> — Meharban Singh

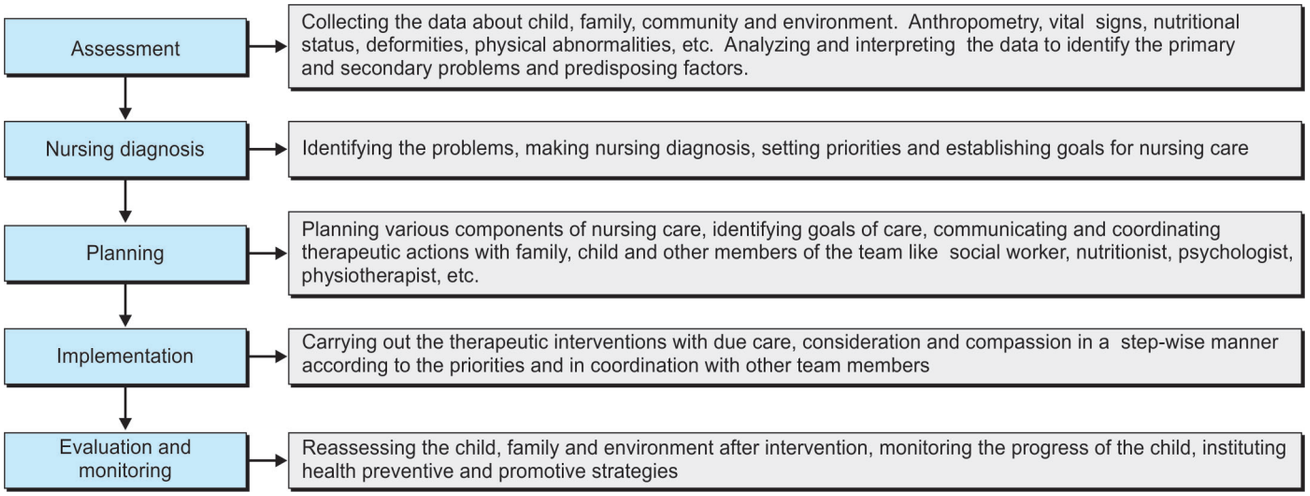

Figure 2.1 The nursing process

Table 2.1 Nursing process in a 5-year-old child with acute glomerulonephritis

Day of illness	*Assessment*	*Nursing diagnosis*	*Planning*	*Implementation*	*Evaluation and monitoring*
10th	▪ History of sore throat 2 weeks ago ▪ Puffiness of face and edema feet ▪ Urine—coca-colored ▪ BP—135/90 mm Hg ▪ Fluid intake—950 mL/24 hr, urine output—250 mL/24 hr ▪ Body weight—22.5 kg ▪ Urine loaded with RBCs and hyaline casts ▪ Blood urea—85 mg/dL ▪ Decreased serum C_3 level	▪ Accumulation of extracellular fluid ▪ Increased blood volume ▪ Hypertension ▪ Hematuria ▪ Renal dysfunction	▪ To reduce fluid accumulation ▪ Treat hypertension ▪ Maintain adequate renal function	▪ Bed rest and back rest ▪ Low salt and low protein diet ▪ Administration of furosemide and hydralazine ▪ Restriction of fluids ▪ Intake-output chart ▪ Urine testing and blood urea level ▪ Reassurance and emotional support to the family	▪ Puffiness and pedal edema—less ▪ BP—130/85 mm Hg ▪ Fluid intake—800 mL/24 hr ▪ Urine output—300 mL/24 hr ▪ Body weight—21.0 kg ▪ Blood urea—65 mg/dL

Note: The nursing process is drafted everyday during the hospital stay of the patient.

volume and frequency) are assessed and recorded. The nurse must have knowledge regarding normal ranges of physical and physiological parameters of healthy children at different ages before she can interpret the abnormalities in a sick child. The salient abnormalities are listed and severity of disease process is graded into acute or insidious and chronic in nature and in case of acute disease process whether it is mild, moderate, severe or life-threatening in severity.

Nursing Diagnosis

The findings and data obtained on history, physical examination and laboratory evaluation are analyzed and synthesized into various diagnostic possibilities. The diagnostic possibilities for various diseases in children can be summarized into eight broad groups (Table 2.2).

According to North American Nursing Diagnosis Association (NANDA), 72 nursing diagnoses have been proposed by taking into consideration not only the disease states of children but by including all areas of health care like health promotion, health maintenance, health restoration and rehabilitation. The identified health problems and issues should be prioritized to plan therapeutic interventions. According to NANDA classification, the latest approved list of nursing diagnoses, in an alphabetical order, is shown in Table 2.3.

Planning of Care

Nursing strategies should be planned keeping in mind a time frame of achieving various goals. Priorities are established to tackle various health problems being faced by the child. In view of the fact that every child is unique and no two children are alike, the interventions are customized or individualized to serve the specific needs of every sick child. The nursing care plan is made available to all the members of the nursing team.

Implementation of Interventions

Depending upon the nursing diagnosis and desired goals, the nursing interventions are outlined and explained to all the team members, family and the child to seek their cooperation for effective implementation. It is important that family and child must participate and cooperate to facilitate the process of healing and recovery. The basic philosophy of interventions is to provide comfort to the child and reverse all the physiological and biological abnormalities of the child. Child must be treated like a child (not a patient) and handled with utmost care, consideration and love. The pediatric nurse must have genuine love for children and adopt a flexible, innovative and play centered approach for care of children. They must be nursed in a position of most comfort depending upon their underlying disease process. The prime goal of interventions is to provide comfort to the child and relieve tension and anxiety of the parents. And the guiding principle of all interventions, as extolled by Florence Nightingale is, "Do No Harm".

Evaluation and Monitoring

Evaluation and monitoring should be recorded on a predesigned proforma to assess the response of the child to various therapeutic interventions. During this phase, the data should reflect improvements in the health status of the child and achievement of goals. The management of health problems of children is a dynamic and continuous process. During intervention, as some existing problems resolve, new health problems or complications may appear. Therefore, the nursing process of assessment, nursing diagnosis, planning care, deciding interventions, and evaluation of outcome is a continuous process and is followed in a cyclic manner till child is completely recovered. After complete recovery, the strategies are formulated and discussed with the family to promote and maintain health and well being of the child by instituting health promotive, preventive and rehabilitative interventions. The supreme goal or philosophy of child care is to ensure that every child is assisted to achieve his/her full genetic

Table 2.2 The spectrum of diagnostic possibilities

Etiology	*Spectrum of diseases*
▪ Infections	Viral, bacterial, fungal and parasitic, etc.
▪ Exogenous toxins and injuries	Drugs, chemicals, foreign body, trauma, burns, scalds and electric shock
▪ Deficiency disorders	Hypoxia, dehydration, protein-calorie malnutrition, deficiency of vitamins, minerals and hormones
▪ Developmental disorders	Genetic diseases, chromosomal disorders and congenital malformations
▪ Neoplasms	Benign or malignant
▪ Allergic, hypersensitivity, or autoimmune disorders	Allergic diathesis, atopy, bronchial asthma, post-infectious disorders, collagen vascular disorders, etc.
▪ Degenerative disorders	Atherosclerosis, progeria, CNS degenerative disorders
▪ Psychogenic and psychosomatic disorders	Breath-holding spells, enuresis, recurrent abdominal pain, conversion reaction, drug addictions, conduct disorders, behavior disorder, autism spectrum disorders, attention deficit hyperactivity disorder, learning disability, etc.

Table 2.3 The list of common nursing diagnoses

- Activity intolerance
- Activity intolerance, risk of
- Adjustment, impaired
- Airway clearance ineffective
- Anxiety
- Aspiration, risk of
- Body temperature, altered risk of
- Bowel incontinence
- Breastfeeding, ineffective
- Breathing pattern, ineffective
- Cardiac output, decreased
- Communication, impaired, verbal
- Comfort, altered, pain
- Confusion
- Constipation
- Coping, ineffective, individual
- Coping, ineffective, family
- Diarrhea
- Diversional activity, deficit of
- Family process, altered
- Fatigue
- Fear
- Fluid volume, deficit, risk of
- Fluid volume, excess, risk of
- Fluid volume deficit
- Gas exchange, impaired
- Growth and development, altered
- Hopelessness
- Hyperthermia
- Hypothermia
- Infant feeding pattern, ineffective
- Infection, risk of
- Injury, risk of
- Knowledge deficit
- Memory, impaired
- Mobility impaired, physical
- Noncompliance
- Nurtition, altered, less than body need
- Nutrition, altered, more than body need
- Oral mucous membrane, altered
- Pain, acute
- Pain, chronic
- Parenting, altered
- Parental role conflict
- Poisoning, risk of
- Post-trauma response
- Protection, altered
- Self-care deficit: feeding, bathing, dressing, toileting, hygiene
- Sensory alteration: visual, auditory, tactile, taste and smell
- Skin integrity, impaired
- Skin integrity, impaired, risk for
- Sleep pattern, disturbance of
- Social interaction, impaired
- Suffocation, risk of
- Swallowing, impaired
- Thermoregulation, ineffective
- Thought process, altered
- Tissue integrity, impaired
- Tissue perfusion, altered: cerebral, renal, cardiopulmonary, gastrointestinal, peripheral
- Urinary elimination, altered

**Source:* North American Nursing Diagnosis Association (NANDA), 12th annual meeting, 1996.

potential for physical growth and optimal mental, emotional, social and spiritual development to serve the needs of the society in a committed and humane manner.

NURSING MANPOWER

Nurses are the backbone of our healthcare system. They lead a demanding and challenging life while working with doctors, providing comfort and tender loving care to patients, guiding families and educating communities.

Most nurses in India are females because in the beginning the practice of nursing was mostly addressed to midwifery. In general, till recently the image of nurses has been rather low due to discrimination, nature of job, caste system, high workload and relatively low remuneration. According to 2012 data, India has 1,597 nursing schools, 833 BSc nursing colleges and 97 MSc nursing colleges with a capacity to train 79, 850 diploma nurses, and 41,650 graduate nurses every year. According to WHO, there is a need to have 1:3 doctor–nurse ratio but the current ratio is only 1:1.5. Although concerted efforts have been made to increase the number of registered nurses in the country but to achieve the recommended allocation of one nurse for 500 population is a distant dream. Moreover, about 20% of graduating nurses head to foreign countries every year, in search of better salary, working conditions, better image, dignity and standard of living. According to recommendations of Indian Public Health Standards, one nurse is required for 2 hospital beds (225 nurses for a 500 bedded hospital) inclusive of 25% leave reserve to cover social exigencies, sickness, annual leave and maternity leave.

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