Unit 5: Premature Infants and Multiple Developmental Disabilities

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Premature Infants

DEFINITION

- Premature infants are *infants born alive before the 37 weeks of pregnancy* is complete. There are sub-categories of premature infants based on gestational age.

ETIOLOGY

- Premature labor is caused by numerous factors.
  - *Pregnancy-related problems that increase the risk of premature delivery:*
    - **Carrying more than one baby at a time**.
    - **Weakened cervix**; begins to dilate early.
    - **Birth defects** of the fetus.
    - **Infection** [*e.g. Urinary tract infection, infection of the amniotic membrane, etc.*]
    - **Preeclampsia**; high blood pressure, and protein in the urine that develops after the 20th week of pregnancy.
    - **Poor nutrition** during pregnancy
    - **Premature rupture of the membranes**.
    - **Other pregnancy complications** that require early induction of labor or cesarean birth.
  - *Unknown etiology* - Cause of preterm birth is sometimes unknown.
  - *Other factors that increase the risk of premature delivery:*
    - **Previous experience** of preterm labor.
    - **Long-term health problems** [*e.g. heart disease, kidney disease, diabetes, etc.*]
    - **Maternal exposure to teratogens** [*e.g. smoking, consumption of alcohol/drugs, stress, etc.*]
    - **Lack of prenatal care**.
    - Mother being **younger than 16** or being **older than 35**.
    - **Genetic influence**.

PREVALENCE & INCIDENCE

- 1 in 5 deaths of children under 5 are due to complications from premature birth, claiming roughly 1 million lives annually.
- Globally, around 1 in 10 babies are born prematurely (before 37 weeks gestation). This translates to roughly 15 million per year.
- The incidence of cerebral palsy in extremely preterm infants is estimated at 3-5 per 100 live births.
- Estimates suggest that 10-20% of children born extremely preterm (less than 28 weeks) develop MDD, with the risk even higher for those born at very low birth weight (less than 1500g).
- Premature babies are 2-3 times more likely to have multiple disabilities than full-term babies.
- The rate of disabilities is higher in boys than in females.
- The Philippines has one of the highest rates of preterm birth in Asia.
- Roughly 300,000 babies are born prematurely in the Philippines each year.

SIGNS & SYMPTOMS

Physical Characteristics	• Newborn Jaundice [*yellow skin & whites of the eyes*] • Lanugo or body hair • Enlarged clitoris in female infants • Small scrotum that is smooth and no ridges and/or undescended testicles in male infants • Less body fat • Soft, flexible ear cartilage • Thin, smooth, shiny skin that is translucent where you can see veins under their skin • Low body weight
Other Characteristics	• Unable to maintain body temperature. • Problem with breathing. • Low muscle tone and activity.

PATHOMECHANICS

- Prematurity can have long-term effects. Many premature infants have medical, developmental, or behavioral problems that continue into childhood or are permanent.
- The more premature the baby is and the smaller their birth weight is, the greater the risk for complications. However, it is impossible to predict a baby's long-term outcome based on gestational age or birth weight.
    - Babies born too early (before 32 weeks) have higher rates of death and disability.
- *Possible Long-term Complications:* Premature infants that survive *may* have…
    - Respiratory issues
        - ***Bronchopulmonary Dysplasia*** - Chronic lung disease that affects newborns.
    - Feeding difficulties
    - Cerebral Palsy
    - Developmental Delay
    - Learning disabilities
    - Physical disabilities
    - Poor coordination
    - Hearing problems
    - Vision problem
        - ***Retinopathy of prematurity*** - An eye disease that can happen to premature babies, or who weigh less than 3 pounds at birth. Occurs when abnormal blood vessels grow in the retina.
    - Blood problems
        - ***Anemia*** *of Prematurity* - In this context, occurs due to untimely birth–before placental iron transport and fetal erythropoiesis are complete. This results in a markedly inadequate amount of red blood cells.
        - ***Infant*** *or* ***Neonatal Jaundice*** - Caused by heightened bilirubin disposition in the skin.
        - ***Hypoglycemia*** - Preterm infants are predisposed to developing this. It occurs due to their limited glycogen count, fat stored, and inability to generate new glucose.

POSSIBLE SPEECH-LANGUAGE PROBLEMS ASSOCIATED WITH THE CONDITION

Feeding and Swallowing	● Primitive reflexes, crucial for functional eating patterns, may be underdeveloped, leading to uncoordinated suck and swallow, weak suck, or breathing disruptions during breastfeeding ● Difficulty in breathing due to underdeveloped lungs ● Weakness or lack of coordination in facial and oral muscles
Oral Motor Skills	● Challenges in controlling tongue movement ● Limited ability to form and coordinate facial expressions
Language Development	● Delayed language milestones (e.g., babbling, first words) ● Limited vocabulary and expressive language skills ● Difficulty with grammar and sentence structure
Speech Sound Production	● Articulation errors due to underdeveloped oral motor control ● Challenges in producing specific sounds or sound combinations
Hearing Impairments	● Increased risk of hearing loss due to prematurity or complications ● Impact on speech and language development
Social Communication Skills	● Less likely to interact with others ● Difficulty with turn-taking ● Challenges in understanding and using nonverbal cues

TYPES, COURSE, & PROGNOSIS

Can be categorized as:

Extremely Preterm	born before 28 weeks of pregnancy
Very Preterm	born between 28 to 32 weeks of pregnancy
Moderate Preterm	born between 32 to 34 weeks of pregnancy
Late Preterm	born at 34 to before 37 weeks of pregnancy

Main developmental disabilities associated with prematurity	
Cerebral Palsy	● Premature birth is a significant risk factor for cerebral palsy, and about half of children diagnosed with cerebral palsy were born prematurely. ● Prematurity, low birth weight, and co-occurring risk factors increase the risk even further.
Intellectual Disability	● Children who were born prematurely are more prone to having lower intelligence quotients and academic achievement scores, facing greater challenges in school, and needing more educational support compared to children born at full term
Attention Deficit/Hyperactivity Disorder	● In a study focusing on babies born between 37 and 41 weeks, researchers found that children born between 37 and 38 weeks had higher ADHD symptom scores compared to those born between 39 and 41 weeks.
Autism Spectrum Disorder	● Premature birth increases the risk of autism due to inflammation in the brain and nervous system.

	• Premature infants frequently exhibit disrupted connectivity between various brain regions, which may contribute to the neurodevelopmental issues commonly observed in this population.
Hearing Loss	• Preterm infants often struggle with auditory processing and discrimination. • They also had deficits in recognizing simple speech sounds and auditory memory. • These challenges can affect their language acquisition abilities.
Visual Impairment	• Retinopathy of prematurity (ROP) is a common complication that becomes more prevalent with lower gestational age and birth weight. • Nearsightedness (myopia) is a frequent visual consequence, particularly in severe cases of ROP and with decreasing gestational age. • Additionally, premature infants may experience other visual issues such as farsightedness (hyperopia) and astigmatism, affecting 12% and 29% of children born at less than 29 weeks of gestation, respectively.

Additional Information	• Late preterm babies have a lower risk of developmental issues and breathing difficulties compared to full-term babies. Their language development generally follows a similar path to full-term babies, but there is a possibility of delayed language development, which can sometimes indicate other underlying challenges like hearing, cognitive, or learning difficulties.
	• Outcomes
	  ○ Untreated premature/disabled children may face cognitive delays, physical disabilities, communication disorders, behavioral problems and poor health.
	  ○ With early intervention and ongoing therapy, these children can improve cognition, motor skills, communication and behavior. Treatment promotes overall health, quality of life, and helps children meet their potential with more independence.

	• Women with a history of preterm births are at higher risk and should wait 18 months before the next pregnancy, quit smoking, address infections promptly, and manage health conditions like diabetes. Close monitoring by doctors and treatments like progesterone supplementation can help. • For women without obvious risk factors, maintaining a healthy lifestyle, regular check-ups, and stress reduction can reduce the risk. While not all premature births can be prevented, doctors can monitor for risk factors and provide preventive measures. Failure to address these factors may have serious consequences, and if a premature baby develops a developmental disability, medical negligence may be suspected.

HEALTHCARE RESOURCES AVAILABLE FOR PREMATURE INFANTS

- ❖ Tracking of temperature and vital signs
- ❖ Fluid and Electrolyte Management
- ❖ Feeding Tube
- ❖ Surgery
- ❖ Incubator (thermoregulation)
- ❖ Kangaroo Mother Care

SLP THERAPY & MEDICAL PRECAUTIONS

Under SLP Therapy
➢ Premature infants and those with low birth weight have a higher likelihood of facing language and speech difficulties during their toddler years. These challenges often persist into school-age years. The affected areas include understanding sentences and questions, expressing thoughts and opinions, reading, spelling, sound production, and grammar. Premature babies are also at risk of motor skill delays, primitive reflex integration issues, and cognitive development delays, all of which can impact language development. ➢ A speech therapist helps develop feeding muscles and improves oral communication skills. They work with both the child and parents to create an optimal language learning environment. **Early intervention** with a speech-language pathologist is critical for brain development and forming neural pathways, targeting cognitive, language, speech, and social communication abilities. The therapist also monitors for broader symptoms that may require referrals to other specialists.
Medical Precautions

<table>
<tr><td colspan="2">Speech-language therapists (SLPs) need to take certain precautions to ensure the safety and well-being of both themselves and their clients, especially when working with premature infants.

● Health Assessment – Ensure that the SLP is in good health and free from any contagious illnesses. SLPs should refrain from conducting therapy sessions if they are unwell to prevent the spread of infections.
● Hand Hygiene – Practice proper hand hygiene by washing hands thoroughly with soap and water before and after each therapy session. Alternatively, use hand sanitizers when soap and water are not readily available.
● Personal Protective Equipment (PPE) – Depending on the specific situation, SLPs may need to use personal protective equipment such as gloves, masks, or face shields to prevent the transmission of infectious agents, especially when working with premature infants as they are very sensitive and are easily infected with viruses.
● Environmental Safety – Ensure that the therapy environment is safe and free from hazards. Remove any potential obstacles or dangers that could pose a risk to the client or the SLP.
● Infection Control Practices – Follow infection control practices, including cleaning and disinfecting therapy materials and equipment regularly. This is crucial, especially when working with clients who may have compromised immune systems.</td></tr>
<tr><td>Preventive measures before, during, and after therapy</td><td>◆ <u>Before</u> engaging in Speech-Language Pathology (SLP) therapy with premature infants and those with multiple developmental disabilities, thorough assessment and consultation with other healthcare professionals are crucial. Prior to therapy, it's essential to gather comprehensive information about the infant's medical history, developmental milestones, and any existing health concerns.
◆ <u>During</u> therapy sessions, careful monitoring of the infant's vital signs and response to stimuli is important. The therapist should adapt techniques to the infant's developmental stage and provide a supportive environment. Considering the vulnerability of premature infants, maintaining a sterile and controlled therapeutic space is vital to prevent infections. Communication with parents or caregivers is key to ensure continuity of care and to educate them on activities or exercises that can be done at home.
◆ <u>After</u>, ongoing assessments and periodic consultations with other specialists are necessary to track progress and adjust interventions as needed. Collaboration among healthcare professionals is fundamental to provide comprehensive care for premature infants with multiple developmental disabilities.</td></tr>
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CRITICAL MEMBERS OF THE MANAGEMENT TEAM

Neonatologist	➢ a medical professional who specializes in caring for newborn babies, particularly those who are ill or born prematurely ➢ are the first line of support in a high-risk birth ➢ services provided: a. antenatal consultation (consultation during pregnancy) for women with certain risk factors, such as multiple births b. intensive care for unwell or premature newborns c. care coordination and planning for critically ill or premature newborns d. neonatal nutrition e. assessment of babies in hospital postnatal wards f. follow-up clinics after birth
Pediatric Surgeon	➢ Diagnose and perform surgery to treat fetal abnormalities and birth defects, diseases, and injuries in fetuses, premature and newborn infants, children, and adolescents.
Registered Nurse	➢ play a crucial role in providing direct patient care ➢ monitor vital signs, administer medications, provide feeding support, and coordinate care ➢ they act as a link between the patient, family, and other healthcare professionals, ensuring comprehensive and coordinated care
Clinical Nurse Specialist	➢ are advanced practice nurses with expertise in a specific clinical area ➢ provide specialized knowledge and guidance to the nursing staff, collaborate with other healthcare professionals, and assist in deve
Respiratory Therapist	➢ focus on managing respiratory conditions and ensuring optimal lung function

	➢ they are responsible for administering respiratory treatments, managing ventilator support, and providing education and support to families
Speech-Language Pathologist	➢ may work on early intervention for speech and language development, feeding and swallowing therapy, and addressing any oral-motor issues that may impact overall communication and nutrition

SUPPORT SYSTEMS FOR PREMATURE INFANTS

PHILIPPINES	
PhilHealth *(Philippine Health Insurance Company)*	PhilHealth offers financial assistance to pregnant women at risk of preterm delivery and premature or LBW newborns through the Z Benefit Package, which covers: ● Preventive measures: This includes corticosteroids to help mature the baby's lungs, medication to prevent preeclampsia, and transfer to a specialized facility if needed. ● Care for newborns: The package covers care for premature babies born between 24 and 37 weeks gestation, weighing 500 grams to 2,499 grams. ➔ *Who is eligible?* ● Pregnant women at risk of preterm delivery between 24 and 36 weeks gestation. ● Premature newborns with a gestational age of 24 to 32 weeks and birth weight of 500 to 2,499 grams. ● Premature newborns with a gestational age of 32 to 37 weeks and birth weight of 500 to 2,499 grams.

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