Module 3 – Conception to Pre-School Age

Growth and Development

Conception to Birth

How length of pregnancy is calculated.
Form the first day of the last period. Pregnant for ~ 280 days (9 months)

Three periods of gestation and how to promote health during each trimester.

- *Trimester 1* – first 3 months, essential organs are made.
  - *Health* – teratogens effects development (e.g. rubella, careful using herbs, no drugs especially during this stage, limit caffeine intake, diet include iron and folic acid)
- *Trimester 2* – End of 3rd month to end of 6th month. Maternal physical changes (e.g. uterus becomes abdominal organ, stronger foetal movement, joints develop, bones distinct, skin covered with lanugo (silk-like hair), eyes open, practices breathing.
  - *Health* – Prepare for life after baby is born, UTI's are common - fully empty bladder.
- *Trimester 3* – 7th to 9th month. Significant weight increase, sleeps 90% of day, less active while lungs mature.
  - *Health* – Education on breastfeeding, avoid noxious agents - can damage CNS.

Major factors influencing growth and development.

- Internal
  - Genetics – sex, race, physicals
  - Temperament – mood of individual
- External
  - Family – beliefs, assistance, nurture
  - Peer-group – different patterns and structures
  - Experiences – Learning new things/skills
  - Health environment – diet, exercise, prenatal health
  - Living environment – climate, home life, socioeconomic status.

Physical and psychosocial changes - intrauterine to extrauterine life.

- Requires rapid adaptation (APGAR SCORE - uses points 2,1,0 for HR, respiratory effect, muscle tone, response to stimulation and skin colouration (10 = best result))
- Removed from placenta – increased systemic vascular resistance
- Initiation of ventilation – requires pulmonary vascular resistance
- Body temperature
- Need for affection and touch.

How is airway patency and body temperature maintained during birth and in the newborn?
Maintained in newborn by:

- removing nasopharyngeal and oropharyngeal secretions then
- placed on mother's abdomen and covered in warm blankets and
- unclothed in an infant warmer.

Apgar scoring tool - part of newborn assessment.
Measurement of a newborns physical condition

Neonate Development

Data collected during the physical assessment of the newborn.

- Height and weight
- Head circumference
- Temperature, pulse and respirations
- General appearance, body functions
- Sensory capabilities, flexes
- Responsiveness

Normal range of physiological parameters for a newborn.

- 3.4kg, 50cm long
- 35cm head circumference

What does the nurse/midwife observe about the newborns?

- Skin colour
  - Dependant on race but gradually changes during infancy
- Fontanelle
  - Usually able to be touched (palpable) at birth. Diamond shape of anterior and triangular shape of posterior
- Neurological function
  - Level of activity, alertness, irritability, responsiveness to stimuli, and the presence and strength of reflexes.
- Behavioural characteristics
  - Periods of sucking, crying, sleeping and activity. Movements are generally irregular, but they are symmetrical and involve all four extremities.
- Sleep pattern
  - The more regular, the less aroused by external stimuli

Sensory stimulation important for a neonate

- Allows them to seek or take stimuli and therefore, enhances cognitive development.

Common localised reflexes assessed in a newborn and the expected behavioural response.

- Babinski: Stroking outer sole of food upwards from heel causes toes to hyperextend (disappears after 1 year)

Factors which may impact on attachment between mother and newborn.

- Health implications
  - Infants behavioural cues may be weak or absent
  - Tired or ill parents not responding to children as well
  - Congenital abnormalities may require incubation
  - Decreasing pleasure from all implications reduces attachment

Health considerations for newborns.

- *Hyper bilirubinaemia*
  - Excessive yellow colouring of skin.
  - This balance can be upset by prematurity, breastfeeding, excess production of bilirubin, certain disease states such as Rhesus iso-immunisation or a disturbance of liver function such as biliary atresia.
  - Phototherapy helps break down for easier excretion. Fluid balance must be maintained due to water stools.
- *Inborn errors of Metabolism*
  - Due to lack of enzyme essential for metabolic rate
  - Rare genetic disorder
  - Neonatal screening and blood test can help detect
- *Circumcision*
  - Rates have lowered significantly
  - Risks (infection after procedure)
  - Benefits (lower UTI's)
  - Educate properly!

Infant development (1 month – 1 year)

Physical Changes

- Proportional growth
- Rapid increase in size and weight (doubles in 5 months)
- Increase in height mainly in trunk
- Posterior fontanelle closes ~ 2 months & anterior fontanelle closes ~ 12-18 months
- Increase in motor and fine movement

Cognitive changes

- Learns by experiencing environment through repetitions (e.g. sucking = pleasurable – sucks toys as well)
- Sensory functions are enhanced (colours, smells and sounds)

Psychosocial changes

- Positive parental contact and nurturing is important since they provide:
  - Warmth
  - Love
  - Security
- Can develop:
  - Optimism