

Lesson One – Fetal Development

FOCUS: The Size of the Fetus at Each Month

45 minutes

Purpose:

Try to find everyday objects that are the same size as an unborn infant at each month of development (approximate sizes listed below). Bring in one of each of the smallest items and place them in a plastic bag, one for each participant. If you have a fetal size model, display that along with the items. The hands-on, everyday objects will help students understand fetal development by month.

Materials:

- Presentation slides 3 and 4– *Fetal Development Stages*
- *Fetus Monthly Development* handout
- Presentation slides 5-11– *Fetus Development by Month*
- Everyday objects the size of the fetus (see list below)
- Instructor Information sheet in this lesson (read prior to teaching this lesson)
- Fetal Development Kit
- Pregnancy Torso

Facilitation Steps:

1. Try to find everyday objects that are the same size as an unborn infant at each month (approximate sizes listed below). Bring in one of each of the smallest items and place them in a plastic bag, one for each participant. If you have the Fetal Development Kit, display it along with the items.

Sizes are approximate; 1-5 month measurements are from crown (top of head) to rump (bottom), and 6-9 month measurements are from crown to heel.

- Month 1: ¼ inch (pea, one Red Hots candy, one round aspirin)

- Month 2: almost 1 inch (large jelly bean, quarter, large grape)
 - Month 3: A little over 2 inches (car key, a ¼ of a Graham Cracker)
 - Month 4: 4 ½ inches (toilet paper tube)
 - Month 5: 6 ½ inches (standard stapler, tape dispenser)
 - Month 6: Almost 12 inches (1-foot ruler)
 - Month 7: Almost 15 inches (loaf of standard, store-bought bread)
 - Month 8: A little over 16 ½ inches (toy doll)
 - Month 9: 19-13 inches (RealCare Baby or similarly sized doll)
2. Show presentation slides 3 and 4– *Fetal Development Stages*. Review the zygote stage and embryo stage.
 3. Have participants find and observe the objects that represent the embryo in months one and two.
 4. Review the terms on presentation slide 4: Placenta, Amniotic Sac, and Umbilical Cord.
 5. Have participants find and observe the objects that represent the embryo in months three through six.
 6. Show presentation slides 5-11 and review what is happening in the Fetus Stage.
 7. Have participants find and observe the objects that represent the fetus in months seven through nine.
 8. Give participants the *Fetus Monthly Development* handout. Go through what is happening in each month, referring back to the size of the everyday objects to get an idea of what size it is when these developments are happening.

9. Pass around each Fetal Development model in the kit by month. If you have the Pregnancy Torso, display it to show what a full-term pregnancy looks like.

Instructor Information

Newborns need a lot of care, and most do not respond to the parent with big smiles and giggles until they are a couple of months old. Many young and especially teenage parents believe that an infant will love them back right away. An infant does bond with his or her parent, but a newborn is going to take much more than it gives back.

Brain development in infants: Most brain development happens after an infant is born. An infant has 100 billion brain cells at birth. Some of those cells already have pathways to each other to regulate breathing, heartbeat, and other life-sustaining functions. Other pathways that determine behavior, mental capacity, and emotional development must be made after birth. A small child's brain is twice as active as an adult's. The pathways the young brain cells make with each other are formed primarily during the first three years of life. The experiences that an infant has every day help develop these pathways. The brain keeps track of which pathways are used most. If certain experiences are repeated many times, those pathways are more likely to remain strong throughout life. If a pathway is not used regularly, the brain cells not used will deteriorate and disappear. This process is called "pruning."

Communication and language: To learn language, an infant must hear language. Many people think that talking to infants is not important since the infants cannot understand the words. Words and sounds heard during the first three years of life largely determine the adult vocabulary. Parents who read and talk to their infants are helping to develop very important language pathways in the brain. After a while, the child will start to participate in the sharing of language – these initial "conversations" are very important. Even when infants are "babbling," they are repeating the sounds and syllables of words they hear. A caregiver's verbal response to babbling helps establish brain pathways about conversation and language.

Routines and security: An infant needs a safe, secure environment filled with loving care. Infants who have their needs met develop feelings of trust and security. Parents who respond in a sensitive way to their child's needs are building security. A positive relationship with a parent makes the infant feel safe and secure. Consistency in routines for eating and sleeping are good ways to help an infant feel trust and security. Positive and loving responses to each instance of crying makes an infant feel safe. The infant learns that his or her world is predictable.

Enriching experiences: Parents do not need expensive, trendy educational toys and activities to help their infants' brain development. Any activity that taps into one or more of the five senses will help build brain pathways. For example, simply focusing on his or her mother's face helps an infant build visual pathways between brain cells. Taking an infant for a walk while the infant is active and alert provides a new experience he or she will use to build pathways. Variety keeps the brain stimulated, and repetition of activities helps the infant learn.

Many infants can tolerate only brief periods of active stimulation, whether it be visual, auditory, etc. Infants will communicate when they have lost interest by fussing or turning their faces away.

Fetal Development Stages

Zygote Stage – two weeks

- Sperm unites with the ovum (egg).

Embryo Stage – six weeks

All major body systems begin to develop.

- Central nervous system, brain, blood vessels, stomach, and heart.
- Eyes, lungs, arms, legs, hands, and feet.

Terms:

Placenta – tissues that connect the umbilical cord of the embryo or fetus to the uterine wall.

Amniotic sac – fluid-filled pouch that cushions the embryo.

Umbilical cord – nutrients and oxygen from the mother's bloodstream pass to the embryo.

Fetus Stage – seven months

- The fetus grows and matures during this time.
- The body, head, arms, and legs grow rapidly.
- Organs develop for blood circulation, breathing, and digestion.
- Nerves and muscles develop.
- Heart pumps blood through the veins and arteries.

Fetus Monthly Development

3rd Month

- Nostrils, mouth, lips, teeth buds, and eyelids form.
- Fingers and toes are almost complete.
- Biological gender is evident.
- Heartbeat can be heard with a stethoscope.
- All organs are present, though immature.

4th Month

- Skin is less transparent.
- Fine hair covers the entire body.
- The fetus can suck its thumb, swallow, hiccup, and move around.
- Facial features become clearer.

5th Month

- Hair, eyelashes, and eyebrows appear.
- Teeth continue to develop.
- Organs are maturing.
- Hands are able to grip.
- The fetus becomes more active.

6th Month

- Eyes open and close.
- Muscles in the arms and legs strengthen.
- Fat deposits begin to appear beneath wrinkly skin.
- Breath movement begins.

7th Month

- A thick, white, protective coating called vernix covers the fetus.
- Nervous, circulatory, and other systems mature.
- Periods of fetal activities are followed by periods of rest and quiet.

8th Month

- The fetus hears sounds and may be startled by sudden noise.
- The fetus usually moves into a head-down position.

9th Month

- Increase of fat under the skin makes the fetus look less wrinkled.
- Fetal movement decreases with less room to move.
- The fetus gains disease-fighting antibodies from the mother's blood.
- The fetus descends lower into the pelvis, ready for birth.