
PRACTICAL 15 ASSESSMENT AND RECORDING OF GROWTH AND DEVELOPMENT

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15.0 OBJECTIVES

At the completion of this practical, you will be able to:

- take weight, length / height, body circumferences of children;
- observe activity performance of children;
- record the above parameters in the child health records; and
- interpret the child health records to assess growth and development of children and explain its significance to mothers.

15.1 INTRODUCTION

In Unit 1, Block 4 of theory Course 2, you have learnt about the growth and development of children including a number of parameters such as weight, length/height, body circumferences used to assess the growth and observation of activity performance used to assess the development. These parameters are also called as indicators of growth and development.

You are expected to assess the growth of children by taking their weight, length/height, body circumferences and development by observing their activity performance. Accurate use of methods for taking these parameters/making observation, provides accuracy in assessment of growth and development.

In this practical you will learn to take weight, length/height, body circumferences and observe activity performance of children with the help of simple and easy methods and record them in the concerned child health records. You will also gain skill in doing so during the practical contact sessions.

15.2 ASSESSMENT OF GROWTH

The assessment of baby's growth is made by taking weight, length/height, body circumferences. We shall now learn to take these parameters in the following sub-sections.

15.2.1 Taking Weight

The growth at birth is assessed by taking weight, length/height and head circumference and thereafter only by taking weight. This is because the weight is a sensitive indicator of growth and the significant changes can be observed over a period of few days. Taking weight is also easy with a possibility of a high level of accuracy. It reflects only present health status of the child and provides a baseline for assessment of its future growth. Taking weight at intervals and then comparing with reference standards of weight for age helps to know the growth pattern in a child. A decrease or increase in weight also indicates deterioration or improvement in health of that child.

Hanging scale (spring scale) and beam scale are the two methods to measure the weight and these are discussed below:

Let us begin with articles required for measuring weight.

Articles

Hanging Scale Method (Fig. 15.1)

- 1) Hanging scale (tubular spring scale).
- 2) Square piece of strong cloth about 75 × 75 cm from mother.

Beam Scale Method (Fig. 15.2)

- 1) Beam scale
- 2) A piece of news paper.

Procedure

Hanging Scale Method

The procedure is carried out at home by using articles from public health bag.

The steps of procedure are:

- 1) Keep your bag on a clean surface.
- 2) Explain the procedure to the mother and ask for a square piece of strong cloth.
- 3) Wash your hands.
- 4) Take out the hanging scale from bag.
- 5) Check the scale for accuracy and if required balance the scale.
- 6) Undress the baby if dressed in more or heavy clothes to avoid variation in actual weight reading.
- 7) Place the square cloth piece on a flat surface and tie two knots in two separate but opposite corners.
- 8) Put the knotted cloth on the mother's lap or any soft surface.
- 9) Keep the baby diagonally on the cloth.
- 10) Bring the two unknotted corners of cloth together and tie a firm reef knot leaving enough space for baby to move.
- 11) Check the firmness of reef knot by attempting to pull it apart.
- 12) Insert the hook attached to the bottom of the hanging scale under the reef knot of the cloth pouch.

- 13) Lift the cloth pouch containing the baby about 5-6 cm above the mother's lap or soft surface.
- 14) Note the reading.
- 15) Remove the baby and give to the mother.
- 16) Inform the mother about baby's weight.
- 17) Untie the knots and give cloth to the mother.
- 18) Wash your hands.
- 19) Replace the hanging scale.
- 20) Record the weight in your diary.



Fig. 15.1: Hanging scale method

Beam Scale Method

- 1) Explain the purpose and procedure to the mother.
- 2) Wash your hands.
- 3) Check the scale for accuracy and if required balance the scale.
- 4) Undress the baby if dressed in more or heavy clothes to avoid variation in actual weight reading.
- 5) Place newspaper on the scale pan.
- 6) Keep the baby on the newspaper placed on the pan.
- 7) Keep your hand off the baby and the pan, again to avoid variation in actual weight reading.
- 8) Move the weight bar forward or backward until the scale balances.
- 9) Note the reading immediately.
- 10) Lift the baby and give to the mother.

- 11) Inform the mother about baby's weight.
- 12) Return the weight bar to zero.
- 13) Wash your hands.

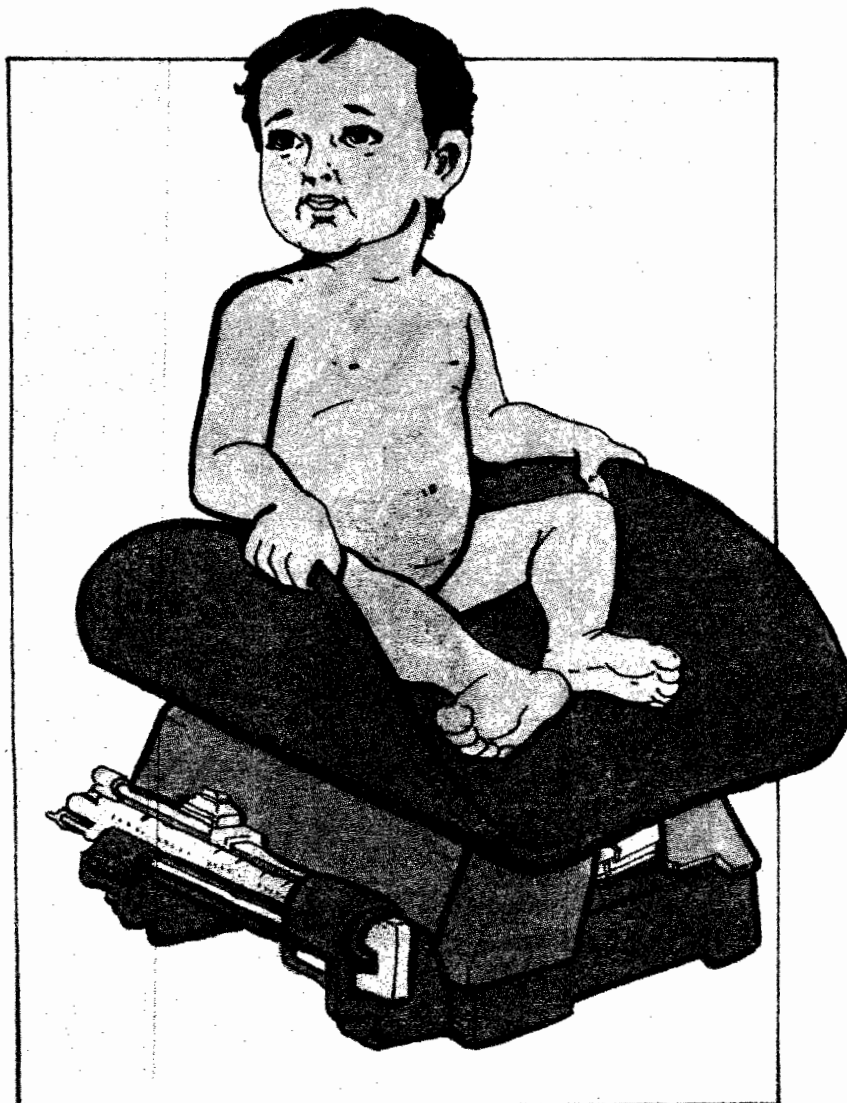


Fig. 15.2: Beam scale method

Points to Remember:

Hanging Scale Method

- 1) When using a hanging scale, the baby is always weighed in mother's lap or over a soft surface to protect it from injury in case of tear of cloth or opening of knot.
- 2) The baby is always weighed with same scale and before giving feed. If feed have been given then weigh after half an hour.
- 3) This method is used to weigh the babies (below three months) at home.

Beam Scale Method

- 1) This method is used to weigh the babies at health centre.
- 2) Check that the scale platform is safe and secure to protect baby from falling.
- 3) The babies are afraid of falling when placed on the scale pan and hence cry to return in your hands for safety. Therefore, the weight is taken quickly to allay fears.
- 4) The young children are weighed on flat weighing scale (machine) as the adults are weighed.

When there is no hanging scale or beam scale, you can still take baby's weight by weighing first mother with baby and then mother alone on a flat (adult) weighing machine and subtracting the two.

15.2.2 Taking Length/Height

Length/height is also a good indicator of growth. The various methods used to measure the length/height in supine and standing positions are explained below:

Methods of measuring length

Let us first test the articles for measuring length in supine or standing position.

Infantometer/paper, measuring tape and pen/just measuring tape.

Standing Position

Measuring scale attached to wall, a straight object, paper and pencil and newspaper.

Procedure

Procedure for taking length/height is given below.

Supine Position

Infantometer Method

- 1) Place the infantometer on table/bed.
- 2) Place the baby in supine position on the board of infantometer with head firmly placed against the foot board of infantometer.
- 3) Hold the baby's head in midline, grasp the knees gently and push down on knees to make the legs fully extended and flat.
- 4) Note the measurement.
- 5) Give baby to mother and remove the infantometer.

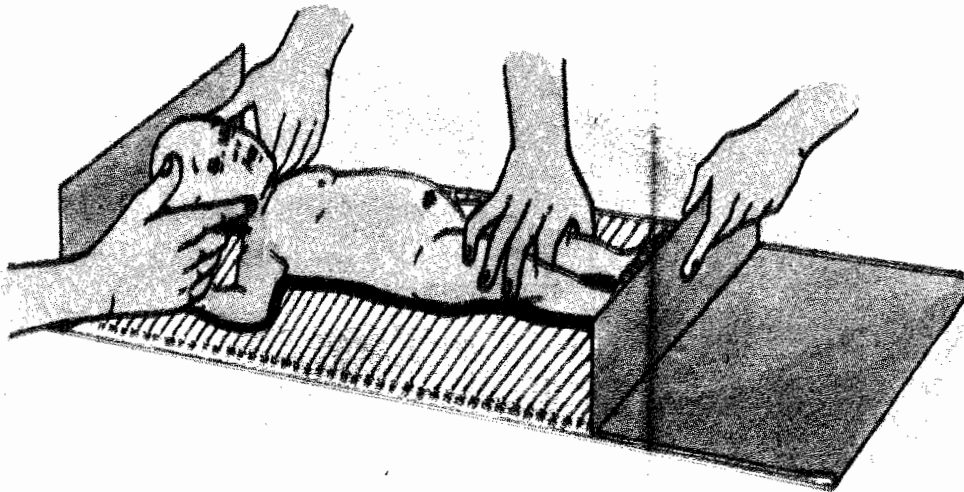


Fig. 15.3: Recording length with infantometer

Paper Marking Method

- 1) Place paper on table or any other smooth hard surface.
- 2) Place the baby on paper as in infantometer method. Take the help of mother in holding the baby's head in midline while you extend the legs and take measurement.
- 3) Mark the end point i.e. top of head and heels of feet with pen held at a right angle to the surface. Make sure that toes are pointing upwards when heel point is marked.
- 4) Ask the mother to lift the baby from paper.
- 5) Place the measuring tape between the two marked points on paper and note the measurement at heel point.
- 6) Remove the articles.

Measuring Tape Method

- 1) Place baby on table/any smooth hard surface.
- 2) Position the baby as in paper marking method.
- 3) Place the measuring tape on the table/surface along the baby's body from the highest point of head to heel point and note the measurement.

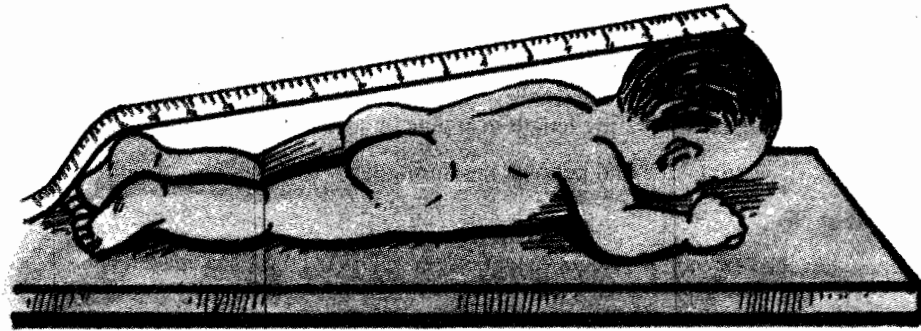


Fig. 15.4: Measuring height by tape method

- 4) Ask the mother to lift the baby and remove the articles.

Standing Position

Measuring Scale Attached to Wall Method

- 1) Ask the child to remove shoes/slippers.
- 2) Assist the child to stand on a clean newspaper kept on the floor.
- 3) Tell the child to stand with buttocks and back of head against the scale on wall, feet and heels together and eyes looking straight.
- 4) Place the straight object on the top of the head at right angle to the scale on wall, touching the scale calibrations.
- 5) Note the reading where the straight object touches the scale.
- 6) Ask the child to put on shoes/slippers.
- 7) Remove the articles.



Fig. 15.5: Measuring height in standing position

15.2.3 Taking Body Circumferences

Two body circumferences are important i.e. head circumference and arm circumference.

Head circumference is the measurement of head and is usually taken in all children at birth or any child whose size is unusual e.g. with hydrocephalus.

Arm circumference is also a good indicator of growth. The mid-arm measurement remains almost constant between 6.5-7.0 inches/ 16-15 cm from 1-6 years and hence used as an independent criterion for assessing growth and nutritional status. It is mostly used during surveys particularly under field conditions when weighing is impracticable.

Article

Measuring Tape

Procedure

Head Circumference

- 1) Place the tape end at the centre of forehead in front, then move the tape around the head and over the centre of occipital bone at the back and to the centre of forehead.

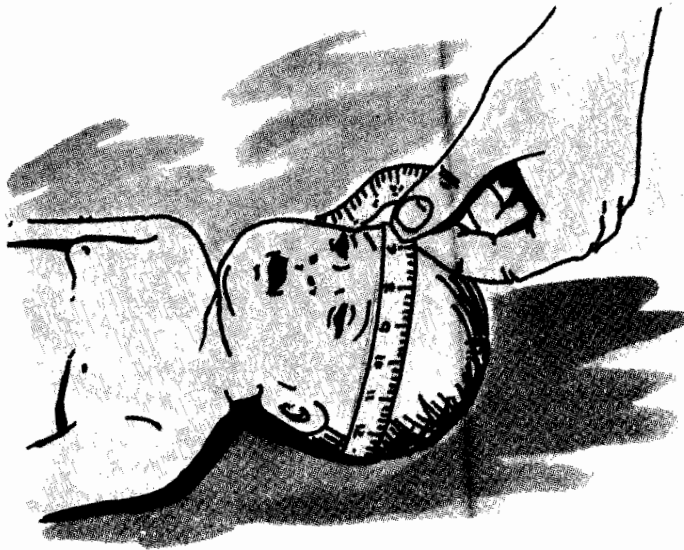


Fig. 15.6: Measuring head circumference

- 2) Note the measurement and record it.

Arm Circumference

- 1) Place the tape around the left arm at the midpoint above elbow while arm is kept hanging.
- 2) Note the measurement.

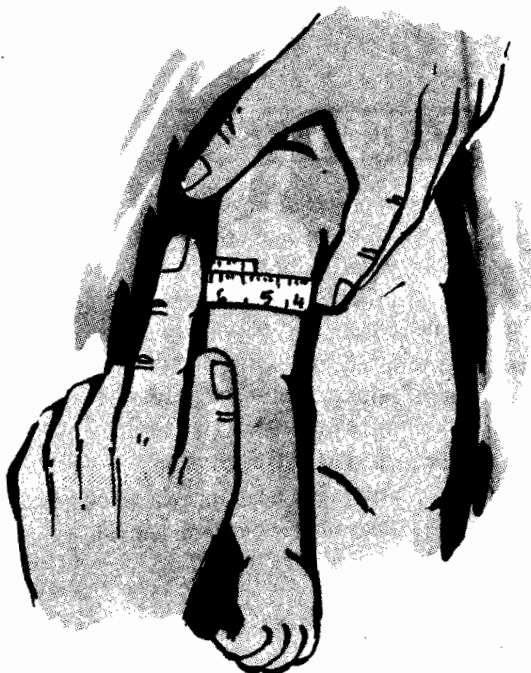


Fig. 15.7: Measuring arm circumference

Check Your Progress 1

- i) Today, you have come to conduct the delivery of Smt. Zabina at her home. After finishing the delivery process and attending the mother, you are now going to attend the baby and assess its growth. Your midwifery kit is having spring balance and measuring tape in it.
- a) List three parameters which are used to assess baby's growth at birth.
-
-
-
-
- b) What will you require from mother to take baby's weight by hanging scale method ?
-
- c) What will you check on spring balance before taking baby's weight ?
-
- d) The best method for taking baby's length at home is.....
- e) Length is measured between and points.
- f) List the steps of measuring head circumference
-
-
-
- ii) Complete the following:
- a) Mid arm measurement remains.....
- b) Arm circumference is used.....

15.3 ASSESSMENT OF DEVELOPMENT

You have already learnt that the development in small children is indicated by the mental, motor and social abilities. These abilities are assessed by observation of the activities (called developmental milestones) for age performed by the children. If a child fails to perform any activity (or to achieve any ability or milestone) for age is considered to have developmental delay. Any obvious abnormality of symmetry is also considered as abnormal e.g., a two month old child (with paralysis of face on left side) when being observed for smile, you may note its right part of lips stretching and becoming apart but left part of lips remaining droopy and closed indicating asymmetrical smile which is abnormal. Similarly a four month old child (with a neurological defect) when being observed for turning head towards sound, you may note the child turning head to right when sound is made on right side but failing to turn head to left when sound is made on left side indicating asymmetrical turning of head which is also abnormal.

Any delay in development should be assessed and reported at once. A check list given below will help you to assess the development in children and detect any developmental delay at the earliest up to two years of age.

Check List for Assessment of Development

Name Parentage Age Sex

Address

Sl. No.	Activities/Developmental Milestones	Yes	No
	0-3 Months		
1)	Gets started by loud sound/bright light.		
2)	Gives smile.		
3)	Fixes eyes on objects and eyes follow moving objects.		
	3-6 Months		
4)	Turns head towards sound and light.		
5)	Holds head steadily.		
6)	Reaches out for objects and grasps them with thumb and first finger.		
	6-9 Months		
7)	Rolls from back to abdomen		
8)	Sits with or without support.		
9)	Combines syllables e.g. dada, baba, mama.		
	9-12 Months		
10)	Crawls on abdomen.		
11)	Stands with or without support.		
12)	Creeps on hands and knees.		
	12-15 Months		
13)	Walks with or without support.		
14)	Feeds self with spoon or drinks with cup.		
15)	Says 2-3 words with meaning.		
	15-24 Months		
17)	Jumps and runs freely.		
15)	Goes up and down the stairs.		
18)	Remains dry during the day.		

Check Your Progress 2

Meera has brought her 6 month-old boy child Ankit to your Well Baby Clinic for assessment of his growth and development as per your advice given at her previous visit.

i) Name the parameter you will use to assess the growth of Ankit.

.....

ii) Assess and record the development of Ankit with the help of check list given above.

Name Parentage Age Sex

Address

15.4 RECORDING OF GROWTH AND DEVELOPMENT

Weight, length/height and body circumferences are recorded in child health records immediately after taking these parameters in subcentre or from diary when taken at home.

15.4.1 Recording Weight

Weight is recorded in growth chart. The growth chart is one of the child health record which is used for longitudinal follow up of a child to interpret changes in weight overtime. What is growth chart, what is its purpose, how it is used, are explained below.

What is Growth Chart

It is a weight for age Chart and also called as Road to Health Chart. It is a graph on which weight is plotted against age. The chart is designed as a means of monitoring and interpreting changes in weight over time (Fig. 15.8).

The chart has vertical and horizontal lines forming columns and boxes. The vertical lines represent age in months whereas horizontal lines represent weight. Each horizontal line represents 1 kg and each dotted line represents $\frac{1}{2}$ kg or 500 gm.

Running diagonally across the chart are the reference curves. The WHO growth chart has 2 curves. These curves facilitate to identify the deviation from normal growth pattern. Children growing normally will follow the curves running parallel to the reference curves.

Ideally the chart should be used from birth. A curve running from point representing the birth weight of a child to the points representing the subsequent periodic weighings (at least every month during the first year, every two months during the second year, every three months thereafter upto five years of age) of that child represents the pattern of growth of the child and is an excellent indicator of its health and nutritional status.

Purposes of Growth Chart

- 1) To monitor the growth of children.
- 2) To detect malnutrition at the earliest.
- 3) To educate the mother and encourage her to participate more actively in growth monitoring.
- 4) To strengthen interaction between health workers and mothers in the child care activities carried out by the health services.
- 5) To stimulate community to participate in activities of health services.

How to Use Growth Chart?

The growth chart is used for plotting the weight and then interpreting the weight curve called growth curve formed by plotting the weight. Let us now learn about plotting the weight on the growth chart and interpreting the growth curve on the growth chart.

Plotting the Weight

The articles and steps of plotting the weight are as under:

Articles

Growth Chart, pen and ruler.

Procedure

You must weigh every child and record weight on growth chart. Identify child's age in months. Take his weight. Mark the weight on chart by putting a dot on a point where the line for child's weight meets the line for child's age. Now if you record the weight of the same child periodically, you will get a number of serial readings regarding his weight. Draw a line to join all these readings. You will get a growth curve (Fig. 15.9).

Name.....

Birth weight.....kg

REASONS FOR SPECIAL CARE

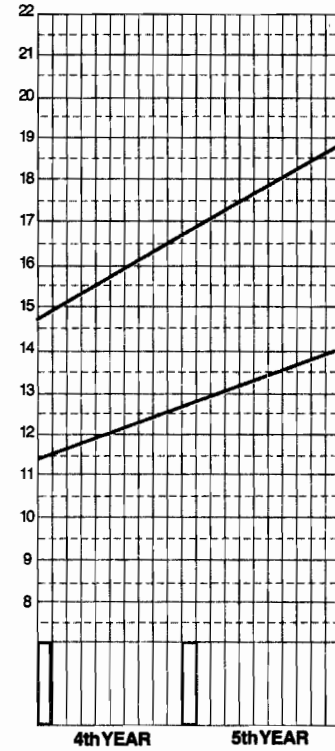
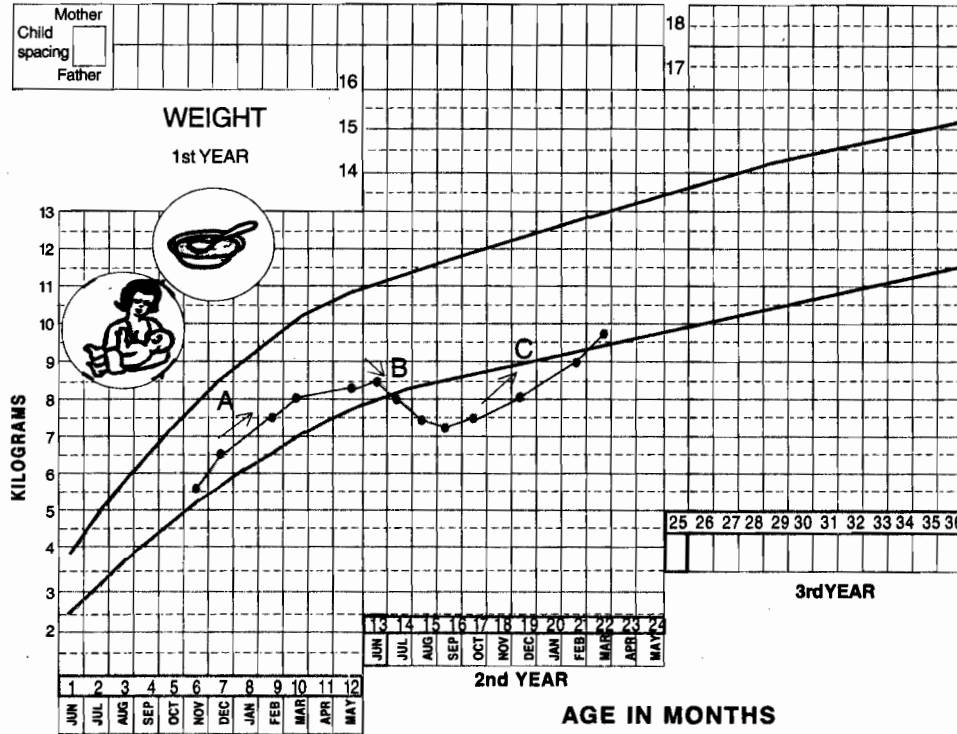


Fig. 15.8: Road to health card

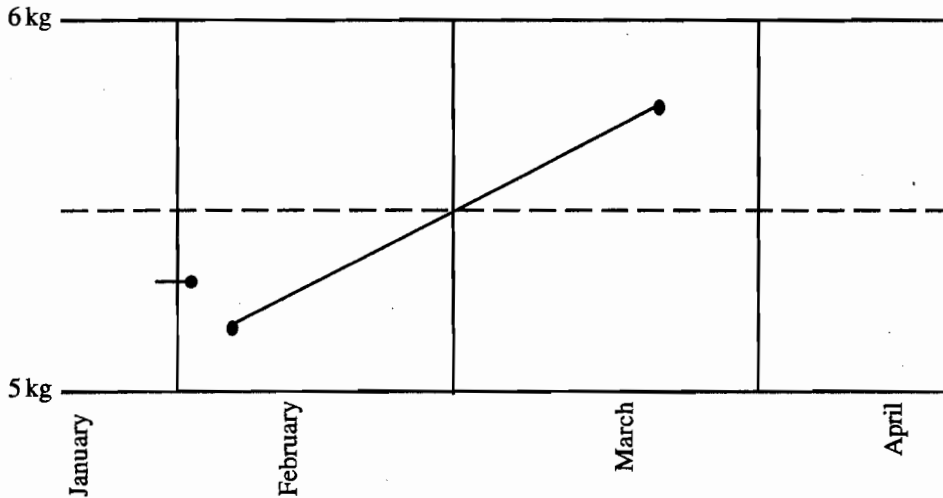


Fig. 15.9: Section of growth chart showing how to place the dots correctly

Interpreting the Growth Chart

The interpretation is made on the basis of direction and position taken by the line/growth curve formed by joining the dots plotted on the growth chart in comparison with the reference curve. The direction of the growth curve helps to know whether the child is growing normally or not. The line/growth curve can take three directions in comparison to a reference curve. i.e. upward, horizontal or downward. The upward curve indicates that the child is growing adequately/normally. The horizontal curve indicates that the child has stopped growing. This is a warning sign. The downward curve indicates that the child is losing weight. This is very dangerous sign and child needs immediate help Fig. 15.11(a)-(c).



Fig. 15.11(a) : Section of growth chart showing upward direction of growth curve—good

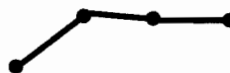


Fig. 15.11(b) : Section of growth chart showing horizontal growth curve—warning sign

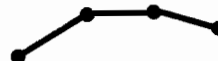


Fig. 15.11(c) : Section of growth chart showing downward direction of growth curve—dangerous sign

The direction of the growth curve also helps to evaluate the effectiveness of corrective measures. For example if growth curve of a child was showing downward direction [Fig. 15.12 (a)] as a result of acute diarrhoea. Oral rehydration and progressive refeeding was advised. When the child is seen one month later, the direction of the curve has changed to a steeply rising one (catch up growth) [Fig. 15.12(b)]. And if the curve has become horizontal [Fig. 15.12(c)], this is a danger sign and indicates that the infection persists or child has not been fed properly after the attack of diarrhoea.



Fig. 15.12(a) : Faltering of growth
— warning sign



Fig. 15.12(b) : Catch-up growth

The position of growth curve in relation to the reference curves on the growth chart is important only in respect of children of different sizes who are growing normally but following their own channels.

If a small child whose growth is following a low channel is active and clinically healthy and its growth curve is running parallel to the reference curve, there is no cause for concern.

If a child whose growth curve is well below the lower reference curve particularly if it is seen to be moving still further away from it, need to be carefully examined because it may be suffering from a congenital defect or chronic condition that is responsible for its small size and significant growth.

15.4.2 Recording Length/Height and Body Circumferences

Record the length/height, head and arm circumferences taken with date in the child health record and compare with the length/height, head and arm circumferences standards of that age to find out whether these are normal or not.

15.4.3 Recording Development

Record the developmental findings in the child health record. If the child is able to perform all the activities for age, it means the development of child is normal. If the child is unable to perform any activity for age, it means there is developmental delay and if the child

performed any activity asymmetrically it means there is some neurological defect. In such cases the child has to be referred immediately to the Pediatrician with a referral note. The referral note must contain the activity for age, the child could not perform or the activity for age is found asymmetrical (abnormal).

Check Your Progress 3

- a) Birth weight of Ankit was 3.2 kg. At the age of 6 months Ankit weighs 6.4 kg. Plot the weight on his growth chart.
- b) Interpret the growth curve formed on Ankit's growth chart above.

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15.5 LET US SUM UP

In this practical you have been acquainted with hanging scale and beam scale methods to take weight. Infantometer, paper marking, measuring tape and measuring scale attached to wall are methods to take length/height and measuring tape method to take head and arm circumferences of children. You have learnt the articles, points to remember and steps of procedure for various methods mentioned above. You have learnt to assess the development of children with the help of check list framed for age, to be performed by children.

At the end you have also learnt to plot the weight on growth chart, record the length/height, body circumferences and development, in the child health record and interpret the growth chart and other child health records to assess the growth and development of children.

15.6 GLOSSARY

- Parameter** : It is a measurable characteristic of something e.g. weight of baby is a measurable characteristic of its growth.
- Sensitive Indicator** : It is a fast changeable characteristic of something e.g. weight is said to be a sensitive indicator of growth since the change in weight is more rapid and is also much more sensitive to any deterioration or improvement in health of a child.

15.7 MODEL ANSWERS

Check Your Progress 1

- i)
 - a)
 - Weight,
 - Length/Height,
 - Head circumference
 - b) Square piece of strong cloth about 75 × 75 cm.
 - c) Check the scale for accuracy and if required balance the scale.
 - d) Paper marking method.
 - e) crown, heel.
 - f)
 - Place the tape end at the centre of forehead in front, then move the tape around the head and over the centre of occipital bone at the back and then to the centre of forehead.
 - Note the measurement.
- ii)
 - a) constant between 6.5 – 7.0 inches / 16-15 cm. from 1-6 years
 - b) to assess growth and nutritional status during surveys.

Check Your Progress 2

i) Weight

Name : Ankit Parentage : Meera Age : 6 months Sex : Male...

Address : XYZ

Sl. No.	Activities/Developmental Milestones	Yes	No
0-3 Months			
1.	Gets startled by loud sound/bright light.	✓	
2.	Gives smile.	✓	
3.	Fixes eyes on objects and eyes follow moving objects.	✓	
3-6 Months			
4.	Turns head towards sound and light.	✓	
5.	Holds head steadily.		✓
6.	Reaches out for objects and grasps them with thumb and first finger.		✓

Check Your Progress 3

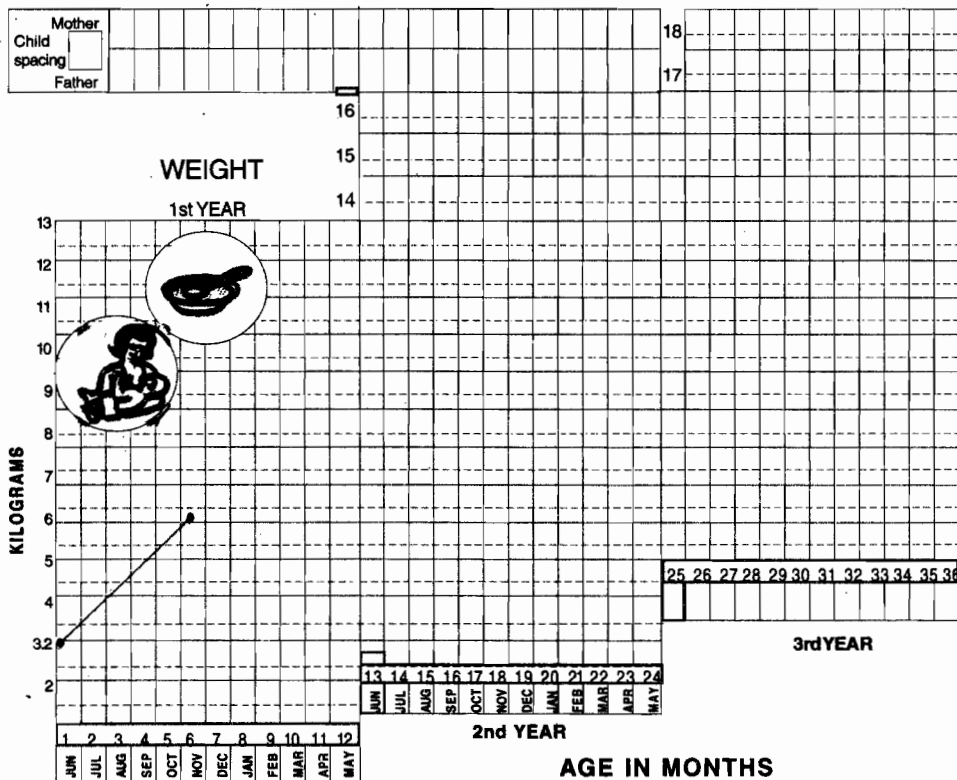
a)

Name..... Ankit

REASONS FOR SPECIAL CARE

Brith weight..... 3.2.....kg

Present weight 6.4 Kg.



b) Ankit's growth curve is moving in upward direction. It is a good sign. Further the position of growth curve is well above the reference curve I. It is also a good sign. The direction as well as the position of growth curve indicates that Ankit is growing adequately/normally and his nutritional status is also good.

15.8 ACTIVITIES

- 1) Make home visits in your health centre area and practice taking weight by hanging scale method, length by paper marking and measuring tape methods and body circumferences by measuring tape method of 10 babies at home, 5 under supervision and 5 by self-practice.
- 2) Practice taking weight of 10 babies brought to your centre by mothers with the help of beam scale, 5 under supervision and 5 by self-practice.
- 3) Practice plotting the weight in the growth charts and recording length and body circumferences.
- 4) Also practice assessing development (with the help of check list), interpreting and recording the findings of 10 children, 5 under supervision and 5 by self-practice.

15.9 FURTHER READINGS

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