NEW WHO CHILD GROWTH STANDARDS

Ques. – Which system of classification was used for growth monitoring in ICDS before introduction of New WHO Child Growth Standards?

Ans. In ICDS, growth monitoring of children (weight-for-age) was done earlier using IAP Classification by modifying Harvard Standards (up to 80 per cent of median is normal; between 80 and 71 per cent is first degree malnutrition i.e. mild; between 70 and 61 per cent is second degree of malnutrition i.e. moderate; and under 60 per cent is third degree malnutrition i.e. severe).

Ques. – Why the IAP standards were replaced with New WHO child Growth Standards for growth monitoring of children in India?

Ans. It was recognised that the use of child growth standards is not consistent across the country, as different child growth reference values and different systems of classification are being used to assess nutritional status of young children.

Comprehensive review showed growth patterns of healthy breastfed infants are different from the existing national/international references. The availability of new child growth Standards and implementation of Eleventh 5-Year Plan provided an opportune moment to review the use of different child growth standards in India, different classifications used, and to analyse different options for updating and harmonising the use of child growth standards in both ICDS and NRHM.

A joint policy directive dated 6 August 2008 was issued by the Secretaries of MWCD and MoHFW, Government of India to the Secretaries of Women and Child Development and Health and Family Welfare of all the States that the new WHO child growth standards would be adopted in India with effect from 15 August 2008 by both ICDS and NRHM.

The new WHO child growth standards represent a shift from describing how children grow – to prescribing how they should grow – how they have a right to grow. They demonstrate for the first time ever that children born in different regions of the world and given the optimum start in life have the potential to grow and develop up to the same range of height and weight for age. The standards show that nutrition, environment and healthcare are stronger factors in determining growth and development than regional or ethnic background.

Details of these three factors are:

<u>Optimal Nutrition</u>

- Exclusive breastfeeding up to six months
- Appropriate complementary feeding

<u>Optimal Environment</u>

- No microbiological contamination
- No smoking

<u>Optimal Health Care</u>

- Immunisation
- Pediatric routines

Ques. - Why are new standards needed?

Ans. Following this review, in 1994, the World Health Assembly (WHA) endorsed the development of a new set of tools to assess infant and young child growth.

The Assembly stressed the need to move beyond past approaches and toward the more desirable goal of describing how all children should grow when their needs are met.

In setting this ambitious goal, WHO and its principal partner, the United Nations University, in collaboration with a number of academic institutions worldwide, undertook the Multicentre Growth Reference Study (MGRS), a community-based, multi-country project to develop new growth standards for infants and young children.

The study involved the recruitment of children who met a number of health criteria in 6 countries representing different regions of the world: Brazil, Ghana, India, Norway, Oman, and the United States. The 8,440 children included in the study were raised in environments that minimized constraints to growth such as poor diets and infection. In addition, their mothers followed health practices such as breastfeeding their children and not smoking during and after pregnancy.

Ques. - Will the standards be applicable to all children?

Ans. The standards describe normal child growth from birth to 5 years under optimal environmental conditions and can be applied to all children everywhere, regardless of ethnicity, socioeconomic status and type of feeding.

Ques. - How different are the new standards from the old growth charts?

Ans. The new standards differ from any existing growth charts in a number of innovative ways. First the MGRS was designed to provide data that describe "how children should grow," by including in the study's selection criteria specific health behaviors that are consistent with current health promotion recommendations (e.g., breastfeeding norms, standard pediatric care, non-smoking requirements).

Another key characteristic of the new standard is that it makes breastfeeding the biological "norm" and establishes the breastfed infant as the normative growth model. The previous reference was based on the growth of artificially-fed children.

The pooled sample from the 6 participating countries will allow the development of a truly international standard (in contrast to the previous international reference based on children from a single country) and reiterate the fact that child populations grow similarly across the world's major regions when their needs for health and care are met.

These standards also include new innovative growth indicators beyond height and weight that are particularly useful for monitoring the increasing epidemic of childhood obesity, such as the skinfold thicknessess.

Ques. - Do these new standards change current estimates of overweight and under-nutrition in children?

Ans. Yes, estimates are going to change because of differences in the pattern of growth between the new standards and the old reference, especially during infancy. The magnitude

of the change in the estimates however will vary by age, sex, growth indicator, and the underlying nutritional status in the population being evaluated.
A notable effect is that stunting (low height for age) will be greater throughout childhood when assessed using the new WHO standards compared to the previous international reference. There will be a substantial increase in underweight rates during the first half of infancy (i.e., 0-6 months) and a decrease thereafter. For wasting (low weight for length/height), the main difference between the new standards and the old reference is during infancy (i.e., up to about 70 cm length) when wasting rates will be substantially higher using the new WHO standards. With respect to overweight, use of the new WHO standards will result in a greater prevalence that will vary by age, sex and nutritional status of the index population.

Ques. - What needs to be done/addressed/changed/improved so that all children grow well according to these standards?
Ans. Breastfeeding should be supported, protected, and promoted. For the first 6 months, mothers need to be informed and empowered to practice exclusive breastfeeding. Children should be provided safe, wholesome, and nutritionally appropriate foods during the period of complementary feeding and after the second year when breastfeeding has ceased. Sound nutritional practices are important throughout childhood. Vaccinations and good health care should be available and accessible to all infants and young children. Families and their communities should do all they can to insure that mothers have a good pregnancy.

Ques. - What Is Growth?
Ans. Growth is the regular increase in size or weight of any living thing, whether it is a plant, an animal, or a human being. Regular and continuous growth is the essence of health in early life of living objects. When a small baby gains weight, grows in height, begins to roll over, sit up and walk, we say that the child is growing. Optimal child growth occurs only with adequate food, a caring, nurturing, social environment and absence of illness, which provides full attention to the growing baby.

Ques.- What is the normal weight gain in children from birth to 3 years?
Ans. - NORMAL WEIGHT GAIN OF CHILDREN FROM BIRTH TO THREE YEARS:

AGE	AVERAGE WEIGHT GAIN PER MONTH IN GRAMS
Birth to 2 months	800
3 months to 4 months	600
5 months to 6 months	400
7 months to 3 years	200

An infant grows rapidly, doubling its birth weight by 5 months and tripling it by 1 year of age. During the second year, the child increases not only in height by 7-8 cm but also gains 4

times of its birth weight. When growth slows or stops, we say growth “falters”. This is a sign that something is wrong with the child and must be discovered at the earliest and set right. Growth Monitoring is done to monitor or measure growth regularly to see whether the child is growing properly. If the child is growing, we say she is healthy. If she is not growing, we must find out why and take action to restore growth. It can be said that “A GROWING CHILD IS A HEALTHY CHILD”, and equally true that, “A CHILD WHO IS NOT GROWING IS NOT HEALTHY”.

Ques. - How to measure growth?
Ans. - Growth of a baby can be observed in many ways: increase in size, height and weight, clothes becoming smaller than they used to be, a string on the waist becoming tighter etc. These all are signs of growth but they cannot tell us if the child is growing well enough for its age.

There are many ways of measuring the growth of a child. The most accurate and sensitive measure of growth is weight gain. By weighing a child regularly, a change of even one to two hundred grams can be observed. This weight change is not visible by any other means of measuring growth. This is why children are weighed regularly to see how much weight they have gained.

Ques. - What is Growth Monitoring?
Ans. Weighing of the child at regular intervals, the plotting of that weight on a graph (called a growth chart) enables one to see changes in weight, and based on these changes in weight, giving advice to the mother is called ‘GROWTH MONITORING’.

Monitoring means keeping a regular track of something, like every week or every month. It must be done at regular intervals. For growth monitoring, it is the change in weight over a period of time which is most important, rather than the weight itself. It should be done more frequently, i.e. once every month, up to age of 3 years and at least once in 3 months, thereafter.

Monitoring the growth of a child every month enables us to see periods of no growth or weight loss even before a child starts appearing thin. This warns us to take early action to ensure that the child grows normally. Taking action on the first sign of growth faltering can easily restore health and proper growth of the child.

Ques. – What is a Growth Curve?
Ans. Each time a child is weighed, the weight is recorded by marking a point on the chart. These points are joined by a line. This line is called a growth curve. If a child is growing and there is regular weight gain, the line will move in an upward direction. Thus, the growth pattern becomes visible to the worker and the mother when the weight is plotted on a growth chart.

When growth falters, i.e. when weight does not increase as expected, the line on the growth chart does not go upward, but stays flat. The line on the growth chart may even go in a downward direction, when a child loses weight.

Ques. – What are the steps of Growth Monitoring?
Ans. - Growth Monitoring involves five steps
Step 1: Determining correct age of the child
Step 2: Accurate weighing of the child
Step 3: Plotting the weight accurately on a growth chart of appropriate gender
Step 4: Interpreting the direction of the growth curve and recognising if the child is growing properly
Step 5: Discussing the child's growth and follow-up action needed, with the mother

Ques. - When to start growth monitoring and how often?
Ans. Growth Monitoring must start at an early age in the child's life, right from birth. The Anganwadi Worker (AWW) must explain to the caretaker, and other family members in the house, importance of weighing a new born baby preferably, same day of birth.

Ques. – Why is it important to start growth monitoring of children right from the time of birth?
Ans. It is well documented that growth of children is most rapid from birth to 3 years, particularly in the first six months. During this period, children are also more vulnerable to diseases and inadequate nutrition which may affect normal growth pattern. It is, therefore, essential to monitor growth of children in this age more frequently. The AWW should weigh all new-borns and children from birth-1 month, weekly; one month- 3 years every month and 3-5 years at every three months.

However, children who are severely underweight, or who have not gained weight for 2 months, or who are "at risk" of under nutrition, should be weighed frequently preferably every month.

However, keeping in view the golden principle of New WHO Growth Standards i.e. weighing and plotting weight of children on the basis of completed weeks/months, it is advisable to conduct four weighing sessions in a month at the AWC so that all children are weighed every month. Those children who do not attend AWC should also be motivated to attend the weighing sessions.

Ques. – How many times does the AWW conducts monitoring sessions in a month?
Ans. - keeping in view the number of children to be weighed, time required for weighing a child, daily workload/ activities of AWW and need for weighing and plotting weight on completed month, it is suggested that there should be four weighing sessions per month at every AWC.

Day of weighing of each child should be determined keeping in view her/his date of birth in order to ensure that every child is weighed on completed month. It may not be feasible to weigh every child on her/his completed month. However, efforts should be made to fix the days of weekly weighing in such a way so that maximum number of children who complete and those who have already completed their months are accommodated on that day for proper growth monitoring.

It is also required that apart from frequent weighing of severely underweight children by AWW, measures for rehabilitation and management of the severely underweight children should be taken on monthly Village Nutrition and Health Day by Health Officials.

Ques. - Why is it important to determine the correct age of the child before growth monitoring?

Ans. In the Integrated Child Development Scheme (ICDS) programme, growth monitoring is done by weight for age method comparing the weight of the child with his age. Therefore, the first step in growth monitoring is to know the correct age of the child up to nearest month. If the child's age is not known correctly, it is not possible to assess the growth of the child and have an accurate growth chart.

An under or over estimate of even two or three months could result in the child being considered either healthy or undernourished than what he actually is. Therefore, knowing the correct age of the child is necessary to do accurate growth monitoring.

Ques. – How to determine the correct age of the child?

Ans. The AWW should be aware of all the births taking place in her area. She can do this by keeping in constant contact with the pregnant women, who are her beneficiaries in the last trimester. She should note down the date of birth of a child as soon as the woman delivers the baby. Keeping in touch with the local trained birth attendant (TBA) can also help her in knowing the births of new babies. The AWW should immediately record the date of birth (day, month and year) of the child in her register. She should also start monitoring the growth of these children.

However, if the mother comes to her present place of residence a few months or years after the child's birth, she may not remember the month of birth of the child. For these children, the AWW can consult the local official register of births with the village panchayat, and or hospital card (in case of urban projects or rural projects close to city). Keeping in view implementation of Janani Suraksha Yojana (JSY), number of institutional deliveries has been increased in our country. Therefore, date of birth in case of large number of children would be available with the health centre. If, however, there are no such records of births in a given area, AWWs can assess the age of a child:

- with the help of Mother and Child Protection Card (MCPC)
- with the help of birth certificate

Ques. – What should be done if the date of birth of the child is unknown to the mother/family?

Ans. If there are no records of births in a given area, AWWs can assess the age of a child:

- From the mother, if she remembers the exact date of birth
- Using a local events calendar.

<u>The following questions may be put to the mother:</u>

"Was it the summer, rainy season or winter when the child was born?"

If the mother lives in a rural area, you may enquire about the agricultural operation that took place at the time of her child's birth, or the celebration of a festival. "Was it the kharif season or rabi season?"

Which crops were being grown at that time"
"Did any special event (election, nautanki, visit of a politician, a wedding etc.) took place soon before or after birth?
"Was any crop being harvested at that time?"
"Was the child born soon before or after the birth of a child whose date of birth is known?"
"Was any festival celebrated days before or after the birth?"
These are examples of some of the questions she may ask to the mother. After getting a rough idea of the child's birth month, to pinpoint the correct birth month of the child, a local events calendar, listing local festivals, can be helpful.

Ques. – What is a Local Events Calendar?
Ans. A local events calendar indicates all the dates on which important events took place during the past five years and can be used as a tool to correctly estimate the birth date of the child.

Such a calendar should show the following:
a) the different seasons – summer, monsoon, autumn, winter and spring;
b) important events in the agricultural cycle of the area, such as sowing and harvesting of rabi crops (wheat, barley, sarson) and kharif crops (jawar, bajra, maize) and the other crops;
c) names of months – both Indian (Chaitra, Baisakhi, etc.) and Western (January, February etc.);
d) local festivals, such as Lohri, Baisakhi, Ram Navmi, Idul Fitar, etc.;
e) phases of the moon, such as full moon (Poornima), new moon (Amavas), Ekadshi, etc.;
f) national festivals, such as Republic Day, Independence Day, etc.; and
g) other events of importance like general elections, panchayat elections, municipal elections, drought, floods or cyclones in the area, visits of very important persons etc.
This calendar is by definition 'local' in nature and will vary from locality to locality. Therefore, the AWW should make a calendar of local events for the last five years for her area. An example of such a local events calendar is given below:

After questioning the mother regarding the season, crop harvest, events, festivals, etc. which occurred soon before or after the birth of the child, the AWW should look up the local events calendar to find out the exact birth month.

Ques. - How weighing of infants and children is carried out?
Ans. Accurate weighing of children is the second step in growth monitoring.
Regular weighing of the child is necessary for monitoring her/his growth. The two types of scales being used in ICDS for weighing children are the 'Bar scale' and the 'Salter or Dial type scale'.

Ques. – How weighing is carried out using Salter weighing scale?
Ans. The Salter Weighing Scale is a reliable, light and portable scale, which can weigh children upto 25 kg. The Salter scale is round in shape, with the needle in the centre.

Weights are marked in kilograms around the dial. There are two variations of the Salter scale. One type has only 500 gm markings between kilograms, and the other has 100 gm as well as 500 gm markings between kilograms. Salter scale with only 500 gm divisions is not used now-a-days. The Scale has a screw on top to make the zero adjustment so that the needle points to zero before the child is weighed.

The scale has two hooks. One on the top is used to hang the scale on a beam or branch of a tree with a rope. The other one is below the dial and is used to hang the sling or pants in which the child is placed for weighing.

Long line markings on the Salter Scale indicates = Kilogram
Medium line indicates 500 gm
Short line indicates 100 gm

Ques. – What are the steps in weighing the child using Salter scale?

Ans. Place the upper hook through the hole at the top of the scale.

• Put a rope through the upper hook of the scale and hang it from a beam or branch of a tree by tying the rope securely.
• Make sure the dial is at eye level so that the weight is read correctly, and not too high from the ground, to avoid injury to the child in case of accidental fall.
• Be sure there is room for the scale to hang freely.
• Pull down on the scale to make sure it is secure.
• Place the lower hook on the bottom of the scale.

For adjusting the needle:

• Place the pants on the lower hook
• Then adjust the needle to zero (‘0’) the screw at the top of the scale in clock wise or anti clock wise direction
• Place the infant sling on the lower hook
• Then adjust the needle to zero (‘0’) by turning in clock wise or anti clock wise direction

For putting the child in the pants:

• Remove the pants from the hook
• Carefully place the child in the pants
• Ask the child to hold the straps for support
• Make sure the straps are in front of the Child’s arms

Hold the child securely under the pants and place the strap of the pants on to the lower hook

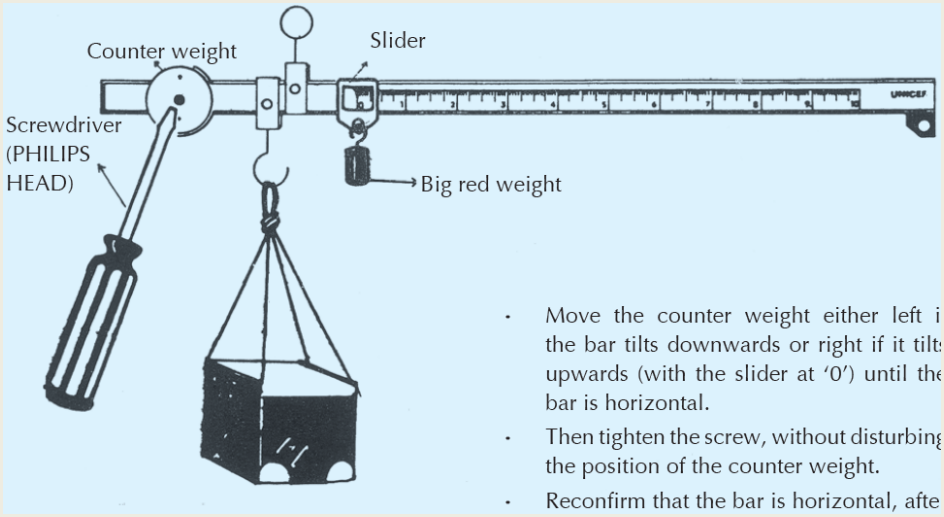
• Make sure the child’s feet are not touching the ground and the child is not holding on to anything, other than straps of the sling
• No one should touch the child while the weight is being read
• Ask the mother to stand close by and talk to the child to prevent crying
• Read the weight when the child is calm and the needle stops moving

• Read the weight exactly opposite the scale; Do not read the weight from the sides

Ques. – How weighing is carried out using Bar weighing scale?
Ans. The Bar Scale is a light metal scale. It is reliable, sensitive and portable and can weigh children up to 20 kilograms.

The Bar Scale has two hooks. The upper hook is used to hang the scale from a beam or a branch of a tree, and the lower hook is used to hang a basket or sling in which the child is placed for weighing.
The Bar Scale is graduated from 0-10 kilograms. There are two types of Bar Scale. In one type of scale, each kilogram is divided into 100 grams divisions and in the other type, each kilogram is divided into 50 grams division.

Two weights are used with the Bar Scale. The big red weight is always used while weighing children and is attached to the movable slider which has a needle, pointing to reading.



The smaller blue weight is only used for children who weigh more than 10 kg. It is attached to the fixed bracket on the right end side of the scale. The left end of the scale is a counterweight with a screw in the centre. This is used for balancing the scale if the scale is not horizontal when the basket or sling is on the lower hook, and the slider is set at zero.

For **hanging the bar scale:**
• Put a rope through the upper hook of the scale.
• Hang the scale from a beam or branch of a tree by tying the rope securely.
• Be sure there is room for the scale to hang freely.
• Pull down on the scale to make sure it is secure.
• The scale should be hung at eye level.

For balancing the bar scale:
• Place the basket or infant sling

• Hold the end of the bar scale and place the big red weight on the slider.
• Gently slide the slider to the '0' mark and release the end of the bar.
• If the scale is balanced the bar will be horizontal to the floor.
• If the scale is not balanced, the bar will be tilting upwards or downwards when the Slider is at '0'.
• Remember the basket or sling must be on the hook while balancing the scale.

If the bar is not horizontal or balanced when the slider is at the 'O' mark, use the screw driver to loosen the big screw in the centre of the counterweight.

• Move the counter weight either left if the bar tilts downwards or right if it tilts upwards (with the slider at '0') until the bar is horizontal.
• Then tighten the screw, without disturbing the position of the counter weight.
• Reconfirm that the bar is horizontal, after the screw is tightened.

For putting the child in the basket:

- Take the basket off the scale.
- Involve the mother in the weighing of her child.
- Help the mother place the child in the basket.
- Hold the child securely under the seat and lift towards the scale placing the strap on the hook.
- Hold the bar securely so it does not move and injure the child.

For weighing a child:

• Use your left hand to move the slider (with the big red weight on it) until the bar is balanced, and is horizontal to the floor.
• Be careful the bar does not fall and injure the child.
• Now remove your hands and read the child's weight.

WEIGHING AN INFANT

• If you use an infant sling, make sure the scale is balanced at the '0' mark, with the infant sling on the hook
• Place the infant in the sling and proceed to weigh the child

Ques. – What should be done in case the child weighs more than 10 kgs using a Bar Scale?

Ans. • The child weighs more than 10 kg if the bar tilts upwards, when the slider and big red weight is moved beyond 10 kg
• Place the small blue weight on the bracket at the end of the bar scale.
• Repeat the steps for weighing a child.
• To read the child's weight read the number indicated by the needle on the slider and add 10 kg to it.
• To remove the child, move the slider back to zero,
• Hold the end of the bar and have the mother take the basket off the hook,
• Then take the child out of the basket.

Ques. – What is the Taring weighing scale (digital scale)?

Ans. "Tared weighing" means that the scale can be re-set to zero ("tared") with the person (mother) just weighed still on it. Thus, a mother can stand on the scale, be weighed, and the scale tared.
While remaining on the scale, if she is given her child to hold, the child's weight alone appears on the scale.

Tared weighing has two clear advantages:
• There is no need to subtract weights to determine the child's weight alone (reducing the risk of error).
• The child is likely to remain calm when held in the mother's arms while being weighed.
• A taring scale is easy to use, and reliable.

There are many types of scales currently in use. The UNISCALE (made by UNICEF) has the recommended features listed above and is used to demonstrate weighing techniques.
It is powered by a lithium battery that is good for a million measurement sessions.
The scale has a solar on-switch, and hence it requires adequate lighting to function. It may have footprints mark on the scale to show where a person should stand. This section will describe how to weigh a child using the UNISCALE or a similar model

There are other type of scales that may be reliable, for example, an electronic baby scale, or a paediatric beam balance that has been calibrated. Children who can stand alone can be weighed directly by making them stand on the platform of the taring scale. Otherwise, the mother can be weighed first; then the mother and child are weighed together and the mother's weight subtracted from the later to determine the child's weight.

Bathroom scales should not be used as most often they are inaccurate and hence unreliable. Hanging scales are also not reliable when weighing agitated babies.

Ques. – What are the steps in weighing the child using the digital weighing scale?
Ans. (a) If the child is less than 2 years old or is unable to stand, you do tared weighing.

• Place the balance on a firm flat ground in adequate light. Pass the finger/foot on the solar panel gently so that the balance gets activated and '0' appears on the screen. Since the scale is solar powered, there must be enough light to operate the scale.

• The mother will remove her shoes and step on the scale to be weighed alone first.
• After the mother's weight appears on the display, tell her to remain still on the scale. Re-set the reading to zero by covering the solar panel of the scale (thus blocking out the light).
• Then pass the child to mother to hold.
• Babies should be weighed with minimum clothes.
• The child's weight will appear on the scale. Be careful to read the number in the correct order (as though you were viewing while standing on the scale rather than upside-down).
• Record the child's weight.

(b) If the child is 2 years or older and can stand still on the scale without support the weighing can be done directly. Ensure that the child steps on the scale alone and stands still.

• Ensure that the mother removes outer clothing of the child in order to obtain an accurate weight since wearable like wet diaper, or shoes and jeans, can weigh more than 0.5 kg. Wrap very young children in a blanket/towel to keep them warm until weighing is done.
Older children should remove all but wear minimal clothing, such as their underclothes.
• If it is too cold to undress a child, or if the child resists being undressed and becomes agitated, one may weigh the clothed child, but note in the *Growth Record* that the child was clothed. It is important to avoid upsetting the child so that the length/height measurements can also be taken if needed. If it is socially unacceptable to undress the child, remove as much of the clothing as possible.
• To turn on the scale, cover the solar panel for a second. When the number 0.0 appears, the scale is ready.
• Ask the child to stand in the middle of the scale, feet slightly apart (on the footprints, if marked), and to remain still until the weight appears on the display.
• Record the child's weight to the nearest 0.1 kg.

***REMEMBER*:**
IF A MOTHER IS VERY HEAVY (MORE THAN 100 KG) AND THE BABY'S WEIGHT IS RELATIVELY LOW (LESS THAN 2.5 KG), THE BABY'S WEIGHT MAY NOT REGISTER ON THE SCALE. IN SUCH CASES, HAVE A LIGHTER PERSON HOLD THE BABY ON THE SCALE.

IF THE CHILD KEEPS JUMPING ON THE SCALE OR WILL NOT STAND STABLE, YOU WILL INSTEAD NEED TO USE THE TARED WEIGHING PROCEDURE.

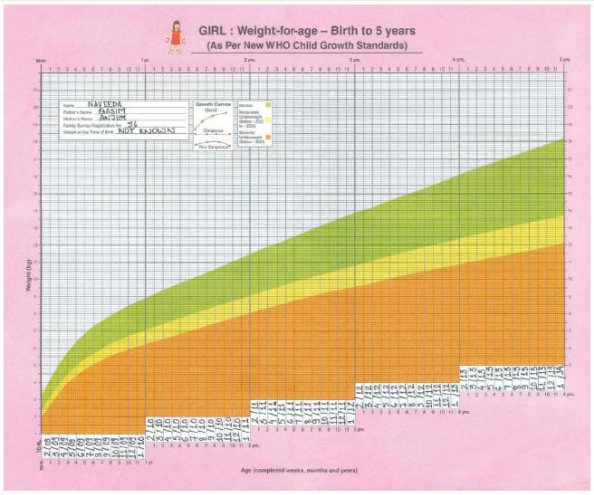
REMEMBER:
To weigh a child in Salter scale
• Hang the scale securely. The scale should not touch a wall or doorway.
• Scale should be at the worker's eye level.
• Adjust the scale to zero with the basket, pants or sling on the lower hook, at the beginning of each weighing session.
• Take the child's weight with the minimum of clothing, without shoes.
• Read the weight to the nearest 100 gm
• Check the accuracy of the Salter (dial) weighing scale every month with a standard weight
(5 kg weight is recommended). You can borrow a standard weight from a shopkeeper in your village, for the purpose.

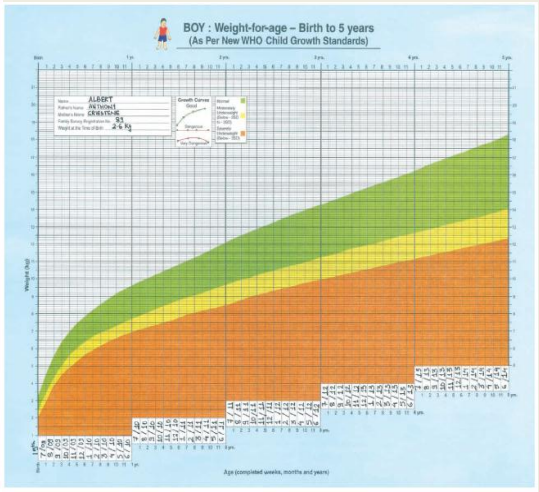
Ques. - What is a growth chart?

Ans. Growth chart is a tool for assessing and monitoring the growth of a child.

It is used for recording the weight of children as per their age up to 5 years. The chart contains weight-for-age growth charts based on new WHO Child Growth Standards. Growth monitoring chart register is a part of the Mother & Child Protection (MCP) Card Package, which also includes a Mother & Child Protection Card and a Guide Book.

As per the new Standards, there are separate growth charts for girls and boys, as they have different weights and lengths beginning at birth and grow to different sizes related to their age.





Ques. – What does direction of the growth curve reflects the growth in children?

Ans. A growth curve is formed by joining the plotted points on a growth chart. Direction of the growth curve indicates whether the child is growing or not and is more important than the actual weight of the child at a given point of weighing.

On each growth chart, there are 3 printed growth curves. These are called Reference Lines or Z Score Lines and are used to compare and interpret the growth pattern of the child and assess her/his nutritional status.

The 1st top curve line on the growth chart i.e upper border of green band is the median which is, generally speaking, the average.

Second line is the junction of green and yellow bands

3rd line is the junction of yellow and orange bands.

Weight of all normal and healthy children, when plotted on the growth chart, fall above 2nd curve (green band); weight of moderately underweight children fall below the 2nd curve to 3rd curve (yellow band); and weight of severely underweight children fall below the 3rd curve (orange band).

Ques. – How growth monitoring with the use of growth charts useful to the ICDS functionaries?

Ans. Growth monitoring and promotion of young children is an important responsibility of an AWW. Growth monitoring means keeping a regular track of the growth and

development of the child with the help of key nutrition indicators related to their age like weight or height. Plotting the child's weight, taken every month or quarter, on the growth chart and joining these weight points with a line to form the growth curve, makes the growth of the child visible.

The growth curve is a useful tool in many ways and enables AWW/Supervisor/CDPO/ANM/MO to:

• Detect early growth faltering and prevent underweight;

• Identify underweight children who need special care and feeding at home, in addition to supplementary nutrition received at the AWC;

• Identify severely underweight children who need special care and feeding at home and to provide referral advice, in addition to Micronutrient-fortified food/Energy-dense food supplementation at the AWC;

• Identify causes of weight loss or lack of growth i.e., illnesses such as fever, diarrhoea and acute respiratory infection; inadequate or insufficient diet; mother's illness; etc., and take corrective and timely action; and

• Educate, counsel and support mothers and families for optimal nutrition, health care and development of their children.

Ques. – What are the Equipment and tools required for growth monitoring?

Ans. Equipment and tools required for growth monitoring are weighing scale, Mother & Child Protection Card and Growth Monitoring Chart Register.

Ques. – How does the new WHO growth chart look like?

Ans. The new WHO growth chart used in the ICDS programme are pink and blue in colour for girls and boys respectively. On the extreme top left of the chart a box has been given where the child's name, father's and mother's name, family survey register number and weight at the time of birth are to be filled.

Each growth chart has two axes. The **horizontal line** at the bottom of the chart is the X Axis. This is for recording the age of the child for five years and is called **'month axis'**. The **vertical line** at the far left of the chart is the Y Axes. This is for recording the weight of the child from birth onwards and is called '**weight axis**". The horizontal lines from bottom to top of the growth chart reflect the weights from 0 to 21 kg at 100 gm interval.

The vertical lines from left to right of the chart reflect age from 0 to 5 years at one month interval. Look at the vertical line on the extreme left of the growth chart. Along this line are weights written in kilograms, 1, 2, 3… 21 kg. The bold line in between the kilograms indicates 500 grams and the thin line 100 grams. At the bottom of the growth chart are five steps, each of which represents one year in the child's life. Each step has been further subdivided into boxes to write the twelve months of the year. The first box on the extreme left has a thick dark outline. This is for the birth month and year of the child.

Ques. – What does the month axis (horizontal axis) denotes on the growth chart?

Ans. The month axis on the growth chart has five steps representing 1-5 years. Each box contains 12 small squares representing 1-12 months i.e. each small square represents 1 month. On the whole, 'month axis' of each growth chart has 60 squares and can be used for a child up to 5 years or 60 months.

Age is recorded in completed weeks/months/ years. It is recorded in completed weeks only for a child below 1 month. Small lines dividing the first month into four weeks has been drawn in the first square which need to be drawn upward while plotting weight depending on the completed week and weight of the child.

Ques. - What does the weight axis (vertical axis) denotes on the growth chart?
Ans. On the weight axis, lines are marked for recording weight in kilograms and grams. Each thick extended line represents 1 kg each line extended from a small square represents 500 grams and the very thin lines represent 100 grams. White rectangles below the 'month axis' are for writing month and years as per the date of birth of the child. On each visit, weight of the child taken is plotted, corresponding to the relevant rectangle.

Ques. – What are the steps of filling up the growth chart?
Ans. In the ICDS programme, the growth charts (Pink and Blue) have been provided in the form of a register which has an index at the end of the growth chart register. Pink growth charts are to be used for girls and the blue ones for boys.

Described below are steps in filling up a growth chart.

a. Filling up the index of growth charts
In the index of the growth chart register (as mentioned below), write down the name of the child and other relevant information such as Serial No, Name of the Child, Date, Month and Year of Birth D/M/Y, Birth Registration No. Father's Name, Mother's Name, Family Survey Registration No, and Page No. of Growth Chart in GM Register.

Index of Growth Charts							
Serial No	Name of the Child	Date, Month and Year of Birth D/M/Y	Birth Registration No.	Father's Name	Mother's Name	Family Survey Registration No	Page No. of Growth Chart in GM Register

Now, turn to an empty growth chart, and choose appropriate growth chart (Pink or Blue) according to sex of the child.

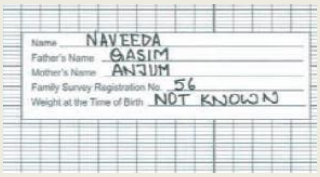
b. Filling up the information box
Choose appropriate growth chart according to the gender of the child Write down the required information in the information box on the growth chart i.e name of the child, father's name, mother's name, family survey registration number and weight at the time of birth.

c. Filling up the month and year column
Write the month and year during which the child was born in the first white rectangle at the bottom of the first column from the left hand side. In the subsequent boxes, you will write the month and year in sequence i.e. March 2009 (3/09), April 2009 (4/09) and May 2009 (5/09), until you reach the last small box in which you will write January 2014 (1/14).

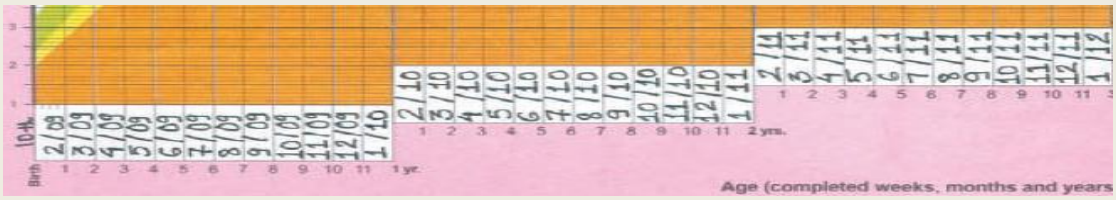
THE CHILD'S BIRTH MONTH AND YEAR WILL BE WRITTEN IN THE FIRST THICKLY OUTLINED BOX AND DATE OF BIRTH ON THE MARGIN.

Ques. – What are the steps for plotting weight on the growth chart?
Ans. Following are the steps for plotting weight on the growth chart:

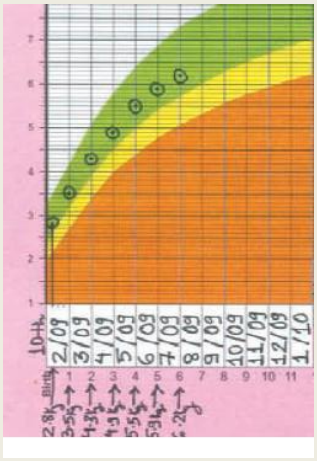
• Use pink border chart for girls and blue border chart for boys.
• Fill up the 'Information Box' on the left hand side of each Growth Chart before using it
• Do the plotting with help of a HB pencil.
• Write the month and year during which the child was born in the first white rectangle at the bottom of the first column from the left hand side



In the subsequent boxes, you will write the month and year in sequence i.e. March 2009 (3/09), April 2009 (4/09) and May 2009 (5/09), until you reach the last small box in which you will write January 2014 [Picture 4.2 (a)]. Plotting for 60th month i.e. February 2014 will be done on the last bold vertical lire.

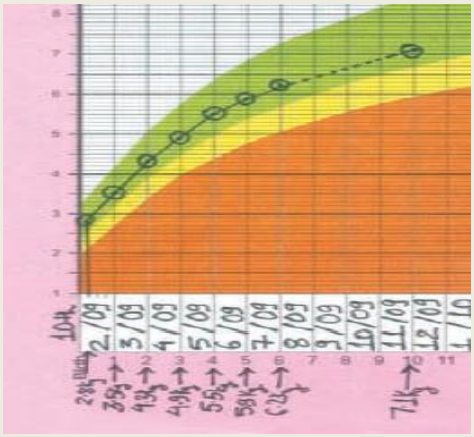


• Identify the 'month box', which identifies the present age of the child in completed weeks or months.
• Plotting has to be made at the junction of vertical line (not between vertical lines) of the identified 'month box', and line corresponding to weight.
• Plotting has to be done on the lines for completed weeks/months. Weekly plotting will be restricted to only initial 1st month from the birth and thereafter plotting will be done on completed months.



For example, when Naveeda was weighed on 9th day her weight was plotted on the 1st week line and not between the lines for 2nd and 3rd weeks.
Similarly, when she was weighed at 6½ months old, weight of Naveeda was plotted on the line for completed months i.e. 6 months and not between the lines for 6 and 7 months.

Ques. – How to calculate days for determining completed week?
Ans. While calculating days in order to determine completed week, the day of birth of the child and the day of weighing should be included for example the age of Naveeda born on 10-09-2009 and weighed on 18-09-2010 is 9 days and thus completing a week.

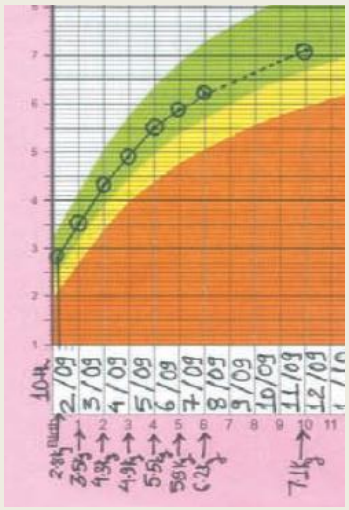


Similarly, in order to determine completed month, an easy way may be adopted for example; a child like Naveeda who has born on 10th September would complete her months on 9th of every month.

In case of a child born on 29th, 30th, 31st January would complete her 1st month on the last day of February (Picture 4.3) and 2nd month would be completed one day before the date of birth i.e. 28, 29 and 30 respectively and calculation of the completed months will be done in the preceding months accordingly. The child born on
1st of any month would complete her month on the last day of respective month and so on during all the years.

• For plotting on completed weeks, small lines drawn in the birth month need to be followed/extended upward vertically (Picture 4.3) till the plotting of actual weight of the child.

• Identify the horizontal line which indicates the present weight of the child to the nearest 0.1 kg e.g. 6.2 kg.
• Follow this horizontal line on the 'weight axis' towards right to the point where it intersects with the line which is extended from the vertical line from the 'month box' indicating the present age of the child.
• Write the weight taken to the nearest 100 grams below the 'month box', which indicates the present age of the child.
• Put a dot on the line where the two lines intersect. Draw a circle around the dot, so as to know the position of the plotted point for weight-for-age.
• Do not plot any point in the space between the two vertical lines on a Growth Chart.
• Record weight-for-age of the child by plotting a point on the Growth Chart, each time she/he is weighed.
• Connect the points plotted for two or more months/weight, with a straight line to see form the Growth Curve and observe trends



• Whenever there is a gap in monthly weighing or no information available about weight then that gap in growth chart needs to be joined with a dotted line

Ques. – What is a growth curve?
Ans. When weight points plotted at different intervals are joined with a line, a Growth Curve is formed. Depending on the pattern of monthly growth of a child, the direction of the growth curve may be upward, flat or downward. An upward growth curve indicates that the child is healthy, gaining weight and is growing. However, it is not only an upward curve which is important, but also a healthy upward curve, as a result of adequate weight gain each month. Whenever the weight gain is not sufficient as per the age of the child, then the growth curve is either flat or downward.

Ques. – How to interpret the growth curve?

Ans. After plotting weight and joining dots (points) on the growth chart to form a growth curve, interpreting or reading the growth curve is the fourth step in growth monitoring.

STEPS IN INTERPRETATION OF GROWTH CURVE

• Note the position of the plotted point with reference to printed Growth Curves.
• Interpret the position of the plotted points to identify normal growth or growth problems.
• If plotted weight of a child falls much above the 1st curve, the child has a growth problem, which can be overweight or obesity. This is better assessed from other indicators. Refer the child to the health centre.
• If plotted weight-for-age of a child falls exactly on the 1st or 2nd or 3rd printed growth curve line, then the child is in the less severe category of under-weight e.g. plotted point on the 2nd curve line indicates that the child's growth is normal, where as plotted point below the 2nd curve line indicates that the child is moderately underweight. Similarly, plotted point on the 3rd curve line indicates that the child is moderately underweight and not severely underweight, whereas plotted point below the 3rd curve line indicates that the child is severely underweight.
• If plotted weight-for-age of a child falls on the green band, then the child's growth is normal; if it falls on the yellow band, child is moderately underweight, and if the plotted weight is on the orange band, the child is severely underweight.
• Assess the nutritional status of the child as per the plotted weight-for-age, as given in the box below.

Position of the Plotted Point	Nutritional Status
Plotted point is	
Exactly on or just above the Ist curve(or)	
Between the 1st & 2nd curve	Child's growth is normal
Exactly on the 2nd curve	
Plotted point is:	
Between 2nd & 3rd curve	
Exactly on the 3rd curve	Child is moderately underweight
Plotted point is below the 3rd curve	Child is severely underweight

Ques. – What does the direction of child's growth curve shows?

Ans. Direction of the growth curve helps in determining the growth pattern of a child. It is very important to consider the child's whole situation while assessing the growth pattern. Interpreting trends on the growth chart or the growth pattern will indicate whether a child is growing normally, has a growth problem, or is at risk of a growth problem.

- The growth curve of a normally growing child usually follows a track that is roughly parallel to the 1ST or 2nd printed curve lines. The track may be below the 1st curve line or above the 1ST or 2nd curve line.
- Note the direction of the growth curve of the child, which can be upward, flat or downward

• If the growth curve of a child is moving upward, it is considered good.
• If the growth curve of a child is flat, it is considered dangerous.
• If the growth curve of a child is moving downward, it is considered very dangerous.

PICTURE 5.10 DIRECTION OF GROWTH CURVE

Direction of Growth Curves	Growth Pattern
Upward Growth Curve	**Good** Indicates adequate weight gain for the age of the child. The child is growing well and is healthy.
Flat Growth Curve	**Dangerous** Indicates that the child has not gained weight and is not growing adequately. This is called stagnation. The child needs attention by the mother and the AWW. This needs to be investigated.
Downward Growth Curve	**Very dangerous** Indicates loss of weight. The child requires immediate referral and health care.

Ques. – How to interpret growth curves of children with clinical signs of kwashiorkor and marasmus?

Ans. - Observe the child and note clinical signs. It may be mentioned that weight of children with clinical signs would be plotted and indicated clearly on the growth chart (close to the plotted point) about child's clinical sign.

If a child is **severely underweight**, clinical signs of **marasmus** or **kwashiorkor** may be observed. It is important to recognise signs of marasmus and kwashiorkor since they require urgent specialized care that may include special feeding, careful monitoring, medicines, etc. Regardless of their weight, children with these syndromes should be referred for urgent medical care.

Ques. – What are the clinical signs of Marasmus?

Ans. Marasmus is also known as non-oedematous malnutrition. In this form of severe underweight, the child is extremely wasted and has the appearance of skinny and bony structure due to loss of muscle and fatty tissue. The child's face looks like an old man's following loss of facial subcutaneous fat, but the eyes may be alert. The rib markings can be easily seen. There will be folds of skin on the buttocks and thighs that make it look as if the child is wearing baggy pants

Weight-for-age is likely to be very low

Ques. – What are the clinical signs of Kwashiorkor?

Ans. Kwashiorkar is also known as oedematous malnutrition. In this form of severe underweight, the child's muscles are wasted, but the wasting may not be apparent due to generalised oedema (swelling from excess fluid in the tissues), a cardinal sign. The child is withdrawn, irritable, sick and will not eat. The face is round (because of oedema) and the

hair is thin, sparse and sometimes discoloured. The skin has symmetrical discoloured patches where the skin later cracks and peels off. A child with kwashiorkor will usually be underweight, but the oedema may mask the true weight.

Ques. – What are the clinical signs of Marasmic Kwashiorkor*?*
Ans. A condition where a marasmic child is having oedema is called as marasmic kwashiorkor. The child's upper body is wasted, but the lower limbs are swollen with oedema. If an undernourished child has oedema, he must be a kwashiorkor (or) marasmic kwashiorkor child. Oedema of both feet is a sign that a child needs referral. If the swelling is in only one foot, it may just be a sore or infected foot.

Ques. – What is the procedure to check for oedema in kwashiorkor (or) marasmic kwashiorkor child**?**
Ans. To check for oedema, grasp the foot so that it rests in your hand with your thumb on top of the foot. Press your thumb gently for a few seconds. The child has oedema if a pit (dent) remains in the foot when you lift your thumb. A child with oedema of both feet is automatically considered severely underweight, regardless of what the scale shows. The weight will be more due to fluid retention. Plot this child's weight-for-age, but mark clearly on the growth chart (close to the plotted point) that the child has oedema. This child is automatically considered severely underweight and should be referred to health centre.

Ques. - How growth problems or risk can be interpreted from the child's growth curve?
Ans. i) Child's growth curve is far above the first curve line
Child may have a growth problem. This is better assessed from other nutrition indicators at the health centre. However, it may be mentioned that a tentative principle has been followed to understand the growth curve above the green band that is a hypothetical line dividing green band into two equal parts may be drawn and one of the two equal parts may be pasted above the green band and the children whose plotting falls between this hypothetical line and the real green zone need not to be referred to health centre. However, children whose plotting falls above the hypothetical line actually have growth problem and need to be referred to health centre.

ii) Child's growth curve is far below the third curve line
Child may be severely underweight and she/he needs urgent specialised medical care.

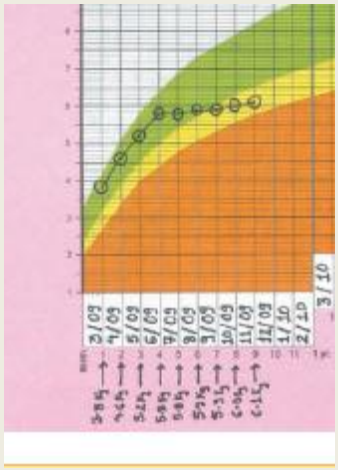
iii) Any quick change or sharp incline or decline in the child's growth curve
When child's growth curve goes upward or downward from its normal track, this needs to be investigated to determine the cause and remedy of the problem.

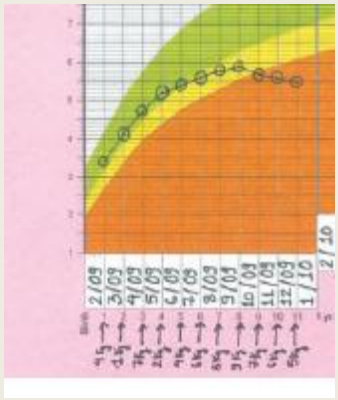
iv) Child's growth curve crosses a printed curve line
If a child's growth curve crosses a printed curve – either from above or below, it means there has been a significant change in the child's growth. This may indicate a good change or risk. An AWW can interpret it based on from where (relative to the 1st curve line) the change in the curve began and the rate of change as given below:
• If the shift is towards the 1st curve (green), this is probably a good change.
• If the child's growth curve line stays close to the 1st curve, occasionally crossing above and below it, this is fine.

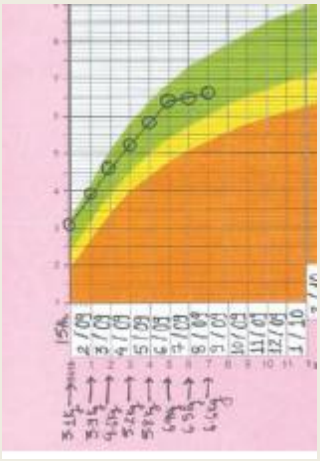
• If the shift is towards 2nd curve (yellow) or 3rd curve (orange) this indicates a problem or risk of a problem. If it is noticed on time, it may be possible to intervene early and prevent a problem.

v) Child's growth curve remains flat

Child may have a growth problem if there is no gain in weight as the age increases. This is called stagnation. This needs to be investigated if the condition remains same for 2-3 months.







Ques. – What advice must be given to mother depending on the growth curve information of the child?

Ans. The most important step in growth monitoring is using the growth curve information of each child to give specific advice to mothers to make sure their children keep growing normally. The growth trend of the child should be discussed with the mother every month immediately after weighing.

The **FIRST STEP** in giving specific advice to mothers is to observe the growth curve of the child and determine the growth trend. See if the child has gained adequate weight, not gained weight or lost weight, as compared to the previous month's weight. The growth chart should be shown to the mother and growth trend discussed with her: whether the child is growing normally or not.

The **SECOND STEP** is to ask the mother what has been happening to the child during the last month to make her child's growth pattern happen that way. Too often, we start telling the mother what to do without listening to her and finding out the reasons why the child is not growing. We must remember that the mother knows the most about her child, and she is the person who can make the changes to improve the child's growth. LISTEN carefully to what the mother has to tell you about what the child has been eating and how much, if the child has been sick, if there has been any other problem.

The **THIRD STEP** is to discuss with the mother specific action(s) she can take to promote her child's growth. This will depend on what the mother tells you, the trend of the growth curve and the age of the child.

Ques. – What specific actions should be discussed with the mother to promote her child's growth?

Ans. The specific action each mother should take to promote her child's growth will differ, depending on the age of the child, and his/her growth trend if the child has been growing normally or not. AWW must learn how to give advice that is appropriate and that the mother can understand easily and implement.

1. If the child's growth curve has been rising, show the growth curve to the mother and appreciate the mother that this is good and ASK her what has happened during the

past months which have made the child's growth so good. LISTEN carefully to the mother. She may give you many practical ideas and suggestions which have made her child grow normally. Learn from these mothers and encourage them to share their child-rearing practices with others.

2. If the child's growth curve is flat or downwards, explain the growth curve to the mother and point out to mother that the child's GROWTH is a matter of concern and enquire about the child rearing practices that she has followed during the last month. You must find the reason(s), which caused poor growth in this child at this very time. The mother may give the following reasons:
    i) Episodes of illness, such as fever, cough, cold, measles, malaria, diarrhoea etc;
    ii) Child's unwillingness to eat anything;
    iii) Inability to introduce complementary food due to lack of understanding of the child's nutritional requirements, customs and, beliefs or refusal of food by the child; and
    iv) Abrupt discontinuation of breast milk without introduction of complementary food due to second pregnancy.

If the child has not been sick, you have to ask the mother how often she feeds the child and what food she gives the child. The kind and the amount of food vary, depending on the age of the child.

The step wise basic principle to be followed in discussing child's growth with mother are as stated below:

- **Asking** the mother important questions and **listening** to her responses.
- **Praising** her when appropriate.
- **Advising** the mother, using simple language, and giving only relevant advice.
- **Checking understanding** to ensure that mother has understood the advice.
- **Follow-up** with mother to ensure and strengthen implementation of advice.

Ques. – What age-specific advice should be given to the mothers of children of different ages?

Ans. The advice to the mothers of children of different ages differs.

For a three months old child, the focus should on exclusive breastfeeding, mother's diet and frequency of breast feeding and immunisation.

For a child of more than 6 months old, the focus shifts to introducing mashed, semisolid foods, continued breastfeeding, gradually increasing the quantity of food etc. For a 9-11 months child, the emphasis is on gradually increasing the quantity, and introducing variety of foods, which need not be mashed.

A one or two year old child has to eat half as much as an adult in the house eats; instead of feeding the child 2-3 meals, let him eat 5-6 times a day. Make suggestions about different foods the mother can use that are cheap and locally available.

Given below are points you should discuss with the mothers of children at different age periods:

POINTS TO DISCUSS WITH THE MOTHER OF A NEW BORN BABY – 2 MONTHS OLD CHILD

• put the child to breast as soon as possible, preferably within one hour of birth
• feed the yellowish first milk (colostrum) to give protection to the baby from diseases
• exclusive breastfeeding for 6 months; do not give any other food or drinks and not even water
• feed the breast milk whenever the child wants it, during day and night
• breastfeed till the child is satisfied and the child stops sucking
• continue breast feeding even if the child is sick lactating mother should drink plenty of fluids (water, soups, tea, milk, lassi, etc.)

• lactating mother should eat extra food – an extra snack / meal

• get the child bcg, dpt, polio immunisation
• get the child weighed every month
• keep the baby and the surroundings clean

POINTS TO DISCUSS WITH THE MOTHER OF A 3-6 MONTHS OLD CHILD

• exclusively breastfeed the child, no other liquid to be given to the child
• breast feed 8-10 times during day and night
• feed till the child is satisfied and the mother feels the breasts empty
• continue breastfeeding during illness
• drink plenty of fluids and eat more food to produce enough milk
• give the child remaining doses of dpt and polio immunisation
• get the child weighed every month

POINTS TO DISCUSS WITH THE MOTHER OF A 7-11 MONTHS OLD CHILD

• give complementary foods followed by breast feeding or in between breast feeds
• modify the food cooked at home by: cooking it a little more, mashing it, taking out a portion for the baby, before adding masala/ chillies
• start with a small quantity of food, increase the quantity so that child takes half katori/cup of food at one time (size of katori/cup about 150 ml)
• start semi-solid foods since breast milk alone cannot support adequate growth after six months
• introduce one new food in a day especially when child is hungry so chances of acceptance are more
• give well-cooked mashed foods like potato, banana, porridge made of any cereal, milk/water, sugar/jaggery, bread/chapati/bhakary soaked in milk or curry or vegetables, dal; the food should be soft but not watery
• the child at this age puts everything he finds in his mouth. this may result in loose stools
• loose stools are due to infection and not due to introduction of semi-solid foods
• give plenty of fluids if child passes loose watery stools
• child may refuse to take a new food or make fuss in eating. be patient and persistant. soon, the child will get accustomed to eating it

• delayed introduction of food will affect child's growth and mother will find it difficult to introduce semi-solid foods if the child has been only on milk for too long
• do not add water to cow's or buffalo's milk
• continue to eat extra food and drink more liquids during lactation
• give the child one dose of measles immunisation along with vitamin a supplementation
• do not use bottle to feed milk/water. it is difficult to clean it and often results in infection. So use a katori and spoon

POINTS TO DISCUSS WITH THE MOTHER OF 1-2 YEARS OLD CHILD
• child at one year should start eating the family food
• continue to offer a wide variety of foods including family foods such as rice, chapatti, dark green leafy vegetables, orange and yellow fruits, pulses and milk products
• child should eat half as much as an adult in the family
• feed the child about 5 times a day
• feed from separate bowl and monitor how much the child eats
• sit with the child and help her finish the serving
• continue breastfeeding up to 2 years or beyond
• give vitamin 'a' solution at six months interval up to the age of five years

POINTS TO DISCUSS WITH THE MOTHER OF 2-3 YEARS OLD CHILD
• continue to feed family foods 5 times a day
• help the child feed himself/herself
• supervise feeding
• ensure hand washing with soap before feeding

Ques. – What are the current norms of supplementary nutrition at the anganwadi for children 6 months to 3 years?
Ans. Supplementary nutrition for Children (6 months to 3 years):
Food supplement of 500 Kcal of energy and 12-15 gm of protein per child per day in Supplementary Nutrition Programme (SNP) should be provided at the AWC. For children in this age group, the existing pattern of Take Home Ration (THR) under the ICDS Scheme shall continue. However, in addition to the current mixed practice of giving either dry or raw ration (wheat and rice), which is often consumed by the entire family and not the child alone, THR should be given in the form that is palatable to the child and is seen as food to be exclusively consumed by the child instead of the entire family.

The THR could be given in the form of Micronutrient-fortified food and/or Energy-dense food that may be marked as 'ICDS Food Supplement'. Since a child under 3 years is not capable for consuming a meal of 500 Kcal in one sitting, the AWW may advise mothers to give THR in small frequent meals to the child. The severely underweight children need to be provided food supplement of 800 Kcal of energy and 20-25 gm of protein in the form of Micronutrient-fortified food and/or Energy-dense food as THR. Considering the inability of under-3 year old child (6 months to 3 years) to consume a meal of 800 Kcal in one sitting, AWW needs to advise mothers to give THR in small frequent meals to the child. Severely underweight children requiring medical intervention may be given locally appropriate feeding and care under medical advice.

Ques. – What are the current norms of supplementary nutrition at the anganwadi for Children (3 to 6 years)?

Ans. Supplementary nutrition for Children (3 to 6 years):

Food supplement of 500 Kcal of energy and 12-15 gm of protein per child per day at the AWC needs to be provided to supplement home feeding. Arrangements should be made for serving Hot Cooked Meal in AWCs and Mini-AWCs under the ICDS Scheme.

Since a child of this age group is not capable of consuming a meal of 500 Kcal in one sitting, children who come to AWCs need to be served more than one meal.

Since the process of cooking and serving hot cooked meal takes times, and in most of the cases, the food served around noon, these children may be provided 500 Kcal over more than one meal. Arrangements may be made to provide a morning snack in the form of milk/banana/egg/seasonal fruits/Micronutrient-fortified food etc. For severely underweight children in the age group of 3 to 6 years, additional 300 Kcal of energy and 8-10 gm of protein (in addition to 500 Kcal of energy and 12-15gm of protein given at AWC) should be given in the form of Micronutrient-fortified food and/or Energy dense Food as THR. Severely underweight children requiring medical intervention may be given locally appropriate feeding and care under medical advice.

Ques. – What are the current norms of supplementary nutrition at the anganwadi for Pregnant Women and Lactating Mothers?

Ans. Supplementary Nutrition for Pregnant Women and Lactating Mothers

Food supplement of 600 Kcal of energy and 18-20 gm of protein per beneficiary per day in the form of Micronutrient-Fortified Food and/or Energy-dense Food needs to be provided as THR. However, in addition to the current mixed practice of giving either dry or raw ration (wheat and rice), which is often consumed by the entire family and not the mother alone, it should be given in the form of Micronutrient-fortified food or Food that may be consumed by the pregnant and lactating mothers rather that the whole family.

Ques. – When should children be referred to the medical staff?

Ans. In spite of your best efforts, suggestions, and appropriate response from mothers, some children do not grow. These are children in the moderately and severely underweight grades. These children need to be referred to the health staff, such as the ANM or LHV or the Medical officer of the health centre. They can be either advised to go to the health centre or to show the child during the visit of health staff at the AWC. Remember that quick action is required to prevent the condition of these children from becoming worse.

During the visit of the medical staff at the AWC, discuss the condition of those children whose weights have not increased. Also, utilise this opportunity to get examined those children who have flat or downward curves.

In case the visit of the health staff is not expected for some days, ask the mother to go to the nearest health centre. In some cases, it may be necessary for the AWWs to accompany the mothers of severely underweight children to the health centre.

Once the child is referred to the medical staff, the AWWs need to follow up with the mother after her visit to the health centre and support her in improving the health of her child.

Ques. – What are some of the ways of organising growth monitoring sessions in her community?

Ans. Organising a meaningful growth monitoring session involves weighing the child, plotting weight on the growth chart, discussing the growth curve with the mother and deciding actions that she has to take to improve child's growth. Ideally, all these tasks should be done at one time. However, the AWW requires adequate time to discuss with the mother, the child's growth, especially with those whose children have lost weight, or have not gained weight.

Suggested below are some ways of organising growth monitoring sessions:

• AWW can fix the dates in such a way that small groups of 5-7 mothers can be called at one time. On the first day, she can call mothers with children under one year of age. On the second day, she can call mothers of children from 1-3 years. She should take help of the mothers in the weighing process. In this way, AWW can weigh and discuss the growth of the child and problems of and specific actions to be taken for, each child.

• Take the weighing scale and the growth chart register to one part of the village on one day and to another part of the village the next day where a number of houses are clustered together. This will make it easier for the mothers to attend these sessions, especially in the hilly areas.

• If there are large group of mothers who have come at one time, the AWW would note down the weights and then discuss the growth curve with the mother during home visit. But, this should be done within the next few days.

Ques. – What are some of the possible causes of underweight in children?

Ans. The cause(s) of underweight can be one or more from amongst those given below:

• Repeated infections, such as diarrhoea, measles, worm infestations etc., due to, unhygienic environment, unsafe drinking water, bottle-feeding etc.;

• Lack of required food in terms of quality and quantity, due to low family income and large family size, food fads, lack of understanding of the nutritional needs of the child;

• Delayed introduction of additional foods resulting in child not accepting any food other than milk;

• Sudden discontinuation of breast milk without introduction of supplementary foods, due to conception of the next child or sickness of the mother; and

• Child suffering from a chronic disease like tuberculosis, inability to digest milk etc.

A child, who is born with a low birth weight or is in the 'at risk' category and who encounters any of the causes listed above, is prone to suffer from severe underweight.

Ques. – What are the possible solutions to tackle the problem of underweight?

Ans. Depending on the cause of underweight, the ICDS functionary should:

• Ask the mother to show the child to the doctor to take care of infections and any chronic disease which the child may have. In view of the severity of underweight and associated infection, the child may need hospitalisation. The child can be examined by the doctor either during the visit of the health staff to the AWC or at the sub centre/hospital whichever is earlier. The supervisor/AWW should inform the family the date and time of the doctor's visit at the AWC or location, timing of the PHC/sub-centre/hospital;

• Ask the mother to bring the child to the AWC for supplementary feeding immediately, in case the child does not need hospitalisation, or after the child is discharged from the hospital. Supervisor should explain to the mother the need to give supplementary food to the child and the need to give it in small, frequent feeds and not to share the food with other members of family. The AWW should ensure that the mother gives one feed at the AWC and carries back the rest with her;

• Ask the mother that, if possible, 1-2 teaspoon of extra oil/ghee, be added to the child's food at each meal;

• Demonstrate the preparation of Micronutrient-fortified food and/or Energy-dense food to the mother to provide adequate and balanced Kcal and protein intake through the food.

• Advise mother to take quick action in case the child has any illness. Give oral rehydration solution and other fluids in case the child has diarrhoea. Mother should continue to feed the child during illness etc;
• Explain to the mother that recovery of a severely underweight child takes time (2-4 months) and that she should not expect miracle by taking the child to the doctor or by feeding supplementary nutrition given at the AWC; and
• Ask the mother to get the child weighed after one month interval to see the change in weight.
A onetime advice to the mother of a severely underweight child is not enough. The supervisor and the AWW have to follow up the child and this mother during their subsequent visits, by looking at the weight gain and talking to the mother to find out how much advice she has followed. Supervisor should encourage the mother if the child has gained weight.

Ques. – What are some of the suggestive recipes representing energy dense and hot cooked meals for ICDS programme?

Ans. RECIPES OF ENERGY DENSE / INSTANT FOODS: These food items can be given as the first feed in the Anganwadi Centres (AWCs) as well as Take Home Ration (THR) for both children in the age-group of 6 months to 3 years and severely undernourished children in the age group of 6 months to 6 years.

CEREAL-PULSE MIX (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost[1] (Rs)
Wheat, roasted	20	68	2.4	0.34	0.30
Bengal gram, roasted	10	37	2.3	0.54	0.41
Groundnuts, roasted	7	38	1.7	2.68	0.34
Jaggery/Sugar	17	64	0.1	0.02	0.50
Total	**54**	**207**	**6.5**	**3.6**	**1.55***
Recommended Level		**200**	**5-7**		

*** Excluding processing cost**

Method of Preparation

- Powder all the roasted ingredients individually
- Mix all the three thoroughly
- Crush or powder the jaggery/sugar, add to the above mixture and mix thoroughly
- Store in air tight containers
- Mix with hot water before serving the child
- It can be made into laddus or in the form of porridge

RAGINA (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Ragi, dehusked & roasted	30	99	2.2	0.40	0.76
Bengal gram, roasted	7	25	1.5	0.33	0.27
Sugar	20	80	0.02	0.00	0.30
Total	**57**	**204**	**3.7**	**0.7**	**1.33***
Recommended Level		**200**	**5-7**		

*** Excluding processing cost**

Method of Preparation

- Powder all the roasted ingredients and the sugar individually
- Mix all the ingredients thoroughly
- Store in air tight containers
- Mix with hot water before serving the child
- It can be made into laddus or in the form of porridge

RICE FLAKES-GROUNDNUT BARFI (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice flakes	17	58	1.1	0.20	0.50
Groundnuts, roasted	13	76	3.5	5.40	0.70
Jaggery	20	77	0.1	0.02	0.60
Total	**50**	**211**	**4.7**	**5.6**	**1.80***
Recommended Level		**200**	**5-7**		

*

Excluding processing cost

Method of Preparation

- Roast the rice flakes and mix with the roasted and crushed groundnuts
- Prepare syrup with jaggery and water
- Add the mixture of rice flakes and crushed groundnuts mix quickly
- Spread the mixture on a greased plate and cut into pieces immediately

WHEAT-GROUNDNUT BARFI (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat, roasted	17	57	2.0	0.27	0.25
Groundnuts, roasted	17	96	4.4	6.70	0.84
Salt	0.5	0	0.0	0.00	0.01
Sugar	13	54	0.01	0.00	0.20
Baking Powder	0.5	0	0.0	0.00	0.05
Total	**48**	**207**	**6.4**	**7.0**	**1.35***
Recommended Level		200	5-7		

*** Excluding processing cost**

Method of Preparation

- Powder all the roasted ingredients and the sugar individually
- Mix all the ingredients together
- Add the baking powder and salt and mix thoroughly
- Make a stiff dough with hot water, roll into chapatis and cut into desired shape
- Place the cut pieces on greased metal trays and bake them well on heated sand in a degchi
- The degchi should be kept covered with a lid and pieces of live charcoal kept on the lid to ensure uniform baking
- Remove the biscuits when they are golden brown

BAJRA AND PULSE/ LEGUME MIX (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Bajra, dehusked & roasted	20	72	2.4	1.01	0.50
Green gram, roasted	7	24	1.7	0.08	0.27
Groundnut, roasted	7	38	1.7	2.70	0.33
Gingelly seeds, roasted	3	19	0.6	1.47	0.19
Sugar	13	54	0.01	0.00	0.20
Total	**50**	**207**	**6.4**	**5.3**	**1.49***
Recommended Level		200	5-7		

*** Excluding processing cost**

Method of Preparation

- Powder all the roasted ingredients and sugar individually
- Mix all the ingredients thoroughly
- Store in air tight containers
- Mix with hot water before serving the child
- It can either be made into laddus or in the form of porridge

SWEET READY MIX (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat, roasted	17	57	2.0	0.27	0.25
Soyabean, dehusked & roasted	11	49	4.9	2.21	0.47
Oil	5	45	0.0	5.00	0.33
Sugar	11	46	0.01	0.00	0.17
Total	**44**	**197**	**6.9**	**7.5**	**1.22***
Recommended Level		**200**	**5-7**		

***Including processing cost**

Method of Preparation

- Powder all the roasted ingredients and sugar individually
- Mix all the above ingredients along with oil in a blender
- The food can be served as such or can be made into laddus or porridge by mixing the required quantity of hot water

PAUSHTIK PANJEERI (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Semolina	24	82	2.4	0.19	0.47
Bengal gram flour	13	50	2.8	0.75	0.55
Groundnuts, roasted	3	19	0.9	1.34	0.17
Oil	3	27	0.00	3.00	0.20
Sugar	7	27	0.01	0.00	0.10
Total	**50**	**205**	**6.1**	**5.3**	**1.49***
Recommended Level		**200**	**5-7**		

***Including processing cost**

Method of Preparation

- Roast semolina, Bengal gram flour and ground nuts separately in oil
- Add the powdered sugar. Grind all the ingredients into fine powder and store
- The food can be served as such or can be made into laddus or porridge by mixing the required quantity of hot water

BESAN-SUJI LADUS (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat Flour	13	46	1.6	0.22	0.20
Semolina	13	50	2.8	0.75	0.27
Bengal gram flour	7	24	0.7	0.05	0.22
Oil	7	63	0.0	7.00	0.46
Sugar/Jaggery	10	38	0.01	0.01	0.30
Total	**50**	**221**	**5.1**	**8.0**	**1.45***
Recommended Level	**200**		**5-7**		

***Including processing cost**

Method of Preparation

- Roast the semolina, wheat flour and Bengal gram flour separately in oil till light brown
- Make a thick syrup of jaggery/sugar
- Add the roasted ingredients and cook for another minute
- Remove from stove. Shape into round ball, while still hot

PAUSHTIK BARFI (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat Flour	13	46	1.6	0.23	0.20
Bengal gram flour	7	25	1.4	0.38	0.27
Groundnuts, roasted	7	39	1.7	2.70	0.34
Oil	3	27	0.00	3.00	0.20
Sugar/Jaggery	20	76	0.03	0.03	0.60
Total	**50**	**213**	**4.7**	**6.3**	**1.61***
Recommended Level		200	5-7		

***Including processing cost**

Method of Preparation

- Roast the groundnuts, remove skin and grind
- Heat oil, add wheat flour and Bengal gram flour, fry till golden brown
- Mix well and remove from fire
- Spread on greased plate and cut into equal pieces

PAUSHTIK MATHRI (6 Months – 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat Flour	17	57	2.0	0.29	0.42
Bengal gram flour	17	62	3.5	0.94	0.68
Oil	10	90	0.0	10.00	0.66
Salt	1	0	0.0	0.00	0.01
Total	**45**	**209**	**5.5**	**11.2**	**1.77***
Recommended Level		200	5-7		

***Including processing cost**

Method of Preparation

- Mix wheat flour, bengal gram flour, salt and oil well. Knead into dough and keep aside for 5 minutes. Make small round balls
- Heat oil in a deep frying pan, flatten each ball into round shape
- Dust the mathris in wheat flour and fry in medium flame till golden brown

AMYLASE RICH ENERGY FOOD (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Processed wheat Flour	20	68	2.4	0.33	0.30
Malted Ragi	3	9	0.2	0.03	0.07
Processed Soya Flour	13	58	5.8	2.61	0.54
Powdered Sugar/Jaggery	15	59	0.01	0.00	0.22
Vitamin & Mineral premix	-	-	-	-	0.05
Total	**51**	**194**	**8.4**	**3.0**	**1.18***
Recommended Level		**200**	**5-7**		

Method of Preparation

- Boil water, remove from heat and add the powder stir continuously while mixing
- Serve the beneficiaries as Laddu, Kheer or Hulva

WEANING FOOD/ WHEAT SOYA LADDU (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat	24	80	2.8	0.40	0.35
Rice	7	24	0.5	0.03	0.07
Soybean	12	52	5.2	2.34	0.49
Sugar	11	43	0.01	0.00	0.16
Vitamin & mineral premix	-	-	-	-	0.05
Total	**54**	**199**	**8.5**	**2.8**	**1.12***
Recommended Level		**200**	**5-7**		

Method of Preparation

- Boil water, remove from heat and add the powder stir continuously while mixing
- Serve the beneficiaries as Laddu

N UTRO SOYA CORN CHIKKIS (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Corn Flakes	27	92	2.9	0.96	0.80
Soybean	7	29	2.9	1.31	0.27
Roasted Bengal Gram	2	7	0.5	0.11	0.08
Sugar	17	67	0.02	0.00	0.25
Oil	1	9	0.0	1.00	0.07
Vitamin & mineral premix	-	-	-	-	0.05
Total	**54**	**204**	**6.3**	**3.4**	**1.52***
Recommended Level		200	5-7		

Method of Preparation

- Ready to serve chikkis

SUMMARY (Average Nutritive Value and Cost Per Recipe)

S.No.	Recipe	Children (6 months – 3 years)			
		Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
1.	Cereal-Pulse Mix	207	6.5	3.6	1.55
2.	Ragina	204	3.7	0.7	1.33
3.	Riceflakes-Groundnut Barfi	211	4.7	5.6	1.80
4.	Wheat-Groundnut Barfi	207	6.4	7.0	1.35
5.	Bajra and Pulse/Legume Mix	207	6.4	5.3	1.49
6.	Sweet Ready Mix	197	6.9	7.5	1.22
7.	Paushtik Panjeeri	205	6.1	5.3	1.49
8.	Besan Suji Laddu	221	5.1	8.0	1.45
9.	Paushtik Barfi	213	4.7	6.3	1.61
10.	Paushtik Mathri	209	5.5	11.2	1.77
11.	Amylase Rich Energy Food	194	8.4	3.0	1.18
12.	Weaning Food/ Wheat Soya Laddu	199	8.5	2.8	1.12
13.	Nutro Soya Corn Chikkis	204	6.3	3.4	1.52
TOTAL		2678	79.2	69.7	18.88
Average		206	7.2	6.3	1.45
Recommended Level		200	5-7		

Ques. – Give examples of for some common hot cooked food recipes?

Ans. Following food items can be given as the second feed in the Anganwadi Centres (AWCs) for both normal children and severely undernourished children in the age group of 3 to 6 years.

MITHA DALIYA (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Broken Wheat	36.8	125	4.5	0.63	0.55
Green Gram Dhal	14.4	50	3.5	0.17	0.59
Soybean	5.8	25	2.5	1.13	0.24
Sugar	20	80	0.2	0.00	0.30
Oil	3	27	0.0	3.00	0.20
Fuel	130	0	0	0	0.27
Total		306	10.5	4.93	2.15
Recommended Level		300	8-10		

Method of Preparation

- Roast broken wheat and soybean in a pan
- When half done, add green gram dal and continue roasting till light brown

N AMKEEN DALIYA (6 Months - 6 Years Children)

- Add water and cook till soft and semi solid consistency is obtained
- Add milk, sugar and oil
- Boil for a few minutes and serve hot

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Broken Wheat	54.4	185	6.6	0.92	0.82
Green Gram Dhal	11.6	40	2.8	0.14	0.47
Soybean	6.8	29	2.9	1.33	0.28
Oil	5.6	50	0.0	5.60	0.37
Salt	1.0	0	0	0	0.01
Fuel	130	0	0	0	0.27
Total		**306**	**12.1**	**8.0**	**2.22**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Heat oil and fry broken wheat, green gram dhal and soybean till golden brown
- Add water and cook till soft and semi solid
- Add salt and serve hot.

KH ICHDI (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice	65	224	4.4	0.30	0.65
Green gram dhal	10	35	2.5	0.12	0.41
Cooking oil	5	45	0.0	5.00	0.33
Green chilies	5	1	0.1	0.03	0.36
Ginger	2	1	0.05	0.02	
Turmeric	0.5	2	0.03	0.03	
Salt	1	0	0.0	0.00	
Fuel	130	0	0.0	0.00	0.27
Total		**309**	**7.1**	**5.5**	**2.02**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Heat oil in a pan
- Season with green chilies, turmeric and ginger paste/pieces
- Add the washed rice and green gram dhal
- Add the salt and required amount of water (For 1 cup rice add 2.5 cups of water)
- Cook till soft and done and serve hot

VEGETABLE UPMA (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Broken wheat	55	191	5.7	0.44	1.10
Bengal gram dhal	5	19	1.0	0.28	0.20
Carrots	15	7	0.1	0.03	0.36
Beans	15	4	0.3	0.02	
Cooking oil	5	45	0.0	5.00	0.33
Ginger	2	1	0.05	0.02	0.38
Cumin	1	4	0.2	0.20	
Green chillies	5	1	0.1	0.03	
Salt	1	0	0.0	0.00	
Ground nuts	5	28	1.3	2.01	0.25
Fuel	130	0	0.0	0.00	0.27
Total		**300**	**8.8**	**8.0**	**2.89**
Recommended Level		**300**	**8-10**		

Method of Preparation

Boil the vegetables and keep aside

Heat oil and season with green chillies, cumin, bengal gram, ginger & groundnuts

Add the broken wheat and fry for 2 minutes. Add the boiled vegetables and salt

Add water (for 1 cup broken wheat add 2 cups of water) and cook till soft and done. Serve hot.

K ESARIYA UPMA/HULVA (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Semolina *(Suji)*	42.8	149	4.5	0.34	0.86
Soybean	12.8	55	5.5	2.50	0.52
Sugar	19.6	78	0.02	0.0	0.29
Oil	4.8	43	0.0	4.8	0.31
Flavours & colours	a pinch	0	0	0	0.01
Fuel	130	0	0	0	0.27
Total		**325**	**10.0**	**7.6**	**2.26**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Boil water and sugar for a few seconds and keep aside.
- Fry semolina and soybean in oil till golden brown.
- Add the hot syrup and cook till *halwa* does not stick to the sides of the pan.
- Serve hot

SWEET PONGAL (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice	50	173	3.4	0.25	0.50
Green gram dhal	10	35	2.5	0.12	0.41
Oil	5	45	0.0	5.00	0.33
Jaggery	15	58	0.1	0.02	0.45
Fuel	130	0	0.0	0.00	0.27
Total		**311**	**6.0**	**5.4**	**1.96**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Boil the rice and green gram dhal with required amount of water (for 1 cup rice add 2.5 to 3 cups of water)
- When rice turns soft and water is absorbed, add powdered jaggery
- Add oil and boil till the jaggery leaves the sides of the vessel
- Serve hot or cold

BROKEN WHEAT PORRIDGE (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Broken wheat	50	174	5.2	0.40	1.00
Green gram dhal	10	35	2.5	0.12	0.41
Oil	5	45	0.0	5.00	0.33
Jaggery	15	58	0.1	0.02	0.45
Fuel	130	0	0.0	0.00	0.27
Total		**312**	**7.8**	**5.5**	**2.46**
Recommended Level		**300**			**8-10**

Method of Preparation

• Boil the broken wheat and green gram dhal with required amount of water (for 1 cup broken wheat add 3 cups of water)
• When the mixture turns soft and water is absorbed, add powdered jaggery
• Add oil and boil till the jaggery leaves the sides of the vessel
• Serve hot or cold

T AMARIND RICE (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice	50	173	3.4	0.25	0.50
Bengal gram dhal	5	19	1.0	0.28	0.20
Curry Leaves	2	2	0.1	0.02	0.02

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Cooking oil	5	45	0.0	5.00	0.33
Tamarind Pulp	8	23	0.2	0.01	
Dry red chillies	2	5	0.3	0.12	
Cumin	1	4	0.2	0.20	0.52
Turmeric	0.5	2	0.03	0.03	
Salt	1	0	0.0	0.00	
Groundnuts	5	28	1.3	2.01	0.25
Fuel	130	0	0.0	0.00	0.27
Total		**301**	**6.6**	**7.9**	**2.09**
Recommended Level		**300**	**8-10**		

Method of Preparation

• Cook the rice till soft and done with required amount of water (for 1 cup rice add 2 cups of water) and keep aside to cool
• Heat oil in a pan and season with dry red chillies, bengal gram, curry leaves and turmeric powder. Add groundnuts and fry till it loses its raw flavour
• Add the thick tamarind pulp and the required quantity of salt and bring to a boil till thick consistency is achieved
• Cool it to room temperature

• Pour this mixture over the cooked and cooled rice, mix well and serve

RICE KHEER (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice	25	86	1.7	0.12	0.25
Sugar	10	40	0.01	0.00	0.15
Milk	100	210	4.3	6.48	2.50
Fuel	130	0	0.0	0.00	0.27
Total		**336**	**6.01**	**6.6**	**3.17**
Recommended Level		**300**	**8-10**		

Method of Preparation

• Clean and wash the rice
• Boil milk, add rice and cook till semi solid
• Add sugar
• Serve hot or cold

AJMAH CHAWAL (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice	50	173	3.4	0.21	0.50
Rajmah	25	87	5.7	0.30	0.90
Tomatoes	20	4	0.2	0.04	0.84
Onions	15	7.5	0.2	0.02	
Red Chilli Powder	3	7.4	0.5	0.20	
Turmeric	0.5	1.8	0.03	0.03	0.84
Garam Masala	0.5	1.5	0.07	0.05	
Salt	1	0	0.0	0.00	
Oil	5	45	0.0	5.0	0.33
Fuel	130	0	0.0	0.00	0.27
Total		**327**	**10.1**	**5.85**	**3.68**
Recommended Level		**300**	**8-10**		

Method of Preparation

• Cook the rice and keep aside
• Soak the rajmah and boil it till soft
• Add sugar In a pan, fry the ground onions till brown
• Add tomatoes and fry till water evaporates
• Add all the spices and the boiled rajmah
• Cook for a few minutes, sprinkle *garam masala* and serve hot
• Serve the rajmah with hot rice

POHA (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (KCal)	Protein (gm)	Fat (gm)	Cost (Rs)
Rice Flakes	35	121	2.3	0.42	1.05
Potatoes	30	29	0.5	0.03	
Carrots	15	7	0.1	0.03	0.56
Curry leaves	2	2	0.1	0.02	
Groundnuts	10	57	2.6	3.98	0.50
Cumin	1	3.6	0.2	0.15	
Turmeric	0.5	1.8	0.03	0.03	0.10
Salt	1	0	0.0	0.00	
Oil	10	90	0.0	10	0.66
Fuel	130	0	0.0	0.00	0.27
Total		**312**	**5.6**	**14.6**	**3.14**
Recommended Level		**300**			**8-10**

Method of Preparation

- Wash thoroughly and soak the rice flakes for 5 minutes, drain and keep aside
- Roast groundnuts, remove skin and keep aside
- Cut the potatoes and carrots and boil and keep aside
- Heat oil, add cumin and curry leaves, add the boiled vegetables
- Add the groundnuts, salt, turmeric and the rice flakes
- Mix well, cook for 2 minutes and serve hot

POORI-CHOLE (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Poori					
Wheat flour	40	136	4.8	0.64	0.60
Oil	5	45	0.0	5.00	0.33
Chole					
Kabuli chana	20	72	3.4	1.07	0.82
Potatoes	10	10	0.2	0.01	0.24
Tomatoes	10	2	0.1	0.02	
Oil	5	45	0.0	5.00	0.33
Ginger	1	1	0.02	0.00	0.57
Garlic	1	2	0.06	0.00	
Garam Masala	1	3	0.2	0.10	
Turmeric	0.5	2	0.03	0.03	
Tamarind	5	14	0.2	0.00	
Red Chilli Powder	3	7	0.5	0.2	
Cumin	1	4	0.2	0.2	
Salt	1	0	0.0	0.00	
Fuel	130	0	0.0	0.00	0.27
Total		**343**	**9.7**	**12.3**	**3.16**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Make dough, divide into small balls, roll into pooris and deep fry
- Soak chana overnight, boil, drain and keep aside
- In a pan, add oil, fry ground ginger and garlic till brown.
- Add all the spices except tamarind
- Add the boiled chana and boiled potatoes, cook for a few minutes.
- Add the tamarind pulp, garam masala and garnish with chopped tomatoes

THEPLA (6 Months - 6 Years Children)

Ingredients	Quantity (gm)	Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
Wheat flour	60	206	7.3	1.02	0.90
Fenugreek leaves	10	5	0.4	0.09	0.12
Green chillies	2	1	0.1	0.01	
Red chillie powder	2	5	0.3	0.12	
Ginger	1	1	0.02	0.00	
Garlic	1	2	0.06	0.00	0.36
Turmeric	0.5	2	0.03	0.03	
Cumin seeds	1	4	0.2	0.20	
Salt	1	0	0.0	0.00	
Oil	10	90	0.0	10.00	0.66
Fuel	130	0	0.0	0.00	0.27
Total		**316**	**8.4**	**11.5**	**2.31**
Recommended Level		**300**	**8-10**		

Method of Preparation

- Combine together all the ingredients with the wheat flour
- Knead into a dough by adding 5 gm of oil. Set aside for 15 minutes
- Prepare medium sized balls, roll into a round shape like a chapathi
- Roast them on a pan on both the sides properly by applying oil
- Remove when well roasted
- Serve hot

SUMMARY (Average Nutritive Value and Cost per Recipe)

S.No.	Recipe	Children (6 months – 3 years)			
		Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
1.	Mitha Daliya	306	10.5	4.93	2.15
2.	Namkeen Daliya	306	12.1	8.0	2.22
3.	Kichidi	309	7.1	5.5	2.02
4.	Vegetable Upma	300	8.8	8	2.89
5.	Kesariya Upma/Halwa	325	10.0	7.6	2.26
6.	Sweet Pongal	311	6.0	5.4	1.96
7.	Broken Wheat Porridge	312	7.8	5.5	2.46
8.	Tamarind Rice	301	6.6	7.9	2.09
9.	Rice Kheer	336	6.01	6.6	3.17

S.No.	Recipe	Children (6 months – 3 years)			
		Energy (K Cal)	Protein (gm)	Fat (gm)	Cost (Rs)
10.	Rajmah Chawal	327	10.1	5.85	3.68
11.	Poha	312	5.6	14.6	3.14
12.	Poori-Chole	343	9.7	12.3	3.16
13.	Thepla	316	8.4	11.5	2.31
	TOTAL	**3167**	**76.1**	**83.2**	**26.88**
	Average	**317**	**7.6**	**8.3**	**2.69**
Recommended Level		**300**	**8-10**		

OPTIONAL MENUS CONSISTING OF EGG, MILK AND BANANA

Menu: 1

Name of Food Stuff	Average Weight (gm)	Cost (Rs.) [Per Child /Day]	Nutritive Value	
			ENERGY (Kcal)	PROTEIN (gm)
Egg [1 No.]	50	2.50	87	6.7
Milk [150 ml] [Buffalo]		3.75	176	6.5
Total:		**6.25**	**263**	**13.2**

Menu: 2

Name of Food Stuff	Average Weight (gm)	Cost (Rs.) [Per Child /Day]	Nutritive Value	
			ENERGY (Kcal)	PROTEIN (gm)
Banana (Ripe) [1 No.]	100	1.70	116	1.2
Milk [150 ml] [Buffalo]		3.75	176	6.5
Total		**5.25**	**292**	**7.7**