

## Assessment of Growth Monitoring Activities under Integrated Child Development Programme (ICDS) in Vadodara District of Gujarat State

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### Abstract :

**Introduction:** The Integrated Child Development Services (ICDS) programme is implemented through a network of community-level Anganwadi centers (AWCs). The range of services includes growth monitoring, immunization, health check-ups, and supplementary feeding, nutrition and health education. The study was done with the objective to assess the knowledge and skill of Anganwadi workers (AWWs) regarding growth monitoring at AWCs under ICDS. **Method:** It was a cross-sectional study conducted in 63 AWCs under field practice area of Rural Health Training Centre (RHTC) of the medical college. Knowledge and skill about growth monitoring were assessed by Knowledge Assessment Score (KAS) and Skill Assessment Score (SAS) respectively. **Results:** Mean KAS was 10.4 out of 15 whereas Mean SAS found to be 8.32 out of 10. Knowledge of AWWs regarding various topics like sources for getting birth date of child, procedure for weighing child, malnutrition grade by growth chart plotting and interpretation of various malnutrition grades was poor. Whereas understanding of various aspect of growth monitoring like when to start growth monitoring, how to weigh a child, interpretation of growth curve was good. **Conclusion:** Knowledge and skill regarding growth monitoring was lacking among AWWs. Training should be organized with continuous supportive supervision so that knowledge can be converted into skilful practices.

**Key Words :** Anganwadi Workers, Growth Monitoring, ICDS

### Introduction :

India is home to 158.7 million children in the age group of 0-6 years. With nearly 20 per cent of the 0-4 years' child population of the world, India is home to the largest number of children in the world.<sup>[1]</sup> The Integrated Child Development Services (ICDS) represents one of the world's largest and most unique programme for early childhood development.

The programme is implemented through a network of community-level Anganwadi centres (AWC). The range of services targeted at young children and their mothers include growth monitoring, immunization, health check-ups, and supplementary feeding, as well as nutrition and health education to improve the childcare and feeding practices that mothers adopt. Preschool education is provided to children between three and six years of age.<sup>[2]</sup>

Growth Monitoring and Promotion (GMP) is integral part of ICDS and widely used as a community-based tool for child survival. The use of growth monitoring extends beyond problem detection; it has been used to provide a basis for communicating with mothers on child health and nutrition by stimulating the thinking about the causes of poor growth and malnutrition.

The impact of any program is dependent on coverage, intensity of contact, frontline worker performance, and adequacy of resources. Training, supervision and support for workers must be improved if they are to be effective counsellors in growth promotion programme. The present study was conducted to assess knowledge and skill of anganwadi workers (AWW) regarding growth monitoring activities at AWC.

**Method:**

A cross sectional study was conducted to assess the knowledge and skill of AWWs regarding growth monitoring activities under ICDS.

**Sampling method:** Two PHCs of Vadodara district under field practice area of Rural Health Training Centre (RHTC) of Medical College were selected purposively for the study. List of AWCs was procured from Chief Development Project Officer (CDPO). There were total 63 AWCs under these two PHCs. All AWWs of 63 AWCs who gave the consent to take part in the study were included.

**Data Collection:** Data collection was divided into three parts; basic information of AWW, knowledge assessment and skill assessment. Basic information of AWWs included their age, education, experience and details of training received.

The knowledge component of AWWs was assessed using a pre-designed, self-administered, standardized, 15 multiple choice questionnaires in local language, covering steps of growth monitoring. Each correct answer was given one mark. The score was counted out of total 15 marks considered as Knowledge Assessment Score (KAS) for each AWW.

For skill assessment, data of children between 6 months to 5 years who were weighed and plotted on growth chart in previous month by AWW were collected. Ten children's data were collected from each AWC using simple random sampling method. List of children were taken from AWW and random number were generated using random number generator mobile application. The data included information on birth date, age, sex, weight and malnutrition classification given by AWW. The collected data was crosschecked for malnutrition classification. Correct classification was decided using Weight for Age Z score calculated using WHO Anthro software. Out of 10 children from each AWC, each correct classification given by AWW was taken as 1 score. Total correct classification given by AWW out of 10 was considered as Skill Assessment Score (SAS). KAS and SAS was calculated for the first time in the study.

According to Weight for Age Z score, grade of malnutrition was determined as Red classification if Z-score is less than -3 SD, greater than or equal to -3 SD and less than -2 SD means yellow classification, greater than or equal to -2 SD means green classification. Here, red classification suggests severe malnutrition, yellow classification suggests moderate malnutrition and green classification suggests normal nutrition status or no malnutrition.

**Approval of the ethical committee:** Necessary permission from ICDS Department and ethical clearance from Institutional Ethics Committee for Human Research was taken prior to data collection.

**Statistical Analysis:** Data were presented in terms of proportions and percentages. Data were compiled and tables were made using Microsoft Excel. Analysis was done using Medcalc software. Weight for Age Z score was calculated by WHO Anthro software.

**Results:**

All 63 AWWs from selected 2 PHC areas gave the consent to take part in the study and data was collected from all of them.

**Profile of the AWWs:** The minimum age of AWWs was 22 years and maximum age was 57 years, the mean age being 41 years. Out of 63, 4 (6.4%) AWWs were educated up to primary education, 52 (82.5%) were educated up to secondary while 6 (9.5%) were graduates and 1 (1.6%) was post graduate. Regarding job experience as an AWW, 15 (23.8%) AWWs had less than 5 years, 4 (6.4%) AWWs had 5 to 10 years' experience and 44 (69.8%) AWWs were having experience of more than 10 years. Most of the AWWs (95 %) had received their induction training. Fifty-two AWWs (82.5%) had received refresher training while 11 AWWs (17.5%) did not get the refresher training. Education, experience and training status details were asked verbally only.

**Knowledge assessment of AWWs:** For knowledge assessment 15 multiple choice questions were given to AWWs in local language. Each correct answer was given one mark. The score was counted out of total 15 marks (Table-1). This score was considered as Knowledge Assessment Score for each AWW. Mean KAS of AWWs was  $10.4 \pm 2.4$  out of 15.

**Table 1: Knowledge regarding steps of growth monitoring among AWWs**

Question	Response	Number of AWWs gave Correct responses out of 63 AWWs
If birthdate is not known, how will you get it?	a. From Mamta card b. From birth certificate c. From local calendar d. All of the above	25 (39.7%)
What is true about weighing?	a. Free suspension of scale b. At the level of eye c. Adjusted to zero before weighing d. Weighing with minimum clothing e. All of the above	40 (63.5%)
To measure accurate weight, how many times weighing should done?	a. Once b. Twice c. Thrice d. Don't know	36 (57.1%)
If child's weight/age falls on junction of yellow and red band, what does that mean?	a. Child is normal b. Child is moderately underweight c. Child is severely underweight	37 (58.7%)
What does flattened growth curve on growth chart signify?	a. weight is increasing gradually b. weight is low for age c. don't know	29 (46.0 %)
If the growth curve of a child is moving downward, it is	a. Good b. Dangerous c. Not significant	20 (31.7%)
If the growth curve of the child is moving downward, what should be done?	a. Nutritional counselling of mother b. Referral to health facility c. Regular follow up d. All of the above	39 (61.9%)

**Table 2: Difference in Malnutrition grade given by AWWs and Weight for Age Z score (by WHO Anthro Software)**

Malnutrition Grade	RED	YELLOW	GREEN	Total
AWW's Grade	61(9.7%)	282(44.8%)	287(45.5%)	630
Weight for Age Z score Grade by WHO Anthro Software	107(17%)	252(40%)	271(43%)	630

**Table 3: Number and Type of Incorrect Classification of Malnutrition by AWWs**

Incorrectly Upgraded Classification	Number (out of 630)	Incorrectly Downgraded Classification	Number (out of 630)
RED → YELLOW	47 (7.4 %)	GREEN → YELLOW	18 (2.8 %)
YELLOW → GREEN	32 (5.1 %)	YELLOW → RED	04 (0.6 %)
RED → GREEN	03 (0.5 %)	GREEN → RED	01 (0.2 %)
Total	82 (13.0 %)	Total	23 (3.7 %)

**Table 4: AWWs' Assessment Score related to Experience, Education & Refresher training**

Variable	Number of AWWs	Average KAS	Average SAS	Average Total Score (SAS+KAS)
<b>Experience</b>				
≤ 5 Years	15	10.9	8.6	19.5
> 5 Years	48	10.3	8.3	18.5
<b>Education</b>				
Primary	4	10	8	18.5
Secondary	52	10.3	8.3	18.7
Graduate & above	7	10.9	8.4	19.3
<b>Refresher training</b>				
Yes	52	10.3	8.3	18.7
No	11	10.6	8.5	19.1

**Skill assessment of AWWs:** As described in methodology, randomly 10 children's data from each AWC (total 630 children) were taken to assess skill of AWW regarding her growth monitoring practice. AWW's Skill Assessment Score (SAS) was determined by total correct classification of malnutrition given by her out of 10 selected children's data. Mean SAS was  $8.32 \pm 1.5$  meaning average 8 out of 10 children were correctly plotted on growth chart according to their malnutrition grade by AWWs. Difference in malnutrition classification given by AWWs and by the WHO anthro software is shown in Table 2.

On verifying the type of difference, whether the malnutrition grade of child was upgraded or downgraded, following results were found (Table 3). Upgrading was possible by three ways; red graded child described as yellow, yellow graded child described as green or red graded child described as green grade by AWWs. Same way downgrading also was possible by three ways, green graded child described as yellow grade, yellow graded child described as red or green graded child described as red grade of malnutrition by AWWs.

As the malnutrition grade on the basis of Weight for Age criteria was given by both anganwadi workers and WHO Anthro software, agreement between two was ascertained. Weighted kappa was found to be 0.8 with standard error of 0.03 at baseline. Weighted kappa shows there is a very good agreement in malnutrition grade given by AWWs and Weight for

Age Z score from WHO Anthro software but it was not sufficient in this case. 105 children out of 630 were incorrectly classified on growth chart by AWWs. Out of 105 children, 82 children were given better nutrition classification while they were malnourished and 23 children were diagnosed as malnourished or given severe classification while they were normal or having moderate malnutrition (Table 3).

On calculating correlation coefficient, Weak or no correlation was found between total score of AWW and their age ( $r=-0.29$ ), education ( $r=0.09$ ) and experience ( $r=-0.19$ ). Average KAS, SAS and total scores did not show major difference with job experience, education status or refresher training status of anganwadi workers (Table 4).

### Discussion:

This study was conducted to assess the knowledge and skill of AWWs with regards to growth monitoring among rural AWWs.

Evaluation report on ICDS states that most AWWs do not have much idea of the growth monitoring processes and medical assistance required by malnourished children.<sup>[3]</sup> The present results of the study showed that a relatively large proportion of AWWs were aware of a number of key principles of growth monitoring. However, there were still some serious gaps in their knowledge and skills of AWWs irrespective of their education and experience.



In this study most of AWWs (87%) had knowledge that growth monitoring should start from birth. However in study by S. Bhasin et al only 43% of AWWs had the knowledge that growth monitoring can be started for a child at any age below 6 years.<sup>[4]</sup>

In present study 53% AWWs had correct knowledge about steps of weighing child. 56% AWWs had knowledge that child should weighed twice to measure accurate weight of child. In a study by D. Chattopadhyay et al. majority of AWWs 91.3% suspended the scale freely and 65.2% suspended it at the level of the eye. 60.9% adjusted the scale to zero before weighing. All of them weighted the children with minimum clothing and without shoes and 60.9% took the reading from a distance of one foot. While 65.2% AWWs preferred to take the readings in fractions of 100 grams, none weighed twice to calculate the average and none put the readings on growth charts.<sup>[5]</sup>

In contrast to this study results, majority (87 percent) of anganwadi workers were aware regarding various precautions to be taken during weighing of child in study by S. Manhas et al.<sup>[6]</sup>

In present study 87% AWWs had correct knowledge that serial periodical weight measurement of child at regular interval is best method for growth monitoring similar results were found in study by S Bhasin et al. that 77% AWWs had correct knowledge about same topic.<sup>[4]</sup>

Only 34% AWWs in this study had knowledge about all the sources (like Mamta card, birth certificate, local calendar) of getting birth date of child if not available. 67% AWWs had knowledge that correct age, sex and weight of the child are required for growth monitoring. In a study by A. Davey et al. only 40% AWWs were able to mention that correct age estimation of the children is essential for growth monitoring and malnourished children should be weighed monthly.<sup>[7]</sup>

In present study 16% children were incorrectly plotted on growth chart by AWWs. Growth chart plotting was considered as skill of AWWs in this study. N. Thomas et al. found that 55.6% of AWWs knew how to plot the weight on the growth chart.<sup>[8]</sup>

In present study 87% AWWs had adequate knowledge regarding zones of different grades of malnutrition and their interpretation. But 47% AWWs did not know which category should be considered when plotting of weight falls on junction of any two bands. S. Bhasin et al. found in their study that almost all (99%) of the AWWs had adequate knowledge regarding the significance of lines on the growth charts indicating different grades of nutritional status.<sup>[4]</sup>

In present study only 9% AWWs were able to interpret descending curve as very dangerous for child whereas only 28% of AWWs were able to interpret that low weight for age results in flattened growth curve. A similar result also shown by U. Kapil et al. that the interpretation of all kinds of growth curves was generally poor. More than half of the AWWs could not interpret a flattened growth curve which meant that inadequate weight gain was not being recognized as a danger signal. Correct interpretation of ascending growth curve 65%, descending growth curve 63% and flattened growth curve 42%.<sup>[9]</sup> In some studies like S. Bhasin et al. and A. Davey et al. noted that there were most of AWWs had correct knowledge about the importance of ascending, flattened and descending curves.<sup>[4]</sup>

In this study Knowledge assessment score went on increasing as the experience in years was increasing but the difference was not statistically significant ( $p > 0.05$ ). No relationship was found between the educational qualification of AWW and her knowledge about different services provided by her ( $p > 0.05$ ) similar results were studied by T. Meenal et al.<sup>[10]</sup>

Dissimilarity in results were found in study by Patil SB et al. that Knowledge assessment score went on increasing as the experience in years was increasing and the difference was statistically significant ( $p < 0.05$ ). No relationship was found between the educational qualification of the worker and her knowledge about different services provided by her. ( $p > 0.05$ ).<sup>[11]</sup>

In this study variable such as educational qualification, experience and refresher training had no impact on KAP of AWWs. Similar results were noted in study by K. Sheela et al.<sup>[12]</sup>

**Conclusion and recommendation:**

Very good agreement ( $\kappa$  0.8) was found in malnutrition grades given by AWWs and Weight for Age Z score from WHO Anthro software but it was not as much as expected. Understanding of various aspect of growth monitoring was not good in AWWs of rural area in present study. Educational qualification, experience and refresher training had no significant impact on knowledge and skill of AWWs. The knowledge and efficiency of AWWs can be enhanced through frequent lectures and on-the-spot demonstrations. Further studies can be carried out with innovative techniques to improve skills of AWWs.

**Declaration:**

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Conflict of Interest: Nil

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