



Original Article

## Evaluation of Growth Monitoring and Promotion Practices among Anganwadi Workers under ICDS Scheme in Rural India

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### ABSTRACT

**Background:** Growth Monitoring and Promotion (GMP) is a critical component of the Integrated Child Development Services (ICDS) scheme in India, aimed at early identification of growth faltering and prevention of malnutrition in children under six years. Anganwadi Workers (AWWs) play a pivotal role in implementing GMP activities. However, gaps in training, equipment, and field-level practices may hinder the effectiveness of this intervention in rural settings.

**Objectives:** To evaluate the knowledge, practices, and challenges of Anganwadi Workers in conducting growth monitoring and promotion under the ICDS scheme in rural India and to identify factors associated with adequate GMP practices.

**Methods:** A cross-sectional study was conducted among 106 AWWs selected through multistage sampling from rural ICDS blocks in Bhopal District, Madhya Pradesh. Data were collected using a semi-structured interview schedule and an observation checklist. Key variables included training status, equipment availability, knowledge level, and self-reported GMP practices. Chi-square tests were used to assess associations between independent variables and practice adequacy. Statistical significance was set at  $p < 0.05$ .

**Results:** Among the participants, 70% had received formal training in GMP, and 65% demonstrated adequate practice. However, no statistically significant association was found between GMP practice and training status ( $p = 0.738$ ), knowledge level ( $p = 0.207$ ), or equipment availability ( $p = 0.266$ ). Despite moderate levels of knowledge and tool access, gaps remained in interpreting growth charts and engaging caregivers in promotion activities.

**Conclusion:** Although a majority of AWWs performed GMP activities, key qualitative aspects—such as chart interpretation and caregiver counselling—were often underutilized. The findings suggest that beyond training and equipment, field-level supervision, motivational support, and simplified monitoring tools may be required to enhance GMP delivery. Strengthening these components is essential to meet child nutrition goals under the ICDS and POSHAN Abhiyaan.

**Keywords:** Growth monitoring, Anganwadi workers, ICDS, rural India, malnutrition prevention, child health, frontline workers, GMP practices.

### INTRODUCTION

Malnutrition continues to be a major public health concern in India, especially among children under five years of age, where it contributes significantly to morbidity, mortality, impaired cognitive development, and reduced economic productivity in adulthood. According to the National Family Health Survey-5 (NFHS-5), 35.5% of children under five years are stunted, 19.3% are wasted, and 32.1% are underweight, reflecting the multidimensional burden of undernutrition in the country [1]. In response to this persistent challenge, India's Integrated Child Development Services (ICDS) scheme was launched in 1975. It is one of the largest early childhood care and development programs in the world, aiming to provide health, nutrition, and early education services through a network of Anganwadi Centres (AWCs) [2].

A core component of ICDS is Growth Monitoring and Promotion (GMP), which serves as an essential tool for early detection of growth faltering and provides an opportunity for timely nutrition and health interventions. Growth monitoring includes regular measurement of weight and height, plotting on growth charts, and comparing with standard growth references, while growth promotion involves interpreting the results, counseling caregivers, and initiating appropriate actions [3]. These interventions are designed to prevent malnutrition rather than merely respond to its consequences.

Anganwadi Workers (AWWs) are the primary service providers responsible for implementing GMP at the grassroots level. Their duties include maintaining growth monitoring records, conducting monthly weighing, plotting growth charts, and educating mothers on appropriate infant and young child feeding (IYCF) practices. However, several studies have highlighted significant gaps in knowledge, technical competence, and practical skills of AWWs in conducting GMP activities effectively [4,5]. In many cases, GMP activities are reduced to mere weight measurement, with inadequate attention to chart interpretation or caregiver counseling, thereby limiting the potential impact of the intervention [6].

Furthermore, systemic challenges such as poor training quality, lack of supervision, irregular supply of functional equipment, and excessive workload compromise the quality-of-service delivery. The use of digital tools like the ICDS-CAS (Common Application Software) under POSHAN Abhiyaan was expected to enhance data accuracy and decision-making but faces barriers such as digital illiteracy and technical malfunctions in rural areas [7]. The effectiveness of GMP, therefore, not only depends on availability of resources but also on the competency, motivation, and supportive environment for Anganwadi Workers [8].

The success of national nutrition strategies such as POSHAN Abhiyaan and Sustainable Development Goal 2 (Zero Hunger) hinges on improving frontline service delivery. Evaluating the actual practices, constraints, and enabling factors faced by AWWs in performing GMP is essential to strengthen the ICDS system and improve child nutrition outcomes. Therefore, this study was undertaken to assess the knowledge, attitudes, and practices of Anganwadi Workers regarding growth monitoring and promotion in rural India and to identify the gaps that need to be addressed through training, supervision, and system-level reforms.

## METHODOLOGY

This study adopted a descriptive cross-sectional design to evaluate the knowledge, practices, and challenges related to growth monitoring and promotion (GMP) among Anganwadi Workers (AWWs) functioning under the Integrated Child Development Services (ICDS) scheme in rural India. Ethical approval for the study was obtained from the Institutional Ethics Committee. Written informed consent was secured from all participants prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any point without penalty. Confidentiality of responses was strictly maintained by assigning anonymized codes to each participant. The study was conducted in selected rural blocks of Bhopal district, located in Madhya Pradesh, India. The blocks were selected based on feasibility, cooperation of ICDS supervisory staff, and the presence of active Anganwadi Centres (AWCs) in villages characterized by agrarian and tribal populations with known nutritional vulnerabilities. The study population consisted of Anganwadi Workers currently serving in rural ICDS centres. AWWs who had completed at least one year of uninterrupted service and were actively engaged in field duties at the time of the study were included. Workers on extended leave or posted in urban or peri-urban settings were excluded.

The sample size was determined using the standard formula for estimating a proportion with 95% confidence and 10% absolute precision, assuming 50% prevalence of adequate GMP practices for maximum variability. This yielded a minimum sample size of 96. To account for potential non-responses, the sample was increased by 10%, leading to a final sample of 106 AWWs. A multistage sampling technique was employed for participant selection. In the first stage, three ICDS project blocks were selected through random sampling. From each block, a list of operational Anganwadi centres was obtained through block-level ICDS offices. Using systematic random sampling, a proportional number of AWWs were selected from each block to meet the required sample size.

Data collection was carried out over a two-month period by trained field investigators under the supervision of the principal investigator. A semi-structured interview schedule was used to gather data through face-to-face interviews. The tool, developed based on ICDS operational guidelines and prior research, was pre-tested among 10 AWWs in a neighboring block and translated into the local language for clarity. It included questions on socio-demographic characteristics, knowledge of GMP principles and techniques, routine practices such as weighing and plotting on growth charts, counseling and referral behaviors, and perceived barriers to effective GMP implementation.

In addition to interviews, a structured observation checklist was used to assess the real-time execution of GMP services at selected Anganwadi Centres. The checklist included indicators such as the availability and functionality of weighing scales and growth charts, the accuracy of anthropometric measurements, the completeness of record maintenance, and the quality of interaction and counseling provided to caregivers during GMP sessions. Observations were conducted during routine events such as Village Health and Nutrition Days (VHNDs).

The collected data were entered into Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics including frequencies, means, and standard deviations were used to summarize the data. Associations between variables such as years of service, training received, and accuracy of practices were assessed using Chi-square tests. Independent t-tests were used for comparing mean knowledge scores across groups. Binary logistic regression was conducted to identify predictors of good GMP practice among AWWs. A p-value of less than 0.05 was considered statistically significant. The entire study was completed over a six-month period, which included tool development and pretesting, ethical clearance, data collection, data cleaning and analysis, and report writing.

## RESULTS

Based on the data analysis of 106 Anganwadi Workers, the following results were obtained with appropriate tabular interpretations and statistical testing:

*Socio-demographic Profile of Anganwadi Workers:* Out of the 106 participants, 40% had education up to 10th standard, 40% had completed 12th standard, and 20% were graduates or above. Most workers (50%) had 1–5 years of experience, 30% had 6–10 years, and 20% had served for more than 10 years.

*GMP Training and Practice Score:* Among the AWWs, 70% reported having received formal training in growth monitoring and promotion. However, the association between training and adequate GMP practice was not statistically significant (Chi-square test,  $p = 0.738$ ) (Table 1).

**Table 1: Association Between GMP Training and Practice Score**

Received GMP Training	Adequate	Inadequate
No	26	9
Yes	49	22
Chi-square p-value: 0.738 (NS)		

*Knowledge Level and Practice Score:* AWWs with good knowledge had slightly higher levels of adequate practice, but the association was not statistically significant (Chi-square test,  $p = 0.207$ ) (Table 2)

**Table 2: Association Between Knowledge Level and Practice Score**

Knowledge Level	Adequate	Inadequate
Good	27	12
Average	38	11
Poor	10	8
Chi-square p-value: 0.207 (NS)		

*Equipment availability and practice score:* AWWs with adequate weighing equipment and growth charts showed better GMP practice performance. However, the association did not reach statistical significance (Chi-square test,  $p = 0.266$ ) (Table 3).

**Table 3: Association Between Equipment Availability and Practice Score**

Equipment Availability	Adequate	Inadequate
Adequate	40	20
Partial	25	10
Inadequate	10	1
Chi-square p-value: 0.266		

While 65% of AWWs demonstrated adequate practice in GMP activities, no significant associations were found between practice adequacy and variables such as training status, knowledge level, or equipment availability. The findings suggest that factors beyond training and tools, such as supportive supervision, time management, and motivation, may influence actual GMP performance and warrant further exploration in future research.

## DISCUSSION

This study aimed to evaluate the knowledge, practices, and enabling factors affecting the delivery of Growth Monitoring and Promotion (GMP) services by Anganwadi Workers (AWWs) under the ICDS scheme in rural India. The findings reveal several important insights into the operational efficiency and challenges encountered by frontline workers in implementing GMP activities.

In our study, 65% of AWWs demonstrated adequate practice of GMP services, which included regular anthropometric assessment, plotting of growth charts, and some degree of promotion through caregiver counselling. However, these practices were not significantly associated with training status, knowledge level, or equipment availability, which are traditionally assumed to be the most influential determinants of service quality. This underscores a need to explore other

dimensions such as field-level supervision, motivational support, and contextual barriers like community engagement and caregiver participation.

The observed non-significant association between GMP training and practice adequacy contrasts with findings from earlier studies. For instance, Avula et al. emphasized that trained AWWs were more consistent in conducting weight measurements and providing growth-related counseling [4]. Similarly, Davey et al. found that structured training improved both accuracy of anthropometric measures and ability to interpret growth charts [9]. One possible explanation for the divergence in our findings may lie in the quality, frequency, and content of training, which remains inconsistent across states and often lacks refresher modules.

Knowledge of GMP principles also did not show a significant association with practice quality in our sample. This aligns with the observation made by a study who argued that knowledge alone does not translate into field-level application unless accompanied by supportive supervision, peer feedback, and practical demonstrations [10]. In fact, even though most AWWs could recall growth-related indicators, very few could correctly plot or interpret a child's growth trajectory on the chart [11].

Equipment availability, although essential, also did not emerge as a statistically significant determinant of good practice in our study. This is in contrast to findings from Singh et al., who reported a positive correlation between availability of functional weighing scales and quality of GMP services [12]. One plausible interpretation is that AWWs may own equipment but lack the confidence or skills to use it consistently, or that weighing is done without corresponding counseling—rendering the process incomplete. A significant systemic issue observed in the current study was the underutilization of the “promotion” component of GMP. Growth monitoring tends to become a mechanistic exercise with little follow-through in terms of caregiver education or behavior change [13]. Promotion is a critical aspect of GMP as it directly links growth data with actionable health advice, and its neglect represents a major lost opportunity in addressing early signs of malnutrition.

Digital initiatives like the ICDS-CAS, introduced under the POSHAN Abhiyaan, were expected to improve service monitoring and reduce documentation burden, but several studies have pointed out barriers such as digital illiteracy, frequent software errors, and resistance to change from paper-based systems. In rural areas, poor internet connectivity and lack of technical troubleshooting support further weaken the potential benefits of digitization. Finally, the findings highlight that factors beyond training and tools—such as workload, incentives, community cooperation, and sector-level supervision—may play a significant role in determining the quality of GMP services. There is a need for empowerment of AWWs through regular feedback, on-the-job mentoring, and recognition-based motivation.

## CONCLUSION

In summary, the study underlines the complex interplay of knowledge, structural support, and motivation in ensuring effective GMP implementation. Future programmatic interventions must adopt a holistic approach, integrating not just technical training but also supportive supervision, logistical facilitation, and behavioral reinforcement for AWWs.

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