Original Article

Capacity of frontline ICDS functionaries to support caregivers on infant and young child feeding (IYCF) practices in Gujarat, India

Anuraag Chaturvedi MPH, N Nakkeeran PhD, Minal Doshi MPH, Ruchi Patel MSc, Sadhana Bhagwat MD

Public Health Foundation of India, New Delhi, India

Improved infant and young child feeding practices have the potential to improve child growth and development outcomes in India. Anganwadi Workers, the frontline government functionaries of the national nutrition supplementation programme in India, play a vital role in promoting infant and young child feeding practices in the community. The present study assessed the Anganwadi Workers' knowledge of infant and young child feeding practices, and their ability to counsel and influence caregivers regarding these practices. Eighty Anganwadi Workers from four districts of Gujarat participated in assessment centres designed to evaluate a range of competencies considered necessary for the successful promotion of infant and young child feeding practices. The results of the evaluation showed the Anganwadi Workers possessing more knowledge about infant and young child feeding practices like initiation of breastfeeding, pre-lacteal feeding and colostrum, age of introduction of complementary foods, portion size and feeding frequency than about domains which appear to have a direct bearing on practices. A huge contrast existed between the Anganwadi Workers' knowledge and their ability to apply this in formal counselling sessions with caregivers. Inability to empathetically engage with caregivers, disregard for taking the feeding history of children, poor active listening skills and inability to provide need-based advice were pervasive during counselling. In conclusion, to ensure enhanced interaction between the Anganwadi Workers and caregivers on infant and young child feeding practices, a paradigm shift in training is required, making communication processes and counselling skills central to the training.

Key Words: infant and young child feeding practices, knowledge, skills, ICDS, Anganwadi Workers, India

INTRODUCTION

Forty-five percent of the global deaths in children younger than five years have been attributed to nutritional disorders.[1] Over two-third of these malnutrition cases occur during the first year of life owing to inappropriate feeding practices.[2] Inappropriate feeding practices, poor dietary diversity, limited feeding frequency and low energy intake are important risk factors for malnutrition and related morbidities.[3-5]

Promoting appropriate early childhood nutrition is the single most effective child survival intervention.[6,7] Optimal infant and young child feeding (IYCF) practices imply that every child gets the best possible head start in life. The IYCF practices of exclusive breastfeeding for the first six months and continued breastfeeding for two years or beyond together with adequate and appropriate complementary feeding (CF) after six months[8,9] not only substantially reduce malnutrition and morbidity but also reduce under-five deaths by 19%[10] and improve quality of life outcomes in children.[6]

The state level survey data for Gujarat, India, show underweight and stunting in under-five children at 44.6% and 51.7% respectively,[11] reflecting the failure to receive adequate nutrition over a longer period of time. The IYCF indicators in the state are still at suboptimal level, with only 48.3% practicing initiation of breastfeeding within one hour of birth, 41.4% practicing exclusive breastfeeding till six months and 47.8% children receiving appropriate complementary feeding.[12] Similarly, the most recent nutrition survey shows inadequate consumption of essential food groups by 1-3 year old children in rural Gujarat and protein and energy inadequacy in the diet at 57.8%.[13]

The Integrated Child Development Services (ICDS) is the flagship programme of India to address childhood malnutrition in the country. The ICDS programme provides services through community-based workers, referred to as Anganwadi Workers (AWWs). The services are provided from a centre called the Anganwadi Centre (AWC), a courtyard play centre, which is located within the village itself. One AWW is appointed for 1000 people and provides a package of the following six services un-

Corresponding Author: Anuraag Chaturvedi, Public Health Foundation of India, 5/20 Vineet Khand, Gomti Nagar, Lucknow-226010, UP, India.
Tel: +91-9015803030; Fax: +91-11 -49566063
Email: anuraag.chaturvedi@phfi.org; anuraag7@gmail.com
Manuscript received 25 March 2014.
doi: 10.6133/apjcn.2014.23.s1.04

der the ICDS Project: supplementary nutrition, immunisation, health check-up, referral services, pre-school non-formal education, and nutrition and health education. The ICDS programme in Gujarat was launched in 1975 and presently covers 5.2 million beneficiaries (children under 6 years, pregnant and lactating women, and adolescent girls) through 49,338 operational AWCs[14] with AWWs serving as the first point of contact on nutrition needs of children below 6 years of age. To successfully execute implementation of ICDS services, the government has developed comprehensive training programmes that include induction, job and refresher trainings for AWWs, delivered from the district level Anganwadi Workers Training Centres (AWTCs).

Facilitating behaviour change among caregivers through increased awareness, skill building and effective counselling is seen as an important pathway to address the problem of inappropriate IYCF practices.[15-17] Results from studies show that apart from socio-economic, cultural and environmental factors, adoption of appropriate IYCF practices is also strongly influenced by the AWWs' level of knowledge and skills.[15,18] Knowledge of IYCF and new-born care practices among caregivers who were visited by AWWs having superior knowledge was higher compared to those visited by AWWs having less knowledge.[19,20] Elsewhere, Shi and Zhang[21] showed that culture specific, easily accessible and holistic educational interventions were found to improve IYCF practices among mothers and other caregivers.

The present study was conducted to assess knowledge of AWWs on IYCF practices as well as their counselling skills in promoting these among beneficiaries. In this paper, we report the findings of the knowledge and skills assessment exercise conducted in Gujarat.

MATERIALS AND METHODS

Study design and sample size

The AWWs were selected through a multistage cluster sampling technique. Four districts, viz Dahod, Jamnagar, Patan and Surat were randomly selected from four of the six divisions in the state. In the second and third stage, ICDS sectors and AWC respectively were selected from each district, based on probability proportional to size and randomisation. Out of 96 AWWs selected, 80 participated in the study.

Training, supervision and standardization of tools

To assess the knowledge and skills, an assessment centre methodology was designed on IYCF practices. An assessment centre is a process in which individuals participate in a series of exercises, most of which approximate what they would be called upon to do in their job.[22] The assessment centre provides reliable and valid information about the range of competencies of an individual considered to be necessary for successful performance in a specific job.[23] Judgments about behaviour are made from specifically developed simulations where assessors observe the behaviour of the participants, and ultimately pool their observations, evaluate the behaviours, and provide a score for related performance dimensions.[24]

As part of the assessment centre design process, the study team visited the AWTCs and interviewed trainers to understand the AWW training curricula and modules for different trainings as well as the process and methodologies used for the training. Additionally, the team met key people from the Department of Women and Child Development (DWCD) in Gujarat as well as other experts on public nutrition to discuss key drivers for successful implementation of IYCF practices and the competencies and standards needed to measure the same. The study team thereafter defined each competence as a behaviour manifest and designed situational exercises and tools against it. Four assessment centres were conducted in the above sampled districts for two days each. At the centre, the participants were put through an ice breaker followed by 20 situational exercises and two non-time-bound simulation exercises.

For assessing knowledge, short cases were developed on breastfeeding and complementary feeding situations and administered to the AWWs to assess their understanding and competence to analyse and recommend optimal practices. AWW proficiency in counselling caregivers on IYCF practices was assessed through two simulations where caregivers of a 4-5 month old infant (simulation 1) and 12-18 month old child (simulation 2) respectively were invited with their child to the assessment centre which was equipped with all resources and tools as available in the real AWC.

Each AWW interacted with two mothers separately in a non-time-bound manner during which their competencies on 1) weighing the child, 2) plotting and interpreting the growth monitoring chart, 3) understanding current feeding practices of children and 4) ability to provide appropriate counselling on IYCF practices were assessed.

The simulation was facilitated at the ratio of 1 AWW to 3 assessors. After each assessment centre, the study team consolidated findings of each participant on her performance in exercises and simulations. Each AWW was assessed against the criteria and standards for the exercise and were not compared with each other.

The situational exercises were designed in English, translated into Gujarati language by an independent professional translator and pretested with caregivers of children below three years of age, residing in Vadodara and Ahmedabad districts of Gujarat. All assessors were trained by core senior project staff over two days.

RESULTS

Profile of Anganwadi Workers (AWWs)

Table 1 shows the profile of AWWs who participated in the assessment exercise. The data on education qualification shows that close to 37% of AWWs had completed 10th grade while 31% completed grade 12. Years of experience in the AWW position ranged from 1-31 years, 13.7% had 1-5 years of experience while more than half of AWWs had worked for more than 15 years as AWWs. The proportion of AWWs who had received a six-day induction training was small (6.25%); but more than three-fourth (76.2%) had received a 26-day job orientation training and 65% had received a five-day refresher training in the past two years. Induction training is a six day training programme following the appointment of AWWs. Orientation training is conducted for AWWs once during the service period for a period of 26 working

Table 1. AWW profile and training received

Education	8th grade	10th grade	12th grade	Graduation & above
	7%	37%	31%	25%
Experience as AWW	1-5 yrs	6-10 yrs	11-15 yrs	> 15 yrs
	13.7%	15%	20%	52.3%
Training	Induction	Job orientation	Refreshers'	-
	6.25%	76.2%	65%	-

Table 2. Knowledge of AWWs on breastfeeding practices

Indicators	Case situation: Given a situation AWWs were expected to	Result (%) n=80
Early initiation of breastfeeding	Advise a recently delivered woman on early initiation of breastfeeding	95
Pre-lacteal feeding	Advise mother of a newborn baby who wanted to give pre-lacteal feed & discard first milk	100
Colostrums		100
Recognize correct attachment for breastfeeding	Identify the picture showing correct attachment to breast, and explain correct attachment signs	91
Signs of right attachment		
• More areola visible above top lip		56
• Mouth wide open		56
• Chin touching breast		29
• Lower lip curled outwards		21
Identification of reliable signs for milk insufficiency	Inform mother about the two signs which could help assess if baby is getting enough milk.	
• Poor weight gain		40
• Small amount of concentrated urine		8
Exclusive breastfeeding	Advise mother of a three month old infant who wanted to introduce cow's milk	96
Expressing and storing breast milk	Advise mother about milk storage as she plans to go out for work.	51
Continuing breastfeeding	Advise mother regarding continuation of breastfeeding after six months	95

days; 22 days in class room and the remaining four days for field visits in AWCs, while refresher training is conducted for five working days, once in every two years of the job and covers, apart from critical program areas, new topics and program developments.

Knowledge on breastfeeding practices

Table 2 shows results of AWWs' knowledge on breastfeeding practices. For each indicator, a case situation was given to the AWWs and their responses are shared below.

a) Early initiation of breastfeeding: In the simulation exercise, AWWs were asked to advise a mother who had newly delivered, about breastfeeding. Some 95% of AWWs advised immediate initiation of breastfeeding or within one hour of child birth. The remaining 5% advised the mother to wait for the secretion of milk to start before initiating breastfeeding.

b) Pre-lacteal and colostrum feeding: In a situation where a family holds the opinion that something 'sweet' should be given to the new-born, all AWWs reported that they would strongly advise mothers against giving pre-lacteal feeds. Similarly, all AWWs concurred that the mother should feed colostrum to the baby and not discard it. Further asked to explain the benefits of colostrum, all AWWs highlighted immunity and the protection it provides against infections. However, very few could highlight the nutritional properties of colostrum.

c) Attachment for breastfeeding: Correct breastfeeding technique is important for ensuring successful breastfeeding, as incorrect technique may cause breast engorgement leading to painful breasts.[25] The AWWs were evaluated for their ability to identify the correct attachment for breastfeeding by showing different pictures. About 91% of AWWs identified correct attachment to the breast during feeding. Regarding specific awareness about signs of correct attachment, about 56% of AWWs stated visibility of areola above the top lip and widely open mouth during suckling whereas about 29% and 21% of AWWs mentioned correct position of lower lip and chin respectively. None was able to explain all four signs of correct attachment.

d) Identification of signs for milk insufficiency: One of the common reasons for early termination of breastfeeding is that caregivers believe that they are not producing enough milk[26] and therefore AWWs were asked to identify the signs of insufficient milk supply. About 40% of the AWWs proposed they would consider poor weight gain as one of the signs for judging breast milk insufficiency whereas only 8% highlighted a small amount of concentrated urine (less than 6 times per day) passed by the baby as an indication of not getting

enough milk. Further, only 7% respondents highlighted both the signs (ie weight loss and concentrated urine).

e) **Exclusive breastfeeding (EBF):** To judge knowledge of the AWWs with respect to feeding additional food to an infant less than 6 months, about 96% of the AWWs reported that giving cow's milk as an additional feed to a three month old infant was an incorrect practice. To further assess their understanding of the benefits of EBF, 65% AWWs reported it reduced infections, 36% believed it provided all required nutrients, 31% reported that it helped to gain weight and 30% stated that it was enough to satisfy the hunger of the child.

f) **Expressing and storing breast milk:** To sustain exclusive breast feeding, especially in the case of a working mother, AWWs should have knowledge and skills to teach the method of expressing breast milk. About half of the AWWs (51%) were aware of the procedure for expressing and storing breast milk for later feeding and advised the mother to do the same.

g) **Continuation of breastfeeding:** When asked, through a given situation, to advise a mother regarding continuation of breastfeeding after the mother had introduced complementary foods to the 6 months child, about 95% of AWWs shared that breastfeeding should be continued along with other feeds while 5% believed that it should be substituted with additional feed.

Knowledge on complementary feeding

Table 3 shows results of AWWs' knowledge on complementary feeding practices. Similar to the previous method, for each complementary feeding indicator, a case situation was presented to AWWs and their responses were captured.

a) **Age of introduction of complementary foods and implications of delay:** About 94% of AWWs felt that six months was the right age to start feeding complementary foods to the infant while 6% were in favour of starting complementary feeding prior to six months. Regarding implications for delayed complementary feeding, about 71% of AWWs referred to inadequate weight gain, 63% stated compromised growth and development in children while 25% referred to increased risk of infections.

b) **Consistency (thickness) of complementary food:** To assess knowledge on correct consistency/thickness of food for infants, pictures of food with different consistencies were shown to AWWs and they were asked to select the correct pictures and provide reasons. Only about 19% of AWWs could identify the correct consistency for the food while the rest (81%) selected pictures with a thin consistency. When asked to provide reasons for selecting the incorrect picture, AWWs indicated that such food was easy to swallow and digest, did not require chewing and that it was better to start with liquid and then move on to semi solid and solid food.

c) **Energy and Nutrient density of complementary foods:** Given a certain situation, AWWs were asked about additional ingredients to be added in Khichdi (A semi-solid, gruel-like preparation with rice, legumes, salt and turmeric, commonly consumed in the state) to make it energy and nutrient dense. Addition of oil, ghee, butter, etc., to make Khichdi energy dense was advised by 71% of AWWs, while 65% of AWWs suggested addition of green leafy and other vegetables to make the food nutrient dense.

Table 3. Knowledge of AWWs on complementary feeding practices

Indicators	Case situation: Given a situation, AWWs were expected to	Results, % (n=80)	
Age of introduction of complementary foods	Advise mother on age of introduction of semi sold foods	94	
Consistency (thickness) of complementary foods	Select the picture depicting correct food consistency	19	
Ways to make food	Advise mother for additional items to be added in the *Khichdi*		
• Energy dense	to make it (a) energy dense (b) nutrient dense	71	
• Nutrient dense		65	
Knowledge about *three* local Iron and vitamin A rich foods	Inform mother about three local iron, vitamin rich foods	Iron	Vitamin A
• At least one		89	71
• Three		24	16
• None		11	29
Portion Size	Recommend mother of a 15 month child about portion size and food frequency	86	
Frequency of food		96	
Promotion of food diversity	Prepare a day's meal from locally available foods		
• Grains		100	
• Pulses		95	
• Fat & oil		99	
• Fruit		50	
• Green Vegetables		26	
• Poultry & meat		38	
• Milk and dairy products		88	
• Balbhog		66	

Table 4. Counselling skills of AWWs on IYCF practices

Skill	During interaction with caregivers and child, AWW was expected to	Expected Response (s)	Results, % (n=80)	
			Simulation 1 (caregiver of 4-5 month infant)	Simulation 2 (caregiver of 12-18 month old child)
Weight and age recording	Check the weight of the child	Recording correct age	49	50
		Minimal clothing	78	71
		Checking '0' adjustment	40	32
		Right child position	60	50
Plotting growth chart and interpreting the curve	Plot WHO Growth chart	Selection of correct growth chart (M/F)	75	75
		Accurate weight plotting	65	75
		Involvement of caregiver	68	64
		Infer and explain results	80	78
Understand feeding practices of the child	Take breastfeeding history and practices	Current status of breastfeeding	30	
		Duration of breastfeeding	18	
		Top feed being given	33	
		Attachment and positioning during breastfeeding	25	
		Exploring breast milk sufficiency	2	
	Take complementary feeding practices	Ask about frequency of feeding		19
		Ask about portion size		10
		Ask about food consistency		7
		Ask about consistency and frequency of Balbhog		12
		Ask about Iron and Vitamin A rich food		17
		Ask about energy and nutrient dense food		12
Age specific counselling skills	Advice on breastfeeding	Exclusive breastfeeding	35	
		Frequency and duration of breastfeeding	39	
		Breastfeeding during illness	13	
	Advice on complementary feeding	Meal frequency/ food consistency/portion size		28
		Iron /Vitamin A rich foods		19
		Feeding Balbhog		26
		Responsive feeding		25

d) Knowledge about iron and vitamin A rich foods: Assessment of the knowledge of AWWs regarding three locally available iron and vitamin rich foods showed that about 89 % of AWWs identified at least one iron-rich local food while 24% could name three such local foods. Similarly, for vitamin A-rich local food, 71 % of AWWs identified at least one such food while only 16% were aware about three such foods. About 30% and 11% of AWWs could not recommend any locally available vitamin A and iron-rich food respectively.

e) Portion size and feeding frequency: When asked to choose portion size and number of feeds for a 15 month old child, 86% and 96% of AWWs responded correctly with appropriate quantity and frequency of food to be fed daily to the child respectively.

f) Preparing a meal plan for a year old infant: In a situation where AWWs were asked to prepare a one day meal plan for a 1-year old child, the analysis showed a meal primarily comprised of cereal, pulses and milk and/or milk based products, reflecting the common diet of rural households in Gujarat.[13] All AWWs recommended meals containing cereal grains. Inclusion of pulses and fats/oils were recommended by 95% and milk/milk products were recommended by 88%. Inclusion of Balbhog (a Ready to Eat micronutrient fortified take home ration provided under ICDS scheme) and green leafy vegetables were recommended by 66% and 26% of AWWs respectively. Poultry and meat products, as well as fruits were included in the meal plan by 38% and 50% of AWWs respectively.

Growth monitoring and IYCF counselling skills

In the ICDS programme, when a caregiver visits the AWC with the child, it is expected that the AWW would weigh the child, plot the growth chart to assess the growth status, identify reasons for growth faltering and finally counsel the caregiver on child care and feeding practices. During the two simulations, skills of AWWs were evaluated on the above steps. Results are shown in Table 4.

a) Weight measurement: Before measuring the weight of the child, about 78% and 71% of AWWs ensured minimal clothing or undressed the child during simulation 1 and simulation 2 respectively. The practice of checking zero-setting on the weighing scales seemed low as only 40% and 32% of AWWs checked zero-setting before taking the weight during simulation 1 and 2 respectively. Many AWWs continued to weigh the child with a positive error of as much as one kilogram. While weighing the infants on suspended balances (Salter type) during simulation 1, only 60% of AWWs could position the infant correctly.

b) Plotting and interpreting the growth monitoring chart: Growth charts used in Gujarat are colour coded as per the gender of the child; pink for girls and blue for boys. About 25% of the AWWs overlooked this and used an incorrect growth chart for the exercise. During simulation 1, about 65% of AWWs could

Table 5. IYCF Knowledge and its application during counselling session (n=80)

IYCF practices	Had knowledge (%)	Discussed during counselling (%)
Exclusive breastfeeding	100	35
Correct positioning and attachment during breastfeeding	91	25
Identification of signs of insufficiency of breast milk		
• Poor weight gain	40	2
• Small amount of concentrated urine	8	
Ways to make food		
• Energy dense	71	19
• Nutrient dense	65	
Feeding Balbhog	66	26
Appropriate complementary feeding practices		
• Portion size	86	10
• Feed Frequency	96	19
• Food consistency	19	7
Local food rich in		
• Iron (at least one)	89	8
• Vitamin A (at least one)	71	
Inclusion of different food groups in diet		
• Grains	100	
• Fat & Oil	99	
• Pulses	95	
• Milk & Dairy Products	87.5	None
• Balbhog	66	
• Fruit	50	
• Egg/ Fish / Meat	37.5	
• Green Vegetables	26	

correctly plot the child's weight against his age while this was done by 75% during simulation 2. The growth of the child was correctly inferred and explained to mothers by 80% and 78% of AWWs during simulation 1 and 2 respectively.

c) **Understanding feeding practices of children:** After plotting the growth monitoring chart, it is important for AWWs to identify causes of growth faltering. This requires that they should have skills for asking the right questions while taking a feeding history of the children. During simulation 1, 30% of AWWs asked caregivers the status and frequency of breastfeeding, about 18% of AWWs probed on the duration of breastfeeding and 33% took the history of feeding of other foods, 25% enquired about positioning and attachment during breastfeeding, 2% asked questions regarding symptoms of sufficiency/insufficiency of breast milk while 24% sought information about the morbidity history of the child. During simulation 2, with a mother of 12-18 month child, 19% of AWWs asked about feeding frequency, 9.5% probed about portion size, and 7% enquired about consistency of food being fed to the child. A history of Balbhog feeding was taken by 17% of AWWs and about 12% asked about its consistency. About 8% of AWWs asked mothers about any iron and vitamin A rich foods being given to the child.

d) **Providing appropriate counselling on IYCF:** During simulation 1, it was expected that AWWs would counsel caregivers by giving appropriate advice on breastfeeding. During this counselling session, about 35% of AWWs advised mothers on exclusive breastfeeding. About 39% of AWWs counselled mothers on frequency and duration of breastfeeding. Few AWWs gave advice about feeding practices during a child's illness, and equally few advised caregivers about the need for regular growth monitoring. During simulation 2, advice on frequency, quality and consistency of food was either cursorily mentioned or overlooked during the counselling session. About 19% of AWWs provided advice on food frequency, 10% on portion size and 7% on food consistency. No AWW promoted diet diversity in their discussion with caregivers. About 19 % of AWWs advised caregivers about giving iron- or vitamin A- rich foods to children, though the majority of the foods recommended were expensive. Nearly 26% of AWWs encouraged caregivers to feed the child with Balbhog and some also gave a demonstration for making Balbhog using the Balbhog packet, water and spoon and yet, points related to both the consistency and the frequency of feeding Balbhog were missed by all. Around 25% of AWWs were found to have counselled caregivers on responsive feeding, rendering advice on feeding the child slowly and with care. Many AWWs also recommended continued AWC visits for weight and growth monitoring..

DISCUSSION

The study assessed the AWWs' knowledge on IYCF practices, its application during interactions with caregivers, their skills related to growth monitoring and their ability to engage with and provide appropriate counselling to caregivers. The results of the study showed that a relatively large proportion of AWWs was aware of a number of key principles of correct IYCF practices.

However, there were still some serious gaps in their knowledge and understanding: very few AWWs knew the nutritional properties of colostrum, none were able to enlist all the four signs of correct attachment of child to

breast, a few recalled correct signs to identify milk insufficiency, only one-third knew the specific benefits of exclusive breastfeeding, a majority had wrong knowledge about the correct consistency of complementary food, more than three-fourths were not able to name at least three local foods rich in iron or vitamin A, and about the same proportion did not mention adding green leafy vegetables when they were asked about a meal plan for an infant. Similarly a majority of the AWWs lacked specific skills essential for proper growth monitoring and counselling, like zero-setting of weighing scales, seeking the correct age of the child, asking the right set of questions while taking a feeding history of children, and giving appropriate and a complete set of messages while providing counselling. As observed elsewhere, AWWs considered weight recording as an "end in itself" [27] as majority of them overlooked the step to discuss and identify causes for growth faltering with caregivers. These results concur with the findings of a number of other studies in this area. [28-32]

The duration and quality of interaction between AWWs and caregivers while counselling caregivers are of great importance. [27-29] Findings from the current study too highlight that the time of interaction of AWWs with caregivers was too limited to promote any effective follow-up action. AWWs generally did not make an effort to build rapport with caregivers, necessary for caregivers to open up and share information about their child. Only a few AWWs showed active listening skills, following up on verbal and nonverbal cues. The brief interactions with caregivers were unidirectional and were not customized to or reflecting the specific needs of the child. Messages were general, incomplete, "standard directives"[29] like *'feed child more'* and not backed by specific details like 'what' 'why', 'when' and 'how' about these practices and hence were not conducive to convincing caregivers and fostering positive compliance or change.

In other words, even though AWWs demonstrated a reasonable level of theoretical knowledge related to IYCF practices, their level of knowledge and skills regarding the finer details on IYCF were found wanting. Perhaps even more importantly, a majority of AWWs were not able to correctly apply their knowledge in practice (table 5) and to correlate caregivers' practices with the nutritional status of their children, to effectively elicit caregivers' IYCF related knowledge and behaviour and to use that for efficient counselling and, finally, to correctly identify and help overcome barriers to nutritional improvement. This study reiterates findings of other empirical studies[2-7] revealing that messages and actions rendered at different points in time by AWWs with respect to a child are disjointed, with no logical flow of purpose and are often a ritual and end in themselves.

Limitations of the study/suggestions for further research

Data pertaining to feeding of water along with breastfeeding in the first six months was not collected although feeding pre-lacteals and top feeding using milk during this period was studied. This is an omission that should be addressed in future studies. Furthermore, a community-level trial on the effectiveness of using an algorithm-based checklist or template to infuse rigour and completeness into the counselling given by AWWs to caregivers on IYCF should be undertaken.

Implications / policy relevance of findings

The findings of this study imply that the training given to AWWs needs a paradigm shift from being a knowledge focused one to being one that strengthens AWWs' ability to analyse IYCF practices, identify problems, infer appropriate action and subsequently render personalised counselling to caregivers. Building rapport and emphatic engagement with caregivers, effective communication and associated skills should become central to the training. Studies have emphasised the need for "repeated practical reorientation training"[8] and for reinforcing the importance of following certain minimum rules like correctly recording age, regular recording and plotting of weights and using correct interpretation of growth curves for counselling and follow up.[9,27] This study points to a need for developing systems that would enable and induce AWWs to carry out necessary activities associated with IYCF, and provide responsive nutrition and health education, backed up by strengthening of outcome based supervision.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the support received from the participants of the study, research associates who had helped in collecting data and Department of Women and Child Development, Government of Gujarat.

AUTHOR DISCLOSURES

Sadhana Bhagwat is a staff member of Global Alliance for Improved Nutrition (GAIN), South Asia region. The other authors declare that they have no conflict of interest. The present study was part of larger study done in Gujarat funded by GAIN.

REFERENCES

1. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M et al. Maternal and Child Undernutrition Study Group. Maternal and child undernutrition and overweight in low-income and middle-income countries. WHO Lancet Series 1 on Maternal and Child Nutrition 2013. Lancet. 2013; 382:427-51. doi: 10.1016/S0140-6736(13)60937-X.
2. World Health Organization, United Nations Children's Fund. Global Strategy for Infant and Young Child Feeding. Geneva. 2003 [cited 2013/11/3]; Available from: http://whqlibdoc.who.int/publications/2003/9241562218.pdf.
3. Women and Child Development Department. National Guidelines on Infant and Young Child Feeding. New Delhi. 2004/7/27 [cited 2013/11/3]; Available from: http://wcd.nic.in/nationalguidelines.pdf.
4. Lutter CK, Daelmans BMEG, de Onis M, Kothari MT, Ruel MT, Arimond M et al. Undernutrition, poor feeding practices, and low coverage of key nutrition interventions. Pediatrics. 2011;5:e1418-27. doi: 10.1542/peds.2011-1392.
5. Senarath U, Agho KE, Akram DeS, Godakandage SSP, Hazir T, Jayawickrama H et al. Comparisons of complementary feeding indicators and associated factors in children aged 6–23 months across five South Asian countries. Matern Child Nutr. 2012;8(Suppl 1):89-106. doi: 10.1111 /j.1740-8709.2011.00370.x.
6. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E et al. Maternal and Child Undernutrition Study Group. What works? Interventions for maternal and child undernutrition and survival. Lancet. 2008;371:417-40. doi: 10.1016/S0140-6736(07)61693-6.

7. United Nations Standing Committee on Nutrition. Scaling Up Nutrition: A Framework for Action. Food and Nutrition Bulletin. Geneva. 2010/4/4 [cited 2013/11/21]; Available from: http://www.unscn.org/files/Announce ments/ Scaling_Up_Nutrition-A_Framework_for_Action.pdf.
8. Tiwari S. Infant and Young Child Feeding Guidelines. Indian Pediatrics. 2010;47:995-1004.
9. World Health Organization. Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals. Geneva. 2009/6/23 [cited 2013/6/26]; Available from: http://whqlibdoc.who.int/publications/2009/9789241597494_eng.pdf.
10. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS, Bellagio. Child Survival Study Group. How many child deaths can we prevent this year? Lancet. 2003;362:65-71. doi: 10.1016/S0140-6736(03)13811-1.
11. International Institute for Population Sciences, ORC Macro. Third National Family Health Survey for India Vol. 1. New Delhi. 2007 [cited 2013/6/26]; Available from: http://www.measuredhs.com/pubs/pdf/FRIND3/00FrontMatter00.pdf.
12. International Institute for Population Sciences, Ministry of Health and Family Welfare. Third District Level Household and Facility Survey- Factsheet Gujarat. Mumbai: [updated 2010/7/24; cited 2013/6/6]; Available from: http://www.rchiips.org/pdf/rch3/state/Gujarat.pdf.
13. National Institute of Nutrition. Diet and Nutritional Status of Rural Population, Prevalence of Hypertension & Diabetes among Adults and Infant & Young Child Feeding Practices. Third Repeat Survey Report of National Nutrition Monitoring Board 2012. Hyderabad. 2013/8/17 [cited 2013/12/4]; Available from: http://www.nnmbindia.org/ 1_NNMB_Third_Repeat_Rural_Survey___Technicl_Report_26.pdf.
14. Women and Child Development Department. Integrated Child Development Services Scheme. Gandhinagar. 2013/4/6 [cited 2013/7/7]; Available from: http://www.wcd.gujarat.gov.in/Directorate_of_Social_Defence.html.
15. Sunguya BF, Poudel KC, Mlunde LM, Shakya P, Urassa DP, Jimba M et al. Effectiveness of nutrition training of health workers toward improving caregivers' feeding practices for children aged six months to two years: a systematic review. J Nutr. 2013;12:1-14.
16. Bhandari N, Mazumder S, Bahl R, Martines J, Black RE, Bhan MK. Infant Feeding Study Group. An educational intervention to promote appropriate complementary feeding practices and physical growth in infants and young children in rural Haryana, India. J Nutr. 2004;134:2342-8.
17. Sethi V, Kashyap S, Seth V. Effect of nutrition education of mothers on infant feeding practices. Ind J Pediatrics. 2003; 70:463-6. doi: 10.1007/BF02723133.
18. Menon P. The Crisis of Poor Complementary feeding in South Asia: where next? Matern Child Nutr. 2012;8:1-4. doi: 10.1111/j.1740-8709.2011.00394.x.
Gujral S, Abbi R, Mujoo R, Gopaldas T. Determinants of community health workers' performance in India. Food Nutr Bulletin. 1991;13:1-8.
19. Agrawal PK, Agrawal S, Ahmed S, Darmstadt GL, Williams EK, Rosen HE et al. Effect of knowledge of community health workers on essential newborn health care: a study from rural India. Health Policy and Planning 2011 Mar 08. [cited 2013/7/13]; Available from: http://heapol.oxfordjournals.org/content/early/2011/03/08/heapol.czr018.full.pdf+html.
20. Shi L, Zhang J. Recent evidence of the effectiveness of educational interventions for improving complementary feeding practices in developing countries. J Trop Pediatr. 2010;57: 91-8. doi: 10.1093/tropej/fmq053.
21. Randall EJ, Cooke EF, Jefferies RJ. Can assessment centres be used to improve the salesperson selection process? Journal of Personal Selling and Sales Management. 1981;2:52.
22. Sharma RR. 360 Degree Feedback, Competency Mapping and Assessment Centres: For Personal and Business Development. India: Tata McGraw-Hill Education Pvt Limited; 2002.
23. Lowry PE. Assessment centre: reducing inter assessor influence. Journal of Public Personnel Management 1991;20: 19.
24. Snowden HM, Renfrew MJ, Woolridge MW. Treatments for breast engorgement during lactation. Cochrane Database Syst Rev. 2001;2:CD000046.
25. Mass S. Breast pain: engorgement, nipple pain and mastitis. Clin Obstet Gynecol. 2004;47:676-82. doi: 10.1097/01.grf.0000135652.49154.75.
26. Cowan B. Growth monitoring as a critical means to provide primary health care. Indian Journal Pediatr. 1988;55(S1): S74-7. doi: 10.1007/BF02810393.
27. Msefula D. How can growth monitoring and special care of underweight children be improved in Zambia? Tropical Doctor. 1993;23:107-12.
28. Gerein NM, Ross DA. Is growth monitoring worthwhile? An evaluation of its use in three child health programmes in Zaire. Soc Sci Med. 1991;32:667-75. doi: 10.1016/0277-9536(91)90145-3.
29. George SM, Latham MC, Abel R, Ethirajan N, Frongillo EA. Evaluation of effectiveness of good growth monitoring in South Indian villages. Lancet. 1993;342:348-52. doi: 10.1016/0140-6736(93)91479-6.
30. Davey A, Davey S, Datta U. Role of reorientation training in enhancement of the knowledge regarding growth monitoring activities by anganwadi workers in urban Slums of Delhi. Indian J Community Med. 2008;33:47-9. doi: 10.4103/0970-0218.39244.
31. Kapil U, Saxena N, Nayar D, Gnanasekaran N. Status of growth monitoring activities in selected ICDS projects of Rajasthan. Indian Pediatrics. 1996;33:949-52.

Original Article

Capacity of frontline ICDS functionaries to support caregivers on infant and young child feeding (IYCF) practices in Gujarat, India

Anuraag Chaturvedi MPH, N Nakkeeran PhD, Minal Doshi MPH, Ruchi Patel MSc, Sadhana Bhagwat MD

Public Health Foundation of India, ISID Campus, 4 Institutional Area, Vasant Kunj, New Delhi, India

印度 Gujarat 第一線整合兒童發展服務(ICDS)公務員支持嬰幼兒照護者從事餵食的能力

改善嬰幼兒餵食方式，具有改善印度兒童的成長及發育成果的潛力。印度 Anganwadi 工作人員為國家營養補充計畫的第一線公務人員，在社區中扮演推動嬰幼兒餵食方式的重要角色。本研究評估 Anganwadi 工作人員對於從事嬰幼兒餵食的知識，以及針對嬰幼兒餵食與照護者的諮商及影響的能力。80 名來自 Gujarat 四個區的 Anganwadi 工作人員參與評估，評估他們在一系列與嬰幼兒餵食施行成功必要的競爭力。評估結果顯示，比起那些直接與餵食直接相關的壓力，Anganwadi 工作人員具備較多與嬰幼兒餵食的知識，例如開始母乳哺育、哺乳前餵食及初乳、副食品的介入年齡、份數及餵食頻率。不過，Anganwadi 工作人員的知識，與他們將知識應用於正式諮詢時傳授給照護者的能力，有極大的差異。在諮商時，普遍存在缺乏吸引照護者情感的能力、忽視孩童的哺餵歷史、主動聆聽技巧不足，以及沒有足夠能力提供照護者需求的建議。總而言之，需確保加強 Anganwadi 工作人員及照護者在嬰幼兒餵食方式的互動，改變訓練模式是必要的。應該以溝通過程及諮商為訓練的核心。

關鍵字：嬰幼兒餵食施行、知識、技巧、整合兒童發展服務、Anganwadi 工作人員、印度