

Review Article

Are we practising responsive feeding effectively in Sri Lanka?

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Abstract

The nutritional indices of children under 5 years of age in Sri Lanka have remained stagnant from 2006–2016. There is increasing evidence that feeding behaviours and styles influence the acceptance of food and dietary intake thereby affecting the growth of the infant and young child. We reviewed the published literature available online, government / non-government websites, peer reviewed journals as well as postgraduate thesis on breastfeeding and complementary feeding in Sri Lanka from January 2006 to October 2019 with regard to responsive feeding (RF) in Sri Lanka to identify the gaps in knowledge and practices. RF is not taking place in the majority (80-90%) of children, according to small studies done in Colombo, Bibile, Anuradhapura, Nuwara-Eliya and Jaffna, even though it is a part of the Infant and Young Child Feeding Guideline in Sri Lanka. Data regarding RF are not collected in the national surveys. Neither mothers, preschool teachers nor the public health midwives (PHMs) appear to have the required knowledge or the necessary skill, and walking around with the child and using distraction methods appear to be the main strategy used in infant feeding as shown in both qualitative and quantitative studies. This appears to be due to deep rooted cultural practices which appear to be unaffected with current interventions provided by the PHM. Health care workers should be trained with the skills and knowledge required to empower all caregivers, including mothers, fathers and grandparents, to practise the authoritative / democratic / responsive

parenting style in order to facilitate RF. Data regarding RF should be routinely collected through the national nutritional surveys to provide a consistent monitoring tool.

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(Key words: Responsive feeding, infant feeding, breastfeeding)

Background

Nutritional indices of children under 5 years of age in Sri Lanka have remained stagnant from 2006–2016 according to the Demographic Health Survey (DHS) data where 17.3% were stunted in both 2006 and 2016, 14.7% (2006) vs 15.1% (2016) were wasted and 21.1% (2006) vs 20.5% (2016) were underweight despite the significant improvements observed in breastfeeding and to a lesser extent in complementary feeding along with a general improvement in the economy^{1,2}. Inappropriate feeding practices have been identified as one of the biggest problems leading to undernutrition^{3,4,5}. The UNICEF model demonstrates that child caring practices affect nutrition and growth in addition to health and dietary intake⁶. There is increasing evidence that feeding behaviours and styles influence acceptance of food and dietary intake thereby affecting growth of infant and young child⁷.

Responsive feeding (RF) is the result of applying the principle of psychosocial care, drawn from the field of developmental psychology, to the feeding situation⁶. RF is a component of the Infant and Young Child Feeding (IYCF) Guidelines that was made the standard of care for infant feeding in 2007 by the Ministry of Health and Nutrition⁸. Ineffective RF has been identified as one of the factors leading to poor growth which follows the initiation of complementary feeding^{9,10,11}. The benefits of RF on the child's food intake have been shown by a systematic review done by Bentley et al⁷. It is also known that acceptance of food by the child is associated with positive behaviour of the caregiver¹².

Children have the ability to self-regulate their energy intake from birth. This ability is facilitated by cause-effect learning, indicating that the signals / cues from the child should be interpreted by the

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caregiver in the correct manner in a supportive environment¹³.

Hunger cues vary according to age where newborn babies would look around, pout their lips, make sucking movements, put their hands towards the mouth, whereas an infant will reach out, point or vocalise to ask for food, which will be followed by verbal requests as the child advances in their language skills¹³.

Satiety cues indicating that they no longer wish to feed, include turning away from the breast, pushing the breast away, pursing their mouth shut in newborns and pushing the food away, turning away from the food and spitting food out in infants¹³.

Feeding abilities in children develop in line with the motor, cognitive and social milestones where the feeding position changes from semi-reclined to seated, where suck-swallow changes to a chew-swallow mechanism, followed by learning to self-feed and thereafter transitioning into the family diet^{14,15}. An infant's emotional response to new circumstances also affect the feeding practices; some children adapt easily to feeding routines and like to try new foods whereas others struggle to adapt to change¹⁶.

Parenting styles have a direct effect on how the infant is fed¹³. Black and Hurley mention four parenting styles, namely, authoritarian / controlling, authoritative / democratic (responding to child in a structured nurturing manner), permissive / indulgent and uninvolved / neglectful¹⁷. Hughes *et al* developed parental feeding styles based on the parenting types¹⁸. Parents who practise responsive parenting (authoritative) are most likely to practise RF as well¹⁷. Authoritative / democratic parenting has also been associated with better acceptance of new food¹⁹, higher school performance^{20,21} and better child behaviour²².

Responsive feeding is an "active behaviour" which is defined as "reciprocity between the child and the caregiver" that is a result of "authoritative" parenting and is conceptualised as a stepwise process^{13,23}.

1. *Proactive feeding environment*

Creation of a structured routine, where expectations are made known and emotion promotes interaction in a pleasant, non-distractive feeding environment with the child understanding that meals are taken at a specific place and a regular time.

2. *Identifying hunger cues and feeding in response to it at a regular time*

The child provides cues to the caregiver via actions, facial expressions or vocalisation and the caregiver responds to these cues in a prompt,

supportive, contingent and appropriate manner, encouraging the development of the child's skills, leading to self-feeding

3. *The child perceives the parent's response in a predictable manner*

Examples include having conversations about food, healthy food choices, encouraging the child verbally²⁴. Increase in the breastfeeding duration was found to be associated with higher likelihood of RF²⁵.

Non-responsive feeding stems from non-reciprocity with aversive and intrusive attempts at direct feeding and is of three types.

1. *Authoritarian type* – the caregiver dominates the feeding situation using force

2. *Indulgent type* – the child dominates the feeding situation, the parent uses high sugar food as a reward, resulting in obesity

3. *Uninvolved* – the caregiver ignores the child at meal times

Examples include force feeding, holding the child's head, threatening or shaking the child⁷. Non-responsive feeding behaviour is linked to obesity in high income countries and undernutrition as well as stunting in middle and low income countries⁸ whereas RF facilitates healthy eating habits and promotes growth thereby reducing both over and under nutrition^{26,27,28}.

Feeding practices are heavily dependent on cultural aspects and global data cannot be directly extrapolated to improve feeding practices in Sri Lanka. A recent study done by de Silva *et al*, observed significant differences in feeding practices between infants who had growth faltering and those who did not, from child welfare clinics in Sri Lanka²⁹. Therefore it is important to carry out a literature search to find out what is already known about the practice of RF in Sri Lanka in order to determine how to improve the feeding practices in a culturally appropriate manner that would lead to the improvement of the nutritional indices in Sri Lanka.

Objective

Our aim was to review the published literature available online as well as postgraduate thesis on RF in Sri Lanka and identify the gaps in knowledge and practices.

Method

Literature related to breastfeeding, complementary feeding, RF with regard to infant feeding and IYCF practices in Sri Lanka was collected for the period January 2006 to October 2019. Among the key words used were: Sri Lanka, stunting, wasting, underweight, growth faltering, low birth weight, complementary feeding (and indicators), breast feeding (and indicators), infant and young child

feeding, responsive feeding, feeding during illness, behavioural change communication, empowerment, training of trainers, mother support groups, food security, child welfare clinic and CHDR. The PubMed search engine, websites of Governmental and local Non-Governmental Organizations and international Non-Governmental Organizations, Ceylon Medical Journal, Sri Lanka Journal of Child Health, Journal of the College of Community Physicians of Sri Lanka, Ruhuna Medical Journal, Sri Lanka Journal of Medicine and the Journal of Maternal and Child Health as well as published abstracts at scientific sessions of relevant colleges and universities, dissertations and theses (MD, MSc, PhD) presented to the Post Graduate Institute of Medicine (PGIM), Colombo from 1982, official websites of Family Health Bureau, Ministry of Health, Department of Census and Statistics (DCS), Medical Research Institute (MRI), Ministry of Agriculture and Livestock Development and UN Organizations (World Health Organization (WHO), World Bank, United Nations Children’s Fund (UNICEF) and United Nations Development Programme (UNDP), National Science Foundation and repositories of all state Universities (University

of Colombo Digital Archive, Open University of Sri Lanka Digital Archive, Ruhuna University Digital Repository, Sri Jayawardenepura University Scholar Bank, Rajarata University Repository, South Eastern University e-repository, Research Repository at University of Jaffna) were searched. In addition, unpublished data were obtained through personal communication with resource persons. Two researchers searched all online databases independently and a third researcher checked all articles for relevance for inclusion.

Results

Although RF is the recommended style of feeding according to the Sri Lankan Infant and Young Child Feeding Guidelines, information about RF is not being captured through the national surveys. While there were many publications with data regarding breastfeeding and complementary feeding, there were limited Sri Lankan published data regarding RF in Sri Lanka.

We identified 10 studies which included RF as mentioned below in Table 1.

Table 1: Characteristics of included studies

| Main author (Year) | Type of study | Place | Number | Age | RF measure |
|---------------------|-----------------------------|---|--------------------------------|--------------------|--|
| Jayawickrama (2006) | Interventional | Piliyandala and Padukka MOH areas Colombo | 510 in each area | 12-23 months | IAQ |
| Nandasena (2008) | Descriptive cross sectional | MOH area Panadura | 477 | 9-10 months | IAQ, CHDR |
| Jeyakumaran (2012) | Descriptive cross sectional | Sandilipay MOH area Jaffna | 427 | 4-12 months | IAQ, household interviews |
| Agampodi (2012) | Qualitative | Anuradhapura | 8-12 mothers in each of 6 FGDs | <2 years | Key informant interviews with 2 PHMs and 6 FGDs with mothers |
| Agampodi (2014) | Point of view article | Anuradhapura | | | |
| Seneviratne (2015) | Qualitative | Nuwaragampalatha Central MOH area, Anuradhapura | | 9 months | In depth interviews |
| Jayakody (2016) | Descriptive cross sectional | Nuwara-Eliya | 427 preschool teachers | preschool children | SAQ |
| Seram (2017) | Descriptive cross sectional | Bibile Base Hospital | 383 | 4-12 months | IAQ |
| Dias (2018) | Descriptive cross sectional | 4 Pre Schools – Dehiwala, Colombo | 200 | 3-5 years | Validated SAQ |
| Pallewatte (2019) | Qualitative | Padaviya MOH area Anuradhapura | 18 mothers 10 PHMs | | Diary, FGDs, Interviews |

RF: Responsive feeding, MOH: Medical Officer of Health, IAQ: Interviewer administered questionnaire, CHDR: Child health development record, FGD: Focus group discussion, PHM: Public health midwife, SAQ: Self-administered questionnaire

Are we practising responsive feeding (RF) in Sri Lanka?

Nandasena *et al* (2008) mentions that RF was not practised by the majority (64%)³⁰. Most (93%) of the preschool teachers (n=344) working in the rural (n=193) and estate sectors (n=151) in Nuwara-Eliya with a minimum of 1 year experience thought that the food intake of the child during preschool hours was their responsibility according to a study done by Jayakody *et al* in 2016. However, only 52.3%

perceived RF as the ideal way to feed pre-school children³¹. Qualitative studies done in Anuradhapura by Agampodi, Seneviratne and Pallewatte demonstrated that complementary feeding patterns and adaptation to adult diet were suboptimal in children <2 years old with inadequate weight gain. They also found that only 18% of mothers had heard about RF although they knew that feeding behaviour was an important component. None of the mothers effectively practised the full concept of RF when

feeding their child and have a very poor knowledge and skill about RF. Even those who practised some aspects were not aware of the scientific basis or the main concepts of RF. The public health midwife (PHM) had a very poor knowledge about RF^{32,33,34}.

Dias *et al* found that only 11% practise “authoritative” parenting which leads to RF. Authoritative parenting was associated with significantly higher scores for all components of RF with significantly higher child behaviour scores²². Unfortunately, the majority (82%) of caregivers practised “authoritarian” parenting, while 7% practised “uninvolved” parenting. Indulgent parenting was not identified in this study²². However, Agampodi (2014) states that close observation during field services reveals that difficulty in making the child eat is one of the most common problems in both rural and urban communities in Sri Lanka resulting in suboptimal feeding patterns such as controlled feeding and indulgence²³. The study done on preschool teachers by Jayakody *et al* (2016) revealed that majority (82%) of the teachers assist the child to eat, whereas 7.3% do not get involved. Educational level was not associated with the type of parenting but employment was associated with higher levels of “authoritative parenting” in this study population³¹.

Step 1: Proactive feeding environment

- *Feeding in a specific place*

Jeyakumaran noted that 80% of children were fed at a specific place in Jaffna³⁵. However only few infants had a specific feeding place in Bibile (6%) and Padaviya (2/18) and Nuwaragampalatha Anuradhapura. Even the few mothers who had a separate place for feeding could not stick to that place in Nuwaragampalatha Central whereas mothers from Padaviya claimed that it was difficult to feed the child in a specific place^{33,34,36}.

- *Keeping the child seated during feeding*

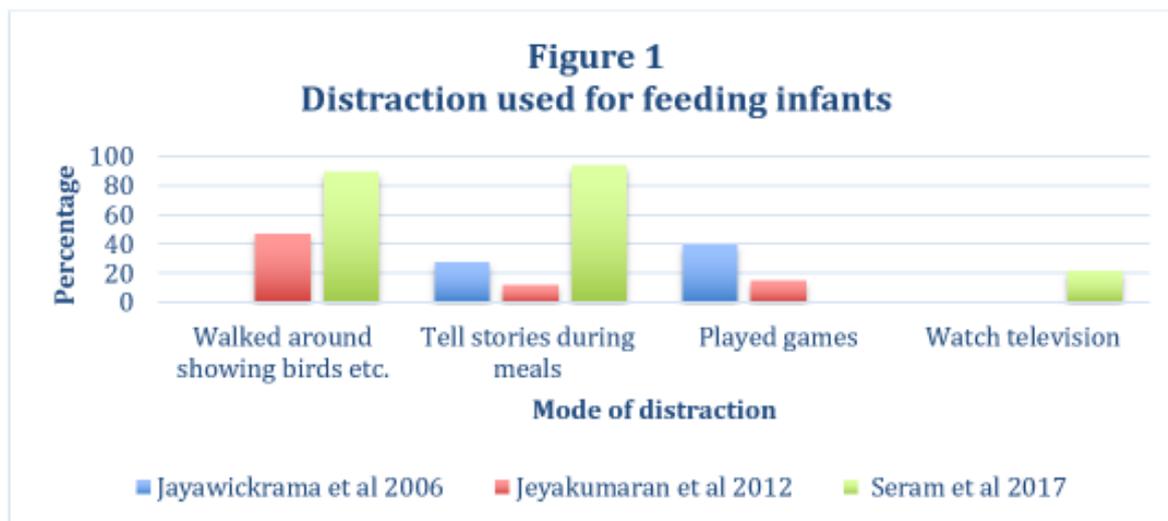
Pallewatte noted that children do not sit down to eat but are fed while engaging in another activity. However according to Seram *et al*, 90.2% mothers agreed that the baby should be fed in the seated position.

- *Feeding with the other family members*

Taking meals with the rest of the family was thought to be a necessary prerequisite by 70.5% of caregivers in Bibile. However it was practised only by 38% in Jaffna^{35,36}.

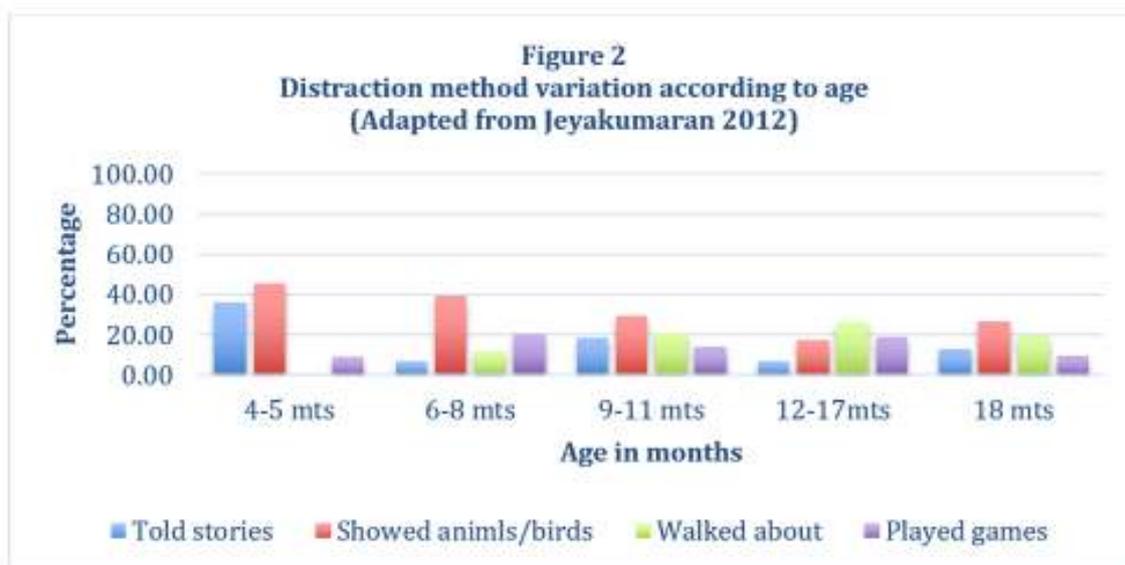
- *Non distractive environment*

All studies showed that most children are fed using distraction and that a non-distractive environment was rarely encountered (Figure 1).



Majority (94%) of the children assessed in Bibile as well as in Padaviya (16/18) and Nuwaragampalatha in Anuradhapura were fed walking around the house / garden showing animals, birds and flowers although Jeyakumaran noted only 47% in Jaffna. Telling stories during meals was also seen in 89% in Bibile but 27% in Colombo and 12% in Jaffna³³⁻³⁷.

Pallewatte *et al* noted that the environment was not optimally utilized to promote psychosocial stimulation and that most of the children were fed in a distractive, unpleasant environment while walking, dancing, playing with pets, showing the environment, keeping the child on a vehicle, watching TV or listening to radio in Anuradhapura³⁴.



The method used to distract the child during feeding appears to change with age. Showing animals and birds appears to have decreased whereas walking around and playing games have increased with age according to Jeyakumaran³⁵ (Figure 2).

Step 2: Identifying hunger cues and feeding in response to it at a regular time

Seneviratne *et al* noted that although most mothers identify hunger cues, they did not feed in response to hunger cues but rather according to a timetable made on their own in Nuwaragampalatha, Anuradhapura. However, Pallewatte *et al* states that identification of hunger cues (fussing, crying and gnawing on hands or fingers) and satiety cues (shaking head from side to side, swiping away the

food and turning away from the spoon) were poor resulting in a hunger sensitive schedule to feed being absent and mothers feeding at their own convenience at Padaviya e.g. breakfast at 9am, lunch before the bath, before sleeping etc. The PHMs revealed that most mothers feed children when they do not show any desire to eat. Jeyakumaran also noted that only 18.2% have fed the babies according to the hunger cues at a specific time in Jaffna. In contrast, Seram *et al* found that 73.9% mothers fed according to hunger cues in Bibile. Feeding according to hunger cues showed only a slight change with age with the highest of 22% at 4-5 months and lowest of 14% at 9 months according to Jeyakumaran as depicted in Table 2³⁵.

Table 2: Timing of main meals (Jeyakumaran 2012)³⁵

| Feeding practice | Age of child | | | | | |
|--|---------------------|---------------------|----------------------|------------------------|------------------------|--------------------------------|
| | 4-5 months (n=11) % | 6-8 months (n=43) % | 9-11 months (n=71) % | 12-17 months (n=126) % | 18-23 months (n=132) % | Overall (n=383) [†] % |
| Fed at a time convenient to the caregiver | 0 | 0 | 15.5 | 18.2 | 16.6 | 14.4 |
| Fed at a specific time | 66.7 | 69.8 | 62.0 | 54.5 | 43.6 | 53.2 |
| Fed according to hunger cues at a regular time | 22.2 | 18.6 | 14.1 | 18.2 | 19.6 | 18.2 |
| Fed whenever the child asks | 11.1 | 11.6 | 08.5 | 09.1 | 20.2 | 14.2 |

[†]Infants who were exclusively breastfed were excluded.

Step 3: Responding to the child in an emotionally supportive and developmentally appropriate manner

- *Caregiver responses characteristic of RF*
Encouraging the child to eat by telling them lovingly and kindly was seen in 95-99% in Bibile and Colombo whereas it was found in only 22.7% in Jaffna (Figure 3). Offering different textures and tastes were also found in the majority of children in

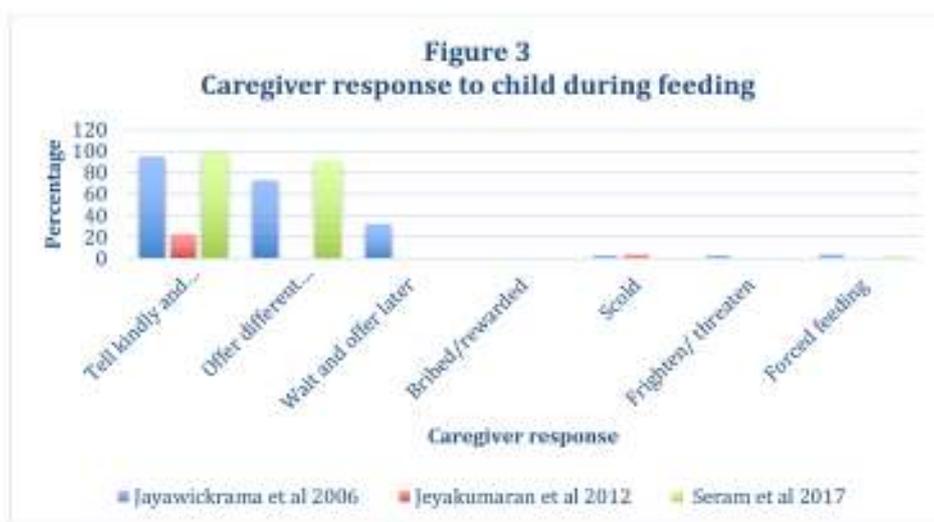
Colombo and Bibile (Figure 3)^{35,36,37}. In addition, Jeyakumaran also noted that 90% of caregivers allow the child to eat at their own pace, 78% maintain eye contact while feeding, 85% are allowed to touch food and 72% children are taught about food during meal time (Table 3). While eye contact and allowing to touch food seems to increase with time, teaching about food ironically appears to decrease with age whereas allowing to eat at their own pace does not seem to vary much with age.

Table 3: Variation of feeding environment in children in Sandilipay Jaffna (Jeyakumaran 2012)³⁵

| Feeding practice | Age of child | | | | | |
|----------------------------------|---------------------------|---------------------------|----------------------------|------------------------------|------------------------------|--------------------------|
| | 4-5 months (n=11) % | 6-8 months (n=43) % | 9-11 months (n=71) % | 12-17 months (n=126) % | 18-23 months (n=132) % | Overall (n=383)* % |
| Allowed to eat at own pace | 90 | 90 | 90 | 91 | 89 | 91 |
| Eye contact | 63 | 70 | 81 | 82 | 76.5 | 78 |
| Allowed to touch food | 63.7 | 63 | 78 | 89 | 93 | 85 |
| Taught about food during feeding | 92 | 79 | 71 | 70 | 80 | 72 |

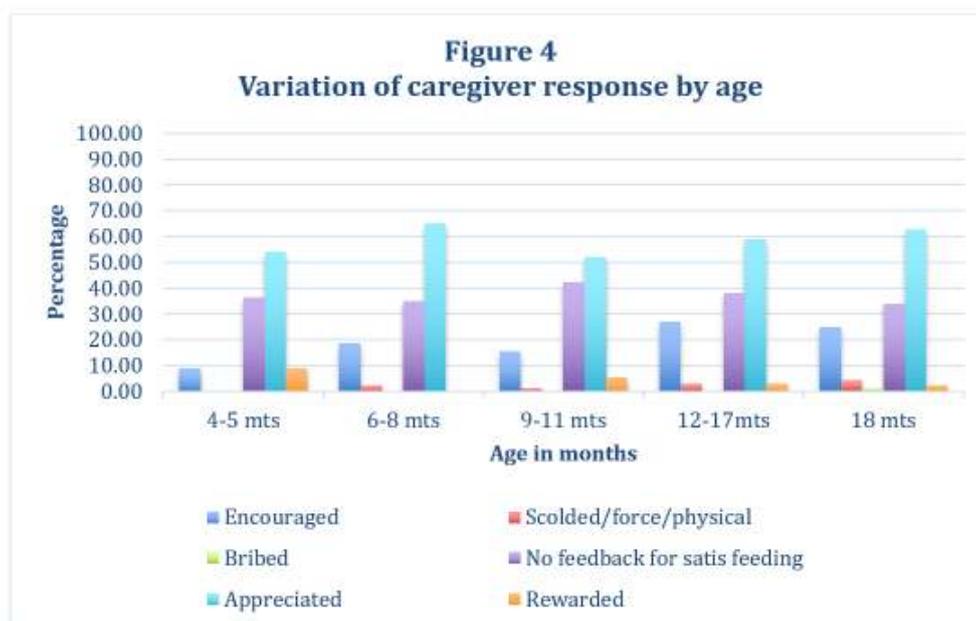
- *Caregiver responses not compatible with RF*
Waiting and offering food later was seen in 32% in Colombo whereas only a handful of parents used

bribing/rewarding, scolding, frightening or physical restraint to feed the child in Colombo, Bibile or Jaffna (Figure 3).



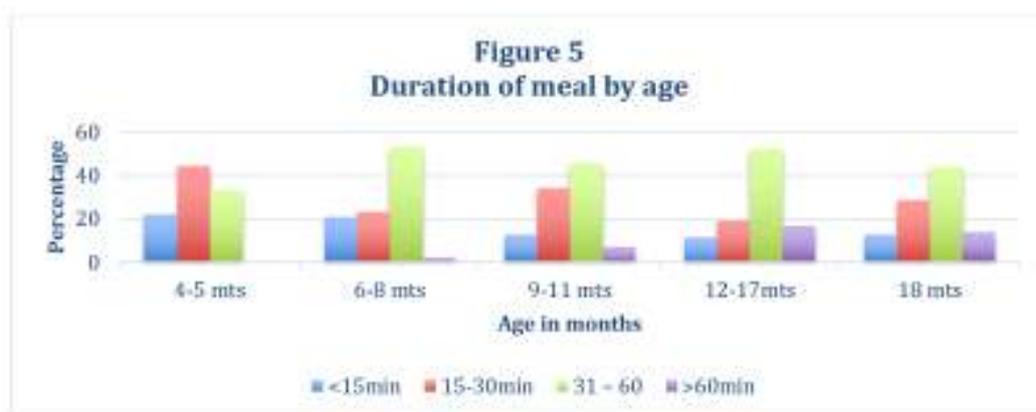
Jeyakumaran noted that both positive and negative caregiver responses appeared to increase with age

where bribing was only seen in the 18-23 months age group^{35,36,37} (Figure 4).



Pallewatte in the study done in Padaviya noted that although feeding commenced in an emotionally supportive manner it ultimately ended with force feeding when the child starts to reject. Dias *et al* also noted that 67% of the preschool teachers believed that they need to force the children in order to finish their meals in Dehiwala, Colombo. Seneviratne *et al* noted that the mothers had a problem with introducing new foods as they were not being accepted by the child.

- *Time taken to complete a meal*
Jeyakumaran noted that the time taken to complete a meal increases with age. While 64% completed the meal within 30 minutes at 4-5 months of age 64% took longer than 60 min to complete the meal at 18 months. This may be due to the decreased effectiveness seen with the distraction methods with age (Figure 5).



Discussion

RF is not taking place in the majority (80-90%) of the children, according to small studies done in Colombo, Bibile, Anuradhapura, Nuwara-Eliya and Jaffna, even though it is a part of the Infant and Young Child Feeding Guideline in Sri Lanka. Data regarding RF is not collected in the national surveys. Neither mothers, preschool teachers nor the PHM appear to have the required knowledge or the necessary skill according to the available literature.

Walking around with the child and using distraction methods appear to be the main strategy used in infant feeding as shown in both qualitative and quantitative studies. This appears to be due to deep rooted cultural practices which appear to be unaffected with current interventions provided by the PHM. Both mothers and PHMs felt that RF is a missing part in their programmes on complementary feeding. They also felt that these cultural practices hinder creating a proactive feeding environment which is the first step in RF.

Mothers do not appear to understand the importance of the hunger and satiety cues and do not respond to it even though some are aware about it. This may be due to the fact that mothers are not aware that RF is an interaction between the stage of infant development as well as the psychological status and hence do not appreciate its role in successful establishment of complementary feeding including the acceptance of new food by the child. Acceptance of new food is one of the corner stones to successful

complementary feeding as it will help to improve food diversity.

Jayawickrama *et al* demonstrated an improvement of responsive care practices through comprehensive intervention which resulted in significant improvement in nutrition indices indicating that feeding practices are determinants of poor nutrition indices in the absence of a change in buying power, and secondly that adequate training of the usual health care workers through the existing system can effectively change complementary feeding practices including RF in mothers to levels adequate to make a change in the nutrition indices of children. Rajapakse *et al* also demonstrated that intervention programmes improved nutrition indices via the Hambantota programme which has now been running for close to 10 years where community mobilization was done with voluntary groups with little added cost to the system. Both Jayawickrama and Rajapakse *et al* examined a monitoring process with supervision of the health care workers who are in direct contact with mothers in order to maintain records of expected work carried out³⁸.

Training of the health care workers / dedicated workers within the context of their current workload requires identification of effective modalities of imparting this knowledge to the maximum in the minimum possible time (e.g. group education around the time of introduction of CF). Further, the health care workers need to be shown a reason to be motivated. They need to have ownership of their

programme and be given greater social recognition, or see the programme itself as a way to improve their recognition in society. Rajapakse *et al* documents that health care workers felt positively motivated due to increased social recognition. Successful projects need to be highlighted and used as a “model” to work towards. It is important to include non-mother caregivers like fathers and grandmothers also into training sessions like in the Hambantota study as cultural taboos are more likely to creep in when non-mother caregivers are feeding the child. It is also important to train the health care workers on empowering the parents to develop an authoritative / democratic / responsive parenting style in order to develop the skills of RF.

In order to facilitate RF, health care workers should be trained with the skills and knowledge required to empower all caregivers, including mothers, fathers and grandparents, to practise the authoritative / democratic / responsive parenting style. Data regarding RF should be routinely collected through the national nutritional surveys to provide a consistent monitoring tool.

Conclusions

The presence of incorrect RF in many parts of the country is a cause for concern due to its potential impact on malnutrition. Incorrect RF has an impact on what the child is fed as well as how the child learns to respond to food. This negative behaviour is likely to track into childhood and even adulthood leading to both under nutrition and over nutrition as these children are less likely to be well adjusted to manage their own hunger and satiety cues and to acquire healthy food habits due to too lenient or strict control. Therefore, a major emphasis needs to be placed on RF to ensure that caregivers accurately understand the education messages that are delivered through numerous channels of the National Maternal and Child Health programme and are empowered with the skills of RF.

Recommendations

In order to facilitate RF:

- As IYCF counselling is a resource intensive and time-consuming task, adequate health care staff is a necessity in quality service provision which should be addressed at national level as a priority concern.
- Strengthen the capacities of health care workers to ensure that adequate skills and knowledge required to empower all caregivers including mothers, fathers, and grandparents, to practise the authoritative / democratic / responsive parenting style are obtained by them. They should also be trained on empowering the family to make

correct food choices within the existing household budget.

- Motivate the health care workers to place more emphasis on introducing the concept of RF early to parents and caregivers (e.g. at the very onset of starting complementary feeding) and identify all opportunities to impart this information to the parents and caregivers (e.g. first complementary feeding class, child welfare clinics at 4th month, home visits).
- Strengthen the existing programme on IYCF by placing more emphasis on early introduction / exposure to RF practices by more supervision and mentoring of PHMs, giving them ownership of their programme along with greater social recognition.
- Identify gaps in the monitoring process with supervision of the health care workers who are in direct contact with mothers and implement feasible solutions and introduce performance-based incentives using successful projects as a “model” to work towards.
- Ensure that caregivers other than the mother, including fathers, grandparents and crèche / day care / nursery staff are made knowledgeable / well exposed to the concept of authoritative / democratic / responsive parenting which facilitates responsive feeding.
- Provide periodic certification to daycare services as a means of monitoring standards with regard to child care including IYCF.
- Explore possibilities that ensure caregivers utilize the numerous opportunities provided to them in gaining knowledge on RF practices such as RF in the CHDR which is a very effective education tool as well as in the complementary feeding booklet and through attending complementary feeding classes conducted by the PHM. Taking into consideration the current context of a rapidly changing sociocultural environment, adverse impacts of media and advisements etc. innovative methods of social behaviour change communication (SDBCC) strategies may need to be employed in this regard.

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