

5. Maternal Responsiveness to Feeding of Infants in Debre Markos Town, Ethiopia: A Qualitative Investigation

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Abstract

Maternal feeding responsiveness largely contributes to the nutritional statuses of infants. In this qualitative study the researcher investigated the identification and proper responses of mothers to the hunger and satiety behaviors of infants as the essential elements of responsive feeding. In doing so, cross-sectional and qualitative descriptive study designs were followed to collect data through direct observation and conversational interview from a conveniently selected sample of 12 infants (age six to 24 months) with their mothers. Having thematically analyzed the data, results indicated that mothers identify infants' hunger states through movement of oral cavities (e.g., opening and closing of lips) and other body parts (e.g., leg twisting and pointing the food), and production of sounds (e.g., vocalize a sound 'haha'); as well as satiety states through food refusal, playfulness and sleepy. These hunger and satiety cues were observed to be differently expressed among younger and older infants. Furthermore, mothers used overt (e.g., calling of the infants' name, showing to taste the food) and covert (e.g., facial expression, eye contact) techniques to encourage infants to eat more. Finally, suggestions were forwarded to investigate the issues of responsive infant feeding more in the various contexts of economically poor countries such as Ethiopia.

Keywords: responsive feeding, infant feeding, hunger cues, satiety cues, feeding encouragement

Introduction

As to the availability and quality food, mother-infant feeding interaction constitutes the essential element to infant nourishment (Engle, Bentley, & Peltó, 2000). Building on the broader parenting style theory, mother - infant feeding interaction is often understood based on the extent to which this interaction is responsive and encouraging (Jansen, Daniels, & Nicholson, 2012), and it is often considered as domain-specific aspect of parenting (Black & Aboud, 2011).

Consensus about the elements of responsive feeding (RF) appears to be difficult to find across researches particularly due to the use of multiple definitions and methodologies (Bentley, Wasser, & Creed-Kanashiro, 2011). In the areas of psychosocial infant care, however, RF has been often conceptualized as consisting of three interrelated necessary components: perception, accurate interpretation, and appropriate response of primary caregivers to infants' hunger and satiety cues (Lamb & Easterbrooks, 1981). These aspects of RF appear to play crucial roles to caregivers' decision to initiate and terminate infant feeding (Hodges, Hughes, Hopkinson, & Fisher, 2008), which tend to contribute ultimately to the healthy nutritional statuses of infants (Engle, Bentley, & Pelto, 2000). Thus, this tends to show that how caregivers decide to initiate and terminate infant feeding is dynamically related with the extent to which infants' satiety and hunger feeding behaviors are accurately identified and responded.

In a general sense of feeding, de Graaf (2011) defined hunger as the unpleasant feeling resulted to the search for food, and satiety as the pleasant feeling resulted to the absence of motivation to eat. Although hunger has been considered as the opposite of satiety in the context of feeding (Drewett, 2007), de Graaf (2011) argued that they are two different aspects of feeding in that infants sometimes do not eat when they are hungry, and they do eat when they are satiated. de Graaf further argued that eating or not eating depends not only to the hunger and satiety of infants but also to the properties of foods (such as texture, weight, volume), and the physical and socio-cultural environment. Infants' hunger and satiety are often thought in terms of early (e.g., increased alertness, sucking on hands) and late (e.g., crying) feeding cue categories (Hodges et al., 2013), showing that they are manifested by infants in temporal sequences.

The widely available empirical literature (e.g., DiSantis, Hodges, Johnson, & Fisher, 2011; Engle et al., 2000; Lamb & Easterbrooks, 1981) on the areas of RF are originated basically from middle class participants of economically developed countries, where the primary intent of infant feeding tends to be on the prevention of over-nourishment and obesity (Drewett, 2007). Empirical descriptions of RF carried out in the Ethiopian settings are generally unfounded (*to the best efforts of the researcher*), where the primary objective of infant feeding is to curtail the

widely prevalent undernourishment among young children⁴ (EHD, 2005). The available studies following medical views generally emphasize on the impacts of undernourishment on infants' physiological health and on the exclusive promotions nutritional interventions to mitigate the prevalence (Bemnet et al., 2012; Mekitie, Tseganeh, & Mirkuzie, 2012; Tefera, 2005). Besides, studies conducted on the areas of nutrition in Economics have associated the higher prevalence of undernutrition in Ethiopia primarily to economic related factors such as food shortage (Demese, 2005) and poverty (Shimelise, 2009).

On the other hand, although responsive infant feeding is often related (*at least theoretically*) to parenting styles (Black & Aboud, 2011), psychological studies on the areas of parenting in Ethiopia have also neglected such specific aspects of mother-infant feeding interactions. Studies conducted so far on parenting in Ethiopia, nonetheless, have investigated its impacts on or relationships with children's and adolescents' scholastic performance (Abesha, 1997), development of independence and social responsibility (Abrahm, 1996), academic achievement (Ayele, 2012; Berhanu, 1996; Kassahun, 2005; Markos, 1996; Tilahun, 2002), self-regulated learning (Tigist, 2003), and identity status (Yekoyealem, 2005).

It is evident in studies conducted so far in Ethiopia at least in Medicine and Psychology that they were not giving emphasis to RF of infants, although mothers in many families in Ethiopia have been mentioned as lacking proper infant feeding skills (EHD, 2005). Hence, studying the specific aspects of RF is ingenious in the various contexts of economically poor countries such as Ethiopia, arguably because (a) the widely available literature on mother-infant feeding interactions (e.g., most of the studies discussed above) were from other contexts where the primary objective of infant nourishment is to the prevention or intervention of obesity (Drewett, 2007) and (b) the current approach of intervention to under-nutrition in Ethiopia is exclusively emphasizing on nutritional interventions (i.e., the provision or availability of food) that guarantee only the meeting of *nutritional requirements* of infants, which by no means ensures the infant's *intake* of those nutrients as the cases in some areas in Ethiopia, such as in

⁴ It was estimated that there are about 44.4% and 9.7% stunted and wasted young children (under the age of five years) in 2015, respectively (EHD, 2005).

Gojjam and Arsi, that were mentioned as food surplus as well as areas of the highest reports of under-nourished children (MOH, 2004, 2013).

Staking on the above evidences and arguments, the present study has investigated the responsiveness of mothers to infants' feeding, which includes mothers' identification of infants' hunger and satiety feeding cues and the way they encourage infants to eat more. It was held in a different socio-cultural and economic setting where there is higher prevalence of child under nutrition (EHD, 2005), where feeding interaction tends to be embedded with child rearing goal of making children to be obedient (Poluha, 2004), and where the relationship between adults and children is likely to be hierarchical (Levine, 1965). Specifically, the current study has addressed the following three basic research questions.

1. What are the hunger and satiety behaviors or cues mothers have identified on infants to initiate and terminate feeding?
2. What are differences observed between younger and older infants in their hunger and satiety feeding cues?
3. What encouragement techniques do mothers use to feed their infants?

Methods

Study Design

The current study followed cross-sectional design which allowed to study infants' feeding cues by incorporating infants with different ages ranged from six to 24 months at the same time of enquiry. Beside, a qualitative descriptive study design was also used in the present study to describe the feeding behaviors of infants.

These designs were employed together in the current study, inter alia, to combine the strengths and to mitigate the inadequacies of different data collection instruments and ultimately for its methodological rigor.

Study Site and Contexts

The present study was carried out in Debre Markos, a town located in the Northwestern part of Ethiopia about 300 kilometers from Addis Ababa. Being an Amhara community dominantly residing in the Town, Amharic is the most widely spoken language in it (CSA, 2007).

Relevant to the methodological considerations of the current study, it is not culturally acceptable in the site to feed a young child in public spaces as well as to disclose it to a stranger and to weigh what she or he is consuming (Carlson & Carlson, 2008). Besides, the study was conducted in the area where equivocation and ambiguity are common patterns of daily communication among the community members in the form of intellectual habits of ‘wax and gold’ (*səminna wərk*) (Levine, 1965).

This site has been chosen mainly because of the researcher’s familiarity with the community. Given that a study of mother-infant feeding interactions need closer look into the socio-cultural networks of the community, this familiarity appeared to facilitate the data collection processes of the current study.

Participants

The actual data to the present study were collected from conveniently recruited mother-infant dyads attended by a Health Extension Worker (HEW) in the study site. Initially, potential families were accessed from the list found with HEW based on the major inclusion criteria of being having an infant (a) born first to the family, (b) with the age between six to 24 months old, and (c) born with full-term. These inclusion criteria were obtained from the findings of empirical studies in that, inter alia, the order of birth, age and term of infants have significant roles to the variations of caregiver-infant feeding interactions (DiSantis et al., 2011; Hodges et al., 2013).

Based on this, 27 mother-infant dyads were accessed and with the help of HEW each of these mothers were requested to participate in the current study by notifying that the purpose of the study is to investigate mother-infant feeding interactions. Accordingly, while nine mothers hesitate to participate in the current study, 17 mothers provide verbal consent as participants. Finally, five mothers were not accessible in their residences during the actual data collection phase. Thus, the actual data to the current study were obtained from 12 mother-infant dyads.

Male and female infants were approximately equal in number ($n = 7$ and 5 , respectively). The mean age for infants was $15 (\pm 5.58)$ with the range from six to 24 months and for mothers was $29.33 (\pm 1.55)$ with the range from 27 to 32 years. Mothers had attended formal education ranging from grade three to diploma levels, and all of them were housemaids during the time of

data collection. The family members were ranging from three to six in number and they were living with the sources of income primarily obtained from fathers whose job includes businessman, civil service employee and daily laborer.

Data Collection Instruments and Administrations

Qualitative data type to the current study were collected from the mid of September to October 2015 through observation form and interview schedule. These instruments were constructed and developed based on review of relevant literature (e.g., DiSantis et al., 2011; Engle et al., 2000; Lamb & Easterbrooks, 1981; Mekitie et al., 2012).

Each participant dyad was directly observed in their own home setting in three unanticipated feeding times to capture hunger and satiety cues of infants with the empirical background that infant feeding behaviors varied significantly across meal occasions (Engle & Zeitlin, 1996). The observations (each with 25 to 45 minutes duration) were held between the initiation and termination of feeding by the mothers. Notes were taken during the observations by the researcher. In an attempt to minimize the obtrusiveness of observation, the HEW who already established rapport with the mothers and to some extent with some infants was availed with the researcher during the observations.

Mothers were interviewed in a conversational open-ended schedule immediately after the three observations of each participant dyad were finished. Mothers were asked two key questions: (1) how do you know when your baby wants to eat? and (2) How can you tell when your baby has got enough to eat? Notes were taken from the responses of the mothers during the interview.

The both direct observation and conversational interview were employed in a supplementary way partly to minimize the issue of intellectual habit of equivocation and ambiguity and the disclosure of infants' feeding, and to triangulate the collected data.

Data Analysis Technique

Thematic qualitative data analysis technique was utilized in the current study. The observation and interview notes of each participant were first canvassed and summarized. The data were, then, thematically grouped and analyzed vis-à-vis the major themes or basic research questions of the study. The data from observations and interviews were, finally, presented complementarily to interpret and clarify the phenomenon under consideration. Thematic qualitative analysis technique was chosen because the main aim of the study involves description of a phenomenon (maternal feeding responsiveness).

Results

Mothers' identification and response to infant's feeding cues tends to be important source of variation to maternal feeding responsiveness. Mothers in the current study have identified different hunger and satiety cues of infants to initiate and terminate feeding. Observations of feeding times and interviews of mothers about infants' feeding helped to investigate how mothers' identify various hunger and satiety cues. These feeding cues appeared to vary in the nature of their manifestations and the age at which they are typically observed on infants. Results of the current study about the descriptions of the forms of hunger and satiety feeding cues are presented next followed by their age-wise differences.

Forms of Hunger and Satiety Feeding Cues

Participant infants of the current study were showing different hunger and satiety cues during observations of their feeding times. Besides, infants' mothers were interviewed on some of these feeding cues. The results obtained from the observations and interviews about the forms of hunger and satiety feeding cues are presented next.

Hunger feeding cues

The hunger feeding cues investigated through observations and interviews were thematically grouped into three categories, viz. movement of oral cavities, movement of body parts, and production of sounds.

Movement of oral cavities.

Common to some observations, mothers initiate to provide foods to infants when the infants were showing a pattern of lip and tongue movement. Some infants of the current study continuously close and open or blink their lower and upper lips with closing their tongue to the boundaries of their lips when they open their lips.

Infants were observed to open their mouth when the mother provided or approached the food to her or his mouth. Interviewee mothers further strengthened these observations by stating that infants prompted their need to continue the feeding by opening their mouths. Many of the infants during the observations typically opened their mouths in an 'O' like shape (Figure 1).

Mothers were observed to feed their infants when the infants suck their thumbs or fingers. Some mothers, however, were observed to disallow their infants to suck their thumbs. To clarify this issue, mothers were interviewed on 'why they provided foods to the infants when infants suck thumbs' or 'prohibit infants from sucking of their thumbs or fingers'. Ideas of the interviewed mothers about this particular issue generally appeared to be related with three views. Some mothers believed that thumb sucking would lead infants to the development of discourteous manners as they grow up. Some other mothers indicated that if an infant is allowed to suck, she or he may absorb the bacteria and germs found on her or his thumbs and fingers, which, according to these mothers, has deleterious effect on infants' health. Finally, a mother indicted that she did not allow her infant to suck thumbs for it would reduce her infant's appetite for food.

In addition to thumb and finger sucking, mothers in the present study were observed to initiate feeding when infants were swallowing or absorbing objects. During the observations, some infants swallowed pieces of plastic bags and cloth, and soils they found on the ground.

Movement of other body parts.

Many infants were observed to gaze at the food. Mothers were asked whey infants gaze on foods and they indicated that infants do so when they need food or when they want to add some more food. Some infants were pointing to foods by either of their hands when they view food around them. Mothers also used pointing of food as cues for infants' needs to have food.

In some observations, infants twistingly move their legs diagonally up and down (Figure 2) when they were sucking breast or bottle and swallowing solid foods. Interviewed mothers indicated that if infants twist their legs during feeding time, it is to mean that they are at ease in absorbing the food.

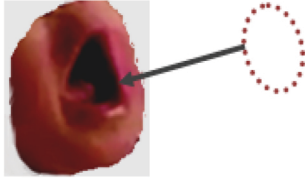


Figure 1. Infants' opening of mouth when food is approaching



Figure 2. Leg movement of infants during feeding

Production of sounds

Infants in the present study were also producing sounds when they seemed hungry. Some infants were observed to vocalize a sound 'haha' when they saw food or when food was coming. While producing such a sound, there were infants who smile or got excited when viewing the food was coming. Besides, some younger infants were continuously producing a sound 'eh.. eh ... eh' when sucking breast or bottle. Interviewee mothers indicated that they felt good when their infants produced this sound. The mothers indicated that during feeding time, this sound can show that the infants were comfortable with what they are sucking.

Some infants, however, tried to call the food when they need it by saying 'nana' or 'enku'. Similar to infants, mothers in the current study were observed to use this word to name the food they were feeding. Neither the mothers nor the infants, however, tried to name a different food with a different name; they indiscriminately used the word 'nana' or 'enku' to call all food types.

Infants in the present study were observed to cry to show their strong need for food. Common to some observations, infants were fidgeting when they were crying. Interviewee mothers remarked, however, that crying can also served infants to communicate their other

needs. Mothers indicated that crying may mean that the infant was experiencing pain or need for sleep. Besides, during an observation, crying was used as cues for infant's discomfort as a result of wetted cloth. The following description of an observation typically reveals how crying was used to signify the need to change a wetted cloth of an infant.

When we go to home, the infant is carried by the guardian in the veranda of the house and he is crying. The mother came to us when she heard our presence and hugged the infant by receiving him from the guardian. The mother sat on a stool and talked the guardian to bring other chairs to us. The mother gave her breast to the crying infant and the infant stopped his crying when he sucked the breast. After staying in this way for about three to four minutes, the infant wriggly moved around his trunk by crying. The mother looked the infant and politely said “min honəh nəw? (ሞን ሆነህ ነው?) [what happened to you?]” by touching his back. The mother identified the source of infant's crying and said “aha... bəlibsih laj fəntəh nəw? (አሃ... በልብህ ላይ ሸንተህ ነው?) [aha ... you urinate on your cloth?]”. When the mother dressed off the wetted shorts, the infant stopped his crying. The infant continued sucking of the mother's breast.

(Feeding time observation 12, eight-month age male infant, October 05/2015).

Satiety feeding cues

The present study identified a range of feeding behaviors of infants which tended to represent their satiety states. These behavioral cues were generally shown on infants after taking some amount of food during the feeding time. For the ease of understanding, the satiety cues were thematically grouped and described into three categories: refusal of food, playfulness, and sleepy.

Food refusal

In the present study, infants were refusing foods they had eating when they appeared to become full. Some infants were spitting (pushing over food from their mouth) or pushing the dish away after taking some amount of food. Some other infants were also observed to throw the food they were eating and this according to mothers signaled that infants were satiated. In addition, some infants sound ‘quak’ from their thorax when mothers were obliging them to eat more. Mothers, however, qualified that these behaviors of infants would mean satiety cues only when infants

absorb acceptable amount of foods. Some infants refused to take foods by turning their head to other direction when mothers were trying to give foods. In addition, some other infants showed their refusal by shaking head side to side when food was approaching to their mouth.

Furthermore, infants were observed to clench the nipple of the mother's breast or bottle to express their refusal of food taking. Some interviewed mothers indicated that infants sometimes clench their nipple through gums when the infants were satiated. Other mothers, however, viewed clenching of nipple as the breast has no milk and the infants want to have additional feeding. Some infants were also observed to close or purse their lips when they do not want to eat more during feeding.

Playfulness

In the present study, infants appeared to be playful when they were full in feeding. Infants were observed to explore their nearby around the mid of feeding. They began easily distracted and to pay attention to the surrounding more than the beginning of feeding session. Some infants were trying to touch objects in their surroundings after taking some amount of food.

Some infants were observed to produce different playful vocalizations such as 'fi... fi.... fi.....' after the feeding sessions. Some other infants were observed to dandle on and tried to jump on the lap of mothers, which these behaviors were not observed before or at the beginning of the feeding.

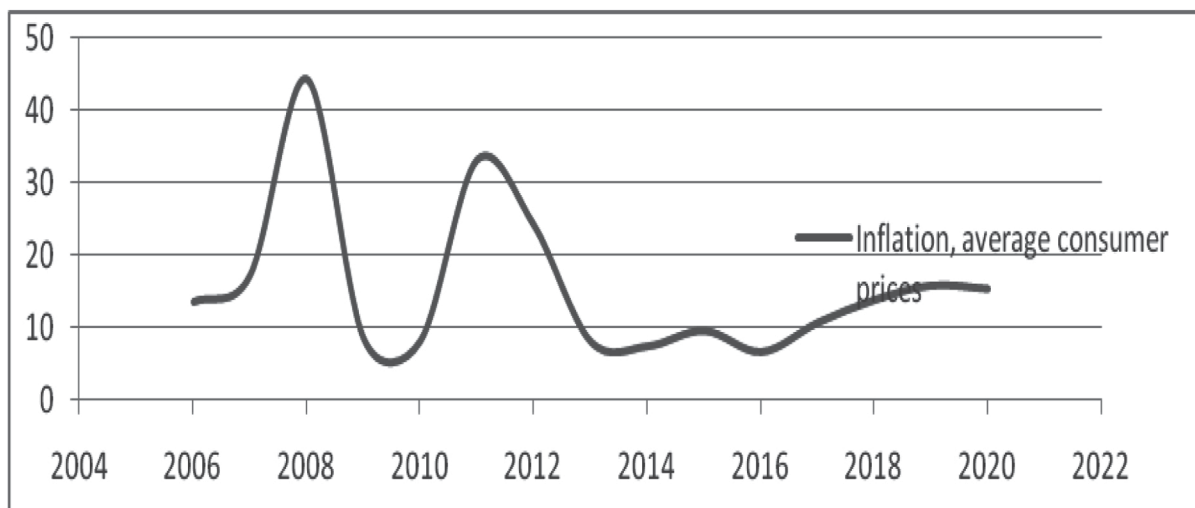
Some mothers, however, appeared to misinterpret infants' playfulness cues. In an observation, for example, an infant refuses to take food and wanted to play with toys but the mother was pressuring him to eat more.

The mother and the infant sat on a mattress placed in the salon of their house. There are dried gourd, very small ball and other toys in front of them on the mattress. The mother tried to put in the food into the mouth and said to the infant "baba, babaye (ባባ፣ ባባዬ)" to encourage him to eat more. The infant took the food and swallowed it slowly for longer time. The mother gave the food for the second time and the infant took the food but spit it over by his tongue. The mother distractedly said "libsihin ahun k'əjjirrellih dəgməh tabbəlaffəw? (ልብስህን አሁን ቀይሬልህ ደግመህ ታብላሽው?) [I changed your cloth but you make it dirt

4.2.2 Running stage of Inflation for the last decades

Classical economists argued that there is a negative relationship between economic growth and inflation implicitly. Inflation reduce saving and investment and their by affecting capital accumulation. Empirical evidence double digit inflation rate can lower the purchasing power of peoples and increase cost of livings and their by reduce growth of real gross domestic products of a given country but the target rate of inflation to accelerate real GDP varies from country to country or might not existence of threshold effect (Bruno, M., & Easterly, W.(1998); Khan, M. S., Senhadji, A., & Smith, B. D. (2001); Ashagrie Demile,(2015) etc. For the last 14 years the inflation rate is on average double digit rise cost of living in Ethiopia like cost food, cloth and shelter as shown in figure 2 below .

Figure 2: The trend of inflation rate in Ethiopia (2006-2020)



Source: International monetary Fund Data Base (Accessed January 20, 2020).

4.3.3 The prevalence High Corruption in Ethiopia for the Last decades

Governments will apply demonetization of currency to curb the problem of corruption and to make handy cap the terrorist support funds. The International transparent organ data showed that the corruption index of Ethiopia is experiencing an increasing trend as depicted in figure 3 below.

in a moment?]”. The mother again tried to give food to the infant by saying “babba (ፋፋ), babbajjə (ፋፋፆ), mit ‘t’a (፳፻፳፻), sititaffit (ሰተታፍተ) [it is sweaty take this one]”. The infant took the food and again spit it over for the second time after swallowing it for some time. The mother smell and taste the food for there was an odd flavor on it. The mother verbally encouraged the infant and gave the food to him. The infant took the food and spit it over for the third time. Now the mother stopped her feeding after expressing her confusion by the infant’s behavior and saying “jihe li zare min hon^wal? (ይሄ ልጅ ማሪ ምን ሆኗል?) [what happened to this child today?]”. Immediately after the mother stopped the feeding, the infant delved to play with the toys found on the mattress.

(Feeding time observation 14, 12-month age male infant, September 29/2015).

Sleepy

Infants were observed to swallow and absorb very slowly and felt drowsy than the beginning of feeding while they tend to be satiated. Moreover, during the observations, infants fall asleep while they were sucking the nipples of mothers’ breast or bottle. During sucking time, infants opened their eyes and during the sleeping time they paused sucking and close their eyes with varying durations. At a ‘normal’ condition (i.e., when there was no distraction of noises on the surrounding and on the infant’s body), these sucking and sleeping of infants were observed to follow some pattern. The duration of sucking (shown in bold horizontal lines in Figure 3) eventually became shorter and replaced by longer duration of pausing (sleeping).

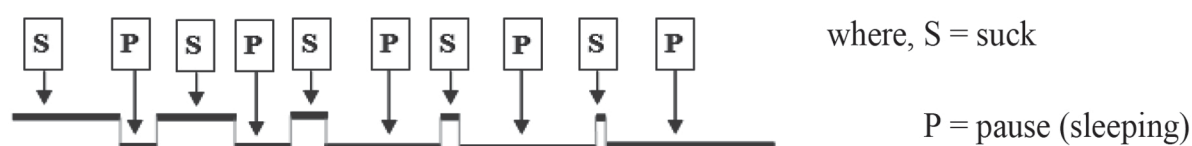


Figure 3. Patterns of sucking and sleeping among infants

Hunger and Satiety Cues between Age Groups

Hunger and satiety feeding cues appeared to differ between the age groups of infants. Based on a noticeably meaningful change, the aforementioned described hunger and satiety feeding cues of infants are likely to be grouped into two broad age categories: younger infants (age six to 12

months) and older infants (age 13 to 24 months). Some feeding cues, however, were evolved to be observed in similar ways on both groups.

Summary of hunger feeding cues indicated that while thumb or finger sucking, smiling when food was viewed, gazing at the food, and leg twisting were typically observed among younger infants, cues such as swallowing and absorbing objects, opening the mouth in an O shape when the food was approaching to the mouth, getting excited when food was coming, vocalizing a sound ‘haha’, call the food by saying ‘nana’, or ‘enku’, and pointing to the food by hand were typically observed among older infants. Movement of lips and tongue, and crying were observed commonly as hunger feeding cues on the two age groups.

Similarly, many younger infants typically signaled their satiety through spitting out foods, turning head to other direction, closing lips, and clenching nipples. In contrast, older infants typically push the dish away, sound ‘quak’ from the thorax, throw foods, shake the head side to side, produce sounds, and felt drowsy when they tended to be satiated. Other satiety cues such as swallowing slowly, beginning to explore, easily distracted and pay attention to surrounding more were observed typically on both younger and older infants.

Maternal Feeding Encouragement Techniques

Infants seem to eat more when they were encouraged by their mothers during feeding times. Mothers were observed to use different forms of overt and covert encouragement techniques to make infants eat more. In this sub-section, verbal and non-verbal feeding encouragement techniques are presented.

Verbal feeding encouragement

Many mothers were observed to use different forms of verbal encouragement at the beginning or during the feeding times. Some mothers repeatedly call their infants in ‘babyish’ ways “babba (ባባ), babbajjə (ባባዬ), or abbulle (አቡሌ) [for males]”, and “mit’t’a (ሚጣ), mit’t’ajja (ሚጣዬ), mit’t’u (ሚጡ), or mituye (ሚጡዬ) [for females]” during feeding times to encourage infants eat more.

In some observations, mothers were tasting the foods several times during feeding, said “sititaffit (ሰትታፍት) [it is sweaty]”, and orally produce sounds such as ‘mit’t’a!’ (ሚጣ!), ‘in!a’

(አገጃጃ!). In this way, mothers were serving as models to infants by tasting the foods. Some interviewed mothers believed that infants eat comfortably when they were practically shown that the food is to be eaten. Interestingly, an interviewed mother also stated her view that “infants vicariously imitate mothers’ actions and, therefore, I taste the food to encourage my infant to eat or drink it”.

Moreover, mothers used giving or expecting to give reinforces to encourage infants during feeding interactions. Some mothers were observed to provide small toys producing sounds to infants during their feeding. A mother alleged her infant “jiccīn bilanna wədə wic’c’ jizṣəh ihedalləhu (ይችን ብላና ወደ ውጭ ይገባህ እሄዳለሁ)” [after you eat this, I will take you out]” while she was feeding her infant. Another mother also said “bij! albīlam kalj mit’t’u tibəlabbiḥalləcc (ብይ! አልብላም ካልሽ ሚጡ ትበላብሻለች)” [eat! if you refuse to eat, mitu (the name of another child) may eat yours]” to competitively encourage her infant to eat more. Besides, some mothers were observed to go into a different place to feed their infants. A mother was observed to hold the infant on her lap and somebody standing in front was playing the infant (e.g., by applauding) to encourage him to eat more.

In the current study, some older infants were observed to grasp the food by their hands and want to take in the food to their mouth. These attempts of infants to self-feed appeared to be sources of conflict to the feeding interactions with mothers. Some interviewees believed that these initiations of infants to feed themselves should be taken as opportunities to encourage them to eat more. Beyond this, however, a mother stated that this attempt of infants’ self-feeding “is the beginning of the development of eating by them”. Besides, two of the interviewed mother indicated that changing the food variety seemed to serve to encourage infant to eat more.

Finally, holding infants in the chest of the mothers were used to sooth infants when they feel discomfort and crying as a result of feeding interactions. A mother was observed to amble, kiss and fondle the infant by holding him in her chest and said “bəḵ’k’a! bəḵ’k’a! (ቢቃ! ቢቃ!) [enough! enough!]” to clam and ready him for feeding.

Non-verbal feeding encouragement

Mothers were also used some non-verbal encouragement techniques to feed their infants. Some mothers were observed to use facial interactions, eye and body contacts to encourage infants during breast or bottle feeding. Some younger infants, in turn, touched the amulets of mothers when they were sucking. In an observation, an infant was seeking the attention of her mother by scratching the mother's chest when the mother was turning her face and talking to us. In many observations of the present study, younger infants were trying to touch the mother's lips through their fingers when they were fed.

Sitting on the lap of the mother was also used to facilitate infants feeding. In an observation, for instance, the infant refused to take food when he was sitting on the carpet, but began to eat when he was sat on the lap of his mother.

Discussion

Infant feeding involves, among other things, the identification of feeding cues of infants, which tends to vary based on their age, and the use of techniques to encourage infants to eat more. Using data obtained through observations and interviews from conveniently selected 12 infant-mother pairs, the present study has intended to investigate these three crucial elements of RF.

In relation to the first intent, the present study found out that infants express their hunger states through the movement of oral cavities and other body parts, and production of sounds. Specifically, the study indicated that infants move their lips and tongues, suck their fingers, and swallow and absorb objects they catch up, gaze at and point to the food, get excited to the view of foods, vocalize 'haha' and call the food 'nana' or 'enku', and cry when they need foods. In this regard, mothers in the present study seem to be responsive feeders as they used those behaviors of infants to decide to initiate feeding. Similarly, in a qualitative study by Hodges and his colleagues (2008) out of home working mothers also reported that infants (ages between three to 12 months) showed their hungry state through fussiness. Different from the current study, however, Hodges et al. (2008) found out that mothers fed their infants in a scheduled time (i.e., in every two hours) regardless of the infants' cues. This variation is likely be related to the differences in the working statuses of mothers between the two studies in that working mothers were more likely to use scheduled feeding than the non-working mothers, and non-working

mothers were more likely to use responsive (or demand based) feeding than working mothers (Iacovou & Sevilla, 2012).

Furthermore, the current study indicated that infants showed their satiety states through refusal of foods, playing and sleeping. Specific to these cues, infants 'request' mothers to terminate feeding through pushing over or throwing foods away, producing a sound 'quak' from the thorax, turning their head to other direction or shake side to side, pursing lips, and spitting out the nipple of mothers or bottles. Moreover, infants began to explore, easily distracted or pay attention to the surrounding, dandle on mothers' lap, swallow slowly, and feel drowsy and sleepy when they appeared to be satiated. In an extensive ethnographic open-ended conversational interviews and observations of infants' meals in Mali, Dettwyler (1986) also found out that mothers interpret infants' satiety when they stop eating, pushes food away, or leaves the area where the food is being served. Hodges et al. (2008) also indicated that starting to play with and smashing of foods were also used as cues to the satiety of infants. In the current study, mothers were not observed to weigh the amount of food infants were absorbing during feeding times, which is different from the findings of Hodges and his colleagues. Hodges et al. (2008) in addition found that mothers know the satiety of their infants by measuring the amount of food taken. This difference seems to be related to the less socio-cultural acceptability of weighing what a young child is eating among many parents in Ethiopia (Carlson & Carlson, 2008).

The current study revealed that although there appeared to be some similarities, younger (age six to 12 months) and older infants (age 13 to 24 months) tended to signal their hunger and satiety states in different ways. To express hunger states, whereas younger infants typically appeared to use thumb or finger sucking, smiling or gazing at the food, and leg twisting, older infants typically seemed to swallow and absorb objects, open the mouth in an O shape when the food was approaching to the mouth, get excited when food was coming, vocalize a sound 'haha', call the food 'nana' or 'enku', and point to the food by hand. Besides, the two groups also tend to differ in expressing their satiety states. Hence, spitting out foods, turning head to other direction, closing lips and clenching nipples were commonly observed among younger infants, and pushing dishes away, sounding 'quak' from the thorax, throwing foods, shaking head side to side, and feeling drowsy were typically shown among older infants to signal their satiety state. As infancy

is expected to be the period of progressive developmental changes in physical, cognitive and socio-emotional aspects (Santrock, 2006), these differences between younger and older infants tend to be ascribed to their motor, language and intellectual developments (Dearden et al., 2009). Dearden and others indicated, for instance, that 17 month-old infants were more likely than 12 month-olds to feed themselves and to stand while eating, and were less likely to be in the lap or arms of the caregiver.

Finally, the present study depicted that mothers used various verbal and non-verbal techniques to encourage their infants to eat more during feeding times. Mothers in the current study call infants in 'babyish' ways (e.g., through 'baba' or 'mita'), show infants by tasting foods and producing sounds orally (e.g., 'mita!' or 'entsa'), provide toys to infants, and cajole infants (e.g., by saying "after you eat this, I will take you out" or "eat! if you refuse to eat, [another child] may eat yours") during feeding to encourage infants. In cross-sectional study of feeding beliefs and practices of caregivers (n=764) of six to 23 month-old babies in Derashe special Woreda, Southern Ethiopia, Mekitie et al. (2012) also indicated that infants were reported to eat more when they were encouraged verbally and provided with separate plate, and they refused to eat if they were ill, forced to eat, fed by someone other than the caregiver. Similarly, positive verbalization and allowing infants to self-feed were also found to be associated with greater food intake and acceptances (Dearden et al., 2009). Contrary to the findings of the present study, Dettwyler (1986) reported that mothers did not encourage, cajole, or bribe their babies to eat more food because of the views of the families that it can 'spoil' infants.

Conclusion

During observations of feeding times of the present study, infants were showing some behaviors when they were satiated and when they do not want to eat. Although these two states of feeding are different, they were not distinctively delineated in the current study. Besides, the current study used broad age categories to signify the developmental variations of infants' hunger and satiety feeding cues. Thus, the study was not able to show the specific developmental progressions of feeding behaviors that infants manifest at a given age partly due to the smaller number of participants. Moreover, younger and older infants in the present study appeared to be encouraged to eat more by mothers with different techniques. The present study, however, was

not able to clearly show the mechanisms mothers were using to encourage younger and older infants.

Cognizant of these limitations, it can be concluded based on the findings of the current study that infants communicate their hunger and satiety states to mothers through different behavioral cues, which can help mothers to be responsive feeders. Maternal encouragements of infants during feeding time to eat more tend to contribute to infants' intake of nutrients.

Suggestions

In light of the major findings of the current study, suggestions were forwarded for further investigations of mother-infant feeding interactions. As feeding appears to be one aspect of child or infant care and to influence children's developmental outcomes, it can be a potential area of investigation particularly in Ethiopia, a country where there are higher proportions of underweight younger children. Thus, interested practitioners and scholars of developmental psychology and other related disciplines are encouraged to study infants' or children's feeding by relating it to their developmental outcome variables such as temperament and attachment characteristics.

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