



Distribution of minimum recommended meal frequency among children aged 6-23 months in Cambodia

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ABSTRACT

Introduction

Minimum meal frequency (MMF), a proxy indicator to examine child's energy requirements, focuses on the number of times children receive foods apart from breast milk and breastfeeding by child's age. This study describes the MMF among children aged 6-23 months and its distribution across additional key characteristics of the children and their mothers.

Methods

A secondary data analysis of Cambodia Demographic Health Survey (CDHS) 2014 among 2,201 children aged 6- 23 months was performed. Descriptive analysis and MMF distribution across child and mother's characteristics were conducted using STATA V 14.

Results

Overall, higher proportion of boys (71.4%) than girls (68.0%) met required MMF. Children who met required MMF were living in urban rather than rural areas (82.6% vs. 69.0%). Higher proportion of children (76.0%) whose mothers working in non-agriculture met required MMF than children (70.1%) with mothers working in agricultural sector. Finally, the higher the number of children the HH had (≥ 4 children), the lower the children met the MMF requirement.

Conclusions

Meeting recommended MMF for children aged 6-23 months remains a concern in Cambodia though found better than many other countries. Therefore, this requires further actions including nutrition specific interventions particularly focused on rural areas and families with more children.

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Introduction

The first two years of age is a critical period for optimal growth and development of children [1]. After the age of 6 months, breast milk alone is no longer sufficient for infant's nutritional need due to energy and nutrients requirement increase. Hence, the introduction of complementary feeding is necessary for children to familiar with the transition of eating family foods [2]. More than two-thirds of children deaths under 24 months of age are associated with inappropriate feeding practices which are the most risk of malnutrition resulted in stunting, illness, and mortality [3-5]. Inadequate complementary feeding is a factor responsible for childhood stunting. Those factors include low food intake, inadequate feeding, and insufficient frequency of feeding [6]. Minimum meal frequency (MMF), a proxy indicator to examine child's energy requirements, focuses on the number of times children receive complementary foods other than breast milk by specifying to child's age and breastfeeding status. According to Infant Young Child Feeding (IYCF) indicators, breastfed children are considered to meet required MMF if they receive solid, semi-solid foods at least twice a day for infants age 6–8 months and at least three times a day for children age 9–23 months. Non-breastfed children aged 6–23 months are considered to be fed with the MMF if they receive solid, semi-solid foods at least four times a day [7]. According to the Cambodia Demographic and Health Survey 2014 (CDHS), it was found that 74% of breastfed children were fed to meet required MMF in the last 24 hours preceding the survey. Among non-breastfed children, 68% were fed four or more times per day [8].

Appropriate feeding practices were more common among breastfed children rather than non-breastfed children. Though the urban children were likely to be fed better than the rural children, malnutrition in Cambodia is still a public health concern with stunting of 32%, wasting of 10% and underweight of 24% among children under five of age [8]. Therefore, it is crucially important to prevent malnutrition within the critical period of life during pregnancy and children's first two years of life by having proper feeding practices [7]. In Cambodia, there have been limited studies assessing IYCF practice by using MMF recommended by IYCF WHO among children age 6-23 months. We take this opportunity to assess the MMF among children aged 6-23 months across socio-demographic characteristics.

Methods

Data source and key variables

We used children dataset (KHKR72FL.DTA) from the CDHS 2014, which was a nationally representative survey. All provinces were categorized into 19 domains and stratified by urban and rural areas with a two stage clustered sampling design. Detailed methods and questionnaires could be found in CDHS 2014 I report [8]. The total sample of 2,201 children age 6- 23 months were included in the analysis with collected information on feeding practices through interviews with their mothers.

Interested variables were included the children's feeding practices by using IYCF indicator, MMF, and child and maternal characteristics.

Statistical analysis

Stata V14 was used to describe the main interest variable, MMF across child and maternal characteristics. Sampling weight was taken into account throughout the analysis process to compensate the complex sampling design.

Results

Table 1 presents the overall characteristics distribution of the children age 6-23 months. Of the 2,201 children aged 6-23 months, about 18.0% were in age group of 6-8 months, and slightly close to 82.0% were in age group of 9-23 months. Boys represented slightly more than half of the samples. Mainly, 86.0% of the children age 6-23 months lived in rural area. Commonly, more than one third (32.0%) of their mothers had no employment, followed by 36.0% working in agricultural sector, and 32.0% in non-agriculture. Close to 40.0% of families reported of one child followed by 2 children (30.0%) and at least 3 and more children (30.5%) in the families. In the meantime, 67.6% of the children age 6-23 months were still breastfed (**Table 1**).

Table 1: Distribution of children age 6-23 months by socio-demographic characteristics, and status of breastfeeding

Variables	N = 2201	
	Freq.	%
Child's age group (in months)		
6 – 8	401	18.2
9 – 23	1800	81.8
Sex		
Boy	1117	51.0
Girl	1084	49.0
Place of residence		
Urban	305	14.0
Rural	1896	86.0
Mother's occupation		
Did not work	698	32.0
Agricultural work	789	36.0
Non-agricultural work	714	32.0
Number of children in the HH		
1	857	39.0
2	672	30.5
3	312	14.2
≥ 4	360	16.3
Status of breastfeeding		
Still breastfed	1487	67.6
Non-breastfed	714	32.4

Table 2 illustrates MMF prevalence among children aged 6-23 months by socio-demographic characteristics. Overall, 71.1% of children aged 6-23 months who met required MMF were children aged 6-8 months and 70.4% among children aged 9-23 months, respectively. Among breastfeeding children, 71.0% of children aged 6-8 months met required MMF and 75.2% among children aged 9-23 months. Among non-breastfed children, 72.5% children aged 6-8 months who met required MMF and 62.6% among children aged 9-23 months.

In general, boys (71.4%) were slightly higher proportion of meeting the required MMF than girl (68.0%). The percentage of breastfed children who met required MMF were slightly different between boy and girl (73.6% vs. 74.7%). However, 66.6% of non-breastfed children who met required MMF were boy and only 59.5% were girl.

Overall, those children living in urban areas had higher prevalence of meeting the required MMF than rural children (82.6% vs 69.0%). Similarly, urban breastfed (77.5%) and non-breastfed (87.0%) children had higher proportion of meeting the required MMF. Mothers with non-agriculture work had higher proportion of meeting the required MMF than mothers in other jobs. Furthermore, among, non-breastfeed children, it is observed that the mothers in agriculture work (47.6%) and mothers without working (54.0%) compared to 77.2% among mothers in non-agriculture work. Finally, the lower proportions of meeting the required MMF were found in household with more children particularly non breastfeed children (**Table 2**).

Discussion

Overall, this analysis found higher proportion of boys than girls met required MMF. HH with children meeting required MMF tended to live in urban, having mother's job in non-agriculture sector and HH with few children. Generally, across mother and children's characteristics, BF children had better required MMF than NBF children.

Our analysis found similar to CDHS that reported 71.2% of children meeting the required MMF [8]. It was about twice higher than the study analysing of 32 DHS in Sub-Saharan Africa that reported that children aged 6-23 months met the minimum recommended meal frequency of just only close to 42% [9].

The finding indicated higher proportion of meeting the required MMF among boy higher than was consistent with the study in Indonesia that boys were more likely to be fed better than girls with minimum meal frequency [10]. This might be due to parental proportionate allocation of investment resources to sons rather than daughters in Indonesia [11]. This might be the case of Cambodian traditional beliefs too that families had a child sex bias that should be further investigated.

Table 2: Distribution of MMF by socio-demographic characteristics among children aged 6-23 months

Variables	BF children (1487)		NBF children (714)		All children (2201)	
	Met required MMF		Met required MMF		Met required MMF	
	n	%	n	%	n	%
Child's age group						
6-8	367	71.0	33	72.5	400	71.1
9-23	1120	75.2	681	62.6	1801	70.4
Sex of the children						
Boy	760	73.6	358	66.6	1118	71.4
Girl	727	74.7	356	59.5	1083	69.7
Place of residence						
Urban	139	77.5	166	87.0	305	82.6
Rural	1348	73.8	548	56.0	1896	69.0
Mother's job						
Did not work	522	68.6	177	54.0	699	65.0
Agricultural work	511	79.0	203	47.6	714	70.2
Non-agricultural work	454	75.0	334	77.2	788	76.0
Number of children in the HH						
1	571	76.3	286	70.0	857	74.2
2	443	74.3	229	62.2	672	70.2
3	223	78.0	89	57.3	312	72.1
≥ 4	250	65.5	110	51.6	360	61.3

In our study, children living in urban areas had higher prevalence of meeting the recommended MMF than rural children were consistent with our CDHS report [8]. It was clearly implied that living in urban areas with wealth determine the ease of accessing resources to meet child's adequate feeding practice [12, 13]. In Cambodian context, this could be further justified by traditional beliefs and practices, during introducing complementary feeding to infants in the rural community, mothers and caregivers might not permit the child to take different food items or unfamiliar taste foods that lead to abdominal problem or developing diarrhoea. This factor might be attributed to the children's low feeding frequency as well.

We found that children aged 6-23 months whose mothers with non-agriculture work had better the recommended MMF than children with mothers in other jobs including staying at home and agriculture sector. It is similar to the study in China that children of mothers in the professional or assigned positions were significantly less likely to be malnourished low MMF as a predictor) as compared to children of mothers who were farmers [14]. In Cambodia context, it was observed that the feeding of complementary foods in household for infants is usually poor and might affect the frequency of children's meal time while their mothers stay home or working in agricultural sector [15]. The benefits of having non-agricultural employment, is that mothers would have better income and might perform better IYCF practice included meal frequency significantly

through improved working conditions, and increased access to resource such as food availabilities [16].

Finally, we found that the more children in the household, the lower proportion of meeting MMF. This trend is similar to a study in Myanmar [17]. The possible reason might be that a mother with fewer child may have a better commitment, good motivation and invest more in interactive time to provide their child better nutrition care with more meal frequency rather than mother with more children. Additionally, the fact that having fewer childbirths may increase mothers' level of love for children which may inversely influence the level of feeding practices such as meal frequency. Another reality is that multi-para mothers may have lower level of education and they are more less likely to practice scientifically feeding recommendation for their children. It was found that infants and young children of multiparous mothers were at risk of not being fed in compliance with WHO infant feeding recommendation. Those who were born from mothers with lower parity achieved significant feeding practice [12, 18].

To our knowledge, this study was the first to assess the distribution of MMF within the age group of children aged 6-23 months following IYCF WHO indicators. Although IYCF practices were assessed by asking mothers about the types of liquids and foods the children consumed in the last 24 hours preceding before interview, respondent recall and reporting bias could have possibly influenced the results with over or under reporting of MMF.

However, we assumed that the IYCF practices reported by mothers are more or less the same throughout the children's life.

Conclusions

Meeting required MMF for children aged 6-23 months as recommended by WHO remains a major challenge in Cambodia though found higher than many Sub-Saharan Africa countries. This requires further actions, including both nutrition specific interventions. Mothers should be aware of appropriate IYCF practice-recommended meal frequency according to WHO guidelines with particular focus on girls, rural areas and more children HHs. Continuing regular nutritional promotion for women including pregnant mothers and early and regular antenatal and postnatal visits should be encouraged. Further research on association of MMF with child's nutritional status and mothers' available time should be investigated and confirmed precisely in order to present the cruciality of eating adequate and sufficient complementary feeding among under 2 children in Cambodia.

Ethics approval

The CDHS were reviewed and approved by the ICF Institutional Review Board (Calverton, MD, USA) and the National Ethics Committee for Health Research of the Cambodia Ministry of Health. Informed consent was obtained from each of the participants before the interview.

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