

## Determinants of Meeting the Minimum Acceptable Diet Among Filipino Children Aged 6-23 Months

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Among children under the age of five, those aged 6-23 months are at a greater risk to suffer from malnutrition. Introduction of appropriate and safe foods to infants at the age of six months is recommended (WHO 2002) to meet evolving nutritional requirements for optimal growth, development, and good health (Ogbo et al. 2015). This secondary, cross sectional study using data from the 8<sup>th</sup> National Nutrition Survey in 2013 aimed to identify the determinants of meeting the minimum acceptable diet (MAD) among children 6-23 months and at age groups 6-11 mo, 12-17 mo, and 18-23 mo in the Philippines. Child, maternal, and household characteristics were examined in terms of their association with meeting the MAD using bivariate and multiple logistic regression analyses with a 5% level of significance ( $\alpha=0.05$ ). The final model showed that among children 6-23 mo, having a mother with more than three children (AOR=1.60) and being in the middle wealth quintile (AOR=1.88) had greater odds of meeting the MAD than those having a mother with at least three children and those in the poorest quintile, respectively. Children having more than five family members had lower odds (AOR=0.64) of meeting the MAD compared with less than five members. Among children 6-11 mo, those with more than five family members were more likely (AOR=5.32) to meet the MAD. Among 12-17 mo, children with non-working mothers (AOR=3.01) and those belonging to the rich wealth quintile (AOR=2.86) were more likely to meet the MAD while those with more than five family members were less likely (AOR=0.49) to meet the MAD. Children with low birth weight among 18-23 mo children had lower odds (AOR=0.47) of meeting the MAD. Working mothers, those from poorer quintiles, and those with more than five household members need to be specifically targeted for interventions that promote and encourage child feeding practices that meet the MAD.

Key words: complementary feeding, determinants, Filipino children, minimum acceptable diet

### INTRODUCTION

Among children under the age of five, those aged 6-23 mo are at a greater risk to suffer from undernutrition. It is during this period that the child is transitioned from breastmilk to solid foods (Khanal et al. 2013). Complementary feeding starts when breastmilk alone is no longer sufficient to meet the nutritional requirements

of infants, thus, other foods and liquids are needed along with breastmilk (Senarath & Dibley 2012).

The World Health Organization (WHO) recommends introduction of appropriate and safe foods to infants at the age of 6 mo in addition to breast milk (WHO 2002). This allows infants to meet evolving nutritional requirements necessary for optimal growth, development and good health (Ogbo et al. 2015).

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Poor child feeding practices and insufficient quantities and inadequate quality of complementary foods have a detrimental effect on health and growth of children less than two years of age. Even with optimum breastfeeding, children will become stunted if they do not receive adequate dietary diversity and meal frequency on their complementary foods after 6 mo of age (Aemro et al. 2013). One of the most effective interventions that can significantly reduce stunting during the first two years of life is complementary feeding (Kabir et al. 2012).

Minimum acceptable diet (MAD) is one of the core indicators for assessing infant and young child feeding (IYCF) practices that combines standards of dietary diversity and feeding frequency by feeding status. Because appropriate feeding of children 6-23 mo is multidimensional, it is important to have a composite indicator that tracks the extent to which multiple dimensions of adequate child feeding are being met. Thus, MAD provides a useful way to track progress at simultaneously improving the key quality and quantity dimensions of children's diets (WHO 2010).

One advantage of MAD is that it is relatively simple to calculate and interpret and is applicable across sociocultural contexts. It is also applicable for both breastfed and non-breastfed children. Analyses have shown that MAD indicator is associated with child anthropometric status, particularly stunting, which makes it a useful tool for population-level assessment (Jones et al. 2013). However, MAD indicator does not provide quantitative information about children's food and nutrient intake. In addition, MAD is a useful proxy for inadequate nutrient intake, but is not valid for assessing nutrient intake or risk for overweight and obesity (Lele et al. 2016).

This study aimed to determine the factors associated to meeting the MAD of children 6-23 mo and at age groups 6-11 mo, 12-17 mo, and 18-23 mo by looking at the characteristics of the child, the mother, and of the household.

The results of the study have the potential to provide the evidence needed to establish strategies and programs for appropriate complementary feeding interventions. Information on the risk factors for inadequate complementary feeding will help target high-risk groups on the formulation of appropriate health and nutrition programs to increase the proportion of children meeting the MAD.

## METHODOLOGY

### Sampling

This study used a secondary data obtained from the 8<sup>th</sup> National Nutrition Survey (8<sup>th</sup> NNS) (FNRI-DOST 2015). The 8<sup>th</sup> NNS, which was conducted in 2013, adopted the 2003 Master Sample (MS) developed by the Philippine Statistics Authority (PSA).

Stratified three-stage sampling design was used in the 8<sup>th</sup> NNS where the first stage is the selection of Primary Sampling Units (PSUs), consisting of one *barangay* or a combination of contiguous *barangays* with at least 500 households each. Enumeration areas consisting of 150-200 households from these PSUs were identified, from which housing units were randomly selected. The last stage was the random selection of the households, which is the ultimate sampling unit. All children 6-23 mo in the sampled households from four replicates were included in the study.

Only children aged 6-23 mo with no missing information or data on feeding practice and mother and household socio-demographic profile were included in the analysis. The total sample size included 2,600 children.

### Statistical Analysis

The MAD indicator was expressed as dichotomous variable categorized as "meeting the MAD" and "not meeting the MAD". A child who met both the minimum dietary diversity (MDD) and the minimum meal frequency (MMF) was categorized as "meeting the MAD" and a child who did not meet either or both the MDD and MMF as "not meeting the MAD". Descriptive analysis was first conducted to present the general profile of children in relation to their socio-demographic, maternal, and household characteristics. MAD indicator was examined against the set of independent variables (child, maternal, and household characteristics) using bivariate analysis in order to assess the prevalence of meeting the MAD for the categories of the independent variables, and to identify factors associated with meeting the MAD. Analyses were performed using the survey 'SVY' commands of Stata version 12.0, which allowed for adjustments for the complex sampling design when estimating confidence intervals around prevalence estimates. Chi-square test was used to test the significance of associations in the cross-tabulations. The crude odds ratio (unadjusted odds ratio) was used in the bivariate analysis, while the adjusted odds ratio (AOR) was used in the multivariate analysis. The unadjusted and adjusted odds ratios were calculated to estimate the strength of association between independent variables and MAD indicator outcome, which is meeting the MAD. Multiple logistic regression using surveys commands was conducted using stepwise backwards

elimination of variables in order to determine the factors significantly associated with meeting the MAD. The factors that were not significant ( $p \geq 0.05$ ) were eliminated in a stepwise manner, and those factors, when any level of the factor was significant ( $p < 0.05$ ), were retained in the final model. The odds ratios (ORs) with 95% confidence intervals were calculated in order to assess the adjusted risk of independent variables.

### Variables

The dependent variable used to describe the feeding practice of infants and young children was the MAD. MAD was derived from the child's 24-hour food recall, a dietary assessment method wherein the child's mother was asked to recall all the food intake (liquid and solid foods eaten) of the child the previous day and night or the past 24 hours. A 24-hour food recall was gathered through face-to-face interview during household visit using a paper-based questionnaire.

1. **Minimum Acceptable Diet:** a composite indicator of MDD and MMF. Meeting the WHO recommended MAD means that a currently breastfed child aged 6-23 mo met both the MDD and the MMF (Khanal et al. 2013), based on what the child ate and drank the past day and night. However, meeting the MAD is slightly different for a non-breastfed child. Dietary diversity is calculated by using six food groups (excluding dairy products) at least four times a day and combining milk related products (formula milk, milk, or yoghurt) with at least two feedings a day.
2. **Minimum dietary diversity:** meeting the MDD means that the child ate at least four or more varieties of foods from the seven food groups in a 24-hour time period.
3. **Minimum meal frequency:** meeting the MMF means that the child received complementary foods the minimum recommended number of times in the past 24 hours. For a breastfed child, the frequency should be at least two times for 6-8 mo, and at least three times for 9-23 mo of age. For a non-breastfed child, it should be at least four times in the last 24 hours. Meal frequency for a non-breastfed child counts the number of times the child was given milk products (formula milk, milk, or yoghurt), which are not included in the count for a breastfed child.

### Independent Variables

Information was collected through face-to-face interviews during house-to-house visit from mothers or primary caregivers. A structured questionnaire programmed in the electronic data collection system (e-DCS) in the netbooks which was developed and pre-tested by the FNRI-DOST was used during the interview. The e-DCS is a web-based data collection system developed for the 8<sup>th</sup> NNS. It was designed to produce an electronic data that will

be transmitted electronically from the survey area to the central database in the FNRI-DOST office. The e-DCS program had undergone two separate pre-testing activities to test its functionality and assess the accuracy and precision of data collected. Each researcher was provided with a netbook installed with e-DCS program to be used during data collection, editing, and data transmission. Instead of a paper-based questionnaire, questions were uploaded in the e-DCS. During face-to-face interview, the researcher reads the uploaded questions from the netbook to the respondent and encodes the respondent's answer directly to the e-DCS.

The following independent variables were selected based on previous evidence regarding factors associated with complementary feeding practices of infants and young children in other countries (Aemro et al. 2013, Issaka et al. 2014) including South Asian countries (Joshi et al. 2012; Kabir et al. 2012).

1. **Child characteristics** – include age: calculated in months and was categorized as 6-11, 12-17 and 18-23 mo; sex: male or female; birth weight: having weight at birth of  $\geq 2500$  grams or  $< 2500$  grams which was based on both birth records and recall of mothers; timely initiation of breastfeeding: whether the child was initiated to breastfeed within one hour after birth or not; and pre-lacteal feeding: whether the child was given feeds other than breastmilk in the first three days of life or not.
2. **Maternal characteristics** – include maternal age: categorized as  $< 20$ , 20-29,  $\geq 30$  years old; parity or number of live births in her lifetime: categorized as  $\leq 3$  children and  $> 3$  children; maternal highest level of education: no grade completed and primary, secondary, and tertiary and higher education; work status: not working were those who were not earning cash while working were those who were earning cash during the time of survey; counseling on nutrition/IYCF: received nutrition/IYCF counseling from a health professional during their pregnancy or not based on the mother's claim; and delivery status such as type of delivery facility: home delivery or health facility delivery; method of delivery: normal or caesarean; and delivery attendant who assisted during delivery: doctor/nurse/midwife and traditional birth attendant and others.
3. **Household characteristics** – household wealth index: poorest, poor, middle, rich and richest; food security status: food secure vs. food insecure; area of residence: rural vs. urban; and household size: categorized into: with  $\leq 5$  members and  $> 5$  members.

**Household wealth index:** a proxy indicator for income. It is calculated as a score of household assets such as ownership of appliances and vehicles, housing characteristics (type and tenure of dwelling unit), and

access to utilities (presence and type of utilities in the household like electricity, water access and toilet facility), which was weighted using the principal components analysis method. This index was divided into five categories (poorest, poor, middle, rich, and richest wealth quintiles), and each household was assigned to one of these categories.

**Household food security status:** was determined using the Household Food Insecurity Access Scale (HFIAS) assessment tool developed by the Food and Nutrition and Technical Assistance (FANTA). HFIAS is a nine-item questionnaire regarding difficulties experienced in securing food needs for the past month from the date of interview. Households were described as food insecure if they answered “yes” to any of the number two to number nine questions.

**Household size:** the number of household members in a household. An individual was considered a household member if he/she had stayed at the household for at least 30 days prior to the time of visit or any member who were schooling or abroad that is considered as a member by the household head.

### Ethics Clearance

The 8<sup>th</sup> NNS was approved by the Ethics Review Committee of the FNRI-DOST under Protocol code FIERC 2012-001 and cleared by the National Statistical Coordination Board (NSCB) with Reference Number PP1-06172013-07. The field researchers discussed information on the objectives and principles of the survey to the mother or primary caregiver of children 6-23 mo who then gave their oral and written consent to participate in the survey.

## RESULTS

Table 1 presents the characteristics of the study participants by age group. The mean age of all children included was 14.3 mo. By age group, the mean age for 6-11 mo was 8.5 mo, 14.6 mo for the 12-17 mo age group, and 20.4 mo for the 18-23 mo age group. A higher proportion of children from all age groups were males. Majority of them had normal weight at birth ( $\geq 2500$  g), were not given pre-lacteal feeds during the first three days of life and were initiated to breastfeeding within 1 h after delivery.

**Table 1.** Percentage distribution of children 6-23 mo by child, maternal, and household characteristics.

CHARACTERISTICS	ALL			6-11 mo			12-17 mo			18-23 mo		
	n	Prop.	Std. Err.	n	Prop.	Std. Err.	n	Prop.	Std. Err.	n	Prop.	Std. Err.
<b>Child</b>												
Age (Mean)	2,600	14.3	0.1	923	8.5	0.1	816	14.6	0.1	861	20.4	0.1
<b>Sex</b>												
Male	1,354	52.2	1.0	474	51.8	1.8	410	50.5	1.8	470	54.4	1.8
Female	1,246	47.8	1.0	449	48.2	1.8	406	49.5	1.8	391	45.6	1.8
Birth weight (Mean)	2,600	2634.0	27.6	923	2687.7	42.4	816	2579.5	50.1	861	2627.5	45.1
$\geq 2500$ g	1,927	75.7	0.9	698	77.1	1.4	580	73.0	1.7	649	76.6	1.5
$< 2500$ g	673	24.3	0.9	225	22.9	1.4	236	27.0	1.7	212	23.4	1.5
<b>Prelacteals</b>												
Not given	2,100	79.9	0.8	733	78.3	1.4	668	81.5	1.5	699	80.3	1.5
Given	500	20.1	0.8	190	21.7	1.4	148	18.5	1.5	162	19.7	1.5
<b>Timely initiation of breastfeeding</b>												
Not within 1 hour	587	23.0	0.9	209	23.8	1.6	179	20.6	1.5	199	24.3	1.6
Within 1 hour	2,013	77.0	0.9	714	76.2	1.6	637	79.4	1.5	662	75.7	1.6
<b>Maternal</b>												
Age (Mean)	2,600	29.3	0.1	923	28.6	0.3	816	29.2	0.2	861	30.3	0.2
$< 20$ y	181	6.7	0.5	88	9.3	1.1	56	6.4	0.9	37	4.1	0.7
20-29 y	1,166	44.7	1.0	435	46.7	1.7	380	46.8	1.8	351	40.4	1.8
$\geq 30$ y	1,253	48.6	1.0	400	44.0	1.8	380	46.8	1.8	473	55.5	1.8

Table 1 continued next page . . .

CHARACTERISTICS	ALL			6-11 mo			12-17 mo			18-23 mo		
	n	Prop.	Std. Err.	n	Prop.	Std. Err.	n	Prop.	Std. Err.	n	Prop.	Std. Err.
<b>Educational Attainment</b>												
No Grade Completed & Primary	546	19.2	0.8	186	18.2	1.3	158	17.3	1.4	202	22.0	1.4
Secondary	1,354	52.8	1.1	473	52.2	1.8	436	54.8	1.9	445	51.6	1.9
Tertiary and above	700	28.0	1.0	264	29.6	1.7	222	27.9	1.7	214	26.3	1.7
<b>Working status</b>												
Working	411	16.6	0.8	128	14.8	1.3	133	17.5	1.5	150	17.8	1.4
Not working	2,189	83.4	0.8	795	85.2	1.3	683	82.5	1.5	711	82.2	1.4
<b>Parity (Mean)</b>	2,600	3.0	0.0	923	2.8	0.1	816	3.0	0.1	861	3.1	0.1
≤3 children	1,745	68.6	1.0	645	72.1	1.6	549	67.9	1.7	551	65.5	1.7
>3 children	855	31.4	1.0	278	27.9	1.6	267	32.1	1.7	310	34.5	1.7
<b>Availing of nutrition/IYCF counseling</b>												
Not availed	515	19.2	0.9	185	19.0	1.3	156	18.3	1.4	174	20.2	1.5
Availed	2,085	80.8	0.9	738	81.0	1.3	660	81.7	1.4	687	79.8	1.5
<b>Delivery Status</b>												
<b>Delivery facility</b>												
At home	800	28.5	1.0	248	25.1	1.6	259	29.1	1.7	293	31.5	1.7
Health facility	1,800	71.5	1.0	675	74.9	1.6	557	70.9	1.7	568	68.5	1.7
<b>Method of Delivery</b>												
Normal	2,358	90.1	0.7	842	90.6	1.1	733	88.9	1.3	783	90.7	1.2
Cesarean	242	9.9	0.7	81	9.4	1.1	83	11.1	1.3	78	9.3	1.2
<b>Assistance during Delivery</b>												
Doctor/Nurse/ Midwife	2,026	80.4	0.9	745	82.1	1.5	637	81.5	1.4	644	77.6	1.5
Traditional Birth Attendant & Others	574	19.6	0.9	178	17.9	1.5	179	18.5	1.4	217	22.4	1.5
<b>Household</b>												
<b>Wealth Quintile</b>												
1 <sup>st</sup> quintile (Poorest)	751	25.7	1.0	246	24.1	1.6	240	25.9	1.6	265	27.4	1.6
2 <sup>nd</sup> quintile (Poor)	626	23.3	0.9	238	24.9	1.5	183	21.7	1.5	205	23.0	1.5
3 <sup>rd</sup> quintile (Middle)	519	20.0	0.8	178	18.6	1.4	177	21.5	1.5	164	20.2	1.4
4 <sup>th</sup> quintile (Rich)	414	17.6	0.9	153	18.2	1.5	119	16.8	1.5	142	17.8	1.4
5 <sup>th</sup> quintile (Richest)	290	13.3	0.8	108	14.2	1.4	97	14.1	1.5	85	11.5	1.3
<b>Food Security Status</b>												
Food Secure	527	22.3	0.9	187	22.8	1.7	167	22.1	1.5	173	21.9	1.5
Food Insecure	2,073	77.7	0.9	736	77.2	1.7	649	77.9	1.5	688	78.1	1.5
<b>Area of Residence</b>												
Rural	1,488	50.7	1.3	528	50.1	1.9	441	47.1	1.9	519	54.8	2.0
Urban	1,112	49.3	1.3	395	49.9	1.9	375	52.9	1.9	342	45.2	2.0
<b>Household Size (Mean)</b>	2,600	7.0	0.1	923	7.0	0.1	816	7.1	0.1	861	6.8	0.1
≤5 members	801	31.8	1.0	269	30.1	1.7	242	30.8	1.8	290	34.6	1.7
>5 members	1,799	68.2	1.0	654	69.9	1.7	574	69.2	1.8	571	65.4	1.7



In terms of maternal characteristics, majority of the mothers were 30 years old or older except for the 6-11 mo age group wherein most of their mothers were 20-29 years old. A higher proportion of the mothers in all age groups had secondary education, unemployed, had at least three children and reportedly availed nutrition or IYCF counseling during their prenatal care while pregnant with the index child.

By delivery status of mothers, majority of them delivered in a health facility, had normal delivery, and were assisted by skilled birth attendant (i.e., doctor, nurse, or midwife).

Regarding household characteristics, a higher proportion of the children were from the poorest (12-17 mo and 18-23 mo age groups) and poor (6-11 mo age group) wealth quintiles. Majority of them lived in rural areas except for the 12-17 mo age group. Most of the households of the study population were food insecure, which means that the household members experienced a lack of food in the past month prior to the survey. A higher percentage of the households had more than five members.

Table 2 shows the proportion of children meeting the MMF, MDD, and MAD by breastfeeding status. Overall, 93.5% of children met the MMF while only 14.5% and 6.7% met the MDD and MAD, respectively. Among children who met the MMF, the highest proportion was from the 18-23 mo age group as compared to other age groups, regardless of breastfeeding status. However, non-breastfed children (99.4%) had a higher proportion of meeting the MMF than the breastfed children (88.9%).

Similarly, the highest proportion of children who met the MDD was from the 18-23 mo age group compared to the 6-11 mo and 12-17 mo age groups, regardless of

breastfeeding status. Non-breastfed children (22.5%) had a higher proportion of meeting the MDD than breastfed children (8.4%).

In terms of meeting the MAD, the highest proportion was also observed among 18-23 mo age group. By breastfeeding status, a higher proportion of breastfed children (8.4%) met the MAD than the non-breastfed children (4.4%).

Table 3 presents the proportion of children (by age group) who met the MAD based on child, maternal, and household characteristics. Overall, only 6.7% of all children 6-23 mo who were included in the study have met the MAD. By age group, the highest proportion of meeting the MAD was noted among the 18-23 mo age group (10.1%), while the lowest proportion came from the 6-11 mo age group (2.0%).

Among infants 6-11 mo old, the highest proportion of those who were able to meet the MAD were females, with low birth weight, those who were not given prelacteal feeds, and those who were initiated to breastfeeding within 1 h after birth. By maternal characteristics, meeting the MAD was observed to be highest among infants whose mothers were aged 30 years and above, those with tertiary or higher education, non-working, and those who availed of nutrition/IYCF counseling. By delivery status, those who were born in health facilities and were delivered through cesarean section had higher proportions of meeting the MAD than their counterparts who were delivered at home and those who were born via normal delivery. By household characteristics, infants belonging to the richest wealth quintile, food secure households, those living in urban areas, and with more than five family members were likely to meet the MAD.

**Table 2.** Proportion of children meeting the MMF, MDD and MAD by breastfeeding status.

Age in mo	MMF			MDD			MAD		
	n	Prop.	Std. Err.	n	Prop.	Std. Err.	n	Prop.	Std. Err.
<b>All</b>	2422	93.5	0.5	376	14.5	0.7	178	6.7	0.5
6-11	800	87.2	1.2	41	4.2	0.7	20	2.0	0.5
12-17	779	95.8	0.7	125	15.7	1.4	68	8.4	1.1
18-23	843	98.2	0.5	210	24.6	1.6	90	10.1	1.1
<b>Not Breastfed</b>	1076	99.4	0.2	252	22.5	1.3	54	4.4	0.6
6-11	240	99.6	0.4	24	8.4	0.8	3	0.7	0.4
12-17	336	98.9	0.5	77	22.3	2.4	20	5.7	1.3
18-23	500	99.7	0.2	151	29.9	2.1	31	5.5	1.0
<b>Breastfed</b>	1346	88.9	0.9	124	8.4	0.8	124	8.4	0.8
6-11	560	82.2	1.6	17	2.5	0.6	17	2.5	0.6
12-17	443	93.4	1.2	48	10.6	1.7	48	10.6	1.7
18-23	343	96.0	1.1	59	16.8	2.1	59	16.8	2.1

**Table 3.** Proportion of children 6-23 mo meeting the MAD by child, maternal, and household characteristics.

CHARACTERISTICS	ALL		6-11 mo		12-17 mo		18-23 mo	
	Prop.	Std. Err.	Prop.	Std. Err.	Prop.	Std. Err.	Prop.	Std. Err.
<b>Child</b>								
Children meeting the MAD	6.7	0.5	2.0	0.5	8.4	1.1	10.1	1.1
<b>Sex</b>								
Male	6.6	0.7	1.8	0.6	8.2	1.5	10.3	1.5
Female	6.7	0.8	2.2	0.7	8.7	1.6	9.8	1.5
<b>Birth weight</b>								
≥2500 g	7.2	0.6	1.8	0.5	9.2	1.3	11.4	1.3
<2500 g	4.9	0.9	2.8	1.1	6.2	1.9	5.7	1.5
<b>Prelacteals</b>								
Not given	7.1	0.6	2.2	0.5	9.1	1.3	10.2	1.2
Given	5.2	1.0	1.3	0.8	5.4	1.7	9.5	2.3
<b>Timely initiation</b>								
Not within 1 hour	6.0	1.0	1.3	0.8	7.4	1.9	9.9	2.2
Within 1 hour	6.9	0.6	2.2	0.6	8.7	1.3	10.2	1.3
<b>Maternal</b>								
<b>Age</b>								
<20 y	4.6	1.6	1.1	1.1	6.6	3.4	10.2	5.0
20-29 y	7.1	0.8	1.8	0.6	9.8	1.6	10.8	1.8
≥30 y	6.6	0.7	2.4	0.8	7.3	1.5	9.6	1.4
<b>Educational Attainment</b>								
No Grade Completed & Primary	4.7	0.9	0.9	0.7	5.0	1.8	7.7	1.9
Secondary	7.3	0.7	1.8	0.6	9.8	1.6	10.7	1.5
Tertiary and higher	6.9	1.0	2.9	1.1	7.9	1.9	10.8	2.1
<b>Working status</b>								
Working	4.8	1.0	1.9	1.1	3.6	1.6	8.6	2.2
Not working	7.0	0.6	2.0	0.5	9.5	1.2	10.4	1.2
<b>Parity</b>								
≤3 children	6.8	0.6	2.0	0.6	8.7	1.3	10.6	1.3
>3 children	6.4	0.9	2.0	0.8	7.8	1.8	9.1	1.7
<b>Availing of nutrition/IYCF counseling</b>								
Not availed	5.5	1.1	1.6	0.9	5.1	1.8	9.9	2.5
Availed	6.9	0.6	2.1	0.5	9.2	1.3	10.1	1.2
<b>Delivery Status</b>								
<b>Delivery facility</b>								
At home	5.0	0.8	1.8	0.8	5.3	1.6	7.5	1.6
Health facility	7.4	0.7	2.1	0.6	9.7	1.4	11.3	1.4
<b>Method of Delivery</b>								
Normal	6.3	0.5	1.7	0.4	8.3	1.1	9.6	1.1
Cesarean	9.7	2.3	5.2	2.7	9.8	4.5	14.6	4.0

Table 3 continued next page . . .

CHARACTERISTICS	ALL		6-11 mo		12-17 mo		18-23 mo	
	Prop.	Std. Err.	Prop.	Std. Err.	Prop.	Std. Err.	Prop.	Std. Err.
<b>Assistance during Delivery</b>								
Doctor/Nurse/Midwife	7.2	0.6	2.0	0.5	9.5	1.3	10.9	1.3
Traditional Birth Attendant & Others	4.5	0.9	2.0	1.0	3.9	1.5	7.2	1.7
<b>Household</b>								
<b>Wealth Quintile</b>								
1 <sup>st</sup> quintile (Poorest)	4.4	0.8	1.5	0.7	4.8	1.4	6.8	1.6
2 <sup>nd</sup> quintile (Poor)	7.0	1.0	1.1	0.6	9.6	2.3	11.7	2.2
3 <sup>rd</sup> quintile (Middle)	8.5	1.3	2.2	1.1	10.8	2.4	12.6	2.8
4 <sup>th</sup> quintile (Rich)	7.8	1.5	2.1	1.1	13.3	3.9	9.2	2.4
5 <sup>th</sup> quintile (Richest)	6.2	1.6	4.0	1.9	3.9	2.1	11.7	3.8
<b>Food Security Status</b>								
Food Secure	8.4	1.3	3.1	1.3	9.3	2.5	13.4	2.6
Food Insecure	6.2	0.6	1.7	0.5	8.2	1.2	9.2	1.1
<b>Area of Residence</b>								
Rural	6.5	0.7	1.4	0.5	8.4	1.4	10.1	1.4
Urban	6.8	0.8	2.6	0.8	8.4	1.6	10.1	1.7
<b>Household Size</b>								
≤5 members	8.2	1.0	0.7	0.4	11.8	2.2	12.3	2.1
>5 members	6.0	0.6	2.6	0.6	6.9	1.2	8.9	1.2

Among children 12-17 mo, only 8.4% were able to meet the MAD. Most of those who met the MAD were females, with normal weight at birth, those who were not given prelacteal feeds, and those who were initiated to breastfeeding within one h of birth. In terms of maternal characteristics, those whose mothers were aged 20-29 years, had secondary education, non-working, with less than three children, and availed of nutrition/IYCF counseling had higher proportions of meeting the MAD. By delivery status, meeting the MAD was higher among children who were born in health facilities, those who were delivered via cesarean section, and those who were assisted by skilled birth professionals. By household characteristics, children belonging to the rich wealth quintile, food secure households, and those with less than five family members were likely to meet the MAD.

Among children 18-23 mo, majority of those who met the MAD were males, those with normal birth weight, those who were not given prelacteals at birth, and those who were initiated to breastfeeding within 1 h after birth. By maternal characteristics, most children who met the MAD were those with mothers aged 20-29 years, with tertiary or higher education, non-working, with no more than three children, and those who availed of nutrition/

IYCF counseling. Also, most of the children who met the MAD were born in health facilities and were delivered via cesarean section through the assistance of skilled birth professionals. In terms of household characteristics, meeting the MAD was higher among children belonging to the middle wealth quintile, food secure households, and those with five or less family members.

Factors associated with MAD based on bivariate models are shown in Table 4. Among 6-23 mo children, meeting the MAD was significantly associated with having a mother with at least secondary education (COR=1.61, CI 1.02 to 2.53,  $p=0.040$ ), health facility delivery (COR=1.52, CI 1.04 to 2.21,  $p=0.030$ ), assistance by traditional birth attendant and others during delivery (COR=0.61, CI 0.40 to 0.93,  $p=0.022$ ), wealth status [poor quintile (COR=1.65, CI 1.03 to 2.63,  $p=0.036$ ), middle quintile (COR=2.04, CI 1.26 to 3.28,  $p=0.003$ ) and rich quintile (COR=1.84, CI 1.10 to 3.08,  $p=0.020$ )], and with more than five family members (COR=0.71, CI 0.51 to 0.99,  $p=0.043$ ). No association was observed regarding child's sex, birth weight, prelacteal feeding, timely initiation of breastfeeding, maternal age, maternal work status, parity, availing of nutrition/IYCF counseling, method of delivery, food security status, and place of residence.



**Table 4.** Factors that influence meeting of the MAD among children 6-23 mo.

Characteristic	All (6-23 mo)			6-11 mo			12-17 mo			18-23 mo						
	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value				
<b>Child</b>																
<b>Sex</b>																
Male	Reference Category															
Female	1.01	0.73	1.39	0.961	1.25	0.49	3.21	0.640	1.06	0.62	1.80	0.830	0.95	0.60	1.50	0.812
<b>Birth weight</b>																
≥2500 g	Reference Category															
<2500 g	0.66	0.44	1.00	0.050	1.61	0.61	4.25	0.332	0.65	0.33	1.29	0.221	0.47	0.26	0.87	0.015
<b>Prelacteals</b>																
Not given	Reference Category															
Given	0.72	0.47	1.09	0.120	0.60	0.16	2.22	0.445	0.57	0.28	1.16	0.122	0.93	0.52	1.65	0.799
<b>Timely initiation</b>																
Not within 1 hour	Reference Category															
Within 1 hour	1.15	0.78	1.69	0.470	1.65	0.46	5.96	0.443	1.19	0.64	2.22	0.584	1.03	0.60	1.77	0.910
<b>Maternal</b>																
<b>Age</b>																
<20 y	Reference Category															
20-29 y	1.60	0.76	3.35	0.214	1.68	0.21	13.65	0.627	1.55	0.49	4.92	0.459	1.06	0.34	3.27	0.916
≥30 y	1.46	0.70	3.07	0.313	2.21	0.28	17.69	0.455	1.11	0.34	3.62	0.856	0.93	0.31	2.84	0.900
<b>Educational Attainment</b>																
No Grade Completed & Primary	Reference Category															
Secondary	1.61	1.02	2.53	0.040	2.00	0.42	9.49	0.384	2.06	0.92	4.60	0.077	1.43	0.78	2.60	0.246
Tertiary and higher	1.52	0.92	2.50	0.099	3.19	0.64	15.88	0.158	1.63	0.68	3.92	0.277	1.45	0.74	2.85	0.283
<b>Working Status</b>																
Working	Reference Category															
Not working	1.50	0.93	2.41	0.099	1.06	0.30	3.76	0.932	2.79	1.06	7.35	0.038	1.24	0.66	2.31	0.507
<b>Parity</b>																
≤3 children	Reference Category															
>3 children	0.95	0.67	1.34	0.753	1.01	0.37	2.73	0.990	0.88	0.49	1.58	0.672	0.85	0.52	1.38	0.513
<b>Availing of nutrition/ IYCF counseling</b>																
Not availed	Reference Category															
Availed	1.28	0.82	1.99	0.279	1.31	0.37	4.71	0.675	1.88	0.84	4.23	0.127	1.02	0.56	1.86	0.939
<b>Delivery Status</b>																
<b>Delivery facility</b>																
At home	Reference Category															
Health facility	1.52	1.04	2.21	0.030	1.16	0.40	3.34	0.783	1.94	0.97	3.90	0.062	1.58	0.96	2.60	0.074
<b>Method of Delivery</b>																
Normal	Reference Category															
Cesarean	1.58	0.97	2.59	0.067	3.25	0.98	10.81	0.055	1.20	0.51	2.80	0.674	1.60	0.78	3.27	0.198

Table 4 continued next page . . .

Characteristic	All (6-23 mo)			6-11 mo			12-17 mo			18-23 mo						
	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value	Crude OR (COR)	95% CI	p-value				
<b>Assistance during Delivery</b>																
Doctor/Nurse/Midwife	Reference Category															
Traditional Birth Attendant & Others	0.61	0.40	0.93	0.022	0.98	0.31	3.09	0.972	0.38	0.17	0.87	0.022	0.63	0.36	1.11	0.112
<b>Household</b>																
<b>Wealth Quintile</b>																
1 <sup>st</sup> quintile (Poorest)	Reference Category															
2 <sup>nd</sup> quintile (Poor)	1.65	1.03	2.63	0.036	0.74	0.16	3.44	0.698	2.09	0.95	4.59	0.065	1.82	0.96	3.46	0.066
3 <sup>rd</sup> quintile (Middle)	2.04	1.26	3.28	0.003	1.52	0.36	6.36	0.570	2.38	1.10	5.16	0.027	1.99	1.00	3.95	0.050
4 <sup>th</sup> quintile (Rich)	1.84	1.10	3.08	0.020	1.42	0.34	5.88	0.629	3.03	1.32	6.97	0.009	1.39	0.66	2.93	0.384
5 <sup>th</sup> quintile (Richest)	1.44	0.79	2.61	0.235	2.76	0.68	11.25	0.157	0.81	0.24	2.75	0.737	1.83	0.80	4.17	0.150
<b>Food Security Status</b>																
Food Secure	Reference Category															
Food Insecure	0.72	0.50	1.05	0.085	0.53	0.19	1.44	0.211	0.86	0.45	1.64	0.655	0.66	0.39	1.10	0.109
<b>Area of Residence</b>																
Rural	Reference Category															
Urban	1.05	0.76	1.45	0.763	1.91	0.75	4.89	0.177	1.00	0.59	1.69	0.998	1.01	0.63	1.60	0.978
<b>Household size</b>																
≤5 members	Reference Category															
>5 members	0.71	0.51	0.99	0.043	4.01	1.15	14.02	0.029	0.55	0.32	0.95	0.031	0.70	0.44	1.12	0.139

Disaggregating by age, only one household factor was significantly associated with meeting the MAD among 6-11 mo, which was having more than five family members (COR=4.01, CI 1.15 to 14.02,  $p=0.029$ ).

Among 12-17 mo old children, meeting the MAD was associated with having a non-working mother (COR=2.79, CI 1.06 to 7.35,  $p=0.038$ ), delivery assisted by traditional birth attendant and others (COR=0.38, CI 0.17 to 0.87,  $p=0.022$ ), wealth status [middle quintile (COR=2.38, CI 1.10 to 5.16,  $p=0.027$ ) and rich quintile (COR=3.03, CI 1.32 to 6.97,  $p=0.009$ )] and having more than five family members (COR=0.55, CI 0.32 to 0.95,  $p=0.031$ ).

Among 18-23 mo old children, meeting the MAD was significantly associated with having low birth weight (COR=0.47, CI 0.26 to 0.87,  $p=0.015$ ).

Table 5 shows the final logistic regression model of meeting the MAD among 6-23 mo children. In the final model, only parity, wealth status and number of household members remained as determinant factors of meeting the MAD among 6-23 mo children. As shown in the table, children with mothers having more than three children (AOR=1.60, CI 1.01 to 2.54,  $p=0.046$ ) and those who

belonged to the middle wealth quintile (AOR=1.88, CI 1.11 to 3.19,  $p=0.019$ ) were more likely to meet the MAD compared to those with mothers having three or less children and those who belonged to the poorest wealth quintile, respectively. On the other hand, children belonging to households with more than five family members were less likely (AOR=0.64, CI 0.45 to 0.91,  $p=0.014$ ) to meet the MAD than those with five or less family members.

Among infants 6-11 mo, having more than five family members had higher odds (AOR=5.32, CI 1.42 to 19.95,  $p=0.013$ ) of meeting the MAD compared to infants with five or less family members.

Among 12-17 mo children, having a non-working mother (AOR=3.01, CI 1.15 to 7.84,  $p=0.024$ ) and belonging to the rich wealth quintile (AOR=2.86, CI 1.09 to 7.51,  $p=0.032$ ) had higher odds of meeting the MAD than their counterparts who were children with working mothers and those belonging to the poorest wealth quintile. Conversely, children with more than five family members were less likely (AOR=0.49, CI 0.27 to 0.86,  $p=0.014$ ) to meet the MAD as compared to those with five or less family members.

**Table 5.** Logistic regression model showing the determinants of meeting the MAD among children 6-23 mo.

Characteristic	All (6-23 mo)				6-11 mo				12-17 mo				18-23 mo			
	Adjusted OR (AOR)	95% CI	p-value		Adjusted OR (AOR)	95% CI	p-value		Adjusted OR (AOR)	95% CI	p-value		Adjusted OR (AOR)	95% CI	p-value	
<b>Child</b>																
<b>Sex</b>																
Male	Reference Category															
Female	1.01	0.73	1.41	0.949	1.65	0.74	3.70	0.223	1.16	0.67	2.01	0.607	0.88	0.54	1.42	0.589
<b>Birth weight</b>																
≥2500 g	Reference Category															
<2500 g	0.78	0.49	1.25	0.296	2.10	0.67	6.63	0.204	1.10	0.47	2.57	0.830	0.47	0.25	0.90	0.022
<b>Prelacteals</b>																
Not given	Reference Category															
Given	0.71	0.42	1.18	0.187	0.49	0.10	2.49	0.392	0.56	0.24	1.30	0.176	0.90	0.42	1.91	0.781
<b>Timely initiation</b>																
Not within 1 hour	Reference Category															
Within 1 hour	1.08	0.67	1.73	0.762	1.94	0.34	11.10	0.455	0.94	0.43	2.05	0.876	1.12	0.57	2.21	0.740
<b>Maternal</b>																
<b>Age</b>																
<20 y	Reference Category															
20-29 y	1.62	0.76	3.45	0.209	1.31	0.14	11.80	0.812	1.64	0.48	5.60	0.430	0.91	0.29	2.87	0.878
≥30 y	1.33	0.60	2.93	0.480	2.00	0.18	22.25	0.571	1.05	0.28	3.92	0.937	0.72	0.22	2.34	0.579
<b>Educational Attainment</b>																
No Grade Completed & Primary	Reference Category															
Secondary	1.27	0.78	2.07	0.330	2.21	0.42	11.57	0.349	1.33	0.50	3.51	0.568	1.15	0.60	2.17	0.675
Tertiary and higher	1.17	0.65	2.10	0.605	3.06	0.46	20.59	0.249	1.21	0.41	3.54	0.726	1.25	0.54	2.89	0.604
<b>Working status</b>																
Working	Reference Category															
Not working	1.62	0.97	2.69	0.064	1.80	0.36	8.97	0.476	3.01	1.15	7.84	0.024	1.36	0.69	2.70	0.372
<b>Parity</b>																
≤3 children	Reference Category															
>3 children	1.60	1.01	2.54	0.046	0.87	0.22	3.53	0.848	2.02	0.94	4.36	0.073	1.61	0.86	3.04	0.138
<b>Availing of nutrition/ IYCF counseling</b>																
Not availed	Reference Category															
Availed	1.16	0.74	1.82	0.524	1.00	0.26	3.90	0.995	1.55	0.67	3.62	0.309	0.86	0.46	1.61	0.632
<b>Delivery Status</b>																
<b>Delivery facility</b>																
At home	Reference Category															
Health facility	1.06	0.57	1.95	0.864	1.08	0.15	7.70	0.941	1.31	0.47	3.65	0.601	1.17	0.50	2.72	0.722
<b>Method of Delivery</b>																
Normal	Reference Category															
Cesarean	1.72	1.00	2.95	0.050	3.67	0.83	16.19	0.086	1.65	0.64	4.25	0.295	1.58	0.76	3.30	0.224

Table 5 continued next page . . .

Characteristic	All (6-23 mo)			6-11 mo			12-17 mo			18-23 mo		
	Adjusted OR (COR)	95% CI	p-value	Adjusted OR (COR)	95% CI	p-value	Adjusted OR (COR)	95% CI	p-value	Adjusted OR (COR)	95% CI	p-value
<b>Assistance during Delivery</b>												
Doctor/Nurse/Midwife	Reference Category											
Traditional Birth Attendant & Others	0.92	0.44 1.93	0.824	1.84	0.17 20.34	0.619	0.61	0.16 2.38	0.476	1.21	0.47 3.12	0.698
<b>Household</b>												
<b>Wealth Quintile</b>												
1 <sup>st</sup> quintile (Poorest)	Reference Category											
2 <sup>nd</sup> quintile (Poor)	1.60	0.99 2.61	0.057	0.59	0.13 2.67	0.491	1.94	0.81 4.65	0.136	1.80	0.90 3.57	0.096
3 <sup>rd</sup> quintile (Middle)	1.88	1.11 3.19	0.019	1.24	0.34 4.48	0.744	2.12	0.87 5.17	0.099	1.85	0.82 4.13	0.136
4 <sup>th</sup> quintile (Rich)	1.65	0.89 3.04	0.109	0.91	0.21 3.99	0.905	2.86	1.09 7.51	0.032	1.15	0.45 2.98	0.768
5 <sup>th</sup> quintile (Richest)	1.18	0.56 2.46	0.663	1.39	0.39 5.02	0.614	0.72	0.16 3.24	0.667	1.28	0.42 3.95	0.662
<b>Food Security Status</b>												
Food Secure	Reference Category											
Food Insecure	0.70	0.46 1.04	0.080	0.62	0.19 1.99	0.423	0.71	0.35 1.43	0.336	0.61	0.34 1.09	0.098
<b>Area of Residence</b>												
Rural	Reference Category											
Urban	0.90	0.63 1.30	0.579	1.61	0.52 5.03	0.412	0.80	0.43 1.47	0.466	0.84	0.51 1.39	0.498
<b>Household size</b>												
≤5 members	Reference Category											
>5 members	0.64	0.45 0.91	0.014	5.32	1.42 19.95	0.013	0.49	0.27 0.86	0.014	0.60	0.36 1.01	0.055
<b>Constant</b>	0.03	0.01 0.09	0.000	0.00	0.00 0.03	0.000	0.01	0.00 0.12	0.000	0.13	0.02 0.72	0.020

Among 18-23 mo old children, those with low weight at birth (<2500 g) had lower odds (AOR=0.47, CI 0.25 to 0.90,  $p=0.022$ ) of meeting the MAD than those with normal weight at birth ( $\geq 2500$  g).

## DISCUSSION

This study assessed the prevalence and determinants of meeting the MAD among children 6-23 mo. The results showed that only 6.7% of all children 6-23 mo have met the MAD. This is significantly lower compared to the survey results in 2011 Updating Survey, which was 12.1% (FNRI-DOST 2012).

Although the proportion of children meeting the MMF was high (93.5%), the possible reason for the low proportion of children not meeting the MAD was because of the low proportion of children meeting the MDD (14.5%). In order for a child to be considered to have met the MAD, he/she should meet both the MDD and the MMF.

This finding implies that despite the high percentage of children meeting the MMF, still a lot of Filipino children 6-23 mo lack diversity in their diets. This is consistent with the 23.5% prevalence of stunting among Filipino children 0-24 mo.

The final model showed that among 6-23 mo old children, those having mothers with more than three children were more likely to meet the MAD than children having mothers with three or less children. A possible explanation for this is that as mother's parity increase, she gains more experience on how to feed her child appropriately. Children belonging to the poor and middle wealth quintile were more likely to meet the MAD compared to those in the poorest wealth quintile. The same result was observed among 12-17 mo children, wherein those in the rich wealth quintile were more likely to meet the MAD compared to those in the poorest wealth quintile. Previous studies have reported that one determinant of not meeting the MAD was lower wealth index (Senarath et al. 2012a; Patel et al. 2012). It has also been reported that compared with children from the richest households, children from

households with lower wealth quintiles were at higher risk of not meeting the MAD. Cross-country comparisons may be useful to understand the characteristics and behaviors toward IYCF practices that are unique or similar to each country. The reported high rate of MAD for those from the richest households could be attributed to the fact that mothers from the richest households were more likely to give their children highly nutritious foods compared to mothers from poor households who were more likely to focus on the quantity aspect of food (Joshi et al. 2012). Also, poorer households may lack the purchasing power to provide a sufficiently varied diet to their children (Rohner et al. 2013). In addition, children from households with higher income have better resources to meet the MAD than their counterpart from the poorer households since they are exposed to better complementary feeding practices resulting to improved nutrient adequacy and sufficiency (Joshi et al. 2012).

Among 6-23 mo old children, having more than five household members had lesser odds of meeting the MAD compared to those with five or less household members. This finding was also seen among 12-17 mo age group. In a study conducted in Southern Ethiopia, it was found out that a smaller family size was associated with appropriate complementary feeding practice (Kassa et al. 2016). One possible explanation might be that having more family members could mean that the competition for available food was higher, resulting to inadequacy of food among family members. Studies have also shown that the food available to larger families per head was frequently lower than that available to smaller families (Ajao et al. 2010). Another reason could be that mothers of households with more than five family members have lesser time to prepare food or to feed their children, since they have to attend to the needs of the other members. Other studies found no significant association between family size and appropriate complementary feeding practice (Belete et al. 2017). However, the opposite result was observed among the 6-11 mo age group wherein having more than five family members had higher odds of meeting the MAD compared to those with five or less family members. There is no literature yet on the association of having large family size with meeting the minimum acceptable diet. The protective effects of having bigger household size may happen if support from family members will be translated into adequate feeding practices to the youngest child. In the Filipino culture, older household members tend to give way to the needs of the younger members sacrificing their own needs.

Children 12-17 mo with non-working mothers had higher probability of meeting the MAD. This finding is consistent with the study done in Nepal, wherein meeting the MAD was significantly higher among mothers who were not

working (DoHS-MoHP 2014). The similar positive impact of non-working mothers on meeting the MAD was also reported in a previous research in India, which stated that meeting the MAD was high among non-working mothers (Shubha & Angadi 2016). This could be due to the fact that non-working mothers have higher tendency to stay at home and take care of their children – including feeding them properly and adequately – which therefore could lead to meeting their MAD.

Lastly, children 18-23 mo with low weight at birth had lower odds of meeting the MAD compared to those with normal weight at birth. This is in line with the finding in another study wherein children 6-23 mo with low birth weight had lesser odds of meeting the requirements for appropriate complementary feeding (Zhou et al. 2017). The possible reason for this is that these children may have experienced in their households a high level of food insecurity resulting to a reduced dietary intake.

In the bivariate analysis, significant association was found between meeting the MAD and health facility delivery and delivery assisted by traditional birth attendant, but lost association when subjected to multiple logistic regression analysis. Delivery status was included in the model, since the initiation of feeding happens in the place where the child was delivered and who assisted the mother in the delivery influences the mother and the family on how to feed and what will be fed to the baby. The initial feeding practice within the first hours and days of the infant is very critical as it determines what will be the child's regular feeding practice; whether the infant will be fed with breast milk or breast milk substitute. Based on the 2013 Facts and Figures of the FNRI-DOST (2015), exclusive breastfeeding among infants 0-5 mo was higher among those who were born in health facilities and were delivered normally with the assistance of traditional birth attendants. Infants who were delivered in health facilities and those who were delivered normally with the assistance of traditional birth attendants – were more likely to be initiated to breastfeeding within one hour after birth.

Though no significant association was found in the final model for the delivery status, other related studies found association between MAD and delivery status. It was reported in a study in Nepal by Joshi and co-authors (2012) that the rates of MDD, MMF, and MAD were generally high among mothers who delivered in a health facility and mothers whose delivery was assisted by health professionals. In this study, mothers who delivered through cesarean section reported a significantly higher prevalence of MAD and MDD than mothers who delivered through non-cesarean. Another study involving five South Asian countries reported that in Bangladesh, delivery in a health facility and delivery with assistance by non-professionals were associated with poor acceptable diet

(Senarath et al. 2012b).

An important strength of this study is the use of a nationally-representative survey, which enhances generalization of results for the entire country.

## CONCLUSION

This study showed some factors that were associated to meeting the MAD of children aged 6-23 mo. These include having a mother with more than three children, being in the middle wealth quintile and having five or less household members. Among 6-11 mo, having more than five household members is associated with meeting the MAD. Among 12-17 mo children, having a non-working mother, higher household wealth and with only five or less household members while among 18-23 mo children, having normal weight at birth were the factors associated to meeting the MAD. Appropriate interventions that promote and encourage child feeding practices that meet the MAD are recommended targeting children from the poorer households, those with more than five family members and working mothers. Nutrition education and social and behavior change interventions for the target groups should emphasize the importance of feeding the child nutritious family foods to meet both the MDD and MMF which could lead to meeting the MAD. Also, the need to emphasize among mothers that meeting the four food groups is easy and affordable even among poor households is important during nutrition education. In addition, promotion of eating a variety of locally available foods especially for the poor households is encouraged to increase the variety of the children's diet.

It is also recommended that existing policies and programs to improve complementary feeding should be strengthened. Lastly, advocacy for appropriate complementary feeding particularly on meeting the MAD should also be strengthened targeting the working mothers, those with large household size, and poor households while continuing with programs that cover the entire population.

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