ajfand SCHOLARLY, PEER REVIEWED AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT Volume 23 No. 3 March 2023 PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST ISSN 1684 5374

Afr. J. Food Agric. Nutr. Dev. 2023; 23(3):22831-22852 https://doi.org/10.18697/ajfand.118.22580

FACTORS ASSOCIATED WITH MINIMUM DIETARY DIVERSITY, MINIMUM MEAL FREQUENCY AND MINIMUM ACCEPTABLE DIET PRACTICES AMONG CHILDREN 6- 23 MONTHS OF AGE IN BOBO-DIOULASSO, BURKINA FASO

Hien A[1,2*], Some JW[5], Toe LC[4,5], Sombie O[4], Meda NTR[6], Ilboudo B[2], Kassie D[7], Fournet F[7], Ouedraogo AG[6] and AN Zeba[4]

Alain Hien

Corresponding authors email: alain.hien1@gmail.com

[1]Institut supérieur des sciences de la santé (INSSA), Université Nazi Boni, 01 BP1091 Bobo-Dioulasso 01. Burkina Faso

[2]Centre Muraz / Institut National de Santé Publique (INSP), 01 BP 390 Bobo-Dioulasso 01. Burkina Faso

[3]Centre National de Recherche Scientifique et Technologique / Institut de Recherche en Sciences de la Santé, 03 BP 7047 Ouagadougou 03, Burkina Faso

[4]Centre National de Recherche Scientifique et Technologique / Institut de Recherche en Sciences de la Santé, Direction Régionale de l'Ouest, 01 BP 545 Bobo Dioulasso 01, Burkina Faso

[5]Department of Food Technology, Safety and Health, Ghent University, Coupure links 653, 9000 Ghent, Belgium

[6]Unité de Formation et de recherche Science et Technique (UFRST), Université Nazi Boni 01 BP1091 Bobo-Dioulasso 01. Burkina Faso

[7]UMR Mivegec (UM-CNRS 5290-IRD 224), Institut de Recherche pour le Développement, 34394 Montpellier, France

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ABSTRACT

The study assessed infant and young child feeding practices and associated factors among 6–23-month-old children in order to inform ongoing and future programs and projects in Bobo-Dioulasso area, in Burkina Faso. Information on child feeding practices and determinants in urban areas is limited in Burkina Faso. Data of 301children, collected in 2013, were considered in this secondary analysis. Questionnaires were used to collect data on respondents' socio-demographic and economic situation. In addition to the information on child care practices, food consumption data were also collected using a 24h dietary recall questionnaire. Indicators of minimum dietary diversity (MDD), minimum meal frequency (MMF), and minimum acceptable diet (MAD) were constructed and proportion of children meeting these indicators calculated. Binary logistic regression was used to see the association between the outcome variables and explanatory variables, and multivariable logistic regression was performed to identify factors associated with minimum dietary diversity, meal frequency and minimum acceptable diet. Data cleaning and analysis were done using SPSS version 25. Odds ratios (ORs) with 95 % confidence interval (CI) were computed to measure the strength of association. Almost 3 out of 4 mothers (72.5%) were housewives and 62.4% of them were illiterate. Among the 301 children, 40.2% were aged 18-23 months. About half of the children (45.2%) were born to mothers from high income households. The proportion of children 6–23 months who met the MDD and MMF for breastfed and non-breastfed children was 18.3% and 28.9%, respectively. Less than one fifth of breastfed children (16.1%) received MAD. Girls were more likely to meet the MDD (p=0.02) and MAD (p=0.04) than boys. The proportion of children 6-23 months meeting the three complementary feeding practice indicators in Bobo-Dioulasso in Burkina Faso were far below the WHO-recommended standard of 90% coverage. The MDD and MAD were positively associated to the female gender. This finding could be used to better target the children in order to improve the effects of the ongoing or future interventions in increasing appropriate complementary feeding practices.

Key words: Dietary diversity, acceptable diet, associated factors, children 6-23 months

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INTRODUCTION

Proper infant and young child feeding practice is needed in the first two years of life for optimal child growth, better health, and development. Complementary feeding practice is a process of starting other foods besides breast milk to meet the increasing demand of the child in terms of nutritional requirement [1].

According to the recommendation of the World Health Organization (WHO), children of 6 months old up to 2 years, beside continuing breastfeeding, should receive an adequate complementary feeding which requires adequate food texture, a minimum meal frequency and a minimum dietary diversity [2].

For instance, in Africa, less than one-third and around one-half (50%) of the 6 to 23-month-old children meet the minimum criteria for dietary diversity and meal frequency, respectively [1]. In addition, only less than 20% of the children receive adequate complementary feeding [3]. The low prevalence of adequate child feeding is probably one of the contributing factors to the high prevalence of stunting in most African countries as highlighted by a recent review of stunting risk factor in sub-Saharan Africa [4].

Furthermore, inappropriate complementary feeding practices increase the risk of under- nutrition, illness, and mortality in infants and young children under 2 years of age [5]. Greater than two-thirds of malnutrition related to child deaths are associated with inappropriate feeding practices during the first two years of life [6]. Malnourished children who survive have an increased risk of morbidity and suffer from life-long consequences of malnutrition and the effect could likely span across generations [7].

The 2020 Standardized Monitoring and Assessment of Relief and Transitions (SMART) survey in Burkina Faso showed that 29% and 24.7% of children aged 6–23 months had received the minimum dietary diversity (MDD) and the minimum acceptable diet (MAD), respectively, in the Hauts-Bassins region where the city of Bobo-Dioulasso is located [8]. In addition to the prevalence studies, recent studies have focused on the relationship between MDD, MMF and MAD and nutritional status of children [9]. The persistent low prevalence of meeting MDD, MMF and MAD requires more intensive and efficient efforts from government and partners to improve the situation. So, there is a need to better understand the factors for low prevalence of meeting MDD, MMF and MAD. Until now, no study has examined these factors to understand the complex processes underlying the low prevalence meeting diet diversity standards in the Hauts-Bassins region, where the city of

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Bobo-Dioulasso is located. The influence of socioeconomic factors on complementary feeding practices has rarely been investigated in urban area of Burkina Faso. Therefore, the present study aims to determine the prevalence of MDD, MMF and MAD among children aged 6 to 23 months in urban areas of Bobo-Dioulasso in Burkina Faso and identify key associated factors.

MATERIALS AND METHODS

Data source

This is a secondary analysis of data from the project named SANTé, INégalités villES (SANTINELLES), an acronym for "Health, disparities and Urban cities" [10]. This study was carried out from October 01 to November 09, 2013, in Bobo-Dioulasso, the economic capital in the western part of Burkina Faso.

The study sample size was estimated at 1000 households. A set of 3400 plots were randomly sampled among the 8812 plots identified from satellite images. A first random selection of 350 plots for each sub-space was carried out to offset the problems of uninhabited plots, wrong plot identification in the satellite images, absence of people, possible refusal, and non-eligibility of households. Additional samplings were carried out after the removal of already visited plots. Finally, 860 adults were included with children aged 6 to 59 months [11]. The analysis was restricted to the last-born alive child aged 6–23 months, living with the respondent. Using the Open Epi software [12], a percentage of acceptable feeding practice among mothers of children in Bobo-Dioulasso of 14% [13], a design effect of 1.5, the sample size (301 mothers) allows to estimate the prevalence of appropriate diversity diet with a precision of 4.8%.

The women's questionnaire was used to collect data regarding the respondent's household characteristics, the socioeconomic status and childcare practices including infant feeding (breastfeeding and complementary feeding). The household questionnaire was used to collect socio-demographic information for all people usually living in the household and assets of the household. A Multiple Correspondence Analysis was performed to build a proxy of the income level using data on household assets (such as television, Digital Video Disc (DVD), fridge, motorbike, or car), house ownership, house's characteristic (type of toilet, lighting source, cooking energy sources, type of house floor, roof and wall) [11].

Dependent variables

The dependent variables were MDD, MMF and MAD defined by the WHO-UNICEF recommendations. According to this recommendation a MDD is the percentage of

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children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day. The eight food groups include: 1) breast milk, 2) grains, roots, tubers and plantains, 3) pulses (beans, peas, lentils), nuts and seeds, 4) dairy products (milk, infant formula, yogurt, cheese), 5) flesh foods (meat, fish, poultry, organ meats), 6) eggs, 7) vitamin A-rich fruits and vegetables and 8) other fruits and vegetables. The MMF is defined as the percentage of 6-23 months children who received solid, semi-solid, or soft foods during the previous day as it follows: 1) for children who are still breastfeeding, the MMF is 2-3 meals per day for 6-8 months old children, 3-4 meals per day for children 9-23 months; 2) for non-breastfed children, the recommendation is 4-5 meals per day based on a 24-h recall of the child's dietary intake [14]. The MAD 6-23 months is defined as the proportion of 6-23 months children who received a MAD during the previous day. This indicator combines information on MDD and MMF, with the extra requirement that non-breastfed children should have received milk at least twice on the previous day.

The MDD, MMF and MAD were each expressed as a dichotomous variable with 1 for meeting the indicator criteria and 0 for not meeting the criteria.

Major explanatory variables

The complementary feeding variables were examined against a set of independent variables (child, maternal, and household characteristics) in order to assess the prevalence of the complementary feeding indicators for the specific categories, and to identify factors associated with not meeting the indicators criteria (for example, inappropriate complementary feeding practice). Variables for child's characteristics included age and sex. Three age categories were created: 6–11 months, 12–17 months, and 18–23 months considering the practical importance to have narrower age intervals at younger rather than at older ages within the sample.

Four mother's characteristics were considered for the analysis: age, education status, occupation and residence. Maternal age was categorized into three groups (<20 years, 20–29 years, and ≥30 years), education status into three groups (no education, primary education level, and secondary education level and above), occupation into three groups (housewife, employee and other), residence into two groups (central district and peripheral district).

One variable for household characteristics, the socioeconomic status, was included in the analysis.

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Statistical analysis

All analyses were conducted using Statistical Package for Social Sciences (SPSS) version 25. Categorical variables were summarized as absolute (number) and relative (percentage) frequencies, whereas normally distributed continuous variables were presented as means and standard deviations.

Bivariate logistic regressions were performed to assess the association between each of the dependent variables and individual independent variables. Any independent variable associated with the dependent variable at the p-value of less than 0.20 in the bivariate analysis was considered for inclusion into the multivariate logistic regression analysis, to control for the potential confounders. Variables in the final multivariate model were selected by a top-down stepwise procedure to retain only those with a p-value < 0.05. The adjusted OR and their 95% CI were estimated. The model was tested for fit and good specification using the Hosmer-Lemeshow test and the link-test, respectively.

Ethical considerations

The ethical committees of the Centre Muraz and the Institut de Recherche en Sciences de la Santé in Bobo-Dioulasso initially examined the study protocol and instruments, and granted approval (authorization no. A30-2013). All study participants provided a written informed consent before participating in the study and for the use of the data.

RESULTS AND DISCUSSION

Table 1 reports the individual, household and community level characteristics of the 301 children aged 6–23 months included in the present study. Among the children included in this study, 121 (40.2%) were in the age category of 18–23 months. About half of the children (45.2%) were born to mothers from high income households. Approximately two- thirds (62.4%) of mothers had no education while more than half of women (47.2%) were 30 years and over. Most of mothers (72.5%) were housewives and most of the children (92.4%) were born at the health center.

The food groups consumed by the participating children during the preceding 24h are summarized in Table 2. The most frequently consumed food group was cereals, roots and tubers (91.7%) followed by flesh foods (61.8%). No child received the following food groups: eggs, and fruits and vegetables rich in vitamin A. There was an increasing trend in consumption of the different food groups with increasing age.

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Proportions of children 6-23 months receiving the MDD, MMF and MAD were 18.3%, 28.9%, and 16.1%, respectively (Table 3). There was an increasing trend of the proportion of children meeting these indicators with age (Table 3).

In Table 4, the factors associated with MDD indicator of children 6-23 months are presented. Child's sex and age, and maternal education status were significantly associated with MDD in univariate analysis. Variables having p-value less than 0.2 in bivariate analyses were re-entered into multivariate binary logistic regression to control for possible potential confounders. These variables were sex of child, child age, maternal education status and place of residence. Accordingly, of total entered variables only the child's sex was significantly associated with the MDD (OR=2.78, 95% CI = 1.20-6.44).

Table 5 shows the results of the assessment of the relationship between the independent variables and MMF. None of the assessed factors was significantly associated with MMF.

In Table 6, the associated factors for meeting MAD are shown. Variables having p-value less than 0.2 in bivariate analyses (sex of child, child age, maternal education status and place of residence) were included in the multivariate logistic regression to control for potential confounders. The bivariate analysis revealed that female sex (OR= 2.2, 95% CI = 1.0-6-4.4) and living in the central district for mothers (OR=2.54, 95% CI = 1.09-5.95) were significantly associated with MAD. In the multivariate analysis, only the female sex remained significantly associated with MAD (OR= 2.48, 95% CI = 1.04-5.90). The remaining factors were not significantly associated with MAD.

This community-based cross-sectional study aimed to assess the factors associated with MDD, MMF and MAD, core indicators of infant complementary feeding practice recommended by WHO and UNICEF among children aged 6–23 months in urban area of Bobo-Dioulasso, Burkina Faso [8]. To better promote such recommended practices, it is essential to have updated information of children achieving these dietary practice's goals.

The present study, based on the analysis of secondary data collected in 2013, found that 18.3% of children met the MDD, 28.9% the MMF and 16.1% received the MAD. The prevalence for these infant complementary feeding practice indicators varies across the years in the region of Bobo-Dioulasso and across Africa. The low prevalence could be due to the urbanization which is in line with the

findings of Samuel *et al.* [15] in Nigeria in 2020. The proportion of children 6-23 months meeting the MDD reported in this study was lower than those from the 2019 and 2020 SMART survey in the same region of Burkina Faso (22.6% and 29%, respectively) [8,16]. The findings of the proportion of children meeting the MMF was also less than the ones from 2019 (51.2%) and in 2020 SMART survey (57.2% and 77.5%, respectively). The findings for attaining the minimum acceptable diet for children were lower than the results from the 2019 and 2020 SMART survey in Burkina Faso (16.5% and 24.7%, respectively). These differences in IYCF indicators between our study and the more recent data from these two SMART surveys could be the results of the government and partners efforts and investments in the country in general and specifically in this region to improve maternal and child nutrition. The complementary feeding practices of children in the present study in Burkina Faso compared to those of other countries showed similar prevalence. This study revealed that 18.3% of children met MDD, which is relatively similar to the findings in studies done in Dabat district, Ethiopia in 2019 which is 17.0% and Kenya 17.9% in 2017 [17,18], even though the data used in the present analysis were older. The prevalence of MDD, MMF and MAD reported in this study was lower than what was found in Ghana in 2013 (at 35.6%, 57.3% and 24.9%, respectively) [19].

To understand the low levels of dietary diversity and acceptable diet provided to Bobo-Dioulasso's children, it is necessary to look at the food items provided to children. The majority of food items given to children were from the food group of cereals, roots or tubers that are rich in carbohydrates (energy). The study children received few or very few food items from the other food groups such as flesh foods given to less than half of all children and this was confirmed by the results of Khanal *et al.* in Nepal in 2013[20].

This study identified four factors associated with at least one of the three infant complementary feeding practice indicators of children 6-23 months in the bivariate. However, only a child's sex shows strong association in the multivariate analysis with female children being more likely to meet MDD and MAD compared to their male counterparts. This might be due to the fact that in some communities' culture, the preference to feed children well according to their gender is common [18]. Most studies found that boys had better dietary diversity than girls which is contrary to this study results where girls had better dietary diversity [18,21,22]. The fact that MDD and MAD were associated with child's sex but not MMF could be explained by the fact the first two indicators are both based on the dietary diversity even though the MAD is a composite indicator including also the MMF. However, two children could have the same number of meals per day but the content in terms of

the number of foods/ food groups consumed could be very different. And the one who consumed a large number of food groups would have a higher dietary diversity than the second even though both had the same number of meals.

Children in the age group of 12–17 months and 18–23 months were more likely to meet the recommended MDD than 6-11 months old children. The possible reason could be that younger children are mainly breastfed and their mothers might think that complementary feeding at their age is not as important as for older children. Another explanation could be that the mothers may perceive that the younger the child, the poor ability of the child's intestine to digest solid, semisolid, and soft foods. Similar findings were reported in Ethiopia and India [23–26].

Maternal education was not associated with MDD. However, the studies by Mesele *et al.* in Ethiopia and Senarath *et al.* in five South Asian countries reported an association [27,28].

Place of residence is an important determining factor for accessibility to food and social services. The children from the peripheral district were less likely to meet MAD compared to the children who lived in central district but the difference was not significant. However, other studies conducted in Ghana and Nepal found significant differences that could be attributed to the challenges for providing good nutrition to children aged 6-23 months in peripheral district [29,30]. Some of these underlining challenges are food beliefs, food insecurity and poor sanitation [30].

Limitations of study

This was a secondary data analysis with some missing data identified. However, we do not think that the extent of the missing data affected the data quality.
The three indicators (MDD, MMF, and MAD) of complementary feeding practice for children 6-23 months were constructed on the basis of a single twenty-four-hour dietary recall data. Therefore, it might not represent the usual complementary feeding practices for these children. Since the study was cross-sectional, the causal inference might not be strong. Another limitation of the study was that the data were old.

CONCLUSION

The prevalence of meeting MDD, MMF and MAD among children 6-23 months in Bobo-Dioulasso was far below the recommended WHO level of 90%, suggesting the need for interventions to promote appropriate complementary feeding practice in this context. Only female sex was significantly associated with MDD and MAD.

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This finding could be used to better target the children in order to improve the effects of the ongoing or future interventions in increasing appropriate complementary feeding practices.

ACKNOWLEDGEMENTS

Authors would like to acknowledge UMR Mivegec (UM-CNRS 5290-IRD 224), Research Institute for Development for making the data available.

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Table 1: Socio-demographic characteristics of mothers (n=301) and their children aged 6-23 months (n=301) in Bobo-Dioulasso, Burkina-Faso

Variables		Frequency (n=301)	Percent (%)
Child characteristics			
Sex		301	
	Male	164	54.5
	Female	137	45.5
Age category (months)		301	
	6-11	93	30.9
	12-17	87	28.9
	18-23	121	40.2
Maternal characteristics			
Age category (years)		301	
	< 20	32	10.6
	20-29	127	42.2
	≥ 30	142	47.2
Educational status		298	
	No education	186	62.4
	Primary	62	20.8
	Secondary and above	50	16.8
Place of Residence		301	
	Peripheral district	132	43.9
	Central district	169	56.1
Occupation		266	
	Housewife	193	72.5
	Employee	63	23.7
	Others*	10	3.8
Income level		301	
	Low	90	29.9
	Middle	75	24.9
	High	136	45.2
Birth place		301	
	Home	23	7.6
	Health center	278	92.4

*Others included: student, unemployed person

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Table 2: Dietary diversity score and types of food groups consumed by children aged 6-23 months during the previous 24h in Bobo-Dioulasso, Burkina Faso (n = 180)

Food group	Age of children (months)							
	6-11		12-17		18-23		Overall sample	
	N	[a]%	n	[a]%	n	[a]%	n	[a]%
Cereals, roots, and tubers	40	19.3	47	25.9	93	54.8	180	91.7
Legumes and nuts	40	8.4	47	19.4	91	72.2	180	19.9
Dairy product	40	23.7	47	28.8	938	47.5	180	32.6
Flesh foods	40	17	47	28.6	93	54.4	180	61.8
Eggs	0	0	0	0	0	0	0	0
Vitamin A-rich fruits and vegetables	0	0	0	0	0	0	0	0
Other fruits and legume	40	12.7	47	31.6	93	55.7	180	43.6
Breast milk	40	38.8	47	33.3	93	27.8	180	84.6

[a]Proportion

Table 3: Proportions of children aged 6-23 months receiving recommended minimum dietary diversity, minimum meal frequency and minimum acceptable diet in Bobo-Dioulasso, Burkina-Faso

Complementary feeding practice indicator		Age group of children (months)							
		6-11		12-17		18-23		Overall sample	
		N	[a]%	n	[a]%	n	[a]%	n	[a]%
Minimum dietary diversity									
	Adequate	2	6.1	8	24.2	23	69.7	33	18.3
	inadequate	37	25.2	39	26.5	71	48.3	147	81.7
Minimum meal frequency									
	adequate	14	26.9	9	17.3	29	55.8	52	28.9
	inadequate	25	19.5	38	29.7	65	50.8	128	71.1
Minimum acceptable diet									
	adequate	2	6.9	7	24.1	20	69	29	16.1
	inadequate	37	24.5	40	26.5	74	49	151	83.9

[a]Proportion

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Table 4: Factors associated with minimum dietary diversity among 6–23 months children in Bobo-Dioulasso, Burkina Faso

Factors	Minimum dietary diversity		OR	IC 95%	p value	Adjusted OR	IC 95%	p value
	Adequate N (%)	Inadequate N (%)						
Sex of child					0.02			0.02
Female	22(25.58)	64(74.42)	2.59	1.13-5.73		2.78	1.20-6.44	
Male	11(11.70)	83(88.30)	1			1		
Child age					0.05			0.06
6-11	2(5.1)	37(94.9)	0.17	0.04-0.75		0.18	0.3-0.85	
12-17	8(17)	39(83)	0.63	0.26-1.55		0.53	0.20-1.37	
18-23	23(24.5)	71(75.5)	1			1		
Maternal Age (years)					0.63	NC		
< 20	5(26.3)	14(73.7)	1.76	0.55-5.68				
20-29	14(17.9)	64(82.1)	1.08	0.48-2.44				
≥ 30	14(16.9)	69(83.1)	1					
Educational status					0.04			0.07
None	14(12.7)	96(83.3)	0.33	0.13-0.82		0.35	0.14-0.92	
Primary	11(30.6)	25(69.4)	0.73	0.25-2.11		0.80	0.26-2.51	
Secondary and above	8(24.2)	25(75.8)	1			1		
Place of residence					0,07			0.15
Central district	25(22.5)	86(77.5)	2.22	0.93-5.24		1.96	0.79-4.88	

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Peripheral district	8(11.6)	61(88.4)	1			1
Maternal occupation					0.25	NC
Housewife	15(14.2)	91(85.8)	1	0.18-5.70		
Others	2(25)	6(75)	0.5	0.09-2.68		
Employee	11(25)	33(75)	1			
Income level					0.20	NC
Low	8(14.5)	47(85.5)	0.53	0.21-1.31		
Middle	6(13)	40(87)	0.47	0,17-1.27		
High	19(24.4)	59(75.6)	1			
Birth place					0.88	NC
Home	2(16.7)	10(83.3)	0.98	0.75-1.27		
Health center	31(18.5)	137(81.5)	1			

CI, confidence interval; OR, odds ratio Hosmer-Lemeshow test: p = 0.12, NC: not considered because p-value in bivariate logistic regression > 0.2

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Table 5: Factors associated with minimum meal frequency among 6–23 months children in Bobo-Dioulasso, Burkina Faso

Factors	minimum meal frequency		OR	IC 95%	p value	Adjusted OR	IC 95%	p value
	Adequate N (%)	Inadequate N (%)						
Sex of child					0.33	NC		
Female	25(28.4)	63(71.6)	0.74	0.40-1.37				
Male	35(35.0)	65(65.0)	1					
Child age					0.19			0.19
6-11	18(41.9)	25(58.1)	1.56	0.74-3.28		1.56	0.74-3.28	
12-17	12(24.0)	38(76.0)	0.68	0.31-1.49		0.68	0.31-1.49	
18-23	30(31.6)	65(68.4)	1			1		
Maternal Age (years)					0.82	NC		
< 20	5(26.3)	14(73.7)	0.78	0.26-2.39				
20-29	28(33.7)	55(66.3)	1.11	0.58-2.12				
≥ 30	27(31.4)	59(68.6)	1					
Educational status					0.62	NC		
None	39(34.2)	75(65.8)	1.40	0.62-3.20				
Primary	10(27.0)	27(73.0)	1.04	0.37-2.91				
Secondary and above	10(27.8)	26(72.2)	1					
Place of residence					0.33	NC		
Central district	33(29.2)	80(70.8)	0.73	0.39-1.37)				

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Peripheral district	27(36.0)	48(64.0)	1			
Maternal occupation					0.49	NC
	38(34.5)	72(65.5)	3.61	0.41-31.97		
Housewife						
	1(12.5)	7(87.5)	3.69	0.44-31.15		
Others						
Employee	16(34.0))	31(66.0)	1			
Income level					0.45	NC
	20(35.1)	37(64.9)	1,45	0.70-3.01		
Low						
	18(36.7)	31(63.3)	1.56	0.73-3.33		
Middle						
High	22(27.2)	59(72.8)	1			
Birth place					0.26	NC
Health center	54(30.9)	121(69.1)	0.52	0.17-1.62		
Home	6(42.6)	7(53.8)	1			

CI, confidence interval; OR, odds ratio; NC: not considered because p-value in bivariate logistic regression > 0.2

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Table 6: Factors associated with minimum acceptable diet among 6–23 months children in Bobo-Dioulasso, Burkina Faso

Factors	Minimum acceptable diet		OR	IC 95%	p value	Adjusted OR	IC 95%	p value
	Adequate N (%)	Inadequate N (%)						
Sex of child					0.04			0.04
Female	19(22.1)	67(77.9)	2.38	1.04-5.47		2.48	1.04-5.90	
Male	10(10.6)	84(89.4)	1					
Child age					0.09			0.11
6-11	2(5.1)	37(94.9)	0.20	0.4-0.9		0.22	0.48-1.04	
12-17	7(14.9)	40(85.1)	0.65	0.25-1.66		0.55	0.20-1.48	
18-23	20(21.3)	74(78.7)	1			1		
Maternal Age (years)					0.76	NC		
< 20	4(21.1)	15(78.9)	1.57	0.47-5.56				
20-29	13(16.7)	65(83.3)	1.18	0.50-2.77				
≥ 30	12(14.5)	71(85.5)	1					
Educational status					0.13			0.22
None	13(11.8)	97(88.2)	0.40	0.16-1.04		0.45	0.17-1.22	
Primary	9(25.0)	27(75.0)	0.80	0.25-2.48		0.88	0.27-2.90	
Secondary and above	7(21.2)	26(78.8)	1			1		
Place of residence					0.04			0.07
Central district	23(20.7)	88(79.3)	2.74	1.06-7.13		2.49	0.93-6.72	

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Peripheral district	6(8.7)	63(91.3)	1			1
Maternal occupation					0.55	NC
Housewife	14(13.2)	92(86.8)	0.66	0.11-3.93		
Others	2(25.0)	6(75.0)	0,45	0.08-2.49		
Employee	8(18.2)	36(81.8)	1			
Income level					0.20	
Low	6(10.9)	49(89.1)	0.44	0.16-1.21		
Middle	6(13.0)	40(87.0)	0.53	0.19-1.48		
High	17(21.8)	61(78.2)	1			
Birth place					0.96	
Health center	27(16.1)	141(83.9)	0.96	0.20-4.61		
Home	2(16.7)	10(83.3)	1			

CI: Confidence Interval; OR: odds ratio Hosmer-Lemeshow test: p = 0.54; NC: not considered because p-value in bivariate logistic regression > 0.2

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