BMC Nutrition

RESEARCH

Open Access

Minimum acceptable diet and contributing factors among children aged 6–23 months in Afghanistan: insights from the 2022–2023 Multiple Indicator Cluster Survey

Essa Tawfiq[1], Muhammad Haroon Stanikzai[2*], Massoma Jafari[3], Ghulam Mohayuddin Mudaser[4], Zainab Ezadi[5], Sayed Ali Shah Alawi[6], Abdul Wahed Wasiq[7] and Omid Dadras[8]

Abstract

Background Undernutrition among children is a public health concern in most low and middle-income countries (LMICs) and is associated with poor child growth and development. Knowledge about child feeding practices is needed for nutritional policies and programs. Hence, this study assessed the status of minimum acceptable diet (MAD) and its associated factors among children aged 6–23 months in Afghanistan.

Methods This cross-sectional study was based on a secondary dataset of the 2022–2023 Afghanistan Multiple Indicator Cluster Survey (MICS 2022–23). Complete data from 7,876 children aged 6–23 months were analysed. The outcome variable was MAD and was defined according to the WHO and UNICEF recommendations and indicators for young child feeding practices. Bivariate and multivariate binary logistic regression analyses were used to identify factors associated with MAD.

Results About 7.3% of children aged 6–23 months were fed with the recommended MAD. The likelihood of receiving MAD was higher in children aged 13–18 months [adjusted odds ratio (AOR) 2.01 (95%CI: 1.63–2.48)] and 19–23 months [2.11 (95%CI: 1.68–2.66)], in children belonging to households with higher wealth status [1.39 (95%CI: 1.04–1.87), 2.06 (95%CI: 1.51–2.82), and 3.07 (95%CI: 2.14–4.40) for the 3rd, 4th, and 5th quintile of wealth status, respectively], and in children living in rural areas [1.56 (95%CI: 1.21–2.01)]. On the other hand, the maternal age group 30–39 years [0.79 (95%CI: 0.64–0.96)] and non-institutional delivery [0.67 (95%CI: 0.54–0.83)] were associated with reduced odds of MAD.

Conclusion Our study revealed that a small percentage (7.3%) of children received MAD in Afghanistan. This emphasizes the need for policies and interventions aimed at the improvement of child feeding practices to ultimately lead to better child nutrition and health in Afghanistan.

Keywords Afghanistan, Child feeding practices, Complementary feeding, Minimum acceptable diet, MAD

*Correspondence:
Muhammad Haroon Stanikzai
haroonstanikzai1@gmail.com
Full list of author information is available at the end of the article

Introduction

Proper infant and young child feeding (IYCF) practices, including breastfeeding and timely introduction of complementary foods, are vital for the growth, cognitive development, survival, and overall health of children under two years old [1, 2]. The World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) emphasize the importance of the Minimum Acceptable Diet (MAD) for children aged 6–23 months. This indicator assesses whether children receive sufficient "dietary diversity" and "meal frequency", with an additional requirement for milk consumption in non-breastfed children to meet their nutritional needs [1, 3, 4]. By ensuring adherence to MAD, children can meet their macronutrient (proteins, fats, carbohydrates) and micronutrient (vitamins, minerals) requirements for proper growth and development [5]. Dietary diversity, a core component of MAD, evaluates the quality of a child's complementary diet by ensuring they consume foods from a variety of essential food groups [3].

Globally, around 27% of children—approximately 181 million under the age of five—experience severe food poverty, with nearly half from the poorest households [5]. South Asia and sub-Saharan Africa are most affected, and Afghanistan is among 20 countries contributing to 65% of the global total, alongside India, Nigeria, and Ethiopia [5]. In fragile countries like Afghanistan, one in three children faces severe food poverty [5]. The country's long-standing conflict, political instability, and environmental crises, worsened by the COVID-19 pandemic, have significantly hindered progress in health and nutrition [6–11].

In Afghanistan, exclusive breastfeeding rates stand at 63.3%, with continued breastfeeding at 52.3%, both of which are critical for early nutrition [12]. An earlier study from Afghanistan reported that only 18% of Afghan children meet the MAD standards, indicating a major gap in dietary diversity and meal frequency [13]. These figures reflect significant challenges in ensuring adequate nutrition for all children.

Efforts to improve child nutrition through national programs like the Basic Package of Health Services (BPHS) and the Essential Package of Health Services (EPHS) have been severely limited by post-2021 international funding cuts, following the collapse of the internationally assisted Afghan government [14–16]. Escalating food prices, widespread poverty, and environmental crises such as droughts and floods have intensified food insecurity, particularly in rural regions, making it increasingly challenging for families to meet MAD standards [11, 15, 17, 18].

This study, using data from the 2022–2023 Multiple Indicator Cluster Survey (MICS), assesses the prevalence of MAD among Afghan children aged 6–23 months and identifies the factors influencing adherence. The research addresses a critical gap in understanding child nutrition in Afghanistan, particularly as the situation has worsened post-2021, with political shifts further straining healthcare and nutritional resources.

Methods

Study design and data source

This is a cross-sectional study for which we used data from the MICS 2022–2023 [12]. The survey design, sampling method and data collection are described elsewhere [12]. As part of the survey, trained surveyors collected data from women of reproductive age, 15–49 years, who answered questions related to child health and nutrition [12]. In this study, we analysed data from 7,876 children, 6–23 months old (Fig. 1).

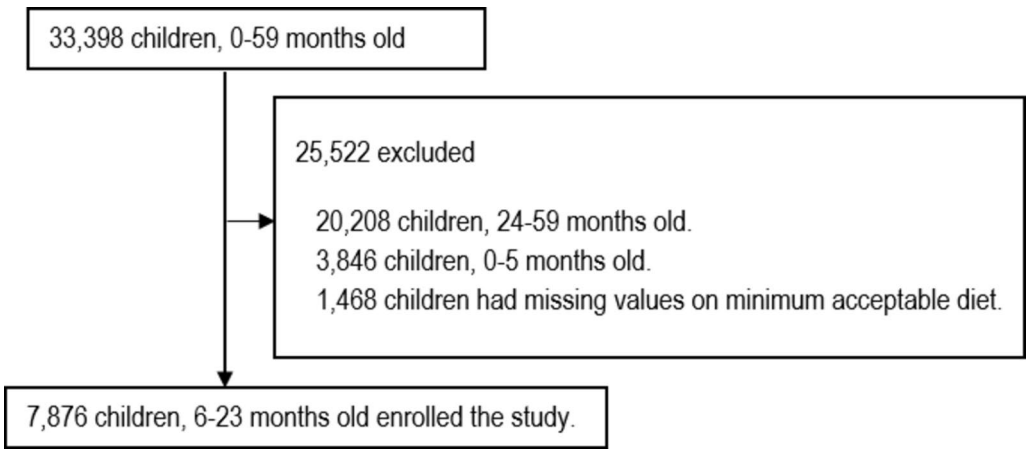

Fig. 1 Final sample size and schematic presentation of the sample selection

Sampling

The MICS Afghanistan 2022–23 survey aimed to provide comprehensive estimates of various indicators concerning the status of women and children across the nation, covering urban and rural areas, as well as all 34 provinces [12]. The provinces were divided into urban and rural strata, and a two-stage household sampling method was employed. Initially, enumeration areas (EAs) from a prior census served as primary sampling units (PSUs), with a predetermined number of EAs systematically selected in each stratum, proportional to their size. Subsequently, a household listing was conducted in these selected EAs, from which 24 households were systematically chosen per EA. The study targeted 23,568 households within 982 sampled EAs. Data were successfully collected for 33,398 children under the age of five, achieving a response rate of 98.8% in households that participated in interviews [12].

Study variables

The outcome variable was MAD, which had two components to meet: (a) whether a child, 6–23 months, received the Minimum Dietary Diversity (MDD) during the previous day, and (b) whether a child, 6–23 months, received the Minimum Meal Frequency (MMF) during the previous day [4]. The MDD component included seven categories of food (i) dairy products such as infant formula, animal milk, cheese or yogurt, (ii) grains, roots, tubers, and fortified grains, (iii) legumes and nuts, (iv) Vitamin A rich fruits and vegetables, (v) flesh foods, (vi) eggs, and (vii) other fruits and vegetables. A child meets MDD if he/she receives four or more of the seven food categories. The MMF component referred to the three following response options: (i) whether a breastfed child of 6–8 months received two times of solid, semi-solid or soft foods, (ii) whether a breastfed child of 9–23 months received three times of solid, semi-solid or soft foods, and (iii) whether a non-breastfed child received four times of solid, semi-solid or soft foods, during the previous day. A child meets MMF if the response is "yes" to any of the above three response options.

The explanatory variables were child age in months (6–12, 13–18, 19–23), child sex (male vs. female), child order (first child vs. second and more children), number of under-5 children (1 child, 2–3 children, ≥ 4 children), mother's age in years (15–29, 30–39, 40–49), mother's education level (no formal education, primary education, secondary/higher education), household head education level (no formal education, primary education, secondary/higher education), place of residence (urban vs. rural), antenatal care (ANC) utilization (no visit, 1–3 visits, ≥ 4 visits), place of delivery (non-institutional deliveries vs. institutional deliveries), household wealth index (lowest quintile up to highest quintile), and access to media (yes/no). Access to media was defined as "yes" if a mother watched TV daily, or listened to the radio daily, or read the newspaper, and as "no", if otherwise. Detailed information on independent variables selection and their relevance to MAD are available in the supplementary file 1.

Statistical analysis

We provided descriptive statistics to examine the distribution of sociodemographic characteristics of children and mothers, and we used the chi-square test to examine the relationship between categories of explanatory variables by status of MAD. We fitted bivariate and multivariate binary logistic regression models and ran them to study the likelihood of receiving MAD across the categories of explanatory variables. Based on a comprehensive literature review [13, 19–22], relevant explanatory variables were selected for the logistic regression model and odds ratio and 95% CI [OR (95%CI)] were obtained from the bivariate and multivariate logistic regression analyses. We added a random cluster effect in the model to address the clustering effects of data at the household level. We applied STATA version 17 for data analyses.

Results

Figure 2 presents the consumption of different food types by children, 6–23 months. It shows that of 7,876 children, 66.3% ate grains, roots, tubers and fortified grains, 57.9% ate dairy products, and 24.9% ate legumes and nuts out of the seven food categories. The least consumed food was Vitamin A-rich fruits and vegetables at 9.0%.

Figure 3 shows that of 7,876 children, only 7.3% achieved MAD.

Table 1 presents baseline characteristics of children and their mothers, by status of MAD. Significant differences were observed in certain characteristics between children who received MAD and children who did not receive MAD. These differences were notable in maternal education, household head education, place of delivery, use of ANC services, child age, access to media, and wealth status. For example, a higher proportion of children with mothers who had primary education received MAD compared to those who did not (10.5% vs. 8.6%), and the same pattern was observed for mothers with secondary/higher education (14.7% vs. 11.5%). Further details are presented in Table 1.

Multivariate analysis results, presented in Table 2, indicate that the likelihood of receiving MAD was greater in children aged 13–18 and 19–23 months, compared to those aged 6–12 months with AORs of 2.01 (95% CI:1.63–2.48), and 2.11 (95% CI: 1.68–2.66), respectively.

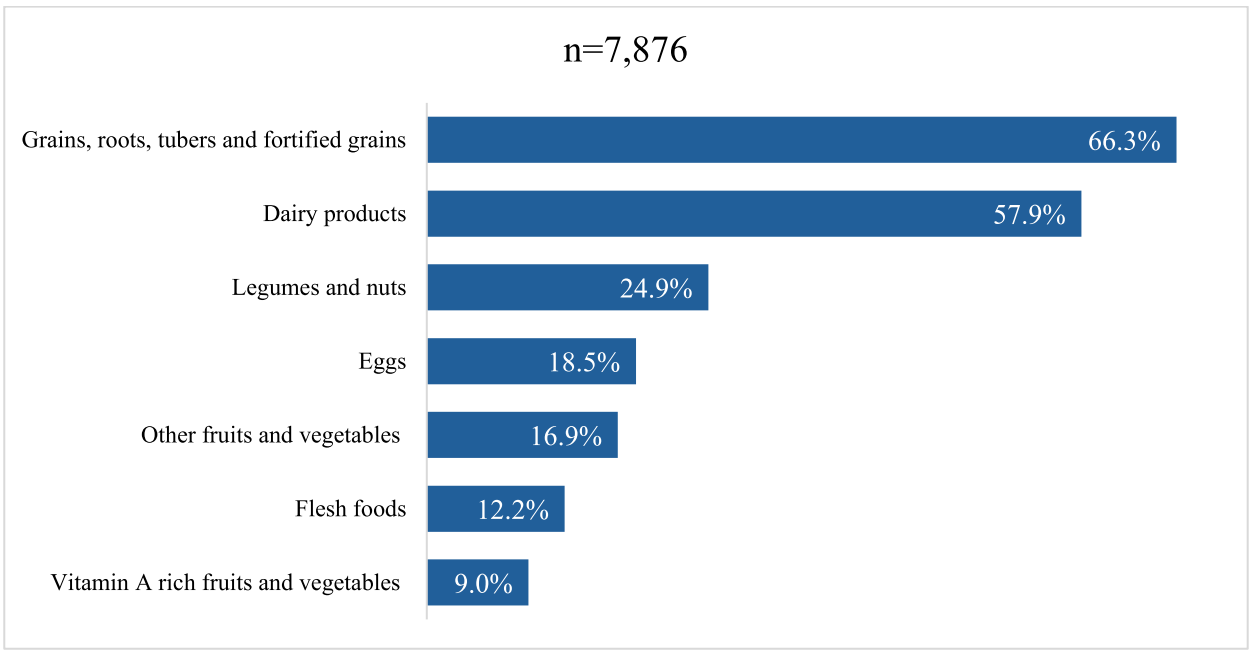

Fig. 2 Prevalence of food consumption by children 6–23 months according to MAD

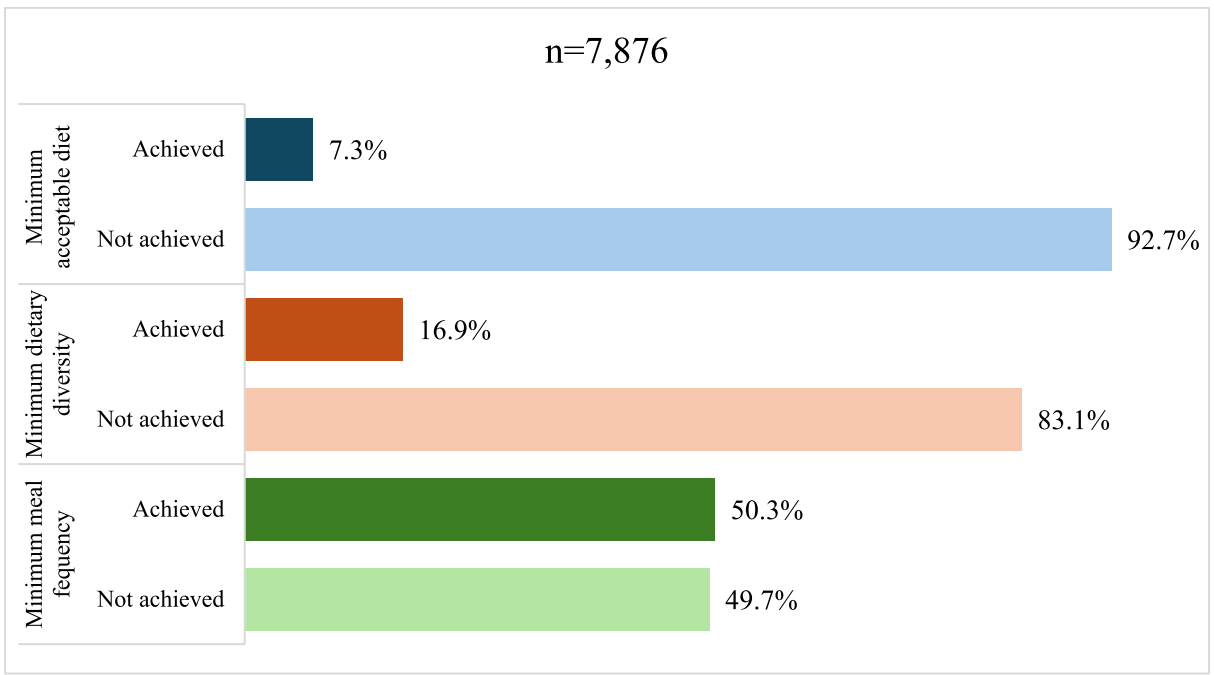

Fig. 3 Minimum acceptable diet, minimum dietary diversity, and minimum meal frequency among children 6–23 months of age

Conversely, children of mothers aged 30–39 years had lower odds of receiving MAD compared to those of mothers aged 15–29 years [AOR: 0.79 (95% CI: 0.64–0.96)], as did children born via non-institutional deliveries compared to those with institutional deliveries [AOR: 0.67 (95%cCI: 0.54–0.83)]. Children belonging to households with higher wealth status had significantly higher odds of receiving MAD, with AORs of 1.39 (95% CI: 1.04–1.87), 2.06 (95% CI: 1.51–2.82), and 3.07 (95% CI: 2.14–4.40) for the 3rd, 4th, and 5th quintile of wealth

Table 1 Baseline characteristics of 7,876 mother–child dyads

Characteristics	Total *n* = 7,876 (%)	Whether MAD was practiced		*P*-Value
		Yes *n* = 579 (%)	No *n* = 7,297 (%)	
Mother's age (years)				
15–29	58.5	62.7	58.1	0.07
30–39	33.4	29.2	33.8	
40–49	8.1	8.1	8.1	
Mother's education				
No formal education	79.5	74.8	79.9	0.01
Primary	8.8	10.5	8.6	
Secondary/higher	11.7	14.7	11.5	
Household head education				
No formal education	64.4	58.9	64.8	0.01
Primary	11.6	12.4	11.5	
Secondary/higher	24.0	28.7	23.7	
Residential area				
Urban	15.7	18.5	15.5	0.05
Rural	84.3	81.5	84.5	
Place of delivery				
Non-institutional	36.1	23.5	37.1	< 0.001
Institutional	63.9	76.5	62.9	
Antenatal care (ANC) visits				
No visit	25.7	18.5	26.2	< 0.001
1–3 visits	44.0	42.3	44.1	
≥ 4 visits	30.3	39.2	29.7	
Child age				
6–12 months	40.7	26.3	41.8	< 0.001
13–18 months	36.1	43.7	35.5	
19–23 months	23.2	30.1	22.7	
Child sex				
Male	50.6	51.6	50.5	0.58
Female	49.5	48.4	49.5	
Birth order				
1st child	14.1	13.1	14.2	0.47
2nd or more children	85.9	86.9	85.8	
Number of under-5 children				
1 child	23.4	22.8	23.4	0.53
2–3 children	63.4	62.5	63.6	
≥ 4 children	13.2	14.7	13.0	
Mother's media access				
No	83.3	74.4	84.0	< 0.001
Yes	16.7	25.6	16.0	
Wealth status				
Lowest quintile	23.5	14.7	24.2	< 0.001
Second	23.4	16.4	24.0	
Third	22.3	21.4	22.4	
Fourth	18.0	24.4	17.5	
Highest quintile	12.8	23.1	12.0	

status, respectively. Children living in rural areas, compared to those living in urban areas, had higher odds of receiving MAD [1.56 (95% CI: 1.21–2.01)].

Discussion

We aimed to assess the prevalence of MAD and its associated factors among children aged 6–23 months in Afghanistan. The study showed that only 7.3% of children received the recommended MAD. In addition to this, child's and mother's age, place of delivery, residential area, and wealth status were factors significantly associated with MAD.

In this study, the prevalence of MAD among Afghan children aged 6–23 months was 7.3%. A study conducted by Giovanna et al. assessing MAD in 80 low and middle-income countries (LMICs) documented a higher prevalence (10.1%) compared to what we found in Afghanistan [23]. Other previous studies have shown a relatively high prevalence of MAD in LMICs, ranging from 23 to 47% [21, 24–26]. Furthermore, the prevalence of MAD in our study was lower than the 18% reported in the 2015 Afghanistan Demographic Health Survey (ADHS) [13]. The decline in MAD prevalence in Afghanistan over time could be attributed to socioeconomic instability following the 2021 political transition, as international assistance was severely restricted, plunging the country into a deeper humanitarian crisis [18]. Several other recent studies have also reported a high prevalence of malnutrition and poor feeding practices among Afghan children [16, 18]. Together, these findings suggest that interventional strategies that focus on IYCF practices should be a key priority for Afghan policymakers and donors.

The results of our study showed that children aged 13–18 months and 19–23 months were more likely to receive MAD than children aged 6–12 months. This finding concurs with those of other studies in LMICs [26–28]. From these studies, it is evident that child-feeding

Table 2 Likelihood of MAD among children aged 6–23 months

Characteristics	COR (95%CI)	*P*-Value	AOR (95%CI)	*P*-Value
Mother's age (years)				
15–29	Reference		Reference	
30–39	0.80 (0.66–0.97)	0.02	**0.79 (0.64–0.96)**	**0.02**
40–49	0.93 (0.68–1.28)	0.66	0.94 (0.67–1.32)	0.74
Mother's education				
No formal education	Reference		Reference	
Primary	1.30 (0.99–1.73)	0.06	1.02 (0.75–1.39)	0.89
Secondary/higher	1.37 (1.07–1.75)	0.01	0.88 (0.67–1.16)	0.36
Household head education				
No formal education	Reference		Reference	
Primary	1.19 (0.91–1.55)	0.20	0.97 (0.73–1.28)	0.82
Secondary/higher	1.33 (1.10–1.62)	0.003	0.94 (0.76–1.16)	0.59
Residential area				
Urban	Reference		Reference	
Rural	0.81 (0.65–1.00)	0.05	**1.56 (1.21–2.01)**	**< 0.001**
Place of delivery				
Institutional	Reference		Reference	
Non-institutional	0.52 (0.43–0.64)	< 0.001	**0.67 (0.54–0.83)**	**< 0.001**
Antenatal care (ANC) visits				
No visit	Reference		Reference	
1–3 visits	1.36 (1.08–1.72)	0.01	1.02 (0.79–1.30)	0.89
≥ 4 visits	1.87 (1.48–2.38)	< 0.001	1.27 (0.99–1.65)	0.06
Child age				
6–12 months	Reference		Reference	
13–18 months	1.96 (1.59–2.41)	< 0.001	**2.01 (1.63–2.48)**	**< 0.001**
19–23 months	2.11 (1.69–2.65)	< 0.001	**2.11 (1.68–2.66)**	**< 0.001**
Child sex				
Male	Reference		Reference	
Female	0.95 (0.81–1.13)	0.58	0.98 (0.82–1.16)	0.80
Birth order				
1st child	Reference		Reference	
≥ 2 child	1.10 (0.85–1.41)	0.47	1.29 (0.97–1.71)	0.08
Number of under-5 children				
1 child	Reference		Reference	
2–3 children	1.01 (0.82–1.24)	0.93	1.05 (0.84–1.32)	0.67
≥ 4 children	1.16 (0.87–1.54)	0.32	1.00 (0.74–1.36)	0.99
Mother's media access				
No	Reference		Reference	
Yes	1.80 (1.48–2.19)	< 0.001	1.18 (0.94–1.48)	0.16
Wealth status				
Lowest quintile	Reference		Reference	
Second	1.13 (0.84–1.52)	0.43	1.07 (0.79–1.45)	0.67
Third	1.57 (1.18–2.09)	0.002	**1.39 (1.04–1.87)**	**0.03**
Fourth	2.30 (1.74–3.03)	< 0.001	**2.06 (1.51–2.82)**	**< 0.001**
Highest quintile	3.19 (2.40–4.23)	< 0.001	**3.07 (2.14–4.40)**	**< 0.001**

Abbreviations: *COR* Crude odds ratio, *AOR* Adjusted odds ratio. Significant values are in bold

practices improve with age [24]. Although Afghan children are introduced to complementary foods through the "wheat feeding ceremony" at the age of six months [13], children are not adequately and appropriately fed. In some Afghan communities, certain solid foods are considered harmful during the initial months of complementary feeding, contributing to suboptimal practices [29]. To improve child complementary feeding practices in Afghanistan, children aged 6–12 months should receive more attention. Therefore, mothers or caretakers should be educated on the nutritional needs of children at different stages of development, so be able to adhere to the minimum acceptable diet for their children.

We observed that mothers aged 30–39 years were less likely to feed the recommended MAD to their children as compared to mothers younger than 30 years. The association between mother's age and MAD is previously reported in studies from LMICs [27, 30–32]. However, in most of these studies, the likelihood of feeding the recommended MAD was higher in older age group mothers [21, 30, 31]. Only one investigation reported a finding similar to our study that older mothers were less likely to achieve MAD for their children [27]. A possible explanation might be that older mothers in Afghanistan often have larger families, which can significantly strain their time and resources. This situation may hinder their ability to meet the nutritional needs of younger children effectively. Moreover, larger household sizes are linked to poorer feeding practices due to limited resources [33]. Additionally, older mothers might adhere more strictly to traditional feeding practices, which may not align with current recommendations for diverse and frequent feeding. In contrast, younger mothers are often more exposed to modern health information and better access to media and healthcare services, including nutrition counseling [34]. However, further research is needed to identify the specific underlying causes. Nonetheless, this association could be important for policymaking and interventions.

Mothers who had non-institutional deliveries were less likely to provide their children with the recommended MAD compared to those who had institutional deliveries. An earlier study from Afghanistan found no significant association between places of delivery and MAD [13]. However, our findings align with research from other LMICs [19, 25]. During institutional delivery, women often receive counseling about child nutrition and feeding practices, which may improve adherence to the recommended MAD. In addition to its impact on MAD, institutional delivery has also been linked to the timely initiation of breastfeeding, exclusive breastfeeding practices, and higher childhood immunization rates [35–37]. Therefore, encouraging pregnant women to give birth in health facilities is paramount.

The odds of receiving MAD were greater in children living in rural areas than those living in urban areas. This finding is different from previous studies which reported better adherence to MAD in urban children [38, 39]. Previous research in Afghanistan has highlighted regional disparities in complementary feeding practices [13]. In the context of Afghanistan, rural families often engage in agriculture, stockbreeding, and fruit production, providing them with direct access to fresh and nutritious food [17, 40]. This self-sufficiency can play a significant role in enhancing child-feeding practices. However, recent studies reported significant food insecurity, widespread poverty, and higher malnutrition rates in rural Afghanistan [16, 41–43]. Therefore, this finding deserves validation in future studies.

A growing body of evidence demonstrates that higher household wealth contributes to improved IYCF practices [24, 33, 39]. Our study indicates a fairly strong association between household wealth status and achieving MAD for children. Children belonging to households with higher wealth quintiles (3rd, 4th, and 5th) were more likely to receive MAD in comparison to those who belonged to households with the lowest wealth quintile. This finding aligns with previous studies from other developing countries [19, 44], and a previous study in Afghanistan [13]. Households with higher wealth quintiles are expected to have the resources to afford better nutrition for children, enabling them to apply recommended child-feeding practices [13]. Moreover, earlier studies in Afghanistan [16, 18], revealed that children from economically disadvantaged households are at an increased risk of malnutrition. Therefore, it is essential to design interventions that specifically target this population. Policymakers must prioritize improving child-feeding practices for socioeconomically disadvantaged households to address these inequalities.

Policy implications and recommendations

The extremely low prevalence of MAD (7.3%) among children aged 6–23 months in Afghanistan underscores significant gaps in child nutrition and calls for urgent, coordinated multi-sectoral efforts. To improve the provision of MAD, the following measures are recommended: First, enhance infant and young child feeding counseling for elderly mothers, those with non-institutional deliveries, and families with lower wealth status to improve their ability to understand the nutritional needs of children at different stages of growth. Second, designing and implementing nutrition support programs to reach young children is mandatory to improve their nutritional status. Finally, addressing food insecurity through collaborative efforts with governmental and non-governmental stakeholders is critical, focusing on enhancing family

livelihoods and ensuring sustainable access to nutritious foods.

Limitations

This study has some limitations. First, the data collected in this national household survey were self-reported and may have affected the validity of the results. Second, the data in MICS 2022–2023 restricted our evaluation of different factors associated with MAD. Therefore, future studies should consider other influencing factors, such as maternal knowledge of child-feeding practices, cultural practices, religious beliefs, and postnatal checkups in their analyses [19–21, 28, 45]. Finally, the cross-sectional nature of the data did not allow for causal inferences regarding factors that may affect MAD.

Conclusion

The current study found that a small percentage (7.3%) of children received MAD in Afghanistan. The study also identified that child's and mother's age, place of delivery, residential area, and wealth status were factors significantly associated with MAD. These findings underscore the persistent challenges in meeting nutritional standards for young children in Afghanistan, compounded by socio-economic and healthcare access disparities. Understanding these associations provides a crucial evidence base for addressing child nutrition and guiding future research on improving dietary practices.

Abbreviations

ADHS	Afghanistan Demographic Health Survey
ANC	Antenatal care
AOR	Adjusted odds ratio
BPHS	Basic Package of Health Services
EPHS	Essential Package of Health Services
CI	Confidence interval
COR	Crude odds ratio
EA	Enumeration area
IYCF	Infant and Young Child Feeding
LMICs	Low and middle-income countries
MICS	Multiple Indicator Cluster Survey
MAD	Minimum acceptable diet
MMD	Minimum meal diversity
MMF	Minimum meal frequency
MNCH	Maternal, newborn, and child health outcomes
PSU	Primary sampling unit
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40795-025-00996-5.

Supplementary Material 1.

Acknowledgements

We thank the UNICEF for allowing us to access and analyze this data.

Authors' contributions

Conceptualization and design: MHS and ET. Analysis: ET and MHS. Writing-original draft: MHS, ET, and MJ. Writing- review & editing: MHS, ET, AWW, SAA, ZE, GMM, and OD. All authors have read and approved the final manuscript.

Funding

None.

Data availability

The MICS 2022–23 dataset is publicly available on UNICEF's official website through the following link: https://mics.unicef.org/surveys.

Declarations

Ethics approval and consent to participate

The Research and Ethics Committee at Faculty of Medicine, Kandahar University waived the ethical application because secondary data from the Multiple Indicator Cluster Survey (MICS) 2022–2023 were used and analyzed in this study. For the MICS 2022–2023, consent to proceed with the interviews was obtained from all participants. For children, informed consent was obtained from their parents or other caretakers. Moreover, all methods in MICS survey were conducted in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]The Kirby Institute, UNSW Sydney, Sydney, Australia. [2]Department of Public Health, Faculty of Medicine, Kandahar University, District # 10, 3801 Kandahar, Afghanistan. [3]Department of Health Policy, Management and Evaluation, University of Toronto, Toronto, ON, Canada. [4]Department of Para-Clinic, Faculty of Medicine, Kandahar University, Kandahar, Afghanistan. [5]Master of Science in Midwifery, Reproductive Health, Kabul, Afghanistan. [6]UHI Project/JHPIEGO, Kabul, Afghanistan. [7]Department of Internal Medicine, Faculty of Medicine, Kandahar University, Kandahar, Afghanistan. [8]Research Centre for Child Psychiatry, University of Turku, Turku, Finland.

Received: 21 October 2024 Accepted: 9 January 2025
Published online: 14 January 2025

References

1. World Health Organization. Infant and young child feeding. In.; 2023. Available from: https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding. Accessed Apr 2024.
2. Amat Camacho N, von Schreeb J, Della Corte F, Kolokotroni O. Interventions to support the re-establishment of breastfeeding and their application in humanitarian settings: A systematic review. Matern Child Nutr. 2023;19(1): e13440.
3. Farah S, Derese T, Abera L. Minimum acceptable diet and associated factors among children aged 6–23 months in Jig-Jiga, Somali region, eastern Ethiopia, 2022. BMC Nutr. 2024;10(1):11.
4. WHO, UNICEF. Indicators for assessing infant and young child feeding practices : Definitions and measurement methods; 2021. Available from: https://www.who.int/publications/i/item/9789240018389. Accessed Apr 2024.
5. UNICEF. Child Food Poverty. Nutrition Deprivation in Early Childhood. In: Child Nutrition Report. New York; 2024. Available from: https://data.unicef.org/resources/child-food-poverty-report-2024/. Accessed Aug 2024.

6. Fahim O, Shahim S, Shams AN, Muhammadi AF, Djazayery A, Esmaillzadeh A. Double burden of malnutrition in Afghanistan: Secondary analysis of a national survey. PLoS ONE. 2023;18(5): e0284952.
7. UNICEF. Press release. UNICEF launches US$ 20 million appeal to support 96,000 children affected by recent earthquakes in western Afghanistan. Available from: https://www.unicef.org/press-releases/unicef-launches-us-20-million-appeal-support-96000-children-affected-recent. Accessed June 2024.
8. OCHA. Humanitarian needs and response plan afghanistan. In.; 2024. Available from: https://www.unocha.org/publications/report/afghanistan/afghanistan-humanitarian-needs-and-response-plan-2024-summary. Accessed June 2024.
9. Neyazi N, Lindan C, Perdes S, Ibrahimi AG, Horemans D, Al Afsoor D. The provision and utilization of essential health services in Afghanistan during COVID-19 pandemic. Front Public Health. 2022;10:1097680.
10. Dadras O, Stanikzai MH, Jafari M, Tawfiq E. Early childhood development and its associated factors among children aged 36–59 months in Afghanistan: evidence from the national survey 2022–2023. BMC Pediatr. 2024;24(1):734.
11. Stanikzai MH, Wafa MH, Rahimi BA, Sayam H. Conducting Health Research in the Current Afghan Society: Challenges, Opportunities, and Recommendations. Risk Manage Healthcare Policy. 2023;16(null):2479–83.
12. Afghanistan Multiple Indicator Cluster Survey (MICS), 2022–2023. Available from: https://www.unicef.org/afghanistan/reports/afghanistan-multiple-indicator-cluster-survey-mics-2022-2023. Accessed Feb 2024.
13. Na M, Aguayo VM, Arimond M, Mustaphi P, Stewart CP. Predictors of complementary feeding practices in Afghanistan: Analysis of the 2015 Demographic and Health Survey. Matern Child Nutr. 2018;14 Suppl 4(Suppl 4):e12696.
14. Glass N, Jalalzai R, Spiegel P, Rubenstein L. The crisis of maternal and child health in Afghanistan. Confl Health. 2023;17(1):28.
15. Safi N, Anwari P, Safi H. Afghanistan's health system under the Taliban: key challenges. Lancet. 2022;400(10359):1179–80.
16. Dadras O, Suwanbamrung C, Jafari M, Stanikzai MH. Prevalence of stunting and its correlates among children under 5 in Afghanistan: the potential impact of basic and full vaccination. BMC Pediatr. 2024;24(1):436.
17. Najam W, Ibiyemi T, Aziz S, Najam R, Gichohi-Wainaina WN, Oldewage-Theron W. Social Determinants of Rural Household Food Insecurity under the Taliban Regime. Nutrients. 2023;15(7):1681.
18. Rahmat ZS, Rafi HM, Nadeem A, Salman Y, Nawaz FA, Essar MY. Child malnutrition in Afghanistan amid a deepening humanitarian crisis. Int Health. 2022;15(4):353–6.
19. Kitaw TA, Tilahun BD, Abate BB, Haile RN. Minimum acceptable diet and its predictors among children aged 6–23 months in Ethiopia. A multilevel cloglog regression analysis. Mater Child Nutr. 2024;20(3):e13647.
20. Markos M, Samuel B, Challa A. Minimum acceptable diet and associated factors among 6–23 months old children enrolled in outpatient therapeutic program in the Tulla district, Sidama region, Ethiopia: a community-based cross-sectional study. J Health Popul Nutr. 2024;43(1):106.
21. Mengistu W, Birhanu D, Seid O. Minimum acceptable diet and associated factors among 6–23 months children in rural households with irrigated users and non-irrigated users in Ethiopia: a comparative cross-sectional study. BMC Nutrition. 2024;10(1):62.
22. Molla A, Egata G, Getacher L, Kebede B, Sayih A, Arega M, Bante A. Minimum acceptable diet and associated factors among infants and young children aged 6–23 months in Amhara region, Central Ethiopia: community-based cross-sectional study. BMJ Open. 2021;11(5): e044284.
23. Gatica-Domínguez G, Neves PAR, Barros AJD, Victora CG. Complementary Feeding Practices in 80 Low- and Middle-Income Countries: Prevalence of and Socioeconomic Inequalities in Dietary Diversity, Meal Frequency, and Dietary Adequacy. J Nutr. 2021;151(7):1956–64.
24. Birhanu H, Gonete KA, Hunegnaw MT, Aragaw FM. Minimum acceptable diet and associated factors among children aged 6–23 months during fasting days of orthodox Christian mothers in Gondar city, North West Ethiopia. BMC Nutrition. 2022;8(1):76.
25. Birie B, Kassa A, Kebede E, Terefe B. Minimum acceptable diet practice and its associated factors among children aged 6–23 months in rural communities of Goncha district, north West Ethiopia. BMC Nutr. 2021;7(1):40.
26. Gonete KA, Angaw DA, Gezie LD. Minimum acceptable diet and associated factors among children aged 6–23 months in Ethiopia: a systematic review and meta-analysis. BMC Pediatr. 2024;24(1):151.
27. Sapkota S, Thapa B, Gyawali A, Hu Y. Predictors of Minimum Acceptable Diet among Children Aged 6–23 Months in Nepal: A Multilevel Analysis of Nepal Multiple Indicator Cluster Survey 2019. Nutrients. 2022;14(17):3669.
28. Rahman MS, Chowdhury MRK, Islam MR, Krull Abe S, Hossain K, Iwabuchi T, Tsuchiya KJ, Gilmour S. Determinants and Projections of Minimum Acceptable Diet among Children Aged 6–23 Months: A National and Subnational Inequality Assessment in Bangladesh. Int J Environ Res Public Health. 2023;20(3):2010.
29. Rezaee MT, Zakki SA, Haq IU, Rahimi N, Fayaz M. Cross-sectional study of determinants of undernutrition among children aged 6–36 months in Kabul, Afghanistan. BMJ Open. 2024;14(8): e079839.
30. Khanal V, Sauer K, Zhao Y. Determinants of complementary feeding practices among Nepalese children aged 6–23 months: findings from Demographic and Health Survey 2011. BMC Pediatr. 2013;13:131.
31. Worku MG, Alamneh TS, Tesema GA, Alem AZ, Tessema ZT, Liyew AM, Yeshaw Y, Teshale AB. Minimum acceptable diet feeding practice and associated factors among children aged 6–23 months in east Africa: a multilevel binary logistic regression analysis of 2008–2018 demographic health survey data. Arch Public Health. 2022;80(1):127.
32. Owais A, Suchdev PS, Schwartz B, Kleinbaum DG, Faruque ASG, Das SK, Stein AD. Maternal knowledge and attitudes towards complementary feeding in relation to timing of its initiation in rural Bangladesh. BMC Nutrition. 2019;5(1):7.
33. Macharia TN, Ochola S, Mutua MK, Kimani-Murage EW. Association between household food security and infant feeding practices in urban informal settlements in Nairobi. Kenya J Dev Orig Health Dis. 2018;9(1):20–9.
34. Hackett KM, Mukta US, Jalal CS, Sellen DW. Knowledge, attitudes and perceptions on infant and young child nutrition and feeding among adolescent girls and young mothers in rural Bangladesh. Matern Child Nutr. 2015;11(2):173–89.
35. Gurung R, Sunny AK, Paudel P, Bhattarai P, Basnet O, Sharma S, Shrestha D, Sharma S, Malla H, Singh D, et al. Predictors for timely initiation of breastfeeding after birth in the hospitals of Nepal- a prospective observational study. Int Breastfeed J. 2021;16(1):85.
36. Mekebo GG, Argawu AS, Likassa HT, Ayele W, Wake SK, Bedada D, Hailu B, Senbeto T, Bedane K, Lulu K, et al. Factors influencing exclusive breastfeeding practice among under-six months infants in Ethiopia. BMC Pregnancy Childbirth. 2022;22(1):630.
37. Gelagay AA, Worku AG, Bashah DT, Tebeje NB, Gebrie MH, Yeshita HY, Cherkose EA, Ayana BA, Lakew AM, Bitew DA, et al. Complete childhood vaccination and associated factors among children aged 12–23 months in Dabat demographic and health survey site, Ethiopia, 2022. BMC Public Health. 2023;23(1):802.
38. Mohammed A, Tareke AA, Keleb A, Kebede N, Tsega Y, Endawkie A, Kebede SD, Mesfin Abera K, Tilahun Abeje E, Bekele Enyew E, et al. Urban-rural disparities in minimum acceptable diet intake among children aged 6–23 months in Ethiopia: A multivariable Decomposition analysis of Ethiopian demographic and health survey 2019. Front Public Health. 2024;12:1361673.
39. Belay DG, Taddese AA, Gelaye KA. Minimum acceptable diet intake and its associated factors among children age at 6–23 months in sub-Saharan Africa: a multilevel analysis of the sub-Saharan Africa demographic and health survey. BMC Public Health. 2022;22(1):684.
40. Flores-Martinez A, Zanello G, Shankar B, Poole N. Reducing Anemia Prevalence in Afghanistan: Socioeconomic Correlates and the Particular Role of Agricultural Assets. PLoS ONE. 2016;11(6): e0156878.
41. Sadat SAA, Pakravan-Charvadeh MR, Gholamrezai S, Rahimian M, Lane G, Béland D, Koc M, Clark N, Omidvar N, Sadeghi R, et al. Factors associated with Afghan household food security pre- and post-Taliban regime. J Public Health Policy. 2023;44(4):551–65.
42. Stanikzai MH, Tawfiq E, Jafari M, Wasiq AW, Seddiq MK, Currie S, Sayam H, Baray AH, Saeedzai SA. Contents of antenatal care services in Afghanistan: findings from the national health survey 2018. BMC Public Health. 2023;23(1):2469.
43. Stanikzai MH, Tawfiq E, Suwanbamrung C, Wasiq AW, Wongrith P. Predictors of antenatal care services utilization by pregnant women in

Afghanistan: Evidence from the Afghanistan Health Survey 2018. PLoS ONE. 2024;19(10): e0309300.
44. Tadesse M, Ali Dawed Y, Fentaw Z, Endawike A, Adamu K. Determinants of inappropriate complementary feeding among children 6–23 months of age in Dessie City Northeast Ethiopia: a case-control study. BMC Nutrition. 2023;9(1):124.
45. Shaun MMA, Nizum MWR, Munny S. Determinants of meeting the minimum acceptable diet among children aged 6 to 23 months in Bangladesh: Evidence from a national representative cross-sectional study. Heliyon. 2023;9(6): e17560.

Publisher's Note