Journal of Health, Wellness and Community Research
ISSN: 3007, 0570

OPEN ACCESS

JHWCR

Type: Original Article
Published: 15 October 2025
Volume: III, **Issue**: XIV
DOI: https://doi.org/10.61919/5ja0ym23

Correspondence
✉ Maisam Ali, maisamali528@gmail.com

Received 21, 08, 25 **Accepted** 10, 10, 2025

Authors' Contributions
Concept: MA; Design: MA, BH; Data Collection: MA, MN, SS, RN, AB; Analysis: MA, HA, BH; Drafting: MA, MN, HA, BH, SS, RN, AB

Declarations
No funding was received for this study. The authors declare no conflict of interest. The study received ethical approval. All participants provided informed consent.

"Click to Cite"

Infant and Young Child Feeding Practices (IYCF) in Shingak, Parachinar, Upper Kurram District, KP, Pakistan

Maisam Ali[1,2], Mah Noor Nadeem[1], Haider Ali[3], Bakhtiar Hussain[3,4], Sawaira Shahid[1], Rashida Noor[5], Ayesha Bibi[6], Humaira Jamal[7]

1 Department of Human Nutrition, The University of Agriculture, Peshawar, Pakistan
2 Clinical Dietitian, Combined Military Hospital (CMH), Jhelum, Pakistan
3 Department of Food Science and Technology, The University of Agriculture, Peshawar, Pakistan
4 Khyber Pakhtunkhwa Food Safety and Halal Food Authority, Peshawar, Pakistan
5 Khyber Pakhtunkhwa Elementary and Secondary Education Department, Peshawar, Pakistan
6 The University of Agriculture Peshawar, Pakistan
7 Department of Human Nutrition, The University of Agriculture Peshawar, Pakistan

ABSTRACT

Background: Infant and young child feeding (IYCF) practices are critical determinants of growth and developmental outcomes, yet suboptimal feeding behaviors remain prevalent in resource-limited settings. Objective: To evaluate IYCF practices in Shingak, Parachinar, Upper Kurram District, Khyber Pakhtunkhwa, Pakistan, using WHO-aligned indicators. Methods: A community-based cross-sectional survey was conducted from July to September among 100 mother–child pairs selected by simple random sampling. Structured questionnaires assessed breastfeeding practices, colostrum provision, exclusive breastfeeding duration, timing of complementary feeding initiation, continued breastfeeding, formula exposure, iron-rich food intake, food group consumption, and feeding frequency, with analysis performed in SPSS version 25. Results: Breastfeeding prevalence was 98% and colostrum provision was 88%. Mean exclusive breastfeeding duration was 5.96 ± 0.35 months, and complementary feeding initiation occurred at 6.36 ± 1.43 months. Continued breastfeeding was reported by 67%, while infant formula exposure was reported by 82%. Iron-rich foods were provided to 55.3% of children. Food group intake was highest for grains/roots/tubers (96.5%) and lowest for other fruits/vegetables (32.9%) and legumes/nuts/seeds (35.3%). Conclusion: Although breastfeeding was widespread, complementary feeding diversity, iron-rich food provision, and sustained breastfeeding require improvement. Targeted maternal nutrition education and counseling are needed to strengthen adherence to WHO IYCF standards and improve child nutrition outcomes

Keywords
Infant feeding; breastfeeding; complementary food; nutrition; WHO IYCF; Parachinar; Kurram; Pakistan.

INTRODUCTION

Optimal infant and young child feeding (IYCF) is a cornerstone of early-life survival, neurodevelopment, and long-term human capital, particularly in low- and middle-income settings where growth faltering and micronutrient deficiencies remain prevalent (4,8). International recommendations emphasize early initiation of breastfeeding, exclusive breastfeeding for the first six months of life, followed by timely introduction of nutritionally adequate, safe, and diverse complementary foods while continuing breastfeeding up to two years and beyond (3,24). These recommendations are operationalized through standardized IYCF indicators, including breastfeeding initiation timing, exclusivity, complementary feeding introduction, meal frequency, and dietary diversity, which allow consistent monitoring of child nutrition practices and program performance across communities (3,25). Despite near-universal breastfeeding across South Asia, evidence repeatedly demonstrates persistent gaps in adherence to optimal IYCF practices, including delayed initiation, avoidance of colostrum, early introduction of prelacteals or formula, inadequate complementary food diversity, and insufficient intake of iron-rich foods, all of which contribute to undernutrition, impaired immunity, and increased susceptibility to infection (6,7).

In Pakistan, the IYCF environment is shaped by a combination of policy commitments and substantial implementation challenges across provinces and rural districts, where household poverty, maternal education, food insecurity, and barriers in health service delivery interact to influence feeding decisions (13). National evidence indicates that infant and young child feeding practices are strongly patterned by socioeconomic and maternal characteristics, with lower maternal education and limited access to counseling linked to poorer feeding quality and reduced dietary diversity (10–12,19,22). Comparable evidence from South Asia further suggests that frontline health worker capacity and community-based behavior change approaches can meaningfully improve caregiver knowledge and feeding practices, particularly when interventions address culturally embedded perceptions about breastfeeding initiation and complementary feeding norms (1,18,20). At the same time, increasing formula exposure and insufficient iron-rich complementary foods represent emerging threats to optimal child nutrition, especially in resource-constrained settings where the affordability and preparation safety of substitutes may be suboptimal (23).

Upper Kurram District in Khyber Pakhtunkhwa represents a geographically and socially distinct context where access limitations, educational inequities, and variable health awareness may influence maternal feeding behaviors, yet community-based IYCF data remain limited. Understanding local adherence to WHO-aligned practices, including breastfeeding patterns, complementary feeding timing, food group intake, and feeding frequency, is essential for designing context-specific interventions to improve child nutrition outcomes. Therefore, this study aimed to assess IYCF practices among mother–child pairs in Shingak, Parachinar, Upper Kurram District, and to characterize patterns of breastfeeding, colostrum provision, complementary feeding initiation, and consumption of key food groups and iron-rich foods in relation to WHO indicators, with the objective of informing targeted maternal nutrition education and counseling strategies in this setting (3,25).

MATERIALS AND METHODS

A community-based cross-sectional observational study was conducted in Shingak village, Parachinar, located in Upper Kurram District, Khyber Pakhtunkhwa, Pakistan, between July and September. The study population comprised mother–child pairs residing in the community during the study period. A total of 100 mother–child pairs were included using a simple random sampling approach. Data were collected using a structured questionnaire administered to mothers, designed to capture maternal and household characteristics and core feeding practices aligned with international IYCF measurement approaches, including breastfeeding exposure, colostrum provision, exclusive breastfeeding duration, initiation timing of complementary feeding, continued breastfeeding status, iron-rich food consumption, and infant formula exposure, as well as complementary feeding food group intake assessed through caregiver reporting consistent with standardized food-group classification (3,25).

Complementary feeding-related measures included the reported age at introduction of complementary foods and child consumption of major food groups, including grains/roots/tubers, legumes/nuts/seeds, dairy products, eggs, flesh foods, vitamin A-rich fruits and vegetables, and other fruits and vegetables, consistent with recognized dietary diversity frameworks (3,25). Feeding frequency for key food categories was assessed using a 24-hour recall approach, recorded as the mean number of feeding episodes per day for each food category. Data were entered and analyzed using SPSS version 25. Descriptive statistics were generated for frequencies, percentages, means, and standard deviations. For inferential outputs, p-values were reported as generated within SPSS for the relevant variables according to the analytic configuration used in the dataset. All analyses were performed using a two-sided statistical approach, and statistical significance was interpreted using a conventional alpha threshold of 0.05 in line with standard practice in community nutrition research (25).

Ethical standards were maintained throughout the study process by ensuring voluntary participation, obtaining informed consent from participating mothers before questionnaire administration, and protecting confidentiality by anonymizing records and restricting the dataset to research use only. Data integrity was supported through standardized administration of the questionnaire, completeness checks at the time of collection, and consistent coding of variables prior to analysis (3,25).

RESULTS

Breastfeeding practices were highly prevalent in the study population, with 98% of mothers reporting breastfeeding (Table 1). Colostrum provision was reported by 88%, indicating that 12% of mothers did not provide colostrum. The mean duration of exclusive breastfeeding was 5.96 ± 0.35 months, which closely approximated the WHO recommended six-month exclusivity window, while the mean reported age at initiation of complementary feeding was 6.36 ± 1.43 months, suggesting that initiation timing clustered near the recommended age but with substantial variability across mother–child pairs (Table 1). Continued breastfeeding was reported by 67% of mothers at the time of interview, while the intended total breastfeeding duration averaged 20.95 ± 8.45 months, reflecting an overall intention toward extended breastfeeding but with wide dispersion (Table 1). In relation to micronutrient-sensitive feeding, only 55.3% reported providing iron-rich foods, highlighting a major coverage gap. Notably, infant formula exposure was reported by 82% of respondents, indicating that a large majority of children had received formula at some point, despite high breastfeeding prevalence (Table 1).

Table 1. Summary of Infant and Young Child Feeding (IYCF) Practices (n = 100)

Indicator	Frequency / Mean ± SD	P-value
Breastfeeding rate	98%	<0.05
Colostrum provided	88%	0.083
Exclusive breastfeeding duration (months)	5.96 ± 0.35	<0.05
Complementary feeding start age (months)	6.36 ± 1.43	0.129
Intended breastfeeding duration (months)	20.95 ± 8.45	0.062
Iron-rich foods fed	55.3%	<0.05
Infant formula given	82%	0.0221
Still breastfeeding at time of survey	67%	<0.05

Table 2. Complementary Feeding Food Group Consumption (n = 100)

Food Group	% Consumed	P-value
Grains/Roots/Tubers	96.5%	0.072
Dairy products	61.2%	<0.05
Eggs	50.6%	<0.01
Flesh foods	45.9%	<0.05
Legumes, nuts, seeds	35.3%	0.087
Vitamin A–rich fruits & vegetables	58.8%	<0.05
Other fruits & vegetables	32.9%	<0.01

Dietary patterns demonstrated strong reliance on staple foods, as 96.5% of children consumed grains, roots, or tubers, representing the most consistently reported food group (Table 2). Consumption of animal-source foods was comparatively lower, with dairy products reported by 61.2%, eggs by 50.6%, and flesh foods by 45.9%, indicating that only about half of the children received eggs and fewer than half received meat-based

DOI: https://doi.org/10.61919/5ja0ym23

foods (Table 2). Plant-based protein sources were less frequent, with legumes, nuts, and seeds reported by 35.3%, while consumption of vitamin A–rich fruits and vegetables was 58.8%, and other fruits and vegetables was 32.9%, indicating that approximately one-third of children consumed non–vitamin A fruits/vegetables, which may constrain dietary diversity (Table 2).

Table 3. Feeding Frequency Patterns Based on 24-hour Recall (n = 100)

Food Type (24h recall)	Mean ± SD	P-value
Only breast milk	3.72 ± 3.50	<0.01
Grains/Roots/Tubers	0.80 ± 1.32	<0.05
Legumes/Nuts/Seeds	0.58 ± 0.61	0.089
Dairy products	2.04 ± 1.22	<0.05
Flesh foods	0.61 ± 0.58	0.073
Eggs	0.86 ± 0.49	<0.05
Vitamin A–rich fruits & vegetables	1.31 ± 1.25	<0.01
Other fruits & vegetables	1.04 ± 1.17	<0.05

Feeding frequency findings based on 24-hour recall further reflected these patterns, with breast milk consumed at a mean frequency of 3.72 ± 3.50 times/day, indicating considerable heterogeneity in breastfeeding frequency across children (Table 3). Dairy products were the most frequently consumed non-breast milk category at 2.04 ± 1.22 times/day, followed by vitamin A–rich fruits and vegetables at 1.31 ± 1.25 times/day, and other fruits and vegetables at 1.04 ± 1.17 times/day (Table 3). In contrast, grains/roots/tubers were consumed at 0.80 ± 1.32 times/day, eggs at 0.86 ± 0.49 times/day, and flesh foods at 0.61 ± 0.58 times/day, suggesting relatively low daily frequency of key nutrient-dense complementary foods, particularly animal-source proteins (Table 3). Legumes/nuts/seeds had a mean frequency of 0.58 ± 0.61 times/day, consistent with their lower prevalence of consumption observed in food group reporting (Table 3). Collectively, these results indicate high breastfeeding prevalence but incomplete adoption of optimal complementary feeding diversity and relatively limited exposure to iron-rich and protein-dense food groups.

DISCUSSION

The present community-based assessment in Shingak, Upper Kurram District demonstrates that breastfeeding is nearly universal, with 98% of mothers reporting breastfeeding, reflecting the strong cultural acceptability of breastfeeding in South Asian settings. However, optimal IYCF requires more than breastfeeding prevalence alone; the quality of early feeding behaviors, exclusivity, timely complementary feeding, dietary diversity, and sustained breastfeeding are the core determinants of nutritional adequacy and developmental outcomes during the first 1000 days (3,4). In this study, 88% of mothers provided colostrum, indicating relatively favorable early feeding beliefs compared with several rural contexts where colostrum is commonly discarded due to misconceptions (6,17). Nevertheless, the remaining 12% who did not provide colostrum reflect a continuing behavioral gap that can translate into lost early immune protection and increased vulnerability to infections, supporting the need for targeted counseling through community health structures and frontline nutrition functionaries (1,23).

The reported mean exclusive breastfeeding duration of 5.96 ± 0.35 months approximates the WHO-recommended six months, suggesting that mothers in this setting may be broadly aligned with exclusive breastfeeding advice. At the same time, the high reported prevalence of infant formula exposure (82%) suggests that breastfeeding practices may include mixed feeding patterns that reduce strict exclusivity in practice, a phenomenon increasingly observed across South Asia where formula use is influenced by socioeconomic aspiration, perceived insufficient milk, maternal workload, and aggressive marketing (19,23). This discrepancy highlights the importance of operationally defining exclusivity according to standardized WHO IYCF indicators and ensuring that community reporting aligns with these definitions to avoid overestimation of optimal practice (3,25). Moreover, continued breastfeeding was reported by only 67%, indicating a meaningful decline beyond infancy despite an intended breastfeeding duration of 20.95 ± 8.45 months, which may reflect social constraints, reduced maternal support, maternal employment, or evolving perceptions around formula and complementary feeding adequacy. Since sustained breastfeeding is associated with improved child survival and cognitive development, strengthening continued breastfeeding support remains a high-impact intervention, particularly when combined with complementary feeding improvements (21).

Complementary feeding initiation occurred at a mean age of 6.36 ± 1.43 months, which is close to WHO recommendations but with substantial variability, implying that a proportion of children are introduced either earlier or later than the optimal 6–8-month window. Both early and delayed initiation can compromise nutritional status: early initiation may displace breast milk and increase infection risk, while delayed initiation contributes to energy and micronutrient deficits at a period of rapid growth (3,4). The complementary feeding profile also revealed a dominant reliance on staples, with 96.5% consuming grains/roots/tubers, while nutrient-dense foods were substantially less common, particularly legumes/nuts/seeds (35.3%), flesh foods (45.9%), and other fruits/vegetables (32.9%). This pattern is consistent with evidence from developing contexts showing that complementary feeding often prioritizes calorie-dense staples while micronutrient-rich and animal-source foods remain limited due to affordability, availability, and knowledge barriers (2,7,16). Critically, only 55.3% of children were reported to receive iron-rich foods, raising concern given the established relationship between micronutrient deficits, anemia, impaired cognitive development, and elevated infection risk (4,8).

The 24-hour recall feeding frequency results further reinforce these dietary diversity gaps. Dairy products had the highest mean frequency among complementary foods (2.04 ± 1.22 times/day), which may reflect cultural acceptability and availability of milk-based foods; however, reliance on dairy alone does not compensate for limited iron-rich and diverse complementary feeding. Mean feeding frequencies for flesh foods (0.61 ± 0.58 times/day) and legumes/nuts/seeds (0.58 ± 0.61 times/day) were low, indicating infrequent intake of key protein and micronutrient sources. Similar patterns have been reported in South Asia and Pakistan, where complementary feeding practices are shaped by maternal education, household socioeconomic status, and caregiving knowledge, and where minimum dietary diversity remains a persistent challenge despite high breastfeeding prevalence (10–12,19,22). Since IYCF behaviors are strongly modifiable through structured counseling and peer-support models, evidence supports scaling community-based behavior change interventions, mother support groups, and strengthening frontline worker capacity as effective strategies to improve complementary feeding diversity and adherence to guidelines (1,18,20).

From a programmatic perspective, the study findings emphasize that breastfeeding promotion alone is insufficient in settings where complementary feeding quality and formula exposure remain problematic. Interventions should prioritize culturally adapted education on colostrum, exclusivity definitions, appropriate complementary feeding timing, and practical guidance to incorporate locally affordable iron-rich and vitamin A–rich foods into daily diets. Nutrition counseling integrated with immunization visits and maternal-child health services is particularly relevant, as feeding practices during and after child illness also influence dietary adequacy and recovery, and improving caregiver knowledge in these scenarios can reduce the risk of growth faltering (23). Overall, the data support strengthening maternal nutrition education and household-level awareness as central drivers for improving IYCF adherence and child nutrition outcomes in Upper Kurram, aligning with broader evidence from Pakistan and comparable South Asian settings (10–13,19,22).

CONCLUSION

In Shingak, Upper Kurram District, breastfeeding was nearly universal and colostrum provision was comparatively high, while reported exclusive breastfeeding duration and complementary feeding initiation approximated recommended timings; however, continued breastfeeding declined substantially and complementary feeding diversity remained limited, with low coverage of iron-rich foods and reduced intake of several nutrient-dense food groups, alongside a high prevalence of infant formula exposure. These findings indicate that improving IYCF in this setting requires focused maternal education, culturally appropriate counseling on exclusive breastfeeding and continued breastfeeding, and practical community-based strategies to enhance complementary feeding diversity and micronutrient adequacy to better align with WHO-recommended IYCF standards and improve child nutrition outcomes (3,4,13,25).

REFERENCES

1. Anuraag C, Nakkeeran N, Doshi M, Patel R, Bhagwat S. Capacity of frontline ICDS functionaries to support caregivers on infant and young child feeding (IYCF) practices in Gujarat, India. Asia Pac J Clin Nutr. 2014;23(Suppl):S29–S37.
2. Batal M, Boulghourjian C, Akik C. Complementary feeding patterns in a developing country: a cross-sectional study across Lebanon. East Mediterr Health J. 2010;16:180–186.
3. Dewey KG, Arimond M. New and updated indicators for assessing infant and young child feeding. Food Nutr Bull. 2009;30(2 Suppl):S256–S262.
4. Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet. 2008;371(9608):243–260.
5. Chaudhary SR, Govil S, Lala MK, Yagnik HB. Infant and young child feeding index and its association with nutritional status: a cross-sectional study of urban slums of Ahmedabad. J Fam Community Med. 2018;25(2):88–94.
6. Das N, Chattopadhyay D, Chakraborty S, Dasgupta A. Infant and young child feeding perceptions and practices among mothers in a rural area of West Bengal, India. Ann Med Health Sci Res. 2013;3(3):370–375.
7. Disha A, Rawat R, Subandoro A, Menon P. Infant and young child feeding (IYCF) practices in Ethiopia and Zambia and their association with child nutrition: analysis of demographic and health survey data. Afr J Food Agric Nutr Dev. 2012;12(2):5895–5914.
8. Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJL. Selected major risk factors and global and regional burden of disease. Lancet. 2002;360:1347–1360.
9. Garg M, Hasan M, Kapoor D. Infant and young child feeding (IYCF) practices in Udupi district, Karnataka. J Nutr Res. 2015;3(1):38–44.
10. Gul NK, Ariff S, Habib MA, Umer M. Determinants of infant and young child feeding practices by mothers in two rural districts of Sindh, Pakistan: a cross-sectional survey. Int Breastfeed J. 2017;12(1):1–9.
11. Hafsa MH. Trends in breastfeeding and complementary feeding practices in Pakistan, 1990–2007. Int Breastfeed J. 2011;6(15):1–7.
12. Hana M, Suleman Y, Hazir T, Akram DS, Uddin S, Dibley MJ, et al. Overview of the infant and young child feeding policy environment in Pakistan: Federal, Sindh and Punjab context. BMC Public Health. 2017;17(Suppl 2):71–123.
13. Inayati DA, Scherbaum V, Purwestri RC, Hormann E, Wirawan NN, Suryantan J, et al. Infant feeding practices among mildly wasted children: a retrospective study on Nias Island, Indonesia. Int Breastfeed J. 2012;7(3):1–9.
14. Jai PS, Gupta SB, Shrotriya VP, Singh PN. Study of nutrition status among under-five children attending outpatient department at a primary care rural hospital, Bareilly (UP). Sch J App Med Sci. 2013;1(6):769–773.
15. Kedir TR, O'Connor TP, Belachew T, O'Brien NMO. Infant and Young Child Feeding (IYCF) practices among mothers of children aged 6–23 months in two agro-ecological zones of rural Ethiopia. Int J Nutr Food Sci. 2016;5(3):185–194.
16. Khan AM, Kayina P, Agrawal P, Gupta A, Kannan AT. A study on infant and young child feeding practices among mothers attending an urban health center in East Delhi. Indian J Public Health. 2012;56(4):301.
17. Komal PK, Sankar J, Sankar MJ, Gupta A, Dadhich JP, Gupta YP, et al. Effect of peer counseling by mother support groups on infant and young child feeding practices: the Lalitpur experience. PLoS One. 2014;9(11):e109181.
18. Logan M, Sharmila A, Dharmaratnam A, Alexander EC. Systematic review of infant and young child complementary feeding practices in South Asian families: the Pakistan perspective. Public Health Nutr. 2018;21(4):655–668.
19. Menon P, Saha K, Kennedy A, Khaled A, Tyagi T, Sanghvi T, et al. Social and behavioral change interventions delivered at scale have large impacts on infant and young child feeding (IYCF) practices in Bangladesh. FASEB J. 2016;30(Suppl):58.30.
20. Kramer MS, Aboud F, Mironova E, Vanilovich I, Platt RW, Matush L, et al. Breastfeeding and child cognitive development: new evidence from a large randomized trial. Arch Gen Psychiatry. 2008;65(5):578–584.
21. Mummad I, Jabeen N, Khatoon S. Feeding practices of infants and young children according to WHO indicators at Children Hospital, Islamabad. Pak J Med Health Sci. 2017;11(1):215–219.
22. Paintal K, Aguayo VM. Feeding practices for infants and young children during and after common illness: evidence from South Asia. Matern Child Nutr. 2016;12(Suppl 1):39–71.
23. Satish T, Bharadva K, Yadav B, Malik S, Gangal P, Banapurmath CR, et al. Infant and young child feeding guidelines. Indian Pediatr. 2016;53:703–713.

DOI: https://doi.org/10.61919/5ja0ym23

24. Shrivastava N, Sandhu A. Index for measuring child feeding practices. Indian J Pediatr. 2007;74(4):363–368.