

 Mukaddes Kilic Saglam

Düzce University, Faculty of Medicine, Department of Pediatrics, Düzce, Türkiye

Received: 07 January, 2026

Accepted: 03 February, 2026

Published: 10 March, 2026

Corresponding Author: Mukaddes Kilic Saglam, Düzce University, Faculty of Medicine, Department of Pediatrics, Düzce, Türkiye
Email: mkdsklc@gmail.com

CITATION

Kilic Saglam M. Knowledge and practices of mothers regarding complementary feeding in Türkiye: A cross-sectional study. Atlantic J Med Sci Res. 2026;6(1):20-9. DOI: 10.5455/atjmed.2026.01.03

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.



Knowledge and practices of mothers regarding complementary feeding in Türkiye: A cross-sectional study

Abstract

Aim: The complementary feeding (CF) period is a multidimensional process that includes offering age-appropriate foods, ensuring adequate portion sizes, appropriate meal timing, dietary diversity, and suitable feeding practices. This study aimed to evaluate mothers' CF practices and identify common mistakes in light of current literature.

Materials and Methods: This study was conducted with 753 mothers of children aged 12–72 months. Data were collected using an online questionnaire covering sociodemographic characteristics, breastfeeding and CF practices, timing of food introduction, feeding methods, and challenges encountered during the CF period. Descriptive statistics, Mann–Whitney U, and Kruskal–Wallis tests were used for data analysis.

Results: Most mothers (80.2%) reported difficulty in defining the CF process. CF was initiated based on healthcare professional recommendations by 36.9% of mothers. Early CF initiation (<6 months) was reported by 37.2% of participants. Prior to CF, 69.4% of infants were exclusively breastfed, and 61.9% of mothers introduced new foods for at least three days. Yogurt (51.0%) and pureed vegetables (34.8%) were the most common first foods. A combined feeding approach (traditional spoon-feeding and baby-led weaning) was used by 67.7% of mothers, and 49.4% obtained CF information from healthcare professionals. Only one CF meal per day was provided by 12.7% of mothers, while 12.9% offered only tasting amounts. Delays in introducing key foods were observed, including eggs, meat, fish, legumes, nuts, and cow's milk. Notably, 30.1% of mothers had not introduced cow's milk by 72 months of age.

Conclusion: The CF period poses significant challenges for mothers. During this period, dietary diversity is often insufficient, essential macro- and micronutrients are not adequately provided, meal frequency is suboptimal, and inappropriate feeding practices are common. These findings underscore the need to update national feeding guidelines and strengthen evidence-based education for both healthcare professionals and families.

Keywords: Complementary feeding, infant nutrition, feeding practices, dietary diversity, maternal knowledge, feeding challenges, Türkiye

INTRODUCTION

Complementary feeding (CF) refers to the process of introducing additional foods when breast milk or infant formula alone is no longer sufficient to meet the infant's energy and nutrient requirements, including zinc, iron, and certain vitamins (1). The CF period encompasses not only the provision of appropriate foods but also the correct adjustment of portion sizes, appropriate timing, ensuring dietary diversity, and the application of suitable feeding practices.

Infancy and early childhood represent a critical period characterized by the most rapid growth and development, during which healthy eating habits and behavioral patterns that persist throughout life are established. Inadequate or inappropriate CF practices may lead to serious consequences, including growth faltering, stunting, micronutrient deficiencies, chewing and swallowing difficulties, and delays in cognitive development. This period also constitutes a highly plastic learning phase in which children shape their taste preferences,

food acceptance, and long-term eating behaviors.

The success of CF is influenced by multiple factors, such as the timing of initiation, the quality of foods offered, hygiene conditions, food preparation methods, and caregivers' knowledge and practices. Evidence from the global literature, as well as data from our country, indicate that insufficient knowledge regarding CF remains a significant public health concern (2-4). Delayed initiation of CF, an insufficient and inadequate number of meals, and the late introduction of iron- and protein-rich foods are among the most important problems. It is also well recognized that not only parents but also healthcare professionals may have knowledge gaps regarding CF (5).

Therefore, understanding parents' knowledge levels, practices, and decision-making processes regarding CF is of great importance for supporting healthy growth, development, and disease prevention. In this study, we aimed to evaluate mothers' CF practices, identify commonly encountered mistakes in light of the current literature, and draw attention to these practices in order to contribute to further research on healthy child nutrition and to the correction of widespread misconceptions.

MATERIALS AND METHODS

This research was conducted as a descriptive cross-sectional study aiming to evaluate mothers' knowledge, attitudes, and practices regarding CF in Türkiye. The study protocol was reviewed and approved by the Düzce University Ethics Committee (Approval No: 2025/309, Date of Approval: November 24, 2025). The study data were collected between 25 November 2025, and 2 December 2025, using an online questionnaire developed by the researcher based on a review of similar studies in the literature. The questionnaire was distributed to participants via social media platforms. At the beginning of the survey, participants were informed about the purpose of the study, and their informed consent was obtained electronically. All data were collected anonymously, participants' personal information was kept confidential, and the data were used solely for scientific purposes.

The study sample consisted of mothers who had children aged between 12 and 72 months, and a total of 753 participants were included in the research. Mothers of preterm infants and those whose children had congenital metabolic disorders, chronic diseases, or food allergies that made the consumption of foods included in the questionnaire medically contraindicated during the CF period were excluded from the study. In addition, questionnaires that were incomplete, inconsistent, or unsuitable for statistical analysis were not included in the evaluation. The questionnaire was developed by the authors based on a comprehensive review of the relevant literature on complementary feeding practices (4,6-9). The items were designed to assess maternal knowledge and practices related to complementary feeding. The questionnaire was not a previously

validated scale, and formal content validity assessment through expert review or pilot testing was not conducted. In addition, internal consistency reliability measures, such as Cronbach's alpha, were not calculated, as the questionnaire primarily consisted of descriptive items.

The data were collected using an online questionnaire created on the Google Forms platform. The survey consisted of three main sections. Family Descriptive Characteristics Form: This section included questions regarding sociodemographic characteristics such as the child's age and sex, the mother's age, educational status, employment status, number of children in the household, and the geographical region of residence. Knowledge, Experience, and Practices Related to CF Form: This section investigated the duration of exclusive breastfeeding, the timing of initiation of CF, the CF method (baby-led weaning [BLW], traditional feeding, or combination method), the type of feeding prior to the initiation of CF (breast milk or formula), reasons for initiating CF, difficulties experienced during the process and their causes, the first preferred foods for CF, sources of information regarding CF, the number of daily meals between 6 and 9 months of age, whether new foods were introduced at three-day intervals (the three-day rule), and the form in which the first foods were offered (blended or pureed consistency). Form on the Months of Introduction of Complementary Foods: This section included questions regarding the months in which complementary foods such as yogurt, egg yolk, egg white, red meat, fish, chicken, legumes, nuts, and cow's milk were introduced.

Statistical Analysis

Descriptive statistics for continuous variables were presented as mean±standard deviation, median, minimum, and maximum values, while categorical variables were expressed as numbers and percentages. The normality of the distribution of continuous variables was assessed using the Kolmogorov–Smirnov test. Comparisons of the months of initiation of CF between two independent groups were performed using the Mann–Whitney U test, whereas comparisons among more than two independent groups were conducted using the Kruskal–Wallis analysis of variance. The groups responsible for statistically significant differences were identified using the Kruskal–Wallis multiple comparison test. Statistical analyses were performed using IBM SPSS for Windows version 20.0 (SPSS Inc., Chicago, IL), and a p value of <0.05 was considered statistically significant.

RESULTS

A total of 753 participants were included in the study. The mean age of the children was 3.35±1.43 years; the youngest child was 1 year old and the oldest was 6 years old. Of the children, 50.6% were male and 49.4% were female. The mean age of the mothers was 34.15±4.59 years, with a minimum age of 23 years and a maximum age of 47 years. Among the mothers, 77.4% were

university graduates and 50.5% were working. Additionally, 85.2% had one or two children, and 93.2% of the families were nuclear families. Regarding geographical distribution, 27.1%

of the families resided in the Central Anatolia region and 27.0% in the Black Sea region. The demographic characteristics of the children and mothers are presented in Table 1.

Table 1. Demographic characteristics of mothers and children

n=753		Mean±SD Median (Min-Max)
Mother age (years)		34.15±4.59 34 (23-47)
Child age (years)		3.35±1.43 3 (1-6)
	n	%
Gender		
Male	381	50.6
Female	372	49.4
Maternal educational status		
Primary	14	1.9
Intermediate	124	16.5
High school	32	4.2
University	583	77.4
Mother's employment status		
Working	380	50.5
Non-working	373	49.5
Family type		
Nuclear family	702	93.2
Extended family	51	6.8
Number of children		
1	318	42.2
2	324	43.0
≥3	111	14.7
Geographical region		
Mediterranean	42	5.6
Eastern Anatolia	29	3.9
Aegean	52	6.9
Southeastern Anatolia	46	6.1
Central Anatolia	204	27.1
Black Sea	203	27.0
Marmara	177	23.5

Among the mothers, 80.2% reported experiencing difficulties during the CF process. The most commonly reported challenges were children's refusal of foods or not eating (33.2%) and the need to prepare separate meals for the child every day (19.1%). When mothers were asked to rate their behaviors and attitudes during the CF process on a scale from 0 to 5, 43.3% scored below

3 (median=3 points).

Regarding the reasons for initiating CF, 36.9% of the mothers reported doing so based on the recommendation of a healthcare professional, while 31.6% stated that they believed the time had come. The characteristics of the CF process among the mothers are presented in Table 2.

Table 2. Characteristics of mothers' CF process

n=753	n	%
Most Challenging Issues During the CF Process		
Food refusal or not eating	250	33.2
Preparing separate meals for the child every day	144	19.1
Not knowing which foods to give, in what amounts, and how many meals per day	36	4.8
Experiencing constipation or gas	41	5.4
Concern about whether the child is receiving sufficient vitamins	133	17.7
Did not experience difficulties	149	19.8
Mothers' Behavior and Attitude Score During the CF Process		
0	20	2.7
1	28	3.7
2	57	7.6
3	221	29.3
4	276	36.7
5	151	20.1
Mothers' Behavior and Attitude Score During the CF Process Median (Min- Max)		3 (0-5)
Mothers' Reasons for Initiating CF		
Family/friends suggested starting CF	15	2.0
Breast milk was insufficient and the baby was not satiated	91	12.1
The mother thought the time had come	238	31.6
The child was not gaining weight	31	4.1
Recommended by a healthcare professional	278	36.9
To help the child become accustomed to different tastes at an early age	100	13.3

It was determined that 54.7% of the mothers initiated CF at 6 months of age. 69.9% of children were exclusively breastfed during the first 6 months. It was found that 61.9% of the mothers adhered to the three-day rule when feeding their infants. As the first complementary food, 51.0% of the mothers preferred yogurt, while 34.8% pureed vegetables, and 67.7% applied a combined feeding approach during the CF period. Additionally, 49.4% of the mothers obtained information about CF from healthcare professionals.

Among the mothers, 44.2% provided two meals per day between 6 and 9 months of age, 12.7% provided only one meal, and 12.9% reported offering only taste trials. It was also determined that 12.7% of the participants provided complementary foods in blended form. Mothers' CF practices and attitudes are presented in Table 3.

It was observed that the introduction of many basic foods during the CF period was delayed. Yogurt was introduced at a mean age of 6.26 ± 2.07 months, red meat at 8.23 ± 2.67 months, and cow's milk at 16.93 ± 7.96 months. A total of 227 mothers (30.1%) reported that they had not introduced cow's milk up to 72 months of age. The reason for this was their belief that cow's milk is not appropriate for child health. The source of these beliefs was generally social media posts. The months of introduction of complementary foods are presented in Table 4.

No significant differences were observed in the timing of initiation of CF based on maternal education level, maternal employment status, number of children, family type, or geographical region of residence. However, the introduction of complementary foods occurred earlier in infants who were exclusively formula-fed compared to those who were exclusively breastfed ($p=0.013$) (Table 5).

Table 3. Mothers' knowledge, experience, and practices related to CF

n=753		Mean±SD
		Median (Min-Max)
Initiation of CF (months)		5.65±0.79 6 (3-8)
	n	%
Initiation of CF (months)		
3	5	0.7
4	46	6.1
5	229	30.4
6	412	54.7
7	47	6.2
8	14	1.9
Infant's Feeding Method Before the Initiation of CF		
Exclusively breastfed	522	69.4
Exclusively formula-fed	53	7.0
Breast milk + formula	178	23.6
Duration of Exclusive Breastfeeding (months)		
1, 2, 3 months	88	11.7
4, 5 months	117	15.5
6 months	526	69.9
None	22	2.9
Did you follow the three-day rule?		
Yes	466	61.9
No	287	38.1
First CF		
Baby biscuit	2	0.3
Soup	25	3.3
Bread	1	0.1
Follow on formula	8	1.1
Pureed fruit	46	6.1
Fruit juice	12	1.6
Pudding	4	0.5
Pureed vegetables	262	34.8
Cooking/broth liquids	9	1.2
Yogurt	384	51.0
Feeding Methods		
Traditional CF	208	27.6
BLW	36	4.8
BLW+Traditional CF	509	67.6
Source of Information		
Family/Friends	125	16.6
Health sector (dokter/nurse)	372	49.4
Social media	256	34.0
Number of Meals at 6–9 Months of Age		
1	96	12.7
2	333	44.2
3	178	23.6
More than 3	49	6.5
Only taste trials were offered	97	12.9
Method of Offering the CF		
Using a blender	96	12.7
Mashed with a fork or grated	657	87.3

Table 4. Months of introduction of selected complementary foods among mothers

Complementary foods	Mean±SD	Median (Min-Max)
Yogurt	6.26±2.07	6 (3-36)
Egg yolk	7.01±2.23	6 (4-36)
Egg white	8.83±2.65	8 (3-24)
Meat	8.23±2.67	8 (4-36)
Fish	9.73±3.32	9 (4-36)
Chicken	9.94±4.22	9 (4-48)
Legumes	10.21±4.21	9 (4-48)
Nuts (n=748)	10.98±5.80	9 (4-48)
Cow milk (n=526)	16.93±7.96	13 (4-60)

Table 5. Comparison of general characteristics with the month of initiation of CF

n=753	Month of Initiation of CF			p value
	n	Mean±SD	Median (Min-Max)	
Maternal educational status				
Primary	14	5.57±1.01	5 (4-8)	0.466 ^d
Intermediate	32	5.78±0.83	6 (4-7)	
High school	124	5.60±0.80	6 (4-8)	
University	583	5.66±0.78	6 (3-8)	
Mother's Employment Status				
Working	380	5.68±0.75	6 (3-8)	0.646 ^b
Non-working	373	5.63±0.82	6 (3-8)	
Family Type				
Nuclear family	702	5.66±0.77	6 (3-8)	0.478 ^b
Extended family	51	5.55±0.94	6 (3-8)	
Number of children				
1	318	5.72±0.77	6 (3-8)	0.070 ^d
2	324	5.64±0.78	6 (3-8)	
≥3	111	5.50±0.84	6 (3-7)	
Geographical Region				
Mediterranean	42	5.52±0.77	5.5 (4-7)	0.125 ^d
Eastern Anatolia	29	5.38±0.94	6 (3-7)	
Aegean	52	5.67±0.78	6 (4-8)	
Southeastern Anatolia	46	5.61±0.64	6 (4-7)	
Central Anatolia	204	5.57±0.84	6 (3-8)	
Black Sea	203	5.77±0.77	6 (4-8)	
Marmara	177	5.69±0.74	6 (3-8)	
Infant's Feeding Method Before the Initiation of CF				
Exclusively breastfed	522	5.70±0.77	6 (3-8)	0.013 ^d
Exclusively formula-fed	53	5.40±0.92	5 (3-8)	
Breast milk + formula	178	5.58±0.79	6 (3-8)	

b: Mann Whitney U test, d: Kruskal–Wallis Analysis of Variance

DISCUSSION

The main findings of our study indicate that approximately half of the mothers described the CF process as difficult, a significant portion provided an insufficient number of meals, protein- and iron-rich foods were introduced late, and incorrect practices and behaviors related to CF persisted.

CF is not limited to the provision of additional foods; it is a multidimensional process that also involves appropriate timing, adequate quantity, suitable consistency, dietary diversity, and proper feeding behaviors. Nutrition and lifestyle during pregnancy, lactation, infancy, and early childhood (the first 1,000 days) have been shown to have long-term effects on a child's future eating behaviors, dietary preferences, and overall health. The approximately 18-month CF period, spanning 6–24 months of age, constitutes the largest portion of this 1000-Day Critical Window (10). Most cases of growth faltering, stunting, and micronutrient deficiencies in childhood develop as a result of errors made during the CF period, which spans approximately 6–24 months of age. Additionally, the risk of obesity, hypertension, diabetes, and cardiovascular diseases in childhood and adulthood may be programmed based on nutrition during this critical period (11).

It is well established that dietary patterns during this period have lasting effects on a child's neurodevelopmental processes and lifelong mental health. While energy intake is essential for fetal and postnatal growth, it alone is insufficient to support optimal brain development. Optimal neurological development requires adequate intake of specific macro- and micronutrients, including protein, zinc, iron, choline, folate, iodine, vitamins A, D, B6, and B12, as well as long-chain polyunsaturated fatty acids. Deficiencies in these nutrients during this sensitive early-life period can result in persistent limitations in cognitive function and neurological capacity, even despite subsequent nutritional interventions (12). Adequate intake of macro- and micronutrients is essential for normal brain development. Early-life undernutrition has been associated with lower IQ scores, reduced academic performance, and increased behavioral problems (13).

There is no global consensus regarding the optimal age to initiate CF. In 2002, the World Health Organization (WHO) recommended changing the introduction of CF from 4–6 months to 6 months of age. The WHO and numerous international organizations consider breast milk during the first six months of life to be the ideal source of nutrition, fully meeting the nutrient requirements of healthy, term infants. After six months (180 days), however, the need for energy, iron, zinc, and certain vitamins increases, necessitating the introduction of complementary foods, while continued breastfeeding is recommended for at least up to 2 years of age and then (14,15).

Debates regarding the timing of the introduction of CF continue, particularly due to its potential long-term effects on allergic diseases, obesity risk, and micronutrient deficiencies (16). The

prevalence of childhood food allergies, particularly in Western countries, has reached up to 10%, increasing interest in studies on the timing of CF (17). However, these studies have not reached a clear consensus. A meta-analysis has shown that introducing allergenic foods before six months, particularly egg and peanut, can significantly reduce the risk of IgE-mediated food allergies (18). Similarly, another study reported that exposure to allergenic foods from three months of age reduced the risk of food allergy at 36 months in the general population and supported early introduction of common allergenic foods as a safe and effective strategy for allergy prevention (19). Additionally, it has been shown that introducing a more diverse diet during the first year of life reduces the risk of atopic dermatitis, asthma, and food allergies up to six years of age (20).

On the other hand, some studies have found no significant association between the age of CF and the development of atopic diseases. In a study conducted in Korea, the timing of CF was not associated with physician-diagnosed atopic dermatitis or asthma (21). Furthermore, no differences were observed in overall food allergies or in allergies to milk, sesame, fish, and wheat between infants who received these allergenic foods between 3–6 months and those who were introduced to them after six months (22). Introducing gluten at any time between 4 and 12 months of age has been shown to have no effect on the risk of developing celiac disease (23). Another study found no conclusive evidence that early introduction of egg in high-risk infants reduces the risk of allergy (24). Additionally, Breen and colleagues argued that existing studies on the role of early CF in allergy prevention have methodological limitations, and that introducing allergenic foods from six months onward may be more appropriate than very early introduction. They also noted concerns that promoting early CF could increase the use of inadequately regulated follow-on formulas (25).

Findings regarding the impact of early or late introduction of CF on obesity risk are also inconsistent. In the ToyBox study, children who began CF at 1–3 months did not show a significant increase in the risk of overweight or obesity during the preschool period compared to those who started at 4–6 months (26). In contrast, a large-scale cohort study conducted in Korea reported higher BMI values at ages 5–7 years in children who began CF before four months of age (27). However, some systematic reviews and meta-analyses have not demonstrated a clear association between early CF and obesity later in life (28).

Micronutrient deficiencies, particularly iron deficiency, represent another important factor in discussions regarding the timing of CF. Effective strategies to prevent anemia in infants include delayed clamping of the umbilical cord after birth, ensuring adequate maternal nutrition during pregnancy and lactation, and providing iron supplementation to at-risk groups. These approaches play a significant role in reducing the risk of iron deficiency, independent of the timing of CF.

In a comprehensive assessment of its 2009 opinion, The European

Food Safety Authority (EFSA) reported that there is no convincing evidence that introducing complementary foods—prepared in an age-appropriate consistency, nutritionally adequate, and under hygienic conditions—before six months of age (<1–<6 months) provides significant health benefits or harms, except in infants at risk of iron deficiency. The report also emphasized that there is no scientific basis for delaying potentially allergenic foods, such as egg, cereals, fish, and peanuts, to a later age compared to other complementary foods with regard to the risk of atopic diseases. EFSA concluded that the appropriate age for introducing CF depends on individual characteristics and development, typically ranging between approximately 3–4 and 6 months for most infants (29). In our study, 54.7% of mothers initiated CF at six months, which aligns with current WHO recommendations (16). However, it is noteworthy that more than 37% of mothers began CF before six months. According to Türkiye Demographic and Health Survey (TDHS) 2018 data, the rate of exclusive breastfeeding for the first six months in our region was 41%, and the rate of introducing complementary foods before six months was 12% (30). The higher rate of exclusive breastfeeding in the first six months observed in our study (69.9%) may be attributed to the inclusion of a highly educated group of mothers. Nevertheless, the rate of starting complementary foods before six months being nearly three times higher may reflect changes in knowledge and practices regarding CF in Türkiye over the past seven years. In our study, the finding that CF was initiated significantly earlier in infants fed exclusively with formula is consistent with the literature (9).

In our study, 80.2% of mothers described the CF process as difficult, with food refusal being the most frequently reported difficulty, highlighting that this period requires support not only nutritionally but also behaviorally. Infant feeding represents a learning process during which children observe their environment, gain experiences with tastes and textures, and develop long-term eating behaviors. Excessively restrictive or overly permissive feeding practices may increase the risk of picky eating later in life.

The U.S. Centers for Disease Control and Prevention (CDC) and the Turkish Ministry of Health recommend starting CF with a single food and waiting 3–5 days between introducing new foods. However, this approach is not endorsed by WHO, The European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN), or other nutrition societies, which state that there is no scientific evidence supporting a systematic waiting period between new foods (15,31). In a study by Samady et al., most pediatricians no longer considered the three-day rule scientifically necessary, yet the practice persists in clinical settings (5). Notably, 61.9% of mothers in our study reported following the “three-day rule.” Waiting three days between new foods may delay infants’ early exposure to iron-, zinc-, and micronutrient-rich foods and hinder allergy prevention efforts. Therefore, national feeding guidelines should be reassessed and updated accordingly.

In terms of dietary diversity, our study found that although yogurt and pureed vegetables were the first foods introduced during CF, foods such as egg white, meat, fish, chicken, legumes, and nuts were introduced considerably later. Infants require complementary foods with much higher nutrient density than adults. For example, a 6–8-month-old infant needs nine times more iron and four times more zinc than an adult male (32). Therefore, infants should receive the most nutrient-dense foods available at home; however, in low-income countries, the opposite is often true, and infants are commonly fed low-nutrient, watery porridges. A review of feeding protocols in 43 European countries showed that 26 countries (61%) recommend providing iron- and protein-rich foods at six months, while 13 countries (30%) suggest introducing them later, between 7–9 months (33). This delay contributes to macro- and micronutrient deficiencies. In our study, only 16.9% of families provided infants with family meals during CF. Previous research has shown that infants who transition directly to family meals are at risk of multiple micronutrient deficiencies, including iron, calcium, and zinc (34). These findings suggest that family meals alone may not be sufficient for infant nutrition. In our study, 16.9% of mothers reported starting the CF period with family meals.

In our study, among infants aged 6–12 months, 12.9% of participants were offered only taste trials, 12.7% received one complementary meal, and 44.2% received two meals per day. The slow and cautious approach after the initiation of CF, both in meal frequency and delayed introduction of nutrient-dense foods, appears to be a major concern. In Europe, among 36 countries for infants aged 6–9 months, 13 countries (36%) provide 1–2 meals per day, 17 countries (47%) provide 2–3 meals, 4 countries (11%) provide 3–4 meals, and 2 countries (6%) provide 4–5 meals of complementary foods (33). WHO recommends that infants aged 6–9 months receive 2–3 main meals per day, with 1–2 additional snacks if needed (15).

Findings regarding cow’s milk constitute an important result of our study. Approximately one-third of mothers reported never giving cow’s milk to their children up to six years of age, primarily influenced by negative information circulating on social media regarding animal milks, suggesting incorrect and excessive avoidance behaviors. In contrast, WHO, ESPGHAN, and other nutrition societies recommend using formula if breast milk is unavailable between 6–12 months and formula is accessible and affordable. If formula is unavailable or costly, full-fat animal milk may be used, and animal milk is considered safe after one year (15,31). There is no evidence in the literature supporting avoidance of animal milk.

Regarding feeding methods, the majority of mothers in our study used a combination of BLW and the traditional approach, contrary to most literature reports (35). Although the BLW method is becoming increasingly popular, evidence regarding its adequacy for energy and micronutrient intake, as well as

choking risk, remains limited (36). WHO and ESPGHAN do not provide a clear recommendation on whether feeding should be spoon-fed or BLW; rather, they emphasize that feeding should be safe, hygienic, adequate, and age-appropriate (15,31).

The strengths of our study include a large sample size, nationwide participation across Türkiye, and a multidimensional assessment of CF. However, the cross-sectional design of the study, reliance on self-reported data, and the use of an online survey represent important limitations. In addition, the questionnaire used was not a formally validated instrument. Although the items were developed based on existing literature, the lack of expert-based content validity assessment, pilot testing, and reliability analysis may have affected the measurement accuracy of the findings. Another limitation of this study is that most participating mothers were highly educated, which may limit the generalizability of the findings to families with lower educational and socioeconomic status in Türkiye.

CONCLUSION

Our study indicates that while mothers have basic knowledge about CF, significant gaps remain regarding food diversity, meal frequency, and misconceptions. Therefore, current national nutrition guidelines should be re-evaluated in line with the recommendations of the most recent international guidelines. Health professionals should provide family counseling in accordance with updated clinical guidelines, and evidence-based public health messages should be reinforced to address prevalent misinformation within the community. In addition, educational programs aimed at promoting healthy dietary habits and supporting optimal growth should place emphasis on the timing of CF as well as its implementation, nutritional content, and dietary diversity.

Acknowledgements

The author sincerely thank all the mothers who participated in the survey and contributed their time and information to this study.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that there is no financial support.

Ethical Approval

The study protocol received approval from the Düzce University Ethics Committee (Approval No: 2025/309, Date: 24 November 2025).

REFERENCES

- Verduci E, Fiore G, Agostinelli M, Zuccotti G. Feeding practices in the introduction of complementary feeding and implications for future healthy eating. *Ann Nutr Metab.* 2025;81:44-55.
- Manikam L, Lingam R, Lever I, et al. Complementary feeding practices for South Asian young children living in high-income countries: A systematic review. *Nutrients.* 2018;10:1676.
- Ali M, Arif M, Shah AA. Complementary feeding practices and associated factors among children aged 6-23 months in Pakistan. *PLoS One.* 2021;16:e0247602.
- Gülümser Şişko S, Bağ Ö, Kondolot M, Nalbantoğlu B, Gökçay G. Breastfeeding and infant nutrition knowledge, attitude, and practices of parents. *Turk Arch Pediatr.* 2022;57:441-47.
- Samady W, Campbell E, Aktas ON, et al. Recommendations on complementary food introduction among pediatric practitioners. *JAMA Netw Open.* 2020;3:e2013070.
- Awaf A, Elias A, Mahfouz MS. Complementary feeding practices among mothers having children less than two years old attending well-baby clinics in Jazan City, Saudi Arabia. *Pan Afr Med J.* 2023;45:45.
- Kostecka M, Jackowska I, Kostecka J. Factors affecting complementary feeding of infants: A pilot study conducted after the introduction of new infant feeding guidelines in Poland. *Nutrients.* 2020;13:61.
- Jalil H, Chong MC, Jalaludin MY, Wong LP, Hmwe NTT. Knowledge, attitude, and practice among mothers toward breastfeeding and complementary feeding in community health setting, Malaysia. *Heliyon.* 2024;10:e39746.
- Gingras V, Aris IM, Rifas-Shiman SL, Switkowski KM, Oken E, Hivert MF. Timing of complementary feeding introduction and adiposity throughout childhood. *Pediatrics.* 2019;144:e20191320.
- Dewey KG. The challenge of meeting nutrient needs of infants and young children during the period of complementary feeding: An evolutionary perspective. *J Nutr.* 2013;143:2050-54.
- Koletzko B, Godfrey KM, Poston L, et al. Nutrition during pregnancy, lactation and early childhood and its implications for maternal and long-term child health: The early nutrition project recommendations. *Ann Nutr Metab.* 2019;74:93-106.
- Schwarzenberg SJ, Georgieff MK. Advocacy for improving nutrition in the first 1000 days to support childhood development and adult health. *Pediatrics.* 2018;141:e20173716.
- Grantham-McGregor S. A review of studies of the effect of severe malnutrition on mental development. *J Nutr.* 1995;125:2233S-38S.
- Pérez-Escamilla R, Buccini GS, Segura-Pérez S, Piwoz E. Perspective: Should exclusive breastfeeding still be recommended for 6 months? *Adv Nutr.* 2019;10:931-43.
- World Health Organization. WHO Guideline for Complementary Feeding of Infants and Young Children 6-23 Months of Age. Geneva: World Health Organization; 2023.
- Young BE, Krebs NF. Complementary feeding: Critical considerations to optimize growth, nutrition, and feeding behavior. *Curr Pediatr Rep.* 2013;1:247-56.

17. Loh W, Tang MLK. The epidemiology of food allergy in the global context. *Int J Environ Res Public Health*. 2018;15:2043.
18. Scarpone R, Kimkool P, Ierodiakonou D, et al. Timing of allergenic food introduction and risk of immunoglobulin E-mediated food allergy: A systematic review and meta-analysis. *JAMA Pediatr*. 2023;177:489-97.
19. Skjerven HO, Lie A, Vettukattil R, et al. Early food intervention and skin emollients to prevent food allergy in young children (PreventADALL): A factorial, multicentre, cluster-randomised trial. *Lancet*. 2022;399:2398-411.
20. Roduit C, Frei R, Depner M, et al. Increased food diversity in the first year of life is inversely associated with allergic diseases. *J Allergy Clin Immunol*. 2014;133:1056-64.
21. Lee J, Shin M, Lee B. Influence of age at complementary food introduction on the development of asthma and atopic dermatitis in Korean children aged 1-3 years. *Clin Exp Pediatr*. 2021;64:408-14.
22. Perkin MR, Logan K, Tseng A, et al. Randomized trial of introduction of allergenic foods in breast-fed infants. *N Engl J Med*. 2016;374:1733-43.
23. Szajewska H, Shamir R, Chmielewska A, et al. Early infant feeding and coeliac disease: Update 2015. *Aliment Pharmacol Ther*. 2015;41:1038-54.
24. Greer FR, Sicherer SH, Burks AW. The effects of early nutritional interventions on the development of atopic disease in infants and children. *Pediatrics*. 2019;143:e20190281.
25. Breen C, Scarpone R, Perkin MR, Boyle RJ. Food allergy prevention: Is earlier complementary food introduction really the optimal approach? *Clin Exp Allergy*. 2025;55:748-51.
26. Usheva N, Galcheva S, Cardon G, et al. Complementary feeding and overweight in European preschoolers: The ToyBox-study. *Nutrients*. 2021;13:1199.
27. Ha EK, Kim JH, Baek HS, et al. Association between complementary food introduction before age 4 months and body mass index at age 5-7 years. *J Hum Nutr Diet*. 2023;36:787-97.
28. Araújo CS, de Farias Costa PR, de Oliveira Queiroz VA, et al. Age of introduction of complementary feeding and overweight in adolescence and adulthood: A systematic review. *Matern Child Nutr*. 2019;15:e12796.
29. EFSA Panel on Nutrition, Novel Foods and Food Allergens (NDA), Castenmiller J, de Henauw S, et al. Appropriate age range for introduction of complementary feeding into an infant's diet. *EFSA J*. 2019;17:e05780.
30. Hacettepe University Institute of Population Studies. 2018 Turkey Demographic and Health Survey. Ankara: Hacettepe University Institute of Population Studies; 2019. Available at: <http://www.hips.hacettepe.edu.tr/eng/tdhs2018/analysis.shtml>
31. European Society for Paediatric Gastroenterology, Hepatology and Nutrition, European Academy of Paediatrics, European Society for Paediatric Research. WHO guideline on the complementary feeding of infants and young children aged 6-23 months 2023: A multisociety response. *J Pediatr Gastroenterol Nutr*. 2024;79:181-88.
32. Joint FAO/WHO Expert Consultation on Human Vitamin and Mineral Requirements. Vitamin and Mineral Requirements in Human Nutrition. 2nd ed. Geneva: World Health Organization; 2005.
33. Koletzko B, Hirsch NL, Jewell JM, et al. National recommendations for infant and young child feeding in the World Health Organization European region. *J Pediatr Gastroenterol Nutr*. 2020;71:672-78.
34. Vossenaar M, Solomons NW. The concept of critical nutrient density in complementary feeding. *Am J Clin Nutr*. 2012;95:859-66.
35. Fernandes C, Martins F, Santos AF, Fernandes M, Verissimo M. Complementary feeding methods: Associations with feeding and emotional responsiveness. *Children (Basel)*. 2023;10:464.
36. D'Auria E, Bergamini M, Staiano A, et al. Baby-led weaning: What a systematic review of the literature adds on. *Ital J Pediatr*. 2018;44:49.