Original Article

Complementary Feeding: Is it Healthy and Adequate? Attitudes, Knowledge and Practices of Families of Rawalpindi

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Abstract

Background: This study examines the factors contributing to inappropriate complementary feeding practices for infants and young children, which can lead to impaired growth, delayed motor and cognitive development, stunting, malnutrition and other nutritional deficiencies.

Objectives: The objectives of this study are to assess the knowledge, attitudes and practices of complementary feeding habits in families of Rawalpindi, to determine demographic variables and child characteristics influencing complementary feeding along with determining whether feeding practices are adequate with a child's health or not.

Materials and Methods: This cross-sectional study was conducted in allied hospitals of Rawalpindi Medical University for six months and a total of 308 mothers with index children between the ages of 4 months and 1 year participated. Convenience sampling was used. Data was collected through a verified self-administered questionnaire or interview-based approach. The data was analyzed through SPSS version 25.

Results: Among 308 study participants, 86.4% mother were housewives and only 13.6% were working women. About two-thirds of the study population correctly stated the recommended time to initiate breastfeeding and nearly two-thirds of the mothers knew the recommended duration for exclusive breastfeeding. The difference in knowledge between the housewives and working women was statistically significant ($p<0.016$).

Conclusion: The current knowledge and practices of complementary feeding are insufficient. To develop a more positive attitude towards complementary feeding it is advisable to organize health education and awareness campaigns.

Keywords: Complementary feeding, Impaired Growth, Delay motor development, Malnutrition, Nutritional deficiencies.

Introduction

The global advancements in child survival are indeed commendable, but a resounding call to fulfill our responsibilities to the youngest generation echoes worldwide. The Millennium Developmental Goals (MDGs) Report 2013 emphasizes the need for additional measures.[1] A pivotal strategy to achieve these goals revolves around improving the practices related to complementary feeding, running in parallel with breastfeeding.[2] In pursuit of this objective, we embarked on a Knowledge, Attitude, and Practices (KAP) study targeting mothers to evaluate the current landscape of breastfeeding and complementary feeding, identifying areas that warrant improvement and potential pathways for enhancing our approach.[2]

Exclusive breastfeeding is an indispensable cornerstone for children's holistic development within their first six months but beyond this exclusive reliance on breastfeeding falls short of fulfilling the nutritional requirements of a child. At this point, introduction of complementary feeding becomes a pivotal contributor to overall child growth and development.[3] According to the World Health Organization (WHO), complementary feeding initiates when breast milk alone is no longer sufficient to meet an infant's nutritional demands, necessitating the introduction of other nourishments.[4] These recommendations, enshrined in the WHO's Infant and Young Children Feeding (IYCF) guidelines, are globally recognized, particularly emphasizing their relevance for middle- and low-income nations, such as those in South Asia, including India, Pakistan, and Bangladesh.[5,6]

A gap in the understanding of infant feeding practices and complementary feeding (CF) within Pakistani households is evident in the literature. The Demographic and Health Survey (DHS) data in Pakistan underscores the suboptimal state of breastfeeding and complementary feeding practices (CFP). Pakistan DHS has recently begun collecting data on all Infant and Young Child Feeding (IYCF) indicators to address the knowledge and practice deficits effectively.[7]

Early childhood growth hinges on adequate nutrition, inadequate nutritional intake during this phase can result in poor nutritional status, with adverse repercussions and even escalated infant mortality and morbidity rates as seen in Pakistan, where, in 2015, the child mortality rate for those under 5 years of age stood at 81 per 1000 live births.[8, 14] The WHO strongly advocates exclusive breastfeeding for the first 4 to 6 months of a child's life. Pakistan's DHS underscores the crucial importance of breastfeeding during the initial six months, as breast milk encompasses vital nutrients such as energy, protein, vitamin A, and iron.[9] However, as children age beyond 6 months, the quality and quantity of breast milk often fall short of meeting their needs.[10,14]

Pakistan grapples with chronic malnutrition, ranking as the third-highest country in terms of malnutrition and under-5 child mortality.[11, 14] According to the Pakistan DHS 2017-18, 23% of children under 5 are underweight, 38% are stunted, and 17% exhibit severe stunting. Additionally, 7% and 2% of children suffer from wasting and severe

wasting, respectively. [12, 14] Malnutrition rates tend to surge between 6 to 18 months, coinciding with the complementary feeding phase. The contributing factors to child malnutrition encompass maternal malnutrition, improper breastfeeding practices, and insufficient complementary feeding practices.[13, 14]

The quality and diversity of a child's diet, as well as the care they receive, are influenced by numerous factors, including the knowledge and beliefs of caregivers, their health, and control over resources, decision-making roles, income, workload, time constraints, and family support. Mothers, in particular, wield a critical role in shaping the nutritional outcomes and growth of their children. A dearth of knowledge among caregivers can result in insufficient feeding practices, underlining the indispensable role of maternal education. In countries like Pakistan, which are still in the process of development, a substantial portion of mothers lacks formal education, creating an awareness gap that leads to a significant number of children under the age of 5 grappling with malnutrition.[15]

Promisingly, interventions designed to enhance maternal knowledge and practices through educational programs have yielded positive outcomes. Educational interventions have led to improved maternal knowledge and enhanced child nutrition practices, as evidenced in both intervention and control groups.[16] Another research endeavor centered on assessing the attitudes and knowledge of mothers concerning food security within the context of complementary feeding for 1 to 2-year-old children. Findings indicated that most mothers possessed a degree of knowledge in this domain. Furthermore, a mother's knowledge of food security was found to be influenced by demographic factors, such as family income, educational level, and maternal occupation.[17]

In light of these considerations, the objectives of this study are to assess the knowledge, attitudes and practices of complementary feeding habits in families of Rawalpindi, to determine demographic variables and child characteristics that influence complementary feeding, and to determine whether child feeding practices are adequate concerning a child's overall health or not.

Materials and Methods

This cross-sectional study was conducted in allied hospitals of Rawalpindi Medical University. The data was collected from mothers bringing their child to vaccine centers of hospitals using convenience sampling. Complementary feeding (CF) was defined as the systematic process of the introduction of suitable food at the right time in addition to the mother's milk to provide needed nutrients to the baby. The mothers having an index child between the ages of 4 months and 1 year were included whereas the infants having any acute illness**,** who were severely malnourished, had congenital birth defects, or were hospitalized at the time of study were excluded. The sample size was calculated using Open EPI version 3.01 which was 267. Data was collected from 308 participants.

A self-structured 41-item questionnaire regarding complementary feeding was used

to assess the knowledge, attitude and practices of mothers. The validity of the questionnaire was checked by the faculty of Community Medicine department and modifications were made accordingly before the start of the study.

Informed consent was taken from all the participants after explaining the title, purpose and objectives of the said research and with the assurance that their confidentiality will be maintained at all costs.

Demographic details of the participants and other data points were collected through a validated self-administered questionnaire. Any incomplete or invalid responses were discarded and given no importance in the calculation of results. Research questionnaire was filled via interview-based approach after taking informed consent and provision of detailed explanations to participants wherever they wanted.

Microsoft Excel and SPSS v.25 were used for data analysis. Quantitative variables were presented as mean and standard deviation. Qualitative variables were presented as frequency and percentage. Chi-square test was used to determine the relationship between demographic variables and knowledge and practices of complementary feeding. 95% confidence level p-value ≤ 0.05 was taken as significant.

Synopsis was submitted in the ethical review board of Rawalpindi Medical University, Rawalpindi and data collection was carried out after the approval from Ethical Review Board of Rawalpindi Medical University, Rawalpindi. Informed consent was taken from all participants. Personal data such as names and contact numbers were kept confidential and will not be disclosed.

Results

A total of 308 mothers participated in the study. The study predominantly featured housewives, with 266 (86.4%) of the participants falling into this category, while a smaller proportion, 42 (13.6%), were working mothers. Approximately 55.5% of mothers were aged between 25 and 30 years. A significant 88% of the women had received some form of education. Furthermore, 225 (73.1%) of the mothers had already raised more than one child, indicating prior experience with childcare and feeding practices. The gender distribution of the index child was fairly even. The median (with interquartile range, IQR) weight of the index child within the sample was 7 (4.13-10) kg. Notably, 63 (20.5%) and 60 (19.5%) of the mothers reported instances of recurrent diarrhea and respiratory infections in their index child, respectively. These detailed characteristics of the study population are summarized in **Table 1.**

Table 1 Demographic Characteristics and Baseline Information

Variable	Frequency	Percentage
Mothers' education		
Illiterate	38	12.3
Primary	88	28.6%
Secondary	11	37.3%
Bachelors	63	20.5%
Others	4	1.3%
Mothers' occupation		
Housewife (a)	266	86.4%
Working women	42	13.6%
Type of delivery		
Vaginal	180	58.4%
C-section	128	41.6%
Mothers age (median, IQR)	27 (25, 30)	
No of children	2 (1,3)	
Index Child characteristics		
Gender		
Male	144	46.8%
Female	164	53.2%
Age in months	7.00(4.13-10)	
Weight index child	7.00 (5.58.12)	
Height index child	61 (20.33-68)	
Child suffers from frequent diarrhea		
Yes	63	20.5%
No	245	(79.5%)
Child suffers from frequent respiratory infections		
Yes	60	19.5%
No	248	80.5%

Around one-third of the study's participants (211, or 68.5%) correctly identified the recommended time to initiate breastfeeding as "soon after birth." Among these, a quarter of the mothers (78, or 25.3%) believed it should start one day after birth. Close to two-thirds of the mothers (198, or 64.3%) accurately stated that the recommended duration for exclusive breastfeeding (EBF) is 6 months. Notably, housewife mothers (177, or 66.5%) exhibited significantly better knowledge in this regard compared to

working women (21, or 50%), with a p-value of 0.038. Mothers with their first child demonstrated notably superior knowledge compared to those with multiple children, with percentages of 75.9% (63 mothers) and 60% (135 mothers) respectively, and a p-value of 0.010. In

the current study, only half of the mothers (170, or 55%) correctly identified that the recommended time to initiate complementary feeding is 6 months. Significant differences emerged based on mother's occupation, with 154 housewives (57.9%) and 16 working women (38.1%) providing the correct response, yielding a p-value of 0.016. Similar discrepancies were observed based on parity, with first-time mothers (67.5%, 63 mothers) outperforming mothers with more than one child (50%, 135 mothers), and a p-value of 0.009.

The majority of mothers (268, or 87.3%) believed that breastfeeding should be continued. Notably, there were significant differences between housewives and working women in this regard. Most of the women in the study reported using homemade products (200, or 64.9%), with a smaller portion using both homemade and commercial products (82, or 26.3%). A small minority (25, or 8.1%) solely used commercial products. Notably, differences were observed based on the mother's occupation, with 179 housewives (67.3%) and 21 working women (50%) preferring homemade products, yielding a p-value of 0.029. The study's data revealed that only half of the mothers were aware that fruits, vegetables, and carbohydrates like bread and rice should be added to complementary feed. Furthermore, only a third of the mothers believed that protein should be included. A notable difference was observed between housewives (157, or 59%) and working women (18, or 42.9%) in favor of fruits and vegetables. Working women and mothers with multiple children favored the inclusion of proteins in complementary feed, with percentages of 23 (54.8%) and 86 (32.3%) and p-values of 0.005 and 0.012, respectively. Approximately one-third (92, or 29.9%) of the mothers believed that sugar and salt should be added to complementary feed. Significant differences were noted among mothers of different age groups, with those above 30 years showing a greater inclination towards adding sugar and salt (44.6%), compared to mothers less than 25 years (18.1%) and those aged 25-30 (29.2%), with a p-value of 0.000. Around one-fifth (64, or 20.8%) of the mothers believed that sweetened beverages should be included in complementary feed. Significant disparities emerged based on mother's age, with mothers above 30 years being more inclined to add sweetened beverages (30.8%), compared to those less than 25 years (9.7%) and those aged 25-30 (21.6%), resulting in a p-value of 0.019. Furthermore, mothers with more than one child were significantly more likely to favor adding sweetened beverages (23.6%) compared to those with only one child (13.3%), with a p-value of 0.020. For a more detailed overview, **Table 2** provides a comprehensive breakdown of the association of maternal sociodemographic characteristics with the mothers' knowledge concerning complementary feeding.

Table 2 Association of maternal sociodemographic characteristics with knowledge and practices

Knowledge/Practice Variable		Frequency	Percentage	p-value
Duration for EBF				
Occupation	housewife	177	66.5%	0.038*
	working	21	50%	
Parity	mother of first child	63	75.9%	0.010*
	mother of multiple children	135	60%	
Time to Initiate Complementary feeding				
Occupation	housewife	154	57.9%	0.016*
	working	16	38.1%	
Parity	first-time mothers	63	67.5%	0.009*
	mother of Multipe children	135	50%	
Using Homemade Products				
Occupation	housewives	179	67.3%	0.029*
	working woman	21	50%	
Inclusion of Proteins in Complementary Feed				
	working women	23	54.8%	0.005*
	mothers of multiple children	86	32.3%	0.012*
Adding Sugar and Salt				
Age	above 30 years	-	44.6%	0.000*
	less than 25 years	-	18.1%	
	aged 25-30	-	29.2%	
Adding Sweetened Beverages				
Age	above 30 years	-	30.8%	0.019*
	less than 25 years	-	9.7%	
	aged 25-30	-	21.6%	
Parity	mothers with more than one child	-	23.6%	0.020*
	mothers with only one child	-	13.3%	

Note. EBF stands for exclusive breast feeding.
*$p<0.05$ is considered statistically significant

A high level of hygiene consciousness was observed among the mothers in the study, with an overwhelming majority of 304(98.7%) ensuring they washed their hands before preparing food for their children. When it came to the choice of water for preparing complementary feed, 138(44.8%) mothers opted for boiled water, 109(35.4%) mothers preferred filtered water, and 60(19.5%) mothers used tap water.

In terms of breastfeeding supplementation, 144(46.8%) mothers included powdered milk in their child's diet, while 115(38.5%) mothers supplemented it with cow milk. When it came to the frequency of complementary feed, the preferences were fairly evenly split, with 132 (42.9%). mothers opting for three times a day and 131(42.5%) mothers choosing twice a day referring to **Table 3.**

Table 3 *Practices Related to Complementary Feeding*

Variable	Frequency	Percentage
Wash hand before making food		
Yes	304	98.7%
No	4	1.3%
Type of water used for complementary feed		
Boiled	138	44.8%
Filter	109	35.4%
Tap	60	19.5%
Any of the above	1	0.3%
Supplement breasts feed with other milk products		
Mother milk	63	20.5%
Cow milk	15	38.5%
Powder milk	144	46.8%
If any other specify	6	1.95
Frequency of complementary feed		
Once a day	26	8.4%
Twice a day	131	42.5%
Thrice a day	132	42.9%
Others	18	5.8%
Type complementary feed used		
Homemade	111	36.0%
Commercial	26	8.4%

Both	156	50.6%
Method to feed child with complementary feed		
Chew and feed the child	52	16.9%
Feed child without chew	51	16.6%
Mashed food	199	64.6%

A substantial majority, approximately 77.6% (239 mothers), expressed high levels of satisfaction with their current practices in this regard. Nearly half of the mothers, specifically 46.8% (144 mothers), indicated that they found it challenging to freshly prepare complementary feed. When it came to selecting specific commercial products, roughly 45.5% (140 mothers) considered the nutritional content, while 40.9% (126 mothers) mentioned they would seek advice from family, friends, and relatives. Furthermore, a substantial majority, approximately 77.6% (239 mothers), expressed high levels of satisfaction with their current practices in this regard as outlined in **Table 4.**

Table 4 Attitudes towards Complementary Feeding

Variable	Frequency	Percentage
Try to find material about complementary feed		
Yes	186	60.4
No	122	39.6
Satisfied with complementary feed practices		
Very satisfied	239	77.6%
Somewhat satisfied	66	21.4%
Not satisfied	2	0.6%
Very dissatisfied	1	.3%
Find it difficult to freshly prepare complementary feed		
Yes	144	46.8%
No	163	52.9%
Price of commercial products bothers you		
Always	98	31.8%
Sometimes	131	42.5%
Not at all	79	25.6%
Child grows well on commercial products		
Yes	118	38.3
No	119	38.6
Don't know	70	22.8

What you look for while purchasing commercial products		
Nutrients	140	45.5%
Child age requirements	102	33.1%
Specific food brands	29	9.4%
Child licking	120	39%
Consult friends and family members	126	40.9%
Consult healthcare workers	86	27.9%

A significant portion of the mothers in the study, comprising 60.4% (186 mothers), expressed their reliance on various sources to acquire knowledge about complementary feeding. The study unveiled that a majority of the participants, around 70.5% (217 mothers), relied on family members for information concerning complementary feeding. In contrast, a relatively lower number of mothers turned to media (30.2%, 93 mothers) and health professionals (31.5%, 97 mothers) for guidance on this topic with reference to **Table 5.**

Table 5 Source of Knowledge

Variables	**Frequency**	**Percentage**
Health Professional		
Yes	97	31.5%
No	18	5.8%
Media		
Yes	93	30.2%
No	25	8.1%
Family		
Yes	217	70.5%
No	11	3.6%
Relatives		
Yes	93	30.2%
No	23	7.5%
Other		
Yes	6	1.9%
No	31	10.1%

Discussion

In this study we investigated mothers' attitude and knowledge regarding complementary feeding. In addition, we also investigated the complementary feeding practices and the determinants of adequate diet among children aged 4-12 months. The current study population predominantly comprising housewives and young mothers, specifically those who have previously borne children. Notably, approximately one-fifth of the mothers reported instances of both diarrhea and respiratory infections in their index children.

Within our sampled population, a substantial proportion, accounting for 55.5%, fell within the age bracket of 25-30 years. Moreover, a noteworthy 68.5% of mothers asserted that the optimal time for commencing breastfeeding is immediately postpartum. This observation aligns closely with a study conducted in Nepal, where 49.2% of mothers fell within the age range of 26-30 years, and 60.4% exhibited awareness that breastfeeding initiation should occur promptly after birth.[18]

However, concerning the introduction of complementary feeding, only half of the participating mothers correctly identified the appropriate time as after six months. This percentage was notably lower than findings in an African study, where 72% of mothers accurately recognized the recommended initiation period for complementary feeding.[19] Moreover, and our investigation revealed that merely 50% of the participants commenced weaning at the recommended six- month mark. Alarmingly, 36% initiated weaning during the fourth and fifth months, a practice that deviates from the recommended guidelines. In a study conducted in the United Arab Emirates (UAE), 27.8% of women initiated weaning before the stipulated six-month period.[20]

Adherence to established feeding guidelines is imperative, as they uniformly discourage the initiation of complementary feeding before the age of 4 months, emphasizing the inherent association with substantial health risks. [4, 21, 22] Within the context of this investigation, it was observed that around 50% of the children underwent the commencement of complementary feeding before reaching the age of 6 months. However, due to the absence of precise information regarding the exact age of introduction, a comprehensive assessment of the potential associated risks remains elusive.[20] A majority of children aged six months and above in the study were found to receive a minimum of two recommended basic food groups. Concurrently, however, a subset of these children had already been introduced to sweetened foods, primarily in the form of snacks.[20]

In accordance with guidelines from the World Health Organization (WHO), the introduction of a diverse range of animal proteins from the age of six months is recommended to mitigate the risk of iron deficiency. [23] Nevertheless, in this study, it was observed that 56.8% of children were given fruits and vegetables, 55.8% received carbohydrates in the form of potatoes and bread, and 35.4% were exposed to animal protein.

Although infants exhibit an innate preference for sweet tastes, the WHO emphasizes that repeated exposure to novel foods enhances the acceptance of diverse flavors, thereby contributing to the development of new preferences.[24] Conversely, early exposure to energy- dense foods with high sugar content in infancy may lead to a reduced intake of nutrient-dense foods, thereby negatively impacting growth. [25] Additionally, early exposure to sugar-containing foods during infancy has been linked to a heightened incidence of dental caries among preschoolers.[26] Notably, approximately one-fifth of infants in this study were exposed to sugar- containing foods from a very young age, a prevalence lower than reported in a UAE study where 52% of children were exposed to sweetened beverages. While these findings deviate from established recommendations, similar outcomes have been reported elsewhere. [26] It is plausible that the cumulative effect of a diminished intake of animal protein and early exposure to sweet foods and beverages contributes to the observed high prevalence of iron deficiency, abnormal growth, and dental caries.

On the hygiene front, a reassuring 98.6% of mothers in our study reported the practice of hand washing before preparing feeds. Notably, 44.8% of mothers opted to boil water for this purpose, while a concerning 19.5% used regular tap water. It is noteworthy that these hygiene practices are comparable to those observed in a Karachi-based study in Pakistan, where 92% of mothers practiced hand washing, and 71.7% refrained from boiling drinking water. [27]

It is clear that there is a need for targeted educational interventions and awareness campaigns to address these gaps in knowledge and practices. Such efforts can focus on disseminating accurate information about the timing and content of complementary feeds, emphasizing the importance of fresh food preparation, and ensuring safe water sources for food preparation. Furthermore, empowering mothers with knowledge is vital, as they play a pivotal role in shaping the nutritional outcomes and growth of their children. While our study provides valuable insights into the knowledge, attitudes, and practices of mothers regarding complementary feeding, it is essential to acknowledge its limitations. The study might be limited by its sample size and the specific demographic characteristics of the participants. The findings may not be fully representative of the broader population, making it challenging to generalize the results to a larger context. The study may not have explored all factors influencing complementary feeding comprehensively.

Important variables, such as socioeconomic status, cultural beliefs, and access to healthcare, might not have been thoroughly examined, potentially missing crucial aspects of the issue. The study's lack of longitudinal data restricts the ability to assess changes in knowledge and practices over an extended period, hindering the understanding of long-term trend.

Conclusion

In conclusion, our study has shed light on the knowledge, attitudes, and practices of mothers concerning complementary feeding for their infants. The findings reveal a mix of strengths and areas that require attention and improvement within this crucial aspect of infant nutrition. On a positive note, a significant proportion of mothers demonstrated strong awareness of key elements, such as the importance of hand washing before food preparation and the initiation of breastfeeding soon after birth. Moreover, a substantial majority expressed satisfaction with their current feeding practices. However, challenges exist, particularly in terms of the knowledge and practices related to complementary feeding. A notable portion of mothers exhibited uncertainty about the recommended timing for introducing complementary foods and the variety of nutrients to include. Additionally, a significant proportion faced difficulties in preparing fresh complementary feeds, while some opted for powdered or cow milk as supplements.

The study also highlights the prominent role of family members as sources of information on complementary feeding, suggesting that involving and educating family networks can be an effective strategy for enhancing child nutrition. Additionally, health professionals and the media could play a more substantial role in providing guidance and disseminating accurate information to mothers.

In the pursuit of improved child health and nutrition, our research underscores the importance of comprehensive educational programs and support systems. By addressing these knowledge gaps and promoting optimal feeding practices, we can take significant strides toward ensuring the healthy growth and development of the youngest generation

References

1. Jain S, Thapar RK, Gupta RK. Complete coverage and covering completely: breast feeding and complementary feeding: knowledge, attitude, and practices of mothers. Med J Armed Forces India. 2018 Jan;74(1):28-32.
2. Kaleem R, Adnan M, Naveed S, Rahat T. Association of mothers' socio-demographic characteristics with their knowledge and practices about complementary feeding. J Fatima Jinnah Med Univ. 2018;12(2):76-80.
3. World Health Organization. Appropriate complementary feeding [Internet]. Geneva: WHO; [cited 2016 Oct 1]. Available from: http://www.who.int/elena/titles/complementary_feeding/en/
4. UNICEF. Programming guide on infant and young child feeding [Internet]. New York: UNICEF; 2011 [cited 2018 Jun 1]. Available from: https://www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf
5. Manikam L, Lingam R, Lever I, Alexander EC, Amadi C, Milner Y, et al. Complementary feeding practices for South Asian young children living in high-income countries: a systematic review. Nutrients. 2018 Nov 5;10(11):1676.
6. Manikam L, Sharmila A, Dharmaratnam A, Alexander EC, Kuah JY, Prasad A, et al. Systematic review of infant and young child complementary feeding practices in South Asian families: the Pakistan perspective. Public Health Nutr. 2018 Mar;21(4):655-68.
7. Younes L, Houweling TAJ, Azad K, Kuddus A, Shaha S, Haq B, Nahar T, Hossen M, Beard J, Copas A, Prost A, Fottrell E. The effect of participatory women's groups on infant feeding and child health knowledge, behaviour and outcomes in rural Bangladesh: a controlled before-and-after study. J Epidemiol Community Health.

2015;69(4):374-81.
8. Aisha R, Batool F, Sultana S. Knowledge, attitude and practices about colostrum feeding among pregnant women in military hospital Rawalpindi of Pakistan. Open J Nurs. 2016 Apr 19;6(4):309-15.
9. Issaka AI, Agho KE, Burns P, Page A, Dibley MJ. Determinants of inadequate complementary feeding practices among children aged 6–23 months in Ghana. Public Health Nutr. 2015 Mar;18(4):669-78.
10. Jamil M, Khanum A, Omer MT, Hamid MH, Zafar Iqbal Bhatti, Khurram Nawaz, Muhammad Ali, et al. Knowledge, attitude and breastfeeding practices of mothers of infants: an experience from a tertiary care hospital in Lahore. Proc SZPGMI. 2018;32(3):1-7.
11. Aziz A, Pervaiz M, Khalid A, Khan AZ, Rafique G. Dietary practices of school children in Sindh, Pakistan. Nutr Health. 2018 Dec;24(4):231-40.
12. Zakar R, Zakar MZ, Zaheer L, Fischer F. Exploring parental perceptions and knowledge regarding breastfeeding practices in Rajanpur, Punjab Province, Pakistan. Int Breastfeed J. [Year & volume unavailable].
13. Bhatti ZI, Nawaz K, Ali M. Impact of nutritional education on feeding related knowledge and practices among mothers of under-5 years children. Religion. 2020;35(39):10.
14. Imdad A, Lassi Z, Salaam R, Bhutta ZA. Prenatal nutrition and nutrition in pregnancy: effects on long-term growth and development. In: Preedy VR, Patel VB, editors. Early Nutrition and Long-Term Health. Cambridge (MA): Woodhead Publishing; 2017. p. 3-24.
15. Das JK, Salam RA, Imdad A, Bhutta ZA. Infant and young child growth. In: Black RE, Laxminarayan R, Temmerman M, Walker N, editors. Reproductive, Maternal, Newborn, and Child Health. Washington (DC): World Bank; 2015. p. 225-42.
16. Jain S, Thapar RK, Gupta RK. Complete coverage and covering completely: breast feeding and complementary feeding: knowledge, attitude, and practices of mothers. Med J Armed Forces India. 2018 Jan;74(1):28-32. (Duplicate of reference 1)
17. Shrestha S, Pokhrel M, Mathema S. Knowledge, attitude and practices among mothers of children 6 to 24 months of age regarding complementary feeding. JNMA J Nepal Med Assoc. 2020 Oct;58(230):758-63.
18. Bimpong KA, Cheyuo EK, Abdul-Mumin A, Ayanore MA, Kubuga CK, Mogre V. Mothers' knowledge and attitudes regarding child feeding recommendations, complementary feeding practices and determinants of adequate diet. BMC Nutr. 2020 Dec;6:1-8.
19. Taha Z, Garemo M, Nanda J. Complementary feeding practices among infants and young children in Abu Dhabi, United Arab Emirates. BMC Public Health. 2020 Dec;20:1-8.
20. Fewtrell M, Bronsky J, Campoy C, Domellöf M, Embleton N, Fidler M, et al. Complementary feeding: a position paper by the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) Committee on Nutrition. J Pediatr Gastroenterol Nutr. 2017 Jan;64(1):119-32.
21. American Academy of Pediatrics. Recommendations for complementary feeding [Internet]. Pediatrics. 2000;106(Suppl 4):1274.1.
22. World Health Organization. Complementary feeding counselling: a training course. Washington (DC): WHO; 2004.
23. Ventura AK, Worobey J. Early influences on the development of food preferences. Curr Biol. 2013 May 6;23(9):R401-8.
24. Smithers LG, Brazionis L, Golley RK, Mittinty MN, Northstone K, Emmett P, et al. Dietary patterns of infants and toddlers are associated with nutrient intakes. Nutrients. 2012 Aug;4(8):935-48.
25. Siega-Riz AM, Deming DM, Reidy KC, Fox MK, Condon E, Briefel RR. Food consumption patterns of infants and toddlers: where are we now? J Am Diet Assoc. 2010 Dec;110(12 Suppl):S38-51.
26. Mohsin SS, Shaikh AS, Shaikh R, Haider N, Parkash A. Knowledge, attitude and practice of mothers regarding complementary feeding. J Dow Univ Health Sci. 2014;8(1):21-5.