

Exploring Dietary Practices, Perceptions and Knowledge of Mothers of Toddlers visiting Primary Care Physicians

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Abstract

Background: Mother is responsible for upbringing of infants and children as she decides their health and food.

Objective: To assess the mother's beliefs and practices related to foods like bananas, dates, rice, eggs, ghee, butter, and factors influencing these practices.

Methodology: A cross-sectional study was conducted between December 2020 and March 2021 among mothers of young children (up to 3 years of age). Responses were collected through interviews. Data were collected from primary health centers (Nainsukh, Gajjumata) and OPD of Fatima Memorial Hospital, Lahore, PHCs Mubarakabad, and Nehranwalaa, district Okara. Questionnaire included information, about the diet given to children such as weaning foods introduced at 6 months and food items consumed by kids up until the age of 3 years. Data were analyzed using SPSS 25.

Results: Out of 333 mothers overall 239 (72%) mothers fed, carbohydrate rich diet as part of weaning, 81% of these mothers were educated up to school level ($p=0.001$). Bananas were avoided by 100% of mothers who had no education ($p=0.000$) due to their perception that their use is linked to increased risk of mucous and chest problems in child. Similarly, eggs were not introduced in children due to misconception that it causes skin rash, fever, or loose stools, with 96% of mothers with no education, 98% with school education, and 42% with higher education ($p=0.000$). Similar trends were use of dates ($p=0.00$), rice ($p=0.02$), and butter ($p=0.002$) among mothers in the 3 educational groups.

Conclusion: Majority of the mothers used a carbohydrate-rich diet as weaning food, and most of these mothers were educated. Majority of the uneducated mothers avoided bananas, eggs, dates, rice, and butter due to misconceptions.

Keywords: Elderly Influence, Maternal Education, Maternal food choice, Weaning food, Misconceptions, Food item.

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Introduction

Malnutrition, a non-communicable disease (NCD) is a pathological state of having deficiencies, excesses, or imbalances in a person's intake of nutrients. An underweight child may be stunted, wasted, or both.¹ 'Wasting' is defined as low weight for height whereas 'stunting' refers to low height for age. Children with low weight for age are known as 'underweight'. 'Overweight' and 'obesity' refers to having weight in excess of height, mainly related to intake of high-calorie foods accompanied with negligible physical activity. Such individuals can be malnourished too if the food they are consuming lacks essential nutrients.¹ The findings of joint child malnutrition estimates (JME) showed 149.2 million children under 5 globally in 2020, were stunted, 59

million were underweight, 45.4 million were wasted and 39 million were over-weight.² Factors affecting the earlier introduction of complementary feed (CF) i.e., before completing 4 months include younger maternal age, mothers' educational level (lower), babies who are never breastfed, preterm babies, and those who received infant formula milk.³ Among the number of factors contributing to persistently high rates of stunting in Uganda, one was the lack of introduction of complementary feeding at the appropriate age.⁴ In places where lack of food availability was not an issue suboptimal CF practices particularly in relation to the choice of food items were observed due to poor maternal knowledge.⁵ Global estimates of feeding practices revealed that approximately one-third of infants of

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age 4-5 months are already fed solid food, whereas 28.2% children age 6-23 months receive minimally varied diet. Cultural factors and poor knowledge of the primary caregivers are found to be important determinants of inadequate complementary feeding (CF) in even the richest of households.⁶ If mothers do not have knowledge about a healthy balanced diet or if they perceive healthy food as harmful, they will not incorporate these food items into their child's regular diet even if they are easily available locally.⁷ Various surveys have been conducted in parts of the world to address challenges in managing malnutrition, including anemia which affects 42% of children under 5 globally. One such study investigated maternal perceptions relating to causes, clinical features, and prevention of anemia identified that a higher maternal knowledge score about childhood anemia was associated with higher maternal educational status and parity.⁸ Wide variation in the timing of the introduction of solids and liquids to infants' diet has been noted across the globe. Despite continuous implementation and promotion of national guidelines on infant feeding in developed countries like Australia, 50% of mothers who were aware of these recommendations were struggling to start solid foods at around 6 months of age, barriers being their perception, peer pressure, conflicting and competing advice from more experienced family members and in presence of above caregiver not sure what weightage to give to the national recommendations.⁹ Likewise, 46% of mothers in a study from Turkey enrolling 1486 mothers and children aged 12-23 months, started complementary feed before 6 months of age.¹⁰ Pakistan's demographic and health survey 2012-2013, from 489 communities showed the introduction of solids, semi-solids, and soft foods were achieved at 6-8 months in 67% of infants where only 22% aged 6-23 months were meeting minimum dietary diversity (MDD). Timely introduction of semi-solid food, minimum meal frequency, dietary diversity, and acceptable diet criteria was analyzed it was found that there was inadequate consumption of fresh fruits and vegetables, legumes, and vitamin A rich foods in all age groups.¹¹ In the subcontinent there are many misconceptions regarding childcare, these misconceptions are influenced by cultural traditions and beliefs. Mother's education about child care plays an important role in fulfilling the

growth requirements of infants and young children.¹² Nutrition plays a vital role in infants' and young children's mental, physical and cognitive development. This survey aims to know about barriers to maternal and child healthy feeding practices and to know how prevalent food-related myths and beliefs are among young mothers in our population. The misconceptions about some specific foods like eggs, bananas, ghee, and dates result in children being deprived of some highly nutritious and affordable food items. This study was planned to assess the mother's beliefs and practices related to foods like bananas, dates, rice, eggs, ghee, and butter, and the role of factors such as maternal education and the influence of elders affecting these practices.

Methodology

A cross-sectional study using a questionnaire specially designed for this purpose, in both English and Urdu languages, was used. Preliminary piloting and validation of the questionnaire were carried out to fine-tune the questions and responses. At places where the population was unable to read or write an educated person (locally) identified and trained to assist mothers in responding to questions. The survey was conducted between December 2020 and March 2021 among mothers of young children (up to 3 years of age) following participant's consent (both verbal and written). Responses were collected through face-to-face interviews, phone calls, and via online questionnaire (due to COVID19). Data was collected from these primary and secondary health care centres based in urban and peri-urban settings. Two remote villages were also identified to collect data. Nainsukh PHC under the management of Fatima Memorial Hospital Lahore, Gajjumata PHC running in collaboration with Fatima Memorial Hospital Lahore, Fatima Memorial Hospital OPD, Mubarakabad, Depalpur, Okara, Nehranwala, Depalpur, Okara. As per WHO the recommended age of weaning is 6 months. In terms of education, we classified someone as "uneducated" if he/she has not been to school at all. If someone has attended up to grade 5 in school is considered as having "primary" education, whereas anyone above that, up to 12th grade was considered as having "secondary" education". Those with qualifications from college and universities above 12th standard were classed as "higher".

Questionnaire: The questionnaire was composed of

4 parts as follows: (1) Socio-demographic characteristics, (2) Mothers feeding practices (3) maternal knowledge relating to the use of certain food items (4) Mothers perception about various foods given to infants and toddlers. The questionnaire included nine practice-related questions, one knowledge-related question, and six perception-related questions. If the participant's responses matched the defined criteria; a score of 1 was given while any other response was given a score of 0. In response to weaning foods consumed by the child different food groups were arranged together for example carbohydrate-rich foods: cerelac, sago pudding, bread, rice, mashed potatoes, porridge, rusk, biscuits were in one group, fruit and vegetables were in another and protein-rich foods: dal, egg, chicken, minced meat formed the 3rd group. If certain foods from that group were included in the child's diet the score of 1 was given and if not then the score was 0. If there were elders (grandparents /others) at home advising about child nutrition score was 1 and if not score was 0.

Different child nutrition-related advice given by the elderly were given different scores e.g. advice to discard the colostrum and not feed it to the baby was scored as 0; advice to breastfeed the child was scored as 1; don't feed the child banana in the winter season was scored as 2; advice to feed the child cerelac, rice, porridge, etc was scored as 3; advice not to feed the child eggs in summer season was scored as 4; feed the child cow's milk was scored as 5; advice to start weaning at age lesser than 6 months was scored as 7; feed the child tea plus other miscellaneous advises were scored as 8. Whereas if the mothers introduced weaning food at age 6 months score was 1 if weaning was delayed beyond 6 months score was 2 and if weaning was started earlier than 6 months then a score of 0 was assigned in SPSS. Questions about specific food items were asked including banana, eggs, rice, dates, butter, and ghee or clarified butter each one was scored separately as; If fed the baby all year round the score was 1; If fed it to the baby only in a particular season and avoided rest of the year the score was 0. Knowledge-related questions were if the mother knew the age of weaning was 6 months? Score 1 for "yes" and 0 for "no". The perception-related questions were

included to identify if mothers were avoiding the use of certain foods due to myths attached to them. If the caregiver did not feed the child one of the selected food items due to perception or myth it was scored as 0 and if she was feeding it then a score of 1 was given. A score of 1 was also given if the parent did not have a perception about that food but were unable to add that in the child's diet due to inability to afford it. Perceptions identified were as follows; Bananas cause chest infection, cough, sputum, etc in winters; Eggs cause heat, fever, rash, diarrhea, itching in the summer months; Dates should not be fed to the child because they cause heat, skin rashes in summers; Use of rice can lead to a chest infection in winter months and diarrhea in summers; Use of butter in winter can lead to chest infection; Use of ghee in summers is harmful because it causes heat, allergy, hepatitis and is difficult to digest by a child in winters ghee causes sore throat.

Sample size: The sample size was 333, calculated based on the confidence interval of 95%, and a sample size calculator called Raosoft was used to calculate the sample size.

Inclusion criteria: Mothers who had one or more children of age 3 years and younger.

Exclusion criteria: Children with cleft palate and cleft lip resulting in difficulty in feeding. Mothers of twins were excluded to eliminate recall bias. Children with health issues needing a special diet were also excluded.

Statistical Analysis: Data were analyzed by chi-square using SPSS 25.

Ethical consideration: Ethical clearance was obtained from the Institutional Review Board (IRB) of Fatima Memorial Hospital, IRB number FMH-11-2020-IRB-834-M

Results

A total of 333 mothers with one or more children up to 3 years of age were interviewed. Maternal age ranged from 19-41 years (mean 28 years) whereas ages of children ranged from 4-36 months (mean 14.5 months). Out of the total, 172 (52%) were males and 161 (48%) children were females and 254 (76%) mothers were homemakers while 79 (24%) were working women. Most fathers were earning; 119 (36%) were self-employed, 110 (33%) were employed, 101 (30%) worked as a laborer or in a factory while a minority were jobless 3 (0.9%). In terms of the level of education of fathers, they were

broadly categorized into unschooled 64 (19%), those who had received education up to primary or secondary level 159 (49%), and those who had higher education 110 (32%). Similarly, mothers who never attended school 59 (18%), those who attended primary or secondary school 156 (47%), and mothers who received higher education 118 (35%). Monthly household incomes income ranges were Rs< 20,000 per month in 95 (28%) respondents, those with earnings between Rs. 20,000-49,000 per month 136 (41%), then those with Rs. 50,000-99,000/month were 29 (9%) while Rs. 100,000 /month and above income households were 73 (22%). Out of the total, 239 (72%) of the families owned their homes whereas 94 (28%) lived in rented property. In terms of having personal transport, 228 (69%) owned one while 105 (31%) used public transport. A total of 123 participants (37%) were urban dwellers, 194 (58%) lived in peri-urban settings while 15 (5%)

study population were residents of rural areas.

On enquiring if the elders in family had an influence on the dietary intake of the grandchild, 68% mothers (226) responded 'yes' while 32% (107) mothers stated no such influence; 68% (226) mothers stated their decision to select food was influenced by the grandparent, mothers with college or university qualification (81%) were more influenced compared to those who attend school (65%) or were uneducated 49% ($p=0.000$). Of the 226, 154 (68%) mothers knew the accurate age of introducing semi-solid food at the recommended age of 6months ($p=0.02$). Carbohydrate-rich foods remained commonly consumed weaning food with 239 mothers using it, 70% in the uneducated class, 81% of those who attended school, and 60% of highly qualified ones ($p=0.001$). Of the 21 mothers who opted for protein-rich weaning foods, 60% belonged to the educational group that attended college or university ($p=0.7$). Highly qualified mothers appear

Table-I: Maternal Education, Elderly influence, Common food misconceptions and Practices

Variables	Maternal education			P-value	
	No Edu.	School Edu.	Coll/Univ deg.		
Elderly influence on a child's diet					
Yes [226/333 (68%)]	29 (49%)	101 (65%)	96 (81%)	0.000	
No [107/333 (32%)]	30 (51%)	55 (35%)	22 (19%)		
Age of introduction of weaning					
= 6 months	18 (31%)	39 (25%)	33 (28%)	0.5	
At 6 months	26 (44%)	73 (47%)	44 (37%)		
> 6 months	15 (25%)	44 (28%)	41 (35%)		
Type of weaning food					
Predominantly carbohydrates	41 (70%)	127 (81%)	71 (60%)	0.001	
Predominantly proteins	4 (7%)	8 (5%)	9 (60%)	0.7	
Fruits and vegetables	21 (36%)	61 (39%)	54 (46%)	0.35	
Tea/biscuits	0 (0%)	8 (5%)	4 (3%)	0.19	
Specific food items not used by caregivers and reasons given by them					
Food item	Reason	No education	School education	College/University degree	P-value
Banana	Increased risk of chest infection, cough, and mucous formation in winters	25 (100%)	73 (94%)	26 (77%)	0.000
	lack of availability or affordability	0 (0%)	5 (6%)	8 (24%)	
Eggs	Rash, fever, loose motions in summers	23 (96%)	43 (98%)	11 (42%)	0.000
	Lack of availability or affordability	1 (4%)	1 (2%)	15 (58%)	
Dates	Rash, fever in summer/Not suitable food for a young child	13 (93%)	11 (39%)	12 (24%)	0.000
	Lack of availability or affordability	1 (7%)	17 (61%)	39 (76%)	
Rice	Chest infection in winters/ lose motions in summers	6 (100%)	8 (100%)	1 (50%)	0.02
	Lack of availability or affordability	0 (0%)	0 (0%)	1 (50%)	
Ghee	Fever, skin rash, and jaundice in summers/chest infection in winters	6 (55%)	15 (75%)	12 (71%)	0.5
	Lack of availability or affordability	5 (46%)	5 (25%)	5 (29%)	
Butter	Chest infection/expectoration in winters	10 (67%)	16 (59%)	3 (15%)	0.002
	Lack of availability or affordability	5 (33%)	11 (41%)	17 (85%)	

to use more fruits and vegetables at 6months compared to their peers (46%, $p=0.35$) as seen in table-I.

On exploring reasons for not using certain food items, bananas were avoided by caregivers mainly due to the risk of the child having mucous and chest problems, such misconceptions were seen predominantly in mothers who received no education or had school education only (100%, 94%) compared to those with college or university degree (77%) ($p=0.000$) table-I. Similarly, eggs

were not introduced in infants or older child's food due to the risk of developing skin rash, fever, or loose stools by 93% and 98% of mothers who had no education at all or attended school education in contrast to 42% mothers who attended higher education ($p=0.000$). Almost identical patterns were observed in all three educational classes of mothers in the use of dates ($p=0.00$), rice ($p=0.02$), and butter ($p=0.002$). It was interesting to note that with the exception of ghee, food affordability as the reason for not including food items in child diet was a

Table II: Use of six Food items all year round by Mothers of various Educational Status

Specific food items used all year round					
Food item	Elderly influence	Mothers with no education	Mothers with School education only	Mothers with College/University degree	P-value
Bananas	Yes	30 (51%)	77 (49%)	81 (69%)	0.004
	No	29 (49%)	79 (51%)	37 (31%)	
Eggs	Yes	22 (37%)	101 (65%)	90 (76%)	0.000
	No	37 (63%)	55 (35%)	28 (24%)	
Dates	Yes	38 (64%)	110 (71%)	65 (55%)	0.03
	No	21 (36%)	46 (30%)	53 (45%)	
Rice	Yes	46 (78%)	140 (90%)	111 (94%)	0.005
	No	13 (22%)	16 (10%)	7 (6%)	
Butter	Yes	35 (59%)	117 (75%)	92 (78%)	0.024
	No	24 (41%)	39 (25%)	26 (22%)	
Ghee	Yes	41 (70%)	125 (80%)	93 (79%)	0.23
	No	18 (30%)	31 (20%)	25 (21%)	

Table III: Elderly Influence on Parent's Food Choice for their Children

Elders influencing children's food intake			
	Yes	No	P-value
Elderly influence	226 (68%)	107 (32%)	
Age of weaning			
< 6 months	57 (25%)	33 (31%)	0.5
6 months	101 (45%)	42 (39%)	
>6 months	68 (30%)	32 (30%)	
Mothers' knowledge of correct age of weaning			
	154 (68%)	72 (32%)	0.02
Choice of weaning food			
Tea Biscuits	10 (4%)	216 (96%)	0.24
Predominantly carbs	168 (74%)	58 (26%)	0.13
Predominantly proteins	14 (6%)	212 (94%)	0.9
Fruits and vegetables	87 (39%)	139 (62%)	0.2
Specific food items used all year round			
Bananas	138 (61%)	88 (39%)	0.01
Eggs	144 (64%)	82 (36%)	0.89
Dates	131 (58%)	95 (42)	0.001
Rice	198 (88%)	28 (12%)	0.18
Butter	166 (74%)	60 (26%)	0.9
Ghee	174 (77%)	52 (23%)	0.6

Specific food items not used by caregivers all year round				
	Reason	Elderly influence present	No elderly influence	P-value
Banana	Increased chest infection, cough, and mucous formation in winters	73 (86%)	52 (98%)	0.017
	Lack of availability or affordability	12 (14%)	1 (2%)	
Eggs	Rash, fever, loose motions in summers	50 (77%)	29 (94%)	0.046
	Lack of availability or affordability	15 (23%)	2 (6%)	
Dates	Rash, fever in summer/ Not suitable food for a young child	26 (35%)	10 (56%)	0.1
	Lack of availability or affordability	49 (65%)	49 (65%)	
Rice	Chest infection in winters/ lose motions in summers	12 (92%)	3 (100%)	0.6
	Lack of availability or affordability	1 (8%)	0 (0%)	
Ghee	Fever, skin rash, and jaundice in summers /chest infection in winters	23 (68%)	10 (71%)	0.79
	Lack of availability or affordability	11 (32%)	4(29%)	
Butter	Chest infection /expectoration in winters	18 (43%)	11 (55%)	0.3
	Lack of availability or affordability	24 (57%)	9 (45%)	

concern mainly raised by mothers with higher education compared to their counterparts. Consumption of bananas, eggs, rice, and butter all year round, was noted more among children belonging to mothers with higher qualifications (banana $p=0.004$, eggs $p=0.000$, rice $p=0.005$, butter $p=0.024$) (Table-II) compared to their fellows. It was identified that bananas and dates were included in the child's diet all year round where the mother's choice was affected by older members of the family. ($p=0.01$ & 0.001 respectively) (Table-III).

Discussion

Two-third of our respondents reported the choice of food for their kids was affected by grandparents or other elders in the house. These findings are similar to one from rural Baluchistan¹³ in pointing out that the aged members of the family are considered as an authority in the choice of food for their grand-child regardless of what is considered nutritionally healthy for the child. We identified inadequate utilization of food resources due to lack of knowledge or because of misbelief despite the fact that parents had access to foodstuffs and were able to afford it too. The introduction of complementary feed was either early or late in 57% of cases in our study, the type of weaning food was predominantly carbohydrates in 72% whereas fruits and vegetables

were used by 41% of mothers. Deficient use of iron-rich foods was observed. Although studies have shown that higher levels of maternal education are associated with reduced undernutrition in young children, an argument that informal education on health and nutrition can also help those mothers who are unable to receive higher education, to gain knowledge which in turn improves practices.¹⁴ Furthermore, higher maternal education led to a better understanding of pediatric anemia, which affects more than half of pre-school children in developing countries.¹⁵ Community-based interventions to promote maternal health education can be cost-effective and can be used long term. Even in underprivileged areas, with a high ratio of poverty and malnutrition, a structured community-based intervention in areas of food economics, healthy diet, and food safety can have successful outcome.¹⁶ Maternal education during the antenatal period in rural Bangladesh led to minimal improvement in timely initiation of CF indicating factors other than maternal knowledge play a role in timely introduction of solids and liquids.¹⁷ Evaluation of complementary feeding practices in a study from Abu Dhabi revealed more consumption of sugar-rich foods, was attributed to poor maternal knowledge rather than availability of food.¹⁸ Keeping in view these observations, it may be prudent to focus on improving the household's

nutritional knowledge including elderly members of the family rather than solely focusing on caregivers. Baby-led weaning, a concept already well-established in the west can be considered as a way to start solids in infants' diet. The baby-led weaning approach is useful for making infants independent using the self-feeding process¹⁹ it is also associated with higher levels of confidence in giving complementary feed by mothers.²⁰ Information on nutritional advantages of foods like banana, eggs, rice, dates, ghee, and butter must be introduced to mothers which will, in turn, promote inclusion of these items in infants and toddlers' diets. The Islamic Republic of Pakistan is among the countries in the world with the highest rates of child malnutrition (stunting 38% wasting 15% and underweight 31%) and its progress in child nutrition and health remained slower than in other South Asian countries.²¹ The survey was not only used as a tool to collect information but also for the education of mothers, a unique feature of this study, a follow-up of the same cohort in 3-6 months can reveal changes in mothers' knowledge gap and perceptions.

Conclusion

This study showed that the majority of the mothers used a carbohydrate-rich diet as weaning food, and most of these mothers were educated. The majority of the uneducated mothers avoided bananas, eggs, dates, rice, and butter due to misconceptions.

Authors Contribution: **KAA:** Conception of work, Acquisition and analysis of data and Revising. **HJ:** Design of work, Interpretation of data and Drafting. **MS:** Design of work and drafting. **ZUH:** Acquisition and analysis of data and revising. **BN:** Conception of work and drafting. **HA:** Design of work and drafting.

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