

## Picky Eating among Preschool Age Children in Baghdad Province

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### Abstract

**Background:** Picky eating is a common problem among children and estimated to be quite high in the preschool age with nearly 14-50% were identified as picky eaters by their parents or caregivers. Picky eating among preschool children in its current available concept is relatively new issue and is understudied worldwide especially in developing countries. However, mother's knowledge plays an important role in the nutritional status of their preschool children. As a result, the prevalence of picky eating among preschool children is expected to be high, resulting in a significant impact on growth, development and future health status of individuals and the community as a whole.

**Objective:** To determine the prevalence of picky eating among preschool children.

**Methodology:** A descriptive cross-sectional study conducted among 1002 preschool children (one to 5 years old) attending kindergarten in both sides of Baghdad City (Al-Karkh & Al-Russafa) chosen by a randomized multi-stage cluster sampling method. The researcher interviewed children mothers by taking full history according to questionnaire. Questionnaire was prepared in three parts covering the socio-demographic data, enquiring about children eating habits, and behavior of the parents in assist eating using facilities. The data collection has been achieved in a period between 1<sup>st</sup> of November 2021 till 31<sup>st</sup> of March 2022.

**Result:** Results revealed a prevalence of picky child of 57.5%, and those who were picky sometimes of 17.1%.

**Conclusion:** Picky eating behavior is a prevalent problem in pre-school children requiring a comprehensive program for parents, caregiver, and community to be aware of this eating behavior among their children with including the topic of picky eating behavior as main section in the curriculum of medical, nursery, and psychology colleges to raise medical care provider awareness about it.

**Keywords:** children; picky eating; health professional

### INTRODUCTION

Children undergo essential developmental changes between toddlerhood and early school years<sup>(1)</sup>. One of these changes is that preschoolers have a consistent daily routine including regular mealtimes. Suitable foods should be provided at mealtimes and it is up to the child to eat what he prefers<sup>(2)</sup>. Around the world, more than 200 million below 5 years old children fail to reach their expectable development in different aspects due to poverty, poor health and nutrition, and deficient care. The first few years of the human life play characteristic vital role in school progress and future adult healthy life making children in developing countries to have much lower achievement levels than children in the developed ones<sup>(3)</sup>.

Early childhood represent a critical time-period to establish healthy eating habits for optimal growth, development, and disease prevention. These habits are difficult to be changed later in life. "My child does not eat" is a frequent complaint in the pediatric clinic<sup>(4)</sup>. Although measures and definitions can vary, picky eating is estimated to be quite high in the preschool age with nearly 14-50% are identified as picky eaters by their parents or caregivers. As growth slows between the ages of 2 and 5 years, most preschoolers experience a parallel decrease in appetite<sup>(2,4,5)</sup>. Parents and caregivers influence the eating behavior of their children through attitudes and beliefs regarding food and feeding issues. Children are still dependent on their parents or caregivers to a great extent about their food intake structure. Moreover, preschool age is a time where children undergo remarkable transitions in eating patterns and consequently forming distinct eating behaviors<sup>(6)</sup>. These behaviors can be summarized by answering the questions: What to eat? How to eat? and How much?<sup>(3)</sup>.

The current study was conducted to determine the prevalence of picky eating among preschool children in Baghdad City.

## SUBJECTS & METHODS

A descriptive cross-sectional study with analytic elements conducted among preschool children (one to 5 years old) attending kindergarten in both sides of Baghdad City (Al-Karkh & Al-Rusafa).

A sample of 1002 respondents aged one to five years were chosen by a randomized multi-stage cluster sampling method. The first step involved both sides of Baghdad City. The second step involved choosing 25 kindergartens from Al-Rusafa and 25 kindergartens from Al-Kharkh side of Baghdad by simple random sampling method. The third step involved all children in the selected kindergartens (clusters).

All children in kindergartens aged one to five years old while those whom parents who refused to participate, unable to do the physical examination, or taking drugs affecting the study results were excluded from the sample.

After well provision and studying of many previous studies and relevant researches<sup>(7,8)</sup>, the questionnaire form was prepared by researcher and supervisor. Questionnaire was prepared as three parts: **Part I** for socio-demographic data which involve asking about age, sex, educational level of the parents and their occupation, care giver of the child, type of delivery, feeding and weaning, chronic diseases and frequency if present, birth weight, admission to hospital During neonatal period, twin birth, home arrangement. **Part II** included enquiring about children with their habits (child finishes his/her meal quickly, child is always asking for food, child would eat too much, child leaves food on his/her plate at the end of a meal, child takes more than 30 minutes to finish a meal, child would eat most of the time, child gets full before his/her meal is finished, child is full up he/she finds room to eat his/her favorite food, child cannot eat a meal if he/she has had a snack just before, child would always have food in his/her mouth, child eats more and more slowly during the course of a meal). **Part III** concerned with behavior of the parents in assist eating using facilities.

The questionnaire was prepared in English language and then was translated to Arabic to accustom the Iraqi habits and norms and to satisfy the respondents making them feel safe and secure to provide information freely.

The data collection has been achieved in a period between the 1<sup>st</sup> of November 2021 till 31<sup>st</sup> of March 2022. The researcher interviewed children mothers by taking full history according to questionnaire, the researcher then measured children weight and height and mid arm circumference.

The data collection process was achieved from early morning till the end of the official time of the kindergarten, 5 days in a week, taking in consideration the surrounding situation associated with COVID-19 pandemic, taking in consideration the precautionary measures of wearing of suitable mask, gloves, and providing a suitable disinfecting agent like alcohol 70% with keeping a distance of one and a half meter to two meters.

Analysis of data was carried out using the available statistical package of SPSS-28 (Statistical Packages for Social Sciences- version 28). Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values).

## RESULTS

A total samples of 1002 child with age range 2-6 years were recruited as the material of the current study.

The mean age of the sample was 55.9±9.7 months. Children aged 5+ years were the most common age group (47.9%), followed by 4+ years old (30.8%) and the least age group was 2 years old (1.7%). Regarding gender, 55.7% were males. Among 992 fathers and 997 mothers, the most common age group was (30-39); 63.6%, followed by (40-49) age group (22.8%). For mothers, the most common age group was (30-39); 59.5%, followed by (20-29) age group (30.6%). Regarding the educational level of the parents, college certificate was the most common for both fathers (60%) and mothers(63.1%). Workers were found to be the most occupation among children father's (84.9%) as illustrated in Table 1.

**Table 1:** The sample characteristics for child and parents, Baghdad, 2022.

		No	%
Child age (months)	24---	17	1.7
	36---	85	8.5
	48---	309	30.8
	60---	480	47.9
	=>72months	111	11.1
	Mean±SD (Range)	55.9±9.7 (24-76)	
Gender	Male	558	55.7
	Female	444	44.3
Father age (years) (alive father=994)	20---29	87	8.8
	30---39	632	63.6
	40---49	227	22.8
	50---59	48	4.8
	Mean±SD (Range)	36.6±6.4 (24-59)	
Father occupation (alive father=994)	Governmental employee	133	13.4
	Self-employee	11	1.1
	Worker	844	84.9
	Retired	6	0.6
Father education (alive father=994)	Primary	27	2.7
	Secondary	181	18.2
	Institute	109	11.0
	College	596	60.0
	Higher education	81	8.1
Mother age (years) (alive mother=999)	20---29	306	30.6
	30---39	594	59.5
	40---49	99	9.9
	Mean±SD (Range)	32.3±5.3 (20-49)	
Mother education (alive mother=999)	Primary	24	2.4
	Secondary	199	19.9
	Institute	86	8.6
	College	630	63.1
	Higher education	60	6.0

Family that was consisting of 4 members and parity of 2 were the most common (44.6%) and (43.4%) respectively. No history of abortion was reported by 73.6% of the participants. The most common type of delivery was cesarian section (66.7%) and normal weight at birth was the most common (87.2%). Also, Breast feeding was the most common type of feeding (58.1%). Regarding vaccination, 97.1% of participants completed their vaccination schedule as illustrated in Table 2.

**Table 2:** Family members, past obstetrical/child history and vaccination schedule, Baghdad, 2022.

		No	%
Type of delivery	NVD	334	33.3
	CS	668	66.7
Type of feeding	Breast feeding	582	58.1
	Bottle feeding	420	41.9
Birthweight (Kg)	VLBW (<1.500)	11	1.1
	LBW (<2.500)	117	11.7

	Normal ( $\geq 2.500$ )	874	87.2
	Mean $\pm$ SD (Range)	2.970 $\pm$ 0.618 (0.850-5.200)	
Vaccination schedule of the child	Yes	981	97.9
	No	21	2.1

It is shown that 1.8% of the participants had chronic diseases; the most common was asthma (11 child), followed by G6PD and VSD (2 children for each). For acute illnesses, 8.1% of the participant were found to have acute illnesses; the most common was tonsillitis (39 child), followed by bronchitis (32 child). Regarding admission to the hospital in the neonatal period, 10.6% of the participants had been admitted and 51.4% of them had been weaned at nearly 2 years old. In the current study, 3.7% of the participants were members of a twin and the first child in the family was the most common among the participants (52.2%) as shown in Table 3.

**Table 3:** Present and past medical history, weaning age, being member of a twin and order of the child in the family, Baghdad, 2022.

		No	%
Order of the child in the family	1	523	52.2
	2	293	29.2
	3	107	10.7
	4	51	5.1
	5& more	28	2.8
Twin	Yes	37	3.7
	No	965	96.3
Admission to hospital in neonatal period	Yes	106	10.6
	No	896	89.4
Age at weaning (months)	<12months	37	3.7
	12---	179	17.9
	18---	172	17.2
	24---	515	51.4
	$\geq 32$ months	99	9.9
	Mean $\pm$ SD (Range)	22.4 $\pm$ 7.9 (6-48)	
Chronic diseases of the child*	Yes	18	1.8
	No	984	98.2
Acute illnesses of the child (n=81)**	Yes	81	8.1
	No	921	91.9
*11 with Asthma, 2 G6PD, 2 VSD, 1 Hemophilia, 1 Rh disease & 1 thalassemia			
**32 with Bronchitis, 39 recurrent tonsillitis, 8 UTI, 1 GIT & 1 lactose intolerance			

Regarding picky eating, it was shown that 31.3% of the participants were considered as picky eaters by their parents, 25.8% were sometimes considered as picky eaters and 42.8% were not considered as such.

The current study showed that 48.5%, 45.4% and 44.7% of the participants sometimes finished their meal quickly, were asking for food and left food on their plate at the end of a meal while 36.1% of them would eat too much if they allowed to which were not healthy eating habits as illustrated in Table 4.

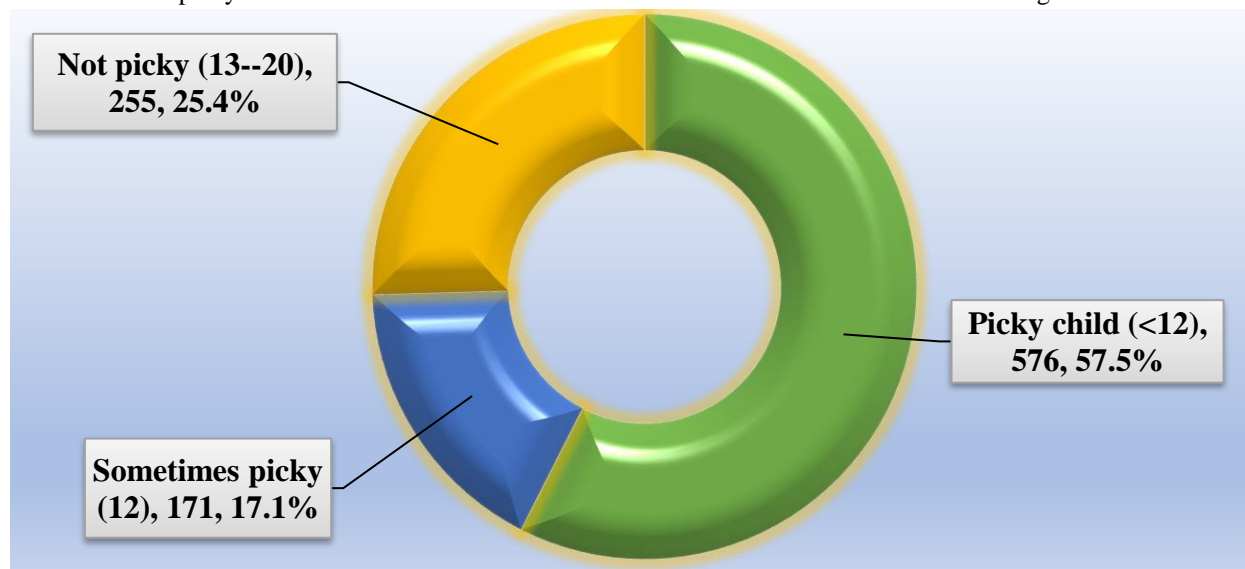
**Table 4:** Eating habits of the participants, Baghdad, 2022.

	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)
The child finishes his/her meal quickly	8.3	18.2	48.5	19.3	5.8
The child is always asking for food	6.9	18.1	45.4	21.5	8.2
The child would eat too much, If allowed to	36.1	27.0	28.3	6.2	2.3
The child leaves food on his/her plate at the end of a	8.5	14.7	44.7	23.2	9.0

meal

**Yellow→is the healthy eating habit**

Using picky child threshold value, 57.5 of the participants were found to be picky eaters, 25.4% were found to be not picky eaters and 17.1% were found sometimes as such this is demonstrated in Figure 1.



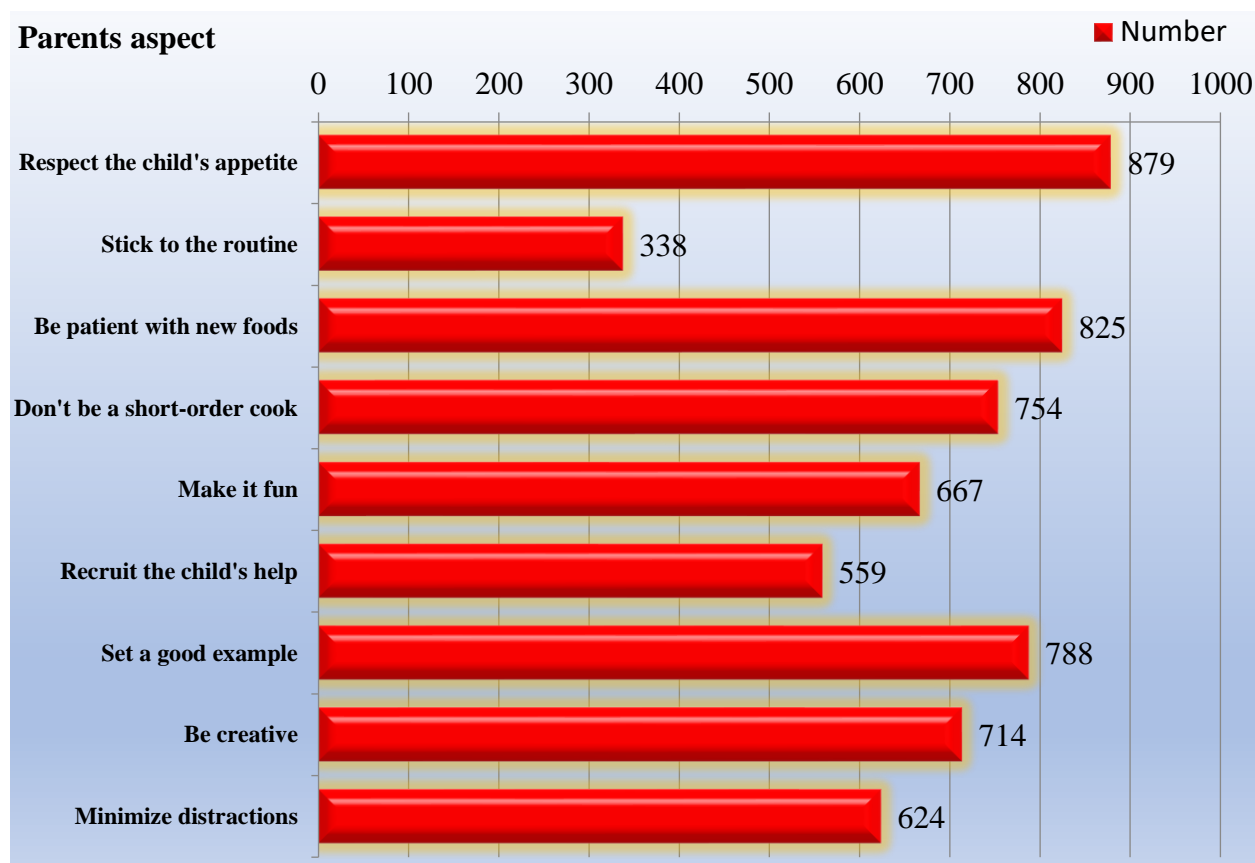
**Figure 1:** Classification of picky eating according to threshold value, Baghdad, 2022.

Concerning some child eating habits and using Likert scale, it was shown that the most common answer selected was (sometimes) for all the asked questions except for (even if the child is full up he/she finds room to eat his/her favorite food) and (The child would always have food in his/her mouth If given the chance) questions in which the most common selected answer was (Never) as illustrated in Table 9.

**Table 5:** Child eating habits, Baghdad, 2022.

	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)
The child takes more than 30 minutes to finish a meal	23.4	16.9	33.6	17.4	8.8
The child would eat most of the time if given the choice	28.1	26.8	31.1	9.3	4.6
The child gets full before his/her meal is finished	5.9	12.1	40.5	23.1	18.5
The child gets full up easily	8.9	10.7	30.5	29.1	20.8
Even if the child is full up he/she finds room to eat his/her favorite food	33.7	21.6	27.7	11.0	6.0
The child cannot eat a meal if he/she has had a snack just before	25.7	22.3	37.3	10.3	4.4
The child would always have food in his/her mouth If given the chance	35.9	17.8	26.5	11.8	8.0
The child eats slowly	29.0	17.8	29.5	15.0	8.7

Regarding parent's behavior with their children, the most common behavior was (Respect the child's appetite); 87.7% followed by (Be patient with new foods); 82.3%, (Set a good example); 78.6%. On the other hand, the least common behavior was (Stick to the routine); 33.7%, followed by (Recruit the child's help); 55.8% as illustrated in Figure 2.



**Figure 2:** Parents behavior with their children, Baghdad, 2022.

## DISCUSSION:

The study revealed a prevalence of picky children was more than half of the study samples, and the prevalence of those who were found to be sometimes picky was less than a quarter of the samples, while the percent of not the picky child was approximately quarter.

The results of a cross-sectional study which conducted in China between 2011 and 2012 to test the dietary and nutritional behavior and status of children below 3 years old showed that the prevalence of picky children among preschooler was 36%<sup>(9)</sup>. Another study which conducted in Singapore among children below 10 years old showed that 25.1% of them were always picky eater and 24.1% were sometimes picky<sup>(10)</sup>.

A cross-sectional study among 2008 random sample of US infants and children from all USA states conducted to explore the diets and feeding habit of infants and children from birth to 48 months. The prevalence of a very picky eater was 10.2% and 34.4% for those who was somewhat picky eaters<sup>(11)</sup>.

Multiple other studies revealed prevalence of picky children ranging from 17 to 29%<sup>(12-14)</sup>. All the studies mentioned above disagree with the results of this study which can be explained due to differences in data collection method, differences in age group, social and cultural differences. While a cross-sectional study conducted in China from 2011 to 2012 among school age children showed that the prevalence was over 59% which consistent with the current study results<sup>(15)</sup>.

Another study which agrees with the results of this study was a cross-sectional survey on 135 child monitored since birth until 5.5 years old showed that the prevalence was 50%<sup>(1)</sup>.

A cohort study conducted among 4018 participants of from pregnancy onwards showed that 46 % of their children were picky eaters<sup>(16)</sup> which also consistent with the current study.

The present study showed that picky or considering the child as picky eater, when the child fails to finish his/her meal quickly, the child is not asking for food, The child wouldn't eat if allowed to and the child leaves food on his/her plate at the end of a meal. Also, when the child took more than 30 minutes to finish a meal, the child wouldn't eat most of the time if given the choice, got full before his/her meal is finished or got full up easily, even if the child is full up he/she can't finds room to eat his/her favorite food, the child cannot eat

a meal if he/she has had a snack just before, the child would always have food in his/her mouth if given the chance and the child eats slowly.

In a study which conducted in Britain among 75 women participated and their children (mean age=3.31 years) through advertisements distributed to preschools, nurseries, children centers and online parenting sites, The following factors are showed that they do not affect the picky child eaters behavior which agree with the published such as TV viewing is not related to the child eating behavior. Although picky children are no more likely to throw temper tantrums when food requests are rejected by parents, parents of picky children report more frequent struggles over food, Parents of picky children are also more likely to argue with their spouse about the child's eating <sup>(17)</sup>. Although they are less likely to exclude foods from the child's daily diet parents of picky children are more likely to prepare a separate meal for the child and to allow the child to watch television during breakfast which disagree with the achieved results in current study <sup>(18)</sup>. However, this contrast in the achieved result may be due to the answers of the parents are not accurate the answers to be more perfect in their treatment of their children.

The predictor factors of being picky eater in a pre-school age may occur during three sages: before birth, during infancy period (reflecting early feeding practices) and after infancy period (concerned with parental behavioral styles as child's autonomy increased). Some of mentioned predictors cannot be changed while others can be modified in accepted ways by appropriate advice and strategies for parents and caregiver to get rid of this feeding behaviors. Anyhow, these predictors always interconnected to each other and there is a complex mixture between parental and child-related characteristics <sup>(19)</sup>, according to these three stages, a study from ALSPAC modelled predictors conducted among 6000 children for each phases separately and test the significant predictors into a final model, results showed that at the first year age, difficulties in feeding and introducing lumpy food (>9 months) were associated with more picky behavior at 38 months. While at the second year age, the choosy child being the most affecting predictor at fifteen months old. 56 % of them were choosy at this period. When their mothers did not worry about this, then only 17 % became picky eater at 38 months, and rose to about 50% if their mothers were worried about that. Provision of repeating way in eating the same food type, this was protective against later picky behavior, and offering ready-prepared meals regarded as predictor of later picky behavior <sup>(20)</sup>.

Early introducing vegetables, had been found as protective way against being picky later on especially at 4-5 months old. Positive eating behavior of the mothers being an important factor to avert their children picky eating behavior and that disagree with this study results. however, in a study which conducted in Australia among mother-child pairs, its results showed that healthy eating of the mothers infancy period was predictive of vegetable consumption during 2nd years of their children life <sup>(21)</sup>, in addition to that it had been found that when mothers press their children to eat leads to more picky eating behavior and lower children weight <sup>(22)</sup>, also a study of the effect of pressure to eat, showed a significant effect in a bidirectional way with picky behavior as that picky behavior at 4-year age of children prospectively predicted parental pressure to eat at age 6 years, and the vice Versa in which the pressure at 4 years age predicted picky behavior at 6 years age. This shows that parental feeding behavior toward their children were changed according to children's food avoidant behavior <sup>(23)</sup>.

A cross-sectional study among 2008 random sample of US infants and children from all USA states conducted to explore the diets and feeding habit of infants and children from birth to 48 months. Large number of parents showed that they present a new food items three to five times before take a decision that their child does not like it, the percentages was between 41 and 53% in the three categories of picky eating. On other hand the percentage of parents who were reporting to offer a new food 6 times or more to their kids, was more among parents of very picky eaters (34%) and somewhat picky eaters (26%) than non-picky eaters (18%) <sup>(11)</sup>, all the mentioned above regarding the parental behavior toward the picky child behavior didn't agree with the current study.

**In conclusion**, picky eating behavior is a prevalent problem in pre-school children requiring a comprehensive program for parents, caregiver, and community to be aware of this eating behavior among their children with including the topic of picky eating behavior as main section in the curriculum of medical, nursery, and psychology colleges to raise medical care provider awareness about it.

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