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Effectiveness of Instructional Program on Parents' Knowledge Concerning Etiologies and Clinical Manifestation of Picky Eating Behavior Among Children Under Five Years of Age

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***Abstract*---**Objective: To assess parents' knowledge concerning etiologies and clinical manifestation of picky eating behaviors. To determine the effectiveness of instructional program on parents' knowledge through comparing the knowledge scores at the pre-test and post-test. Methodology: To achieve the aims of this study, this quasi-experimental design was conducted on children suffering from picky eating behavior assigned to study and control groups is used to study the effectiveness of instructional program on parents' knowledge toward dietary patterns for children with picky eating behavior at Al-Zahra Teaching Hospital in Al-Najaf Al-Ashraf City. Questionnaires were developed to determine the effectiveness of the instructional program on parents' knowledge toward dietary patterns for children with picky eating behavior. The final instruments consisted of (4) parts First: concept of picky eating behavior in children (Includes four questions) Second: causes of picky behavior and dangerous factors (Includes eight questions) Third: symptoms of picky behavior (It includes six questions) Fourth: importance of a child's picky eating behavior diet (It consists of seven questions) Fifth: ways to deal with the child picky eating behavior in food (It contains seven questions) Sixth: therapeutic and guiding measures for picky eating children (It has thirteen questions). Conclusion: The current study showed that the instructions and booklet significantly improved the parents' knowledge of dietary patterns, leading to enhancement of children with picky eating behavior and nutritional status in the study group constantly rather than a control group. Recommendation: Regular examinations of all children to assess their health condition through

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assessing picky eating behavior and dietary pattern to detect any deterioration prematurely

***Keywords*---**instructional program, parents' knowledge, concerning etiologies, clinical manifestation, picky eating behavior, children under five years.

Introduction

Picky or selective eating often refers to those children with strong food preferences, consuming an insufficient variety of foods, restricting the intake of certain food groups, consuming a limited amount of food, or being reluctant to try new foods. Picky eating behaviors are common in infancy and childhood however; there is no specific medical definition for the term picky or selective eater [(1)]. Picky eating is a frequent eating problem in childhood that concerns many parents. In young children, picky eating can contribute to a poor dietary intake and growth status and may have long-term effects. A recent review presented conflicting reports on dietary intake patterns in picky eating children: some studies reported an increased intake of energy or energy-dense foods including snacks and sweets, while most studies reported a limited variety of food intake with reduced energy consumption. Both patterns could cause inappropriate changes in the nutrient composition of the diet and are related to unfavorable growth (i.e., poor growth and overweight) and subsequent health problems [(2)]. The development of picky eating may be affected by factors such as pressure to eat, personality factors, and parental practices/ feeding styles, including parental control and social influences, as well as specific factors, such as the absence of exclusive breastfeeding, the introduction of complementary foods before 6 months, and the late introduction of chewy foods Picky eating, is a widely used existing research. Effects of picky eating behavior on nutrition of the child and factors contributing to development of picky eating behavior [(3)]. Many parents struggle to teach their children healthy eating behaviors because food rejection behaviors such as picky eating and neophobia are common in preschool children. Picky eating can cause distress in families, and in their attempts to increase healthy food intake, parents might use wrong strategies that hinder the development of healthy eating habits. Parents are mainly concerned about their child's rejection of healthy foods like fruits and vegetables and the potential lack of nutrients in the child's diet. However, there is no clear evidence from existing studies that nutrient intake differs between picky eaters and non-picky eaters [(4)]

Methods

Research design

The study was designed as a quasi-experimental design using a test-retest approach for the study and control groups

Setting

Teaching Hospital in Al-Najaf Al-Ashraf City, participants' parents' knowledge being tested in two periods pre-test, post-test-1

Instrument

Picky eating behavior questionnaires based on the internal consistency reliability/alpha Cronbach technique. The reliability was determined through the use of Microsoft excel/ correlation function; also, the result is supported through the use of the SPSS Program version 22 / Reliability Analysis. In addition, the reliability can be determined through the use of Pearson's Correlation Formula. Two levels of responses (correct and incorrect) with two levels of scoring are (1) for the correct answer and (0) for the incorrect answers. Therefore, the levels of parents' knowledge levels are: Poor (mean of scores 0-0.33).Fair (mean of scores 0.34-0.67).Good (mean of scores 0.68 and more).

Results

Table 1
Study Sample Demographic Characteristics

Demographic Data	Rating and Intervals	Statistics	Groups		C.S
			Study	Control	
Residency	Urban	Freq.	33	32	Binomial Distribution p-value (0.56) NS
		%	82.5%	80.0%	
	Rural	Freq.	7	8	
		%	17.5%	20.0%	
Gender	Male	Freq.	21	24	Binomial Distribution p-value (0.55) NS
		%	52.5%	60.0%	
	Female	Freq.	19	16	
		%	47.5%	40.0%	
Child's Age / Years	2 and less	Freq.	7	5	Chi-square value (27.00) d.f. (4) p-value (0.058) NS
		%	17.5%	12.5%	
	3-4	Freq.	9	8	
		%	22.5%	20.0%	
	4 -5	Freq.	24	27	
		%	60.0%	67.5%	
Child's Order in the Family	1-2	Freq.	25	34	Chi-square value (38.00) d.f. (4) p-value (0.06) NS
		%	62.5%	85.0%	
	3-4	Freq.	7	3	
		%	17.5%	7.5%	
	5 and more	Freq.	8	3	
		%	20.0%	7.5%	

%= percentage, freq. = frequency, x2= chi-square value, p- value= probability value, NS= non-significance

The results of demographic characteristics shows that the highest percentage for categories was residency as 82.5% (n = 33) study group and (80%) (n = 32) in the control group with urban resident, the rural was 17.5% (n = 7) study group and 20% (n = 8) in control group. On the other hand, most participants are males 52.5% (n = 21) study group and the remaining 47.5. % (n = 19) are female, and the control group male 60% (n =24) and female 40% (n=16).17.5% (n = 7) 2 and less year old, 22.5% (n = 9) between 3- less than 4year old, 60% (n = 24) were 4 years and above in the study group, 12.5% (n = 5) 2 and less year old, and 20% (n = 8) between 3 - 4 year old, 67.5% (n=27) were 4 years and above in the control group. Most child's order in the family are 1-2, 62.5% (n = 25), and 3-4, 17.5% (n= 7) and 20% (n = 8) the remaining 5 and more are the study group, and 1-2, 85. % (n = 34), and 3-4, 7.5% (n= 3) and 7.5% (n = 3) the remaining 5 and more are the control group.

Table 2
Distribution of the Clinical Characteristic for both Study and Control Groups

Clinical Data	Rating	Statistics	Groups	
			Study	Control
1-Does the child eat special food	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	3	6
		%	100	100
2-Does the child have a medication allergy	Yes	Freq.	8	0
		%	20	0.0
	No	Freq.	32	40
		%	80	100
3-Does the child have a wheat allergy	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100
4-Does the child have a bean allergy	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100
5-Does the child have a blood allergy	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100
6-Does a child have a chronic skin disease	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100
7-Does the child have been malnourished	Yes	Freq.	0	0
		%	0.0	0.0

	No	Freq.	40	40
		%	100	100
8-Does the child suffer from loss of appetite	Yes	Freq.	5	5
		%	12	12
	No	Freq.	35	35
		%	87	87
9-Does the child have chronic diabetes mellitus	Yes	Freq.	2	0
		%	5	0.0
	No	Freq.	38	40
		%	95	100
10-Does a child have autism spectrum disorders	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100

Continue...

11-Do brothers of the child have picky eating behavior	Yes	Freq.	0	0
		%	0.0	0.0
	No	Freq.	40	40
		%	100	100
12-Do you take your child to a dietitian	Yes	Freq.	5	0
		%	12.5	0.0
	No	Freq.	35	40
		%	87.5	100

%= percentage, freq. = frequency

Table (2) shows that most of the study sample responses to the clinical characteristic for both study and control groups were (1, 3, 4, 5, 6, 7, 10, 11) were No. The item (2) in the study group child have a medication allergy (20%) yes, and (80%) No. and No (100%) in the control group. The item (8) child suffers from loss of appetite the response with yes were (12%) in the study and control groups. However, most participants' responses were ''No'' in the study and control groups. Based on the differences in frequency and percentage with ''yes'' answers of the item (8) in the study and control groups were (87%). The item (9) in the study group child have chronic diabetes mellitus (5%) yes. And (95%) No, and yes (100%) in the control group. The remaining 12 item number were "yes" 12.5% in the study group, and the control group 0%. Regarding "No" answer 87.5% in the study group, and in the control group 100%.

Table 3
Distribution of Family General Information for both Study and Control Groups

Information	Rating	Statistics	Groups	
			Study	Control
Monthly income / ID	Less than 300,000	Freq.	2	0
		%	5.0%	0.0%

	300,000-600,000	Freq.	38	40
		%	95.0%	100.0%
Father's levels of education	Read and write	Freq.	0	7
		%	0.0%	17.5%
	Primary school	Freq.	18	9
		%	45.0%	22.5%
	Intermediate school	Freq.	14	13
		%	35.0%	32.5%
	Secondary school	Freq.	4	9
		%	10.0%	22.5%
	College or institute	Freq.	2	2
		%	5.0%	5.0%
	Post-graduate	Freq.	2	0
		%	5.0%	0.0%
Mother's levels of education	Read and write	Freq.	7	15
		%	17.5%	37.5%
	Primary school	Freq.	9	3
		%	22.5%	7.5%
	Intermediate school	Freq.	9	5
		%	22.5%	12.5%
	Secondary school	Freq.	9	7
		%	22.5%	17.5%
	College or institute	Freq.	5	8
		%	12.5%	20.0%
	Post-graduate	Freq.	1	2
		%	2.5%	5.0%
Father's occupation	Employee	Freq.	33	28
		%	82.5%	70.0%
	Retired	Freq.	1	5
		%	2.5%	12.5%
	Jobless	Freq.	6	7
		%	15.0%	17.5%
Mother's occupation	Employee	Freq.	16	24
		%	40.0%	60.0%
	Retired	Freq.	0	8
		%	0.0%	20.0%
	Housewife	Freq.	24	8
		%	60.0%	20.0%
Nutritional problems	No	Freq.	40	40
		%	100.0%	100.0%
Participation in a nutritional program	No	Freq.	40	40
		%	100.0%	100.0%

Making a different food	No	Freq.	40	40
		%	100.0%	100.0%

%= percentage, freq. = frequency

Table (3) shows the distribution of general family information for both study and control groups of frequencies and percentages. Regarding monthly income ranged from 300,000-600,000, revealed that the 38 (95.0%) in the study group, while 40 (100%) in the control group. The most common father's levels of education were from a primary school (45%) and intermediate school (35%) for in the study group, and primary school, secondary school (22.5%) and intermediate school (32.5%) in the control group. The most common mother's levels of education were for all primary school, intermediate school and secondary school (22.5%) for in the study group, and read and write (37.5%) and college or institute (20%) in the control group.

Concerning father's occupation 82.5% employees in the study group, and (70%) in the control group. Most common showed that mother occupation was from housewife and employee (60%) for each degree in the study and control group. The responses illustrate that there "No" (100%) was nutritional problems, participation in a nutritional program and making a different food in the study and control group.

Table 4
Assessment of Parents' Knowledge Concerning Etiologies and Clinical Manifestation of Picky Eating Behavior in both Study and Control groups at the Pre-test

Main Studied Domains	Levels	Statistics	Groups				Total
			Study	Overall Mean/ Assessment	Control	Overall Mean/ Assessment	
Etiologies	Poor	Freq.	36	.075 Poor	38	.050 Poor	74
		%	90.0 %		95.0%		92.5%
	Fair	Freq.	1		1		2
		%	2.5%		2.5%		2.5%
	Good	Freq.	3		1		4
		%	7.5%		2.5%		5.0%
Clinical Manifestation	Poor	Freq.	35	.075 Poor	36	.054 Poor	71
		%	87.5 %		90.0%		88.8%
	Fair	Freq.	4		3		7
		%	10.0 %		7.5%		8.8%
	Good	Freq.	1		1		2
		%	2.5%		2.5%		2.5%

Good (mean of score 0.68-1), fair (mean of scores 0.34-0.67), poor (mean of scores (0-0.33)

The results in a table (4) show that most participants' responses to the "parents' knowledge toward dietary patterns for children with picky eating behavior" at the pre-test were poor for all items in both study and control groups, based on the difference in the frequency and percentage

Table 5
Assessment of Parents' Knowledge Concerning Etiologies and Clinical Manifestation of Picky Eating Behavior in both Study and Control groups at the Post-test

Main Studied Domains	Levels	Statistics	Groups				Total
			Study	Overall Mean/ Assessment	Control	Overall Mean/ Assessment	
Etiologies	Poor	Freq.	3	.906 Good	38	.069 Poor	41
		%	7.5%		95.0%		51.3%
	Fair	Freq.	2		1		3
		%	5.0%		2.5%		3.8%
	Good	Freq.	35		1		36
		%	87.5 %		2.5%		45.0%
Clinical Manifestation	Poor	Freq.	3	.888 Good	36	.067 Poor	39
		%	7.5%		90.0%		48.8%
	Fair	Freq.	3		3		6
		%	7.5%		7.5%		7.5%
	Good	Freq.	34		1		35
		%	85.0 %		2.5%		43.8%

Good (mean of score 0.68-1), fair (mean of scores 0.34-0.67), poor (mean of scores (0-0.33)

This table (5) shows the majority of parents' knowledge toward dietary patterns for children with picky eating behavior during subdomains control group were poor level, while at the post-test the majority of participants' knowledge were good level in all domains. This indicates an improvement in their parents' knowledge with picky eating behavior instructional program in dietary pattern.

Table 6
Mean Difference (Paired Sample t-test) between the Study Group participants' Knowledge throughout Two Periods of Measurements (pre-test and post-test)

Main Studied Domain	Periods of measurements	Mean	Std. Deviation	Std. Error Mean	t-value	d.f.	p-value
Etiologies	Pre-test	.075	.213	.034	16.575	39	0.0001 HS
	Post-test	.906	.264	.042			
Clinical Manifestation	Pre-test	.075	.213	.034	15.598	39	0.0001 HS
	Post-test	.888	.283	.045			
	Post-test	.886	.139	.022			

S.D. = stander deviation, d.f=degree of freedom, p-value= probability, HS= high significance

This table (6) reveals the differences in the Knowledge assessment between the pre-test and post-test study group; it shows an enormously significant difference (P <0.01) among pre-test and post-test evaluation in the study group. This means there is an enhancement in the parents' knowledge after the program.

Table 7
Mean Difference (Paired Sample t-test) between the Control Group participants' Knowledge throughout Two Periods of Measurements (pre-test and post-test)

Main Studied Domain	Periods of measurements	Mean	Std. Deviation	Std. Error Mean	t-value	d.f.	p-value
Etiologies	Pre-test	.050	.152	.024	1.778	39	.083 NS
	Post-test	.069	.160	.025			
Clinical Manifestation	Pre-test	.054	.166	.026	1.433	39	.160 NS
	Post-test	.067	.171	.027			

S.D. = stander deviation, d.f= degree of freedom, p-value= probability, NS= non significance

Table (7) shows the assessment of participants' knowledge between the pre-test and post-test control group; there is no significant difference at P-value more than (0.05) among pre-test and post-test evaluation in the control group. This means there is improvement in the parents' knowledge after the program.

Table 8
Mean Difference (Independent Sample t-test) between the Study and Control Groups participants' Knowledge at the pre-test

Main Studied Domain	Periods of measurements	Mean	Std. Deviation	Std. Error Mean	t-value	d.f.	p-value
Etiologies	Study	.075	.213	.034	.604	78	.548 NS
	Control	.050	.152	.024			
Clinical Manifestation	Study	.075	.213	.034	.487	78	.627 NS

This table demonstrates statistically non-significant differences between the study and control groups in pre-test for domains in the parents' knowledge in all fields.

Table 9
Mean Difference (Independent Sample t-test) between the Study and Control Groups participants' Knowledge at the post-test

Main Studied Domain	Periods of measurements	Mean	Std. Deviation	Std. Error Mean	t-value	d.f.	p-value
Etiologies	Study	.906	.264	.042	17.175	78	0.0001 HS
	Control	.069	.160	.025			
Clinical Manifestation	Study	.888	.283	.045	15.681	78	0.0001 HS

Table (9) show a highly significant difference in the parents' knowledge at a p-value less than 0.01. statistical significance, the significant increase in the statistical mean in post-test compared to the pre-test (i.e., there is an improvement in the parents' level of knowledge following the application of instructional program on parents' knowledge toward patterns for children with PE).

Discussion

In terms of residence, the present study's findings indicate that most participants live in urban areas. Al-population most Najaf's live in urban regions rather than rural areas. As a result, the researcher saw more parents from urban areas than rural areas. This study agrees with Kutbi, and discovered that the majority of children involved in the research lived in urban areas. (5) The majority of the current research children were male, with 21 (52.5%) in the quasi-experimental group and 24 (60%) in the control group. showed that the majority of the studied sample was male (53.2%). According to the current research, male children made up roughly 52.5 % of the overall sample group (6). In a study of French toddlers,

boys had stronger neophobia than girls regarding food fear. Another study indicated that 53.2% of the children were boys and 46.8% were girls, with 2470 children. The current study agreed with the study done in it found that the majority of the studied gender the male (53%). The current study found that the majority of children (60%) aged four years and older are picky eaters; this finding is consistent (7). previous research has shown that the prevalence of picky eating was relatively stable during early childhood, between 2.5 and 4.5 years. (8) The incidence of picky eating was highest during early childhood, declining to deficient levels by six years of age. Distribution of socio-demographic characteristics for both the study and control groups. This table shows no significant difference (P >0.05) between the study and control groups regarding the specified socio-demographic factors. Control entails putting restrictions on the research situation to reduce biases while maximizing accuracy and validity. Put it differently; research control aims to minimize contaminated influences that might skew the connection between the variables of interest (9). The present research discovered no significant differences between the study and control groups regarding general characteristics, except for mother occupation, which indicated more homemakers and fewer workers in the study group than in the control group. Researched 120 moms with toddlers in Indonesia and reported that most women surveyed did not work or were homemakers, with up to 37.5 % being homemakers. (10)

Conclusion

The current study showed that the instructions and booklet significantly improved the parents' knowledge of dietary patterns, leading to enhancement of children with picky eating behavior and nutritional status in the study group constantly rather than a control group.

Recommendation

- Regular examinations of all children to assess their health condition through assessing picky eating behavior and dietary pattern to detect any deterioration prematurely
- More study is needed to assess the long-term impact of such programs and how much of the achieved advantages in terms of enhanced knowledge and abilities are maintained over time

Conflict of Interest: The researchers report no conflict of interest.
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