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Effect of a Nutritional Education Program on Mother Knowledge Regarding Their Children Nutritional Status

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ABSTRACT

Background & Objective: The role of the mothers is very important in providing care and monitor their children`s health in general. Their awareness concerning quality of foods which is needed for each child`s developmental stage can effect on nutritional status This Study assess the effect of an nutritional education Program on mother knowledge regarding their children nutritional status.

Materials & Methods: Sixty moms were chosen from Al-Ayn Social Care Foundation International in Al-Samawah City and take on using a quasi-experimental design. The researcher used a non-probability "purposive sample" and measured the height and weight for child before calculating the body mass index.

Results: The current study found a relationship between moms' educational level and knowledge regard to sociodemographic characteristics with a p-value of .001. However, there were no significant correlations observed between mothers' knowledge in the control group and their age, level of education, occupation, residency, monthly income, and sources of information.

Conclusion: Following the interventional program on nutrition-related health, the level of knowledge among the mothers in the study group was enhanced. The study suggested that the nutrition education program should be offered to all moms in order to enhance their understanding and enthusiasm regarding the significance of child nutrition. Additionally, it was advised that their education should be regularly updated.

Keywords: Health Education, Knowledge, Nutritional Status, Nutritional Sciences

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Introduction

Healthy nutrition is essential for child's growth and development, it can maintain a general health, weight gain, and promote their recovery from diseases **(1)**. Optimal physical and mental condition is crucial at every phase of life, commencing from prenatal growth and delivery, and extending through infancy, childhood, adolescence to adult **(2)**. Mothers play an important role in child life to prevent the exposed has several kinds of medical problems such as osteoporosis, heart disease, high blood pressure, iron deficiency anemia, type 2 diabetes, constipation, and diverticular disease **(3)**.

Nutrition education should prioritize enhancing the dietary knowledge and habits of moms. Expertise in nutrition pertaining to suggestions for feeding infants and young children, as well as assisting mothers in overcoming obstacles to provide their children with sufficient meals **(4)**. Maternal education has a significant correlation with children's health. Mothers have a crucial role as primary caregivers in preventing nutritional issues and promoting optimal growth in their children. Offspring of mothers with higher levels of education experience lower rates of underweight, wasting, and stunting in children **(5)**. Mothers who have received a formal education may possess a higher level of understanding regarding healthcare and nutrition. The education program has a substantial impact on enhancing the health of children, leading to a reduction in the occurrence of stunting, underweight, and anemia. Furthermore, the provision of beneficial education has a consequential effect on the increase of knowledge **(6)**.

A systematic review conducted by the International Journal of Child Care and Education Policy found that maternal nutrition education and knowledge had a significant impact on children's nutritional status. The mother assumes the primary role in caring for the child, particularly during the initial six years of life. The level of maternal care is contingent upon the mother's understanding of nutrition and health. The educational

degree of the mother has been found to have an impact on child care. Insufficient nutrition has a greater impact on children. Mothers who possess knowledge about nutrition have the ability to nurture their children in a healthier manner **(7)**. Numerous health problems can also be lessened with a well-balanced diet. Obesity and excess weight, poor nutrition, and improved practices, beliefs, and awareness of mothers and caregivers. To prevent under-five-year-old malnutrition **(8)**. The relationship between parents' knowledge of healthy eating and the demographic characteristics of their parents—mothers and fathers-including their age, place of residence, and socioeconomic status **(9)**. In developed countries (52) million children under the age of five suffer from wasting, million children suffer from severe wasting (low weight for height), (155) million children suffer from stunting (low height for age), while (41) million children suffer from overweight or obesity **(10)**.

A cross sectional study which aimed to determine the effect of maternal magnitude of the influence of a high level of maternal knowledge is (14.7) with compared to mothers with low knowledge **(11)**. The mother capacity to provide the emotional, cultural, and social support children require to function well and efficiently along their developmental **(12)**. Mothers understanding the appropriate method of feeding can helps to prevent children`s malnutrition and nutrition related health status. Some of the researchers found that nutrition education program can enhance mothers' knowledge and attitudes for appropriate feeding methods, and change their practices in providing feeding for their children, to prevent malnutrition **(13)**.

The Descriptive Study was designed by Kareem **(14)**, to evaluate mothers' awareness of their children's nutritional status in the Baghdad District, namely in the Karkh and Rasafa areas. The findings of the study have shown a strong correlation between mothers' knowledge and factors such as age, occupation status, and the number of children in the family **(14)**. The previous study conducted by Habib, Hussein **(15)** aimed to assess the degree of breastfeeding knowledge, attitude, and practice (KAP) among mothers who visited the outpatient clinic at Fatema Alzahra baby friendly hospital. Observational research that examines a population at a specific point in time to gather data with a sample of three hundred moms revealed All mothers are aware that nursing is superior for their children, however, only 180 (60%) of them possess the knowledge that breastfeeding serves as a preventive measure against diseases in children. Out of the 42 women surveyed, representing 14% of the total, it was found that they were aware of the fact that breast milk is easily digested. However, there was a lack of information among moms regarding exclusive breastfeeding **(15)**. Evaluate the influence of a nutritional education program on the extent of knowledge that mothers possess regarding the nutritional well-being of their children.

Research hypothesis

There is a statistically significant difference between the two different teaching modalities.

Methods

Study Design

This study utilized a quasi-experimental research approach. The study utilized a two-group (control group and study group).

Independent Variable

In this study independent variable is the Improve Mothers Knowledge

Dependent Variables

In these study dependent variables is the children Nutritional status

Research Settings

The study was conducted at Al-Samawah City's Al-Ayn Social Care Foundation International.

Study Participants

The sample of the study was non-probability (purposive), consists of 60 mothers divided in two groups equally as study and control group. The sample of the study was selected according to previous criteria for mothers were low educational level and low socioeconomic status, with age group 21-44 years, and have at least one child under five years without any obvious or diagnosed skeletal deformities such: Scoliosis, Lordosis, Kyphosis, Dwarfism, and Gigantism because they need a special tools to measure their stature.

The participants selected by non-random method, coincidentally and according to their desire to participate in the study. They were divided in to two groups (30 mothers, control group not Exposed to educational program) and (30 mothers, study group exposed to education program).

Mothers' knowledge and child BMI were assessed to both groups (Preprogram, post program I, post program II.

Tools of data Collection:

Data were collected by using of the following tools: The first tool was a questionnaire sheet: It was designed by the researcher after a construct's questionnaire was developed through the review of available literature in order to reach the aims of the study. It consists of two-parts Part I. Mother's and Child's Socio-Demographic Characteristics and mothers` knowledge concerning their children's` nutrition related health. Reviewing the current available literature and it was written in Arabic Language to suit all mothers' categories.

Part I. Mother's and Child's Socio-Demographic Characteristics

This part is concerned with the collection of basic some of socio demographic data for mothers such as: Demographic factors such as age, educational attainment, occupation, monthly income, place of residence, family structure, and the means through which individuals acquire information about nutrition.

While child's socio-demographic characteristics include: age, gender. In addition to measure child`s height and weight according to their age, weight for length for children under two years, and Body mass index BMI for children over two years that used for Centers for Disease Control and Prevention CDC 2010.

Part II. mothers` knowledge concerning their children's` nutrition related health

The mothers` knowledge scale was constructed to assess nutrition-related health for children, that composed of (60 items) divided on (6 domains) which include:

- First domain: Healthy growth indicators for a child
- Second domain: Infant nutrition needs (1 day-less 1 year)
- Third domain: Toddler nutrition needs (1-less 3 years)
- Fourth domain: Pre-school nutrition needs (3-less 5 years)
- Fifth domain: mothers` food safety and poisoning
- Sixth domain: Common health problems related to nutrition among children under 5 years

Instrument Score

Each part has a score based on the quantity of things it contains. The levels of the scale are listed below, and each respondent's three observed occurrences of events were assessed. Mothers' responses were graded as follows for each question: know = 3, uncertain = 2, and don't know = 1.

Validity

A panel evaluated the questionnaire sheet's content validity. Using the panel of expert's method, ten experts were included. They have 10 years of expertise in their respective domain, they were from Baghdad college of nursing. They were (4) faculty members from Community health nursing, 3 faculty members from Pediatric nursing, 3 faculty members from Maternal and newborn nursing,2 faculty members from adult nursing. Professionals with over a decade of expertise in the industry. The tools were modified based on the panel's assessments of phrase clarity, content appropriateness, item sequencing, and scoring and recording accuracy.

Reliability

Test- retest method was used to determine the reliability of questionnaire in the current study, by conducting a repeated administration of the identical test to a cohort of subjects over a specific duration through Cronbach`s alpha coefficient. Test-retest reliability result was calculated by Statistical Package for Social Science Program, IBM SPSS, and version 26.0. As it ranged. Number of 0.71 the findings from validity and reliability suggested that the tools of the study could form viable tools and might be used as a data collection tools for the current study.

Reliability Analysis of the Instruments (Test- retest):

Scales	Items	Correlation	Evaluation
Knowledge	60	0.71	Accepted

Pilot Study

A pilot study is carried out with participant of **(10)** mothers from Al-Ayn Social Care Foundation International in Al-Samawah city for the period 10th to 15th of August, 2023. The sample of the pilot study was excluded from the main study sample. The studied mothers in the pilot study were excluded from the studied subjects.

Ethical Consideration

The ethical consideration was considered in the data collection, the privacy of the participants and their confidentiality, in addition to the objectives and the benefit of the study were included in the data collection.

The approval has been obtained from Scientific Ethical Committee at College of Nursing for questionnaire tool. The written consent form also was obtained from the participants, which encompassed their consent to engage in the study and their voluntary involvement were addressed prior to data collection, include the written consent form of the participants

Data Collection

The data are gathered throughout the using the study`s instrument by direct interview with the mothers, and measure child`s weight and stature. Data collection was conducted from April 11th, 2023 to December 12th, 2023, in Al-Samawah city at Al-Ayn Social Care Foundation International. Precede the

application of the constructed program, control group is presented to assess the mother's knowledge in the study and control groups. The time required to answer all the questions take about 20-30 minutes.

The education program was intervened to the study group only, in the central lecture room of Al-Ayn Social Care Foundation International, for the period from 24th to 26th October, 2023. The program lasted for three days which introduced and scheduled for approximately 1 hour a day. All mothers were exposed to post-test to evaluate their knowledge for both the study and the control group, and after 30 days of posttest I. The same questionnaire is used as a post-test I immediately after the educated program provided for study group, and used again after one month (post test II). While the control group, evaluate their knowledge by the same scale during post test I and II, but without program intervention.

Data Analysis

Examining data is a crucial stage in nursing research when several techniques are used to depict and evaluate material collected by the researcher. The choice of an analytical technique depends on the attributes of the collected data, while quantitative research uses descriptive and inferential statistics to analyze numerical data). The data were analyzed and interpreted through use of the application of Statistical Package for Social Sciences (SPSS), version 26.0.

Applying inferential statistical tests such as (frequencies, percentages, means and standard deviation and Inferential Statistical Tests include Cronbach Alpha (α), Pearson Correlation Coefficient (r), Spearman's rank correlation coefficient, Point Biserial Correlation, Repeated Measure ANOVA).

Results

Table (1) shows the overall evaluation of Mothers' knowledge about nutrition-related health for children under five years; The findings indicate that moms in the study group have a low degree of knowledge at the pre-test time (76.8%, M± SD= 88.47 ± 28.647) while they show good level of knowledge during the post-test I (100%, M±SD= 178.50 ± 1.650) and post-test II (100%, M±SD= 176.27 ± 2.651) that indicate the clear improvement in Mothers' knowledge after engagement in the program.

The mothers in the control group are showing poor level of knowledge during the three times of test: pre-test (83.3%, M±SD= 91.43 ± 27.077), post-test I (83.3%, M±SD= 91.50 ± 27.076), and post-test II (83.3%, M±SD= 91.37 ± 27.050) that indicate no significant change in their knowledge. Table (2), This table demonstrates an important and statistically significant correlation between mothers' knowledge and their degree of education at p-value= .001 and there is significant relationship between mothers' knowledge and their residency at p-value= .015. There are no significant relationships have been reported among mothers' knowledge with their age, occupation, monthly income, and sources of information. Table (3), This table demonstrates that there is no statistically significant association between the knowledge of mothers in the control group and their age, level of education, occupation, residency, monthly income, and sources of information.

Table (4), This table demonstrates that there is no statistically significant correlation between mothers' knowledge and their children's socio-demographic features, including age, sex, and body mass index.

Table 1. Overall Evaluation of Mothers' Knowledge about Nutrition-related Health for Children under Five Years

Knowledge level	Study group												Control group											
	Pre-test				Post- test I				Post- test II				Pre- test				Post- test I				Post- test II			
	F	%	M	S.D	f	%	M	S.D	f	%	M	S.D	F	%	M	S.D	F	%	M	S.D	F	%	M	S.D
Poor	23	76.8			0	0			0	0			25	83.3			25	83.3			25	83.3		
Fair	5	16.7	88.47	28.647	0	0	178.50	1.656	0	0	176.27	2.651	2	6.7	91.43	27.077	2	6.7	91.50	27.076	2	6.7	91.37	27.050
Good	2	6.7			30	100			30	100			3	10			3	10			3	10		
Total	30	100			30	100			30	100			30	100			30	100			30	100		

F: Frequency, %: Percentage, M: Mean of total score, SD Standard deviation of total score Poor= 60 – 100, Fair= 101 – 140, Good= 141 – 180

Table 2. Relationships between mothers' knowledge and Sociodemographic Characteristics in study group (Post-test)

Variable		Knowledge scale				Correlation
		Poor	Fair	Good	Total	
Age (Years)	20 –30	0	0	18	18	r_S = .054 P. value= .777 Sig = N.S
	30 –40	0	0	10	10	
	40 and more	0	0	2	2	
	Total	0	0	30	30	
Education stage	Don't read & write	0	0	1	1	r_S = .610 P-value= .001 Sig= H.S
	Read & write	0	0	8	8	
	Primary school	0	0	9	9	
	Intermediate school	0	0	7	7	
	Secondary school	0	0	5	5	
	Total	0	0	30	30	
Occupation	Employee	0	0	2	2	r^* = .007 P-value= .971 Sig= N.S
	Housewife	0	0	28	28	
	Total	0	0	30	30	
Residency	Urban	0	0	17	17	r_S = .441 P-value= .015 Sig= S
	Suburban	0	0	13	13	
	Rural	0	0	0	0	
	Total	0	0	30	30	
Monthly income	Sufficient	0	0	8	8	r_S = .216 P-value= .252 Sig= N.S
	Barely sufficient	0	0	14	14	
	Insufficient	0	0	8	8	
	Total	0	0	30	30	
Source of information	None	0	0	8	8	r_S = .274 P.value= .143 Sig= N.S
	Family & friends	0	0	9	9	
	Internet	0	0	9	9	
	TV program	0	0	4	4	
	Total	0	0	30	30	

r_S = Spearman correlation, r^*= correlation coefficient, P = Probability, Sig= Significance, N.S = Not significant, S = Significant, H.S = High significant

Table 3. Relationships between Mothers' Knowledge and Sociodemographic Characteristics in control groups (Post-test)

Variable		Knowledge scale				Correlation
		Poor	Fair	Good	Total	
Age (Years)	20 –30	8	1	1	10	r_S = .176 P. value= .353 Sig = N.S
	30 –40	13	1	2	16	
	40 and more	4	0	0	4	
	Total	25	2	3	30	
Education level	Doesn't read & write	13	0	0	13	r_S = .016 P-value= .932 Sig= N.S
	Read & write	1	0	0	1	
	Primary school	10	2	1	13	
	Intermediate school	1	0	1	2	
	Secondary school	0	0	1	1	
	Total	25	2	3	30	
Occupation	Employee	24	2	3	29	r^* = .161 P-value= .394 Sig= N.S
	Housewife	1	0	0	1	
	Total	25	2	3	30	
Residency	Urban	11	1	3	15	r_S = .275 P-value= .141 Sig= N.S
	Suburban	4	1	0	5	
	Rural	10	0	0	10	
	Total	25	2	3	30	
Monthly income	Sufficient	6	1	2	9	r_S = .109 P-value= .567 Sig= N.S
	Barely sufficient	15	1	1	17	
	Insufficient	4	0	0	4	
	Total	25	2	3	30	
Source of information	None	20	1	1	22	r_S = .290 P. value= .120 Sig = N.S
	Family & friends	5	0	1	6	
	Internet	0	1	0	1	
	TV program	0	0	1	1	
	Total	25	2	3	30	

r_S = Spearman correlation coefficient, r^*= point biserial correlation coefficient, P= Probability, Sig= Significance, N.S= Not significant, S= Significant, H.S= High significant

Table 4. Relationships between Mothers' Knowledge with their Children Socio-demographic Characteristics in study groups (Post-test)

Variable		Knowledge scale				Correlation
		Poor	Fair	Good	Total	
Age (Years)	1 – 2	0	0	7	7	r_S = .087 P. value= .648 Sig = N.S
	2 – 3	0	0	6	6	
	3 – 4	0	0	10	10	
	4 – 5	0	0	6	6	
	5 – 6	0	0	1	1	
	Total	0	0	30	30	
Sex	Male	0	0	17	17	r^* = .033 P-value= .864 Sig= N.S
	Female	0	0	13	13	
	Total	0	0	30	30	
Body Mass Index	Underweight	0	0	7	7	r_S = .047 P-value= .805 Sig= N.S
	Healthy weight	0	0	20	20	
	Overweight	0	0	3	3	
	Total	0	0	30	30	

r_S = Spearman correlation, r^*= correlation coefficient, P = Probability, Sig = Significance, N.S = Not significant, S = Significant, H.S = High significant

Discussion

The result in Table (1) showed, most of mothers in both groups were recorded a poor knowledge before they intervene by the educational program. While, their knowledge was increase to the good level of knowledge after exposed to the educational program. When the researcher exam their knowledge immediately after the end of the program at post-test I period, and after one months of test I again at post-test II period. The result of the study indicated, a clear improvement in mothers' knowledge after exposed to the program contents. The researcher included the main information that related to the knowledge gap for mothers during preliminary study.

Most well-prepared programs which provided by professional providers, aimed to improve individual knowledge or practice in certain topics. Many researchers included their prepared program in a study and exam its effectiveness. Such a randomized control trial in which the objective was to assess the impact of nutrition-focused teaching programs for children on the knowledge and behaviors of mothers., the result revealed mothers in the study group improved their good knowledge from (59% to 96%), while mothers in the control group showed the same level of nutrition knowledge **(16)**.

Hodder, et al. **(17)** include a booklet in their educational program, because it more interests, increase attention, and not boring. Their result showed a significant increase in knowledge, attitudes and behavior level of the participants after exposed to the nutrition education intervention by the authors.

Another study likewise discovered disparities in knowledge and behavior between the mothers in the control and intervention groups following their participation in an educational program on children's nutrition (18). Integrating media in the form of booklets into the educational program will enhance participants' motivation to modify their attitudes and feeding behavior. This, in turn, will improve the effectiveness of the programs and minimize the loss of acquired knowledge over time. Suggest utilizing appealing and user-friendly interventions that provide sufficient information about breastfeeding to enhance mothers' awareness **(19)**.

In Table (2) the finding revealed a noteworthy correlation between the knowledge of mothers and their educational attainment, as well as their place of residence only at P-value < 0.05. However, the socioeconomic status showed no significant association.

Children born to educated mothers shown less malnutrition than not well-educated mothers. In Diyala a previous study also found a positive association between children's nutritional status and their mother's education at P-value <0.05 **(20)**.

Furthermore, in their study to evaluate maternal factors on children nutrition status in Tripuri town, the authors depicted mother's educational level influenced on their children nutritional status **(21)**.

Low maternal education can lead to low awareness about the right and healthy food and correct ways of caring weight status **(22)**. A study conducted in Europe, to find the impact of low maternal education upon childhood obesity, found the low maternal education increase the risk of prevalence the overweight among European Countries **(23)**.

The residency has an effect on mothers` knowledge in the current study. In the researcher point of view this result can be justified to that, half of mothers approximately were lived in suburban and rural area, which make their chance of seeking for medical information and services was lack. In addition, most families in this area were depend mostly on the traditional information **(24, 25)**.

Support the current result, in their comparative study in Ethiopia, which discovered that the child's weight was significantly correlated with the mother's place of residence **(26)**. In Turkey, were investigate mothers` nutrition literacy and BMI of their children, The authors showed that the nutrition literacy of mothers was influenced by their socio-economic status, level of nutritional knowledge, and the sources of information they relied on **(27)**.

Moreover, Table (3 & 4) showed there is no notable correlation between the knowledge of mothers and the socio-demographic features of their children. Despite this, certain research has discovered a correlation between a mother's knowledge and the socio-demographic information of her children.

Nowadays low education of mother lead to low birth weight, a simple and reliable screening tool to identify the risk of low birth weight (LBW) infant remains limited, particularly in rural areas where advanced technology is not available **(28)**.

In Ghana, a cross-sectional study by Forh and his colleagues was agreed with our study, a study determine nutritional knowledge and practices of mothers/caregivers and its impact on the nutritional status of children 6–59 months. Found no statistically significant correlation between maternal knowledge and the nutritional status of their children, despite the potential risk of malnutrition among children can be reduced when their mothers have adequate nutritional knowledge **(29)**.

Another supported study by Komala, et al. **(30)**, which aimed to examined the correlation between maternal knowledge and children's Body Mass Index (BMI) in Pringsewu, revealing no significant association between maternal knowledge and children's nutritional status.

Recommends that the implementation of the nutrition education program can be employed as an educational mean for enhancing the high school female students' nutritional knowledge **(31)**.

Conclusion

The study determined that the developed Nutrition Education Program may be regarded as an efficacious method for enhancing and enhancing the nutritional awareness of mothers regarding its impact on their children.

Recommendation

It is recommended to modify the existing educational program developed by the Ministry of Health in order to enhance mothers' understanding of nutrition-related health issues and to boost their awareness and interest in the importance of child nutrition. Nurses and nutritionists' visits to kindergartens and schools in order to provide moms with appropriate education on healthy nutrition. They emphasize the necessity of three meals, particularly breakfast, and encourage the reduction of sugary beverage intake. They also stress the significance of engaging in physical activities. Education programs focused on promoting breastfeeding for mothers who choose not to breastfeed babies.

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Authors' Contribution

Each author participated in data analysis, drafting, and revising of the manuscript, and consented to assume responsibility for all aspects of this project.

Conflict of Interest

The authors declared no conflicts of interest.

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