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An Educational Program Based on the Health Belief Model for Mothers Regarding Prevention of Vitamin A Deficiency among children

Olfat Maher Tawfik Elzohry[(1)], Afaf Salah Abd El-Mohsen[(2)], Amany Mohamed Saad [(3)]

Assistant Lecturer of Community Health Nursing ،Faculty of Nursing, Helwan University,

[(1)]Professor of Community Health Nursing ،Faculty of Nursing, Helwan University

[(2)]Assistant professor of Community Health Nursing ،Faculty of Nursing, Helwan University, Egypt·

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Abstract: **Background: Vitamin A helps boost immunity and protects children under five years from diseases and blindness.**

Design: A quasi- experimental design (pre and post- test) was used Setting: This study conducted in Maternal and Child Health center Helwan Awal, Helwan district, Cairo Governorate.

Sample: A convenience sample included 400 mothers was used.

Tool: structured interview questionnaire consisted of four parts; socio- demographic characteristics, mothers knowledge, mother reported practices and health belief model constructs about vitamin A deficiency.

Results: 21% of the mothers had satisfactory knowledge pre-program, which improved to 62.2% post-program, 38.2% of them had adequate reported practices pre- program, which improved to 77% post program. Also, 39.2% of them had negative health beliefs preprogram which improved to 75.8% of them had positive health beliefs regarding vitamin A deficiency.

Conclusion: There were marked improvement in mothers knowledge, reported practice, and health beliefs regarding prevention of vitamin A deficiency post program. Also, there were statistically significant positive correlations between mothers knowledge, reported practices and health beliefs model post educational program.

Recommendations: Counseling program for mothers should be available in MCH centers and pediatric clinics regarding nutritional needs especially vitamin A supplementation for children.

Keywords: **Educational Program, Health Belief Model, Vitamin A Deficiency.**

I. INTRODUCTION

Children are the most important segments for a nation for the optimal physical, mental, emotional development. A nation's health depends on the healthy citizen. Nutrition of under five `years' children is very important as health, strength and intelligence which develop during this period. Good nutrition is the fundamental basic right for the maintenance of positive health. [4]

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The main underlying cause of Vitamin A Deficiency (VAD) as a public health problem is a diet that is chronically insufficient in vitamin A that can lead to lower body stores and fail to meet physiologic needs. Deficiency of sufficient duration or severity can lead to disorders that are common in vitamin A deficient population such as xerophthalmia, the leading cause of preventable childhood blindness, anemia, and weakened host resistance to infection, which can increase the severity of infectious diseases and risk of death **[9]**

Vitamin-A deficiency is seen more commonly in under five years' children and affects their eyes and can lead to blindness. It causes "xerophtalmia 'which mean dry eyes, characterized by series of clinical signs. These include night blindness, conjuctival xerosis, Bitot-spots, corneal ulceration, karatomalacia and Corneal scar. Dietary deficiency of vitamin-A most commonly and importantly affects the eyes, and can lead to blindness [20]

Community health nurse, can play an important role in identifying the children with vitamin A deficiency and also giving information to their mothers about vitamin A deficiency and its prevention, because the mothers have essential role in protecting their children from any disease especially vitamin A deficiency.so the nurse should give health education for the mothers to gain knowledge, skills necessary to maintain and promote their health, maintain ideal nutrition, giving them foods rich in vitamin A, observe of any symptoms of vitamin A deficiency in their children [14]

1.1 Significance of the Study

Vitamin A deficiency has a serious effect on health as it is the second most important cause of global blindness and also affects growth, general morbidity and mortality. Every year 2.50.000 to 500.000 children become blind, partially or totally due to vitamin A deficiency and lowers the resistance power of these children against infection due to damage the immune system. Therefore, increasing the risk of mortality from common diseases arising from vitamin A deficiency, especially among young children. [24]

The estimated prevalence is 2.8 million children have xerophthalmia. VAD is most prevalent in Africa, Mali, Ethiopia, Nigeria and Egypt. The highest incidence of VAD is almost occurring in children of low income and non- industrialized countries. Also in Egypt, vitamin A deficiency in children is 9% and the prevalence of night blindness in children is 1%. [26]

1.2 Aim of the study

This study aimed to evaluate the effect of educational program based on health belief model for mothers regarding prevention of vitamin A deficiency among children through the following objectives:

1) Assessing mothers knowledge, reported practices regarding vitamin A deficiency.

2) Designing and implementing an educational program for mothers regarding prevention of vitamin A deficiency among children.

3) Evaluating the effect of an educational program for mothers about prevention of vitamin A deficiency among children.

1.3 Research Hypothesis:

Implementation of an educational program based on HBM was improved mothers knowledge and reported practices regarding prevention of vitamin A deficiency among children.

II. SUBJECTS AND METHODS

2.1 Research design:

A quasi- experimental design was utilized in this study.

2.2 Research setting:

The study was conducted at one Maternal and Child Health center (MCH) called Helwan Awal, Helwan district, Cairo Governorate.

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2.3 Sample:

A convenience sample included 400 mothers from the total number 5600 attended to vaccination clinic at Helwan Awal Maternal and Child Health center in the previous year (from January to December 2021).

2.4 Tool for data collection:

The data was collected through using the following 2 tools:

1st Tool: Structured interview questionnaire: - It was developed by the researcher based on the literature review, it comprised the following parts: -

Part I: - Socio- demographic characteristics of mothers and their children, it covered the following items:

The mother characteristics included 9 questions as: - Age, educational level, occupation, residence, monthly income, number of children, number of family members, number of rooms and crowding index**.** Questions from number 1 to 9

The child characteristics included 4 questions: - Age, gender, method of child delivery and rank of child between sibling. questions from number 10 to 13

Part II: Mothers knowledge about vitamin A and its deficiency:

This tool was adapted from **Maces and Glasauer, (2014),** and modified by the researcher. This tool aimed to assess the mothers knowledge about vitamin A included; meaning, importance, needed amount of vitamin A for children, animal foods which are rich in vitamin A, vegetables which are rich in vitamin A, fruits which are rich in vitamin A and breast milk a source of vitamin A and as knowledge about vitamin A deficiency as meaning, the most susceptible age to vitamin A deficiency, symptoms of vitamin A deficiency, causes of vitamin A deficiency, complications of vitamin A deficiency and Preventive meathods of vitamin A deficiency.

Scoring system for knowledge:

Knowledge questions from number 13 to 26, this part included 13 questions which were scored as the following:

- Complete correct = two points.
- Incomplete correct = 1 point.
- Don't know/ incorrect = zero point.

The total score of knowledge were ranged from 0-26 points and classified as the following:

- Unsatisfactory level of total knowledge if mother took < 60% (<16 points).

- Satisfactory level of total knowledge if mother took ≥ 60% (≥16 points).

Part III: Mothers reported practices regarding vitamin A intake for their children: -

This part was used to collect data about vitamin A capsules are given to the child during vaccination, child was given vitamin A capsules, child is given vitamin a capsules at the age of 12 months to 5 years, child is given liver once a week, child eats eggs 3-4 times a week, child eats milk and dairy products 2-3 times a week , child eats green vegetables rich in vitamin a daily, child eats color vegetables rich in vitamin A daily and child eats fruits rich in vitamin a 2-3 times a week.

Scoring system for practice items included 9 questions from 1 to 9 scored as the following:

- Done = one point,
- Not done = zero point.

The total reported practices: Calculated for each mother by adding the score of all items of the reported practices. It ranged from 0-9 points and classified as the following:

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- Inadequat reported practices < 60% (< 5points)
- Adequat reported practices ≥ 60% (≥ 5points)

2nd Tool: - Health Belief Model constructs (HBM): Adapted from champion (1999) and modified by the researcher. The HBM constructs which used in this study was included: all the items of subscales were 39 items and three-point Likert scale response choices: Agree scored 3 points, neutral scored 2 points, and disagree scored 1 point.

Perceived susceptibility included: Child is at risk for vitamin A deficiency, child's chance of suffering from vitamin A deficiency in the next few years is high, child's physical health makes him likely to suffer from vitamin A deficiency, child does not have symptoms, he does not need to have a blood level of vitamin A tested, family history that puts your child at risk for vitamin A deficiency, very concerned about your child suffering from vitamin A deficiency and high probability that child wasexposed to vitamin A deficiency. **Perceived severity** of vitamin A deficiency included : Child is at risk for vitamin A deficiency, child's chance of suffering from vitamin A deficiency in the next few years is high, child's physical health makes him likely to suffer from vitamin A deficiency, child does not have symptoms, he does not need to have a blood level of vitamin A tested, family history that puts your child at risk for vitamin A deficiency, very concerned about your child suffering from vitamin A deficiency and high probability that child wasexposed to vitamin A deficiency. **Perceived barriers** included**:** Foods that contain vitamin A are not compatible with child, Foods that contain vitamin A are expensive, child does not prefer foods that contain vitamin A, it is difficult to change child's food to contain vitamin A, in order to eat vitamin A, child must give up other foods that he loves, child needs to eat foods that contain vitamin A for a long period to achieve the desired goal, it is difficult to obtain foodstuffs that contain vitamin A, foods that contain vitamin A will reduce the nutritional value of child's diet, eating foods that contain vitamin A will have a negative impact on child's life and foods that contain vitamin A have no nutritional value. **Perceived benefits** included: Foods rich in vitamin A prevent vitamin A deficiency problem, foods rich in vitamin A make child feel better, the regular vitamin A that child takes will improve his condition, child feels satisfied when he eats foods rich in vitamin A and detecting vitamin A deficiency early increases the chances of an easy recovery. **Cause of action** included: Follow a balanced diet for child, always follow the doctors' orders because think it wasbeneficial for child's health condition, often do things to improve child's health, child takes vitamins when he is not eating good meals, one of the commandments that I follow is to take care of child's physical health, in addition visits to doctors and Im looking for new information regarding child's health.

Scoring system for HBM, The total score ranged from 39 to 117 points, which was scored as followed:

- Positive health beliefs ≥50% (≥59 points).
- Negative health beliefs <50% (<59 points).

2.5 Validity

Content and face validity was conducted to determine whether the tool covers the aim. The tool was revised by a jury of 3 experts of Community Health Nursing, Faculty of Nursing, Helwan University who reviewed the tool for clarity, relevance, comprehensiveness and applicability. No modifications done but the expertise recommended rephrasing for some questions and items of the tool.

2.6 Reliability

Reliability of the tool was tested to determine the extent to which the questionnaire items are related to each other. Testing the reliability of the tools through Alpha Cronbach reliability analysis was as the following:

Tools	Alpha Cronbach
Knowledge items	0.85
Reported practices items	0.84
Health Belief Model items	0.87

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2.7 Pilot study

After reviewing the tool by the experts, the researcher conducted a pilot study. The purpose of the pilot study was to ascertain the clarity, relevance, and applicability of the study tools and to determine obstacles that may be encountered during data collection. It also helped to estimate the time needed to fill out the questionnaire. The pilot study was carried out on 10% (40 mothers) of the sample size. Based on the result of the pilot study, rephrasing some questions was done to ensure clarity of the questions. So, it included in the main study sample.

2.8 Fieldwork

1. An official letter was issued from the Dean of Faculty of Nursing Helwan University, and was directed to the manager of the MCH centers in Helwan district, Cairo Governorate included the aim of the study to obtain permission after establishing a trustful relationship.

2. Each mother was interviewed individually by the researcher to explain the study purpose.

3. Data was collected during six months (from beginning of January to end of Jun 2023) two days/week (Saturday and Sunday) from 10 am -1 pm till the needed sample was completed. Informed consent was obtained from mothers after the researcher introduce herself for them then the study was conducted by distribution of the tool for them. Time needed to complete the tool was 15-20 minutes.

4. The program was developed based on the result of pretest questionnaire. The plan of the educational program was prepared, implemented and then evaluated the degree of improvement in study sample according to program objectives in the post test.

The educational program phases: This study was conducted by preparatory, assessment, planning, implementation and evaluation phases as following:

(I) First, preparatory phase: Tools of data collection was developed based on review of the current and past, local and international related literature.

(II) Second, assessment phase: By using a pre-testing questionnaire to assess the mother's knowledge, reported practices and health belief model about prevention of vitamin A deficiency.

(III) Third, planning and implementation phase: Designing educational program content regarding prevention of vitamin A deficiency. Vitamin A deficiency program general objective was to improve the mothers knowledge, reported practices and health belief model regarding prevention of vitamin A deficiency and aim was explained to all mothers based on the result of pre-test questionnaire, the researcher was utilized 4 theoretical sessions, each session took from 30-45min.

The content of an educational program booklet was helped to increase knowledge and reported practices about prevention of vitamin A deficiency as: meaning, benefits and sources and importance of vitamin A and vitamin A deficiency: meaning, signs and symptoms, causes, complication …. etc. Each session was followed by summary of essential points. In the last session each mother took one of guide booklet.

(IV) Fourth, evaluation phase: After implementation of the educational program for mothers to prevent vitamin A deficiency for their children, posttests was done once immediately after the program to evaluate the effect of the educational program by using the same questionnaire of pretest.

2.9 Ethical considerations:

An official permission to conduct the proposed study obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Helwan University. Participation in the study was voluntary and subjects were given complete full information about the study, which included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs were respected.

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2.10 Statistical analysis:

Data entry and analysis were performed using Statistical Package for Social Sciences (SPSS) version 25. McNemar's Test was used to evaluate the difference between qualitative variables when data was paired, dichotomous and non-parametric. Marginal Homogeneity test was used to evaluate the difference between non-parametric paired qualitative data when variables had more than two categories. Chi-Square (x^2) test and Fisher exact test were used to evaluate the relationship between the independent categorical variables. Spearmen correlation coefficient was used to evaluate the strength and direction of correlation between two continuous variables.

The observed statistical differences or relationship were detrmined by test of significance as follows:

- Non-significant when P-value > 0.05
- Significant when P-value ≤ 0.05
- Highly statistically significant when P-value ≤ 0.001

III. RESULTS

Table (1) shows that, 63.8% of the studied mothers were in age group 35 - ≤ 40 years with mean age 35.13±9.36 years and 60.7% of them had university education or more. Also, 70.0% of them were housewifes and 76.5% of them were from rural residence. Additionally, 53.3% of them reported not enough income. Also, 45.5% of the studied mothers had 3-4 children and 52.8% of them had family consisted of 3-5 members. Also, 42.3% of them had two rooms in their homes.

Table 2 reveals that, 49.3% of the studied children were in age group >10 years with mean age 9.92±2.65 and 67.2% of them were females. Also, 67.0% of them were delivered by cesarean section and 42.5% of them were the third child.

Figure 1 illustrates that, 22.5% of the studied mothers had satisfactory level of total knowledge preprogram which improved to 65.7% post program implementation.

Figure 2 shows that, 38.2% of the studied mothers had adequate total reported reported practices levels related to vitamin A deficiency preprogram, which improved to 77.0% post program implementation.

Figure 3 illustrates that, 39.2% of the studied mothers had positive level of health belief preprogram, which improved to 75.8% post program implementation.

Table 3 clarifies that, there was a significant statistically positive correlation between total level of knowledge and reported practices pre and post program at (P-value=0.030 and 0.034) respectively, there was a significant statistically positive correlation between total level of reported practices and total level of health belief preprogram and post program implementation at (P-value=0.041 and 0.010) respectively.

IV. DISCUSSION

Vitamin A deficiency (VAD) is a significant public health concern, particularly among children under five years. Vitamin A deficiency can have devastating consequences for children's health. It weakens their immune system, making them more susceptible to infections like measles and diarrhea, which can be deadly. Additionally, VAD can lead to night blindness, potentially hindering their development and education. The Health Belief Model highlights the severity of the deficiency and the importance of early detection and prevention **(Imran et al., 2022).** [10]

The Health Belief Model (HBM) can be a valuable tool for understanding and influencing mothers behaviors regarding preventing vitamin A deficiency in their children. Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action are the factors of HBM. By applying the health belief model and targeting various factors, educational programs can effectively equip mothers with the knowledge and tools needed to protect their children from vitamin A deficiency and ensure their healthy development **(Hossain et al., 2021).** [9]

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Part I: Socio-demographic characteristics of mothers and their children:

Regarding the studied mothers' socio-demographic characteristics, the current study found that more than three-fifths of them were aged 35≤ 40 years with a mean age of 35.13±9.36 years **(Table 1).**

In contrast, **Mohamed et al., (2022)** [19] studied the "Effectiveness of a Community-Based Nutrition Education Program on Maternal Knowledge and Practices Regarding Vitamin A-Rich Foods "in Sudan, (n=200) who found that 81% were below 30 years.

Also, these results were contradicted by **Varghese, et al., (2019)** [23]**,** who studied "knowledge and practice regarding vitamin A prophylaxis among mothers of children under-five years, in India (n=100) subjects, and found that 42% of mothers from 26 to 30 years.

In addition, the present study reported that less than three-quarters of them were housewifes. This result was in agreement with **Woldegebriel et al., (2020)** [25], who conducted a study titled "Associated factors among children aged 6-59 months" in Ethiopia (n= 5161) and reported that 75.4% of them were not working. While **Mohamed et al., (2022)** [19] disagreed with the current finding and found that all their studied mothers were housewifes. Moreover, **Ali, et al., (2019)** [2] contradicted and found that 100% of their studied mothers were housewifes.

The current study found that more than half of mothers not had enough income. These results were incongruent with**, Mangusho et al., (2023)** [18] studied" Vitamin A-related nutrition knowledge gaps and predictors among caregivers of preschool children in Africa "(n= 247) and found that 92% of their studied caregivers were low monthly household income.

As regards children's demographic characteristics, the current study reported that nearly half of the studied children were aged >10 years with a mean age was 9.92±2.65. **(Table 2).**

These findings were in consistent with **Woldegebriel et al., (2020)** [25] who mentioned the mean (±SD) age was 26.6 months (SD±2.1) of the total children, 33% of them were in the age group 12-23 months.

Additionally, the current study reported more than two-thirds of them were female children. This finding was agreed with **Abdel-Wahab et al., (2019)** [1]**,** who conducted a descriptive research design about "Mothers ' knowledge, practices, and attitudes regarding their preschool children with Xerophthalmia", in Benha, Egypt, and reported that 65% of their studied children were females.

In relation to the total level of knowledge regarding vitamin A deficiency pre- and post-program, the current study found that about one-quarter of the studied mothers had satisfactory levels of total knowledge pre-program, which improved to nearly two-thirds of them post-program implementation **(Figure 1).**

Moreover, **Sathiyabama, (2020)** [20] who studied "Assess the effectiveness of a structured teaching program on prevention and management of vitamin-A prophylaxis" in India (n=60) congruent and mentioned that in their pretest, 100% of their studied mothers had inadequate knowledge of the prevention and management of Vitamin A. Whereas in their post-test, 61.66% had adequate knowledge, 36.67% of them had moderately adequate knowledge, and 1.67% had inadequate knowledge on prevention and management of Vitamin A prophylaxis among mothers of under-five children.

This might be due to the program's design to convey clear and effective information that leads to a significant increase in mothers' knowledge regarding vitamin A and its causes.

With regards to total reported practices regarding vitamin A deficiency among the studied mothers, the present study showed that less than two-fifths of the studied mothers had adequate total reported practices level related to vitamin A deficiency pre-program, which improved to more than three-quarters post-program implementation **(Figure 2).**

These results agreed with **Hossain et al., (2021)** [9] who found statistically significant improvements in mothers' practice regarding vitamin A deficiency and its prevention after participating in an HBM-based intervention and the mean practice score of the intervention group increased from 10.9 ± 2.3 at baseline to 14.9 ± 1.9 post intervention.

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This might be due to the effect of educational program that improved mothers reported practices related to vitamin A, and educating mothers positive practices regarding vitamin A-rich foods, and incorporating eggs into their children's diet.

As regards to the studied mothers total health belief model regarding vitamin A deficiency **pre and post program,** The current study illustrated that nearly two-fifths of the studied mothers had a positive level of health belief pre-program, which improved to more than three-quarters post-program implementation **(Figure 3).**

In the same line, **Meena, et al. (2020)** [19] conducted "A quantitative pre-experimental research design to assess "the effectiveness of a structured teaching program regarding malnutrition", in India (n=64) and found that their pre-program: 39% of the studied mothers had a positive level of health belief changed to 75% of the mothers in their post-program implementation.

This might be due to the educational program based on the Health Belief Model effectively influencing mothers' health beliefs and behaviors.

As regards correlation between the studied mothers total knowledge, reported practices and health beliefs regarding vitamin A deficiency pre and post implementation of an educational program, The current study found that there was a significant statistically positive correlation between the total level of knowledge and practices pre and post-program implementation, Also, there was a significant statistically positive correlation between total level of practices and total level of health belief pre-program and post-program implementation. **(Table 3)**

In accordance with these findings, **Kumbhar, (2023)** [14] consistently found that there was a significant statistically positive correlation between mothers' total level of knowledge about vitamin A deficiency and their total level of practices related to prevention. This means mothers with more knowledge (e.g., the importance of vitamin A, symptoms of deficiency) were more likely to report better practices.

This positive correlation existed both pre and post program the educational intervention. This suggests the program might have reinforced the connection between knowledge and practices.

Similarly, **Atabaki et al. (2022)** [5] found that there is a significant statistically positive correlation between mothers' total level of practices and their total level of health belief.

This might be due to mothers with higher initial knowledge (pre-program) about vitamin A deficiency also more likely to report better practices. This correlation remained positive even after the program, suggesting the program might have reinforced the connection between knowledge and practices.

V. CONCLUSION

In the light of the results and research hypothesis of the current study, can be concluded that:

There were marked improvement in mothers knowledge, reported practice, and health beliefs regard in prevntion of vitamin A deficiency post program. Also, there were statistically significant positive correlations between mothers knowledge, reported practices and health beliefs model post educational program.

VI. RECOMMENDATIONS

In the light of results of this study, the following recommendations were suggested:

1- Counseling program for mothers should be available in MCH centers and pediatric clinics regarding nutritional needs especially vitamin A supplementation for children.

2- Witten guidelines about vitamin A in the form of booklets or brochures should be provided to mothers in order to encourage them to prevent children vitamin A deficiency.

3- Develop and implemented health educational sessions for mothers of children with vitamin A deficiency to improve their knowledge and practices toward care of their children.

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Further researchs:

- Ongoing researches in different settings were required for enhancing mothers awareness about vitamin A deficiency prevention.

Table (1): Frequency Distribution of the Studied Mothers According to their Socio- demographic Characteristics (n=400).

Mothers socio- demographic characteristics	No	%
Age (years)		
25 - <30	30	7.5
30 - <35	115	28.7
35 - ≤ 40	255	**63.8**
Mean ±SD	35.13±9.36	
Educational level		
Can't read and write	20	5.0
Read and write	22	5.5
Basic education	50	12.5
Secondary education	65	16.3
University education or more	243	**60.7**
Occupation		
Housewifes	280	**70.0**
Working	120	30.0
Residence		
Rural	306	**76.5**
Urban	94	23.5
Monthly Income		
Not enough	213	**53.3**
Enough	142	35.5
Enough and save	45	11.2
Number of children		
1-2	113	28.2
3-4	182	**45.5**
4-5	93	23.3
>5	12	3.0
Number of family members		
3-5	211	**52.8**
6-8	102	25.5
>8	87	21.7
Number of rooms		
One	17	4.2
Two	169	**42.3**
Three	104	26.0
Four	72	18.0
Five	34	8.5
Crowdeding index		
<1	141	35.2
1-<2	197	49.3
≥2	62	15.5

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Table (2): Frequancy Distribution of the Studied Children according to their Demographic Characteristics (n=400).

Child demographic characteristics	No	%
Age (years)		
<5	69	17.2
5-10	134	33.5
>10	197	**49.3**
Mean ±SD	9.92±2.65	
Gender		
Male	131	32.7
Female	269	**67.3**
Method of child delivery		
Normal	132	33.0
Cesarean section	268	**67.0**
Rank of child between sibling		
First	61	15.2
Second	98	24.5
Third	170	**42.5**
Fourth	64	16.0
Fifth or more	7	1.8

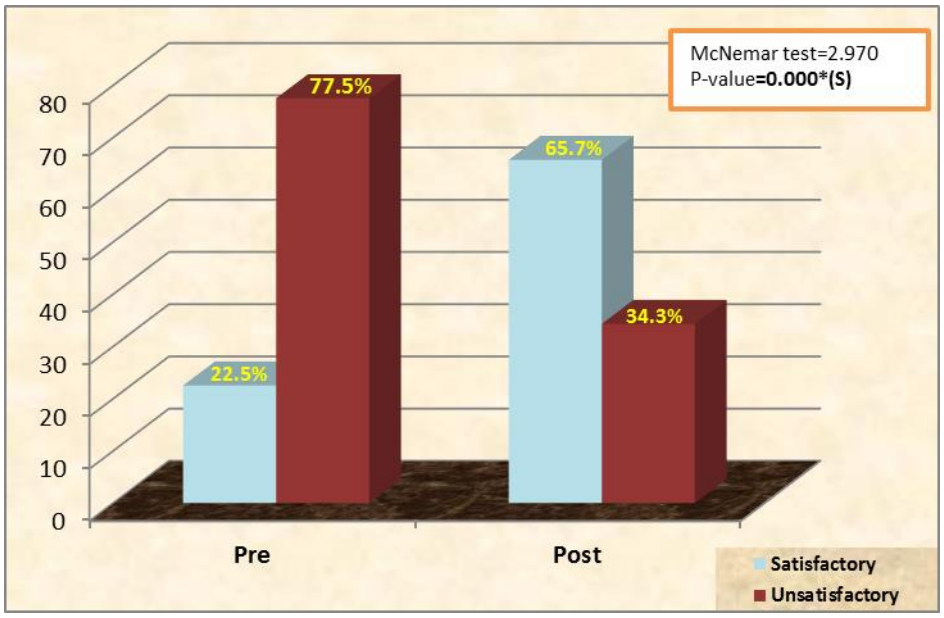

Figure (1): Precentage Distribution of the Studied Mothers Total Level of Knowledge about Vitamin A Deficiency (n=400).

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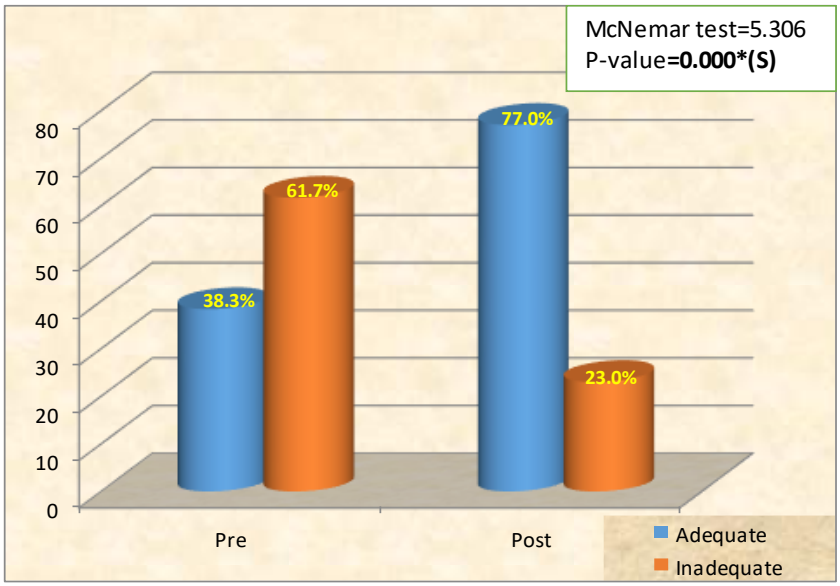

Figure (2): Percentage distribution of the Studied Mothers Total Level of Reported Reported practices related to Vitamin A Deficiency (n=400).

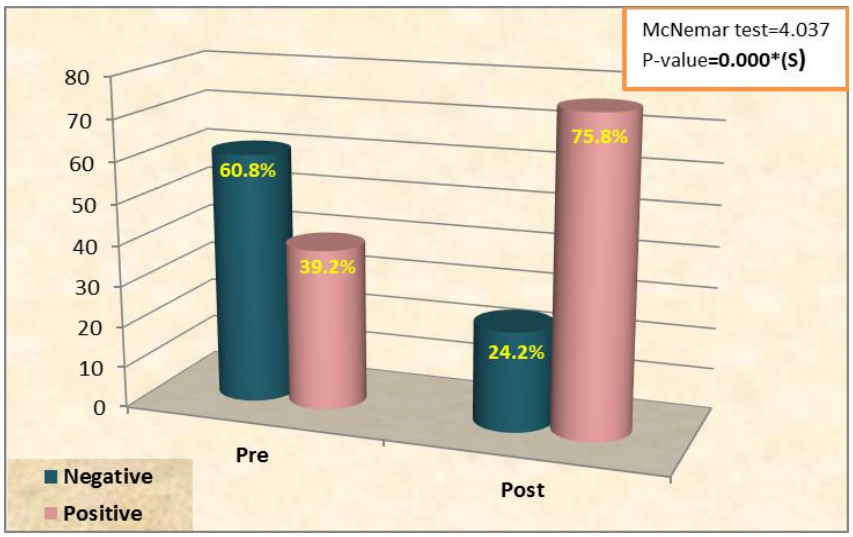

Figure (3): Percntage Distribution of the Studied Mothers Total Level of Health Belief Model Constract related to Vitamin A Deficiency Prevention (n=400).

Table (3): Correlation between Total Level of Knowledge, Reported practices and Health Beliefe Model Pre and Post Program among the Studied Mothers.

Variables	Pre /post	Total level of knowledge		Total level of reported practices	
		R	P-value	r	P-value
Total level of practice	Pre program	0.551	**0.030***		
	Post program	0.692	**0.034***		
Total level of HBM	Pre program	0.461	**0.037***	0.418	**0.041***
	Post program	0.621	**0.015***	0.835	**0.010***

*** Significant at P-value ≤ 0.05**

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