

## Effectiveness of Nutrition Education Program on High School Female Students Nutritional Knowledge in Al-Hilla City, Iraq

Sara S. Zaal<sup>1\*</sup>, Mohammed F. Khalifa<sup>2</sup>

<sup>1</sup>MSc Student, University of Baghdad, Collage of Nursing Department of community Nursing and clinical nurse specialist in Ministry of Health and Environment at Babylon health directorate, province Babylon, Iraq Email: saronat1993@gmail.com

<sup>2</sup> Professor PhD, Department of community Nursing, Collage of Nursing, University of Baghdad, Baghdad City, Iraq. Email: [mh.hala2013@gmail.com](mailto:mh.hala2013@gmail.com)

### Abstract

Aimed this study to determine the effectiveness of nutrition education programs on high school female students' nutritional knowledge . The research design is a quasi-experimental, using one group, test-retest. The study Initiated from (October10<sup>th</sup> 2020 to May 2<sup>nd</sup>, 2021). The study is carried out at Female Students` High School in Hilla City. A non-probability, (purposive) sample of (30) high school female students, is selected for the purpose of the study. A self-report questionnaire is constructed out of the nutrition education program, and application of education program. The instrument consists of two parts, which include demographic data and the nutritional knowledge of high School female Students. The findings indicate that there is a highly significant difference between pre and post-tests episodes. The high School Female Students` Nutritional Knowledge has improved as a result of the program implementation. The study concludes that the nutrition education program is confirmed to be an effective mean for the improvement of the high school female students` nutritional knowledge. The study 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. Further and a nation-wide research can be conducted with large sample size and wide-scale of variables. **Keywords**-nutrition , knowledge, High school female student.

### 1. Introduction

Nutrition is a deliberate act in which a person takes insufficient quantities of the nutrients that the body needs at the right times to protect and maintain health and improve the quality of the body (1). Nutrition education is a mix of art and science that not only provides nutritional knowledge but also helps people understand how to preserve good health, good health practices, better food safety, and more effective use of food resources, among other things(2). Nutrition education includes a variety of strategies aimed at gaining the knowledge, skills, and behaviors needed to plan, manage, and make food choices that meet daily nutrient requirements while also encouraging physical activity (3).

The WHO define female high school students as a critical period of development that occurs between the ages of 10 and 19, Dietary behaviors are particularly important during this time because they influence adolescents' nutritional status as well as their long-term health(4). During this period Good nutrition is critical for their proper physical and cognitive development. Because this period is the best time to start developing healthy habits that you will keep for the rest of your lifetime. a similar time, the age in terms of being the most vulnerable of disease growth that manifests in grown-ups(5).

Unforeseen, the Iraqi people are facing two major nutrition issues: first, issues related to a lack of necessary micronutrients, like vitamins Decrease, or under-weight; and second, issues related to issues of diseases such as Anemia, hypertension, diabetes, obesity cardiovascular disease, besides several other kinds of cancer (6). Every year, the wellbeing of nearly (50) million young females is jeopardized due to acute malnutrition, whereas (40) million young females' health is jeopardized due to long-term obesity(7).

Under-nutrition is the most common nutritional issue in developing countries, affecting both young children and teenagers in low-income countries. malnutrition and diseases play significant roles in deciding morbidity and mortality, limiting the health and output of teenagers. However, the issue of over-nutrition is becoming increasingly prevalent. In developing countries like Ethiopia, it's becoming one of the most serious public health issues(8).

It is important to address the nutritional issues of school girls because their nutritional status has an injurious impact on future generations. Girls' nutritional status (ages 10 to 19) has a significant effect on their current and future health .A consistently balanced diet and eating habits during this period will help to address nutritional deficiencies and linear growth stalls that occur during the first decade of life, as well as limit unhealthy behaviors that contribute to the adult-onset epidemic of non-communicable diseases(9).

Finally , In view of point of the researcher, the present of the study is to evaluate the nutrition knowledge of high school female students in the school setting, learn more about their way of thinking about nutrition, and determine the effectiveness of nutrition education programs on high school female students` nutritional knowledge.

## **2. Methodology**

### **2.1 Ethical consideration**

All female high school students, who have participated in the study, have signed a consent form to present their agreement for participation in the study. The purpose of the study has been explained to the subjects before their participation and they are told that their participation in this study is voluntary and they can withdraw from this study at any time they want. The confidentiality of the data is also safeguarded and they will be securely maintained during and after conducting the study .

### **2.2 Design and setting of study**

A quasi-experimental design, using one group, test-retest, approach is employed to achieve the study objectives from October 10<sup>th</sup>, 2020 to May 2<sup>nd</sup>, 2021.

### **2.3 Instrument of study**

The purpose of the study is to evaluating of the effectiveness of the nutrition education program on high school female student nutritional knowledge in Hilla city, a self-report questionnaire is constructed for the purpose to arrive objectives of the research, Which consists of the two parts.

### **2.4 Statistical Analysis**

The data of the present study is analyzed through using the Statistical Package of Social Sciences (SPSS) version (26). The following statistical data analysis approaches were used in order to analyze data and assess the results of the study. The researchers used descriptive and inferential data analysis to obtain results.

### 3. Results and discussion

Table (1) shows that Results, depict that most of the female students, in the present study, are equally distributed relative to their age and grade, single (90.0%), most of their fathers' education is elementary school graduates (26.7%) and their mothers' education is middle school graduates (30%), have an income of (301-600) thousand dinar (30%) and living in the urban area (56.7%).

Concerning their marital status, the study finds out that the greater proportion of these female high school students are unmarried and this finding reflects the nature of their life in the eastern culture. Most of their parents are low-educated with low income and living in the urban area. Such findings present an evidence that these students have shared a lack of nutritional knowledge due to the impact of the early identified variables. The study in Bangladesh was showed, more than 60 percent of the participating mothers did not complete their secondary education, and most of them were unemployed housewives, while father's education and mother's profession, as well as school type, have a great relationship with nutritional awareness. However, a father's education and profession have a different degree of correlation (10). While another study is carried out to determine the impact of selected socio-demographic factors on elementary school children's nutrition knowledge The stratified cluster sampling method is utilized on a multistage (3922) student sample. Students with the lowest parent education levels have the lowest nutrition awareness scores, according to the study(11). Table (2) Show the Results, out of this table, reveal that all high school female students have experienced a poor level of nutritional knowledge at the pretest episode (100 %).

This results was agreed with study in Adolescent eating habits are essential because body changes impact an individual's nutritional and dietary requirements. Adolescents are growing more self-reliant and making many of their own eating choices (12). However, Teenagers are characterized by a rapid period of growth and development during which nutrition and micronutrient requirements are quite high. Although the frequency of under-nutrition among teenagers is decreasing, the current incidence of under-nutrition is still relatively high (41.9 percent). Adolescents who have a strong understanding of nutrition are more inclined to eat healthily (13). A descriptive study is conducted to increase pupils' comprehension of dietary knowledge (n=25) among high school seniors The outcomes of the study confirm the idea that high school seniors have insufficient nutrition knowledge (14).

The table (3) Results, out of this table, reveal that the majority of high school female students have acquired a good level of nutritional knowledge at the posttest I episode (83.33%).

After their being exposed to the nutrition education program, their nutritional knowledge has been improved and most of them have acquired a good level of nutritional knowledge. Not just because food is the most basic human need, but also because good nutrition is a foundation of development. To achieve optimal physical growth and development, adolescents need an appropriate diet and physical activity to maintain muscular progression and bone strength. The goal of this study is to see how nutrition education affects teenage girls at Government Islamic girls' high school in terms of a balanced diet and physical activity. To take the pre-test and post-test, 30 students were randomly selected from four sections of each class at Govt. Islamic girls high school in Lahore. A questionnaire was used to collect data to give nutrition information. Picture presentations were used to convey the lecture on a balanced diet, physical exercise, the

food pyramid, food guidelines, my plate, macronutrients, micronutrients, and the five food groups. The findings reveal a significant shift in the adolescent's nutritional awareness in terms of a well-balanced diet and physical activity at an  $\alpha$  level of 0.005. According to the findings, multimedia presentations and 3D movies are utilized to teach adolescents. Adolescents should be encouraged to eat a nutritious diet and live a healthy lifestyle through nutritional activities (15). Table (4) Results, out of this table, reveal that all high school female students have acquired a good level of nutritional knowledge during the posttest II episode (100%).

Adolescents who have a good understanding of nutrition are more likely to adopt healthy eating habits. In the light of this, a school-based interventional study is being conducted among adolescent girls in class 9th of a school in an urban slum of Delhi to assess adolescent girls' baseline nutrition-related knowledge and the effectiveness of nutrition education material (flipchart) in increasing their nutritional knowledge. The researchers discovered that following the intervention, the participants' nutrition-related knowledge improved greatly (mean difference was 1.7890 0.1434), which is considerably improved after the nutrition education session ( $P$  0.001) (16).

The goal of this study is to look at how secondary school students' nutrition knowledge evolves as a result of various socio-demographic characteristics. The study's universe includes (521) students, including (142) female and (379) male students in secondary schools, as well as a sampling group from private and state-run secondary schools in Konya province private and state central secondary education schools. The nutrition knowledge of female students is determined to be higher than that of male students, especially those who attend nutrition elective classes (16).

Even if their nutritional sensitivity is not as significant as it is in infancy and childhood, adolescents are a nutritionally fragile population. A study in Bangladesh's North West intends to examine the nutritional status and evaluate the impact of nutrition education on improving nutritional status among adolescent girls. From January 2014 to April 2016 to collect primary data, randomized controlled trial research with a thorough questionnaire is used. At the baseline of the study, the participants were randomly assigned to a control and an intervention group and both groups have the same number ( $n=250$ ) of an adolescent girl. Finally, 241 adolescent girls from the intervention group and 236 adolescent girls from the control group are interviewed to assess the role of nutrition education among adolescent girls. This study shows that mildly (37.6 vs. 31.8) stunted teenage girls are significant ( $p<0.05$ ) reduced whereas moderated and severely stunted girls are almost the same from the baseline. Nutrition education plays a significant role in reducing the thinness among the adolescent girls in the intervention group. In comparison with the control group, nutrition education also appreciably contributed to nutrition and health-related knowledge ( $p<0.001$ ), frequency of eating habit ( $p=0.013$ ), intake of a balanced diet (8.5 to 22.8;  $p<0.001$ ), vaccination coverage (28.8 to 44.0;  $p<0.001$ ), and intake of the iron tablet (15.7 to 56.8;  $p<0.001$ ). Nutrition education not only reduces the percentage of mild stunted significantly but also increases the health and nutrition-related positive behaviors, attitude, and practice of adolescent girls in rural areas (17).

Table (5) Results, out of this table, indicate that there is a highly significant relationship between high school female students' nutritional knowledge and their age only.

A mixed-design study aims at evaluating children and adolescents' nutritional knowledge, practice, and dietary habits in Isfahan province, this study looks into important variances in gender and living area among the above-mentioned people in Iran. In the province of Isfahan, this study is being done on (4700) elementary school children and junior high school students. According to the survey, female students and junior high school students have better nutritional awareness than their male counterparts and elementary school students (18).

Another study assesses the nutritional state and the knowledge of students at selected secondary schools in Nigeria's Sokoto Metropolis. The study enlisted the participation of 240 high school pupils. Male and female students had average ages of 18.01.90 and 15.71.20 years, respectively. The result shows that the female students' nutritional knowledge is significantly higher than that of males (19).

#### 4. Conclusions

The results of this study showed that nutritional knowledge of high school students is affected by the social and demographic characteristics, as the interpretations indicate that the nutritional knowledge is affected by their age.

#### 5. Recommendation

The nutrition education program can be utilized as an educational mean for enhancing the high school female students' nutritional knowledge.

Table(1): Distribution of socio-demographic Data for the Study.(n:30)

**Table (1): High School Female Students' Socio demographic Characteristics**

List	Characteristics	Frequency	Percent
1	Age (Years)		
	16	10	33.3
	17	10	33.3
	18	10	33.3
2	Marital Status		
	Married	3	10.0
	Single	27	90.0
	Divorced	0	0.0
	Separated	0	0.0
	Widowed	0	0.0
3	Grade		
	Tenth	10	33.3
	Eleventh	10	33.3
	Twelfth	10	33.3
4	Father's Education		
	Unable to read and write	2	6.7
	Able to read and write	6	20.0
	Elementary school graduate	8	26.7
	Middle school graduate	2	6.7
High school graduate	3	10.0	

	College graduate	7	23.3
	Postgraduate	2	6.6
5	Mothers' Education		
	Unable to read and write	4	13.3
	Able to read and write	6	20.0
	Elementary school graduate	6	20.0
	Middle school graduate	9	30.0
	High school graduate	1	3.4
	College graduate	4	13.3
	Postgraduate	0	0.0
6	Monthly Income		
	Less than 301 thousand dinar	8	26.7
	301- 600 thousand dinar	10	30.0
	601- 900 thousand dinar	6	20.0
	901- 1,200,000 dinar	5	16.7
	1,201,000 – 1,500,000 dinar	2	6.6
	More than 1,500,000 dinar	0	0.0
7	Residency		
	Urban	17	56.7
	Rural	13	43.3

**Table (2): Overall Evaluation of Female Students' Knowledge at the Pretest Episode**

Poor (42-55)	Fair (56-69)	Good (70-84)
30 (100.0%)	0 (0.0%)	0 (0.0%)

**Table (3): Overall Evaluation of High School Female Students' Knowledge at the Posttest I Episode**

Poor (42-55)	Fair (56-69)	Good (70-84)
0 (0.0%)	5(16.67%)	25(83.33%)

**Table (4): Overall Evaluation of High School Female Students' Knowledge at the Posttest II Episode**

Poor (42-55)	Fair (56-69)	Good (70-84)
0(0.0%)	0(0.0%)	30(100.0%)

**Table (5): Effectiveness of the Nutrition Education Program on High school Female Students Nutritional Knowledge**

a. Comparison between Pretest and Posttest I

	Group Size	Mean	Standard Deviation	Degree of Freedom	T-test	Significance
Pretest	30	12.7333	4.94057	29	14.116	0.000
Posttest I	30	73.2667	4.34649	29	92.327	0.000

b. Comparison between Posttest I and Posttest II

Groups	Group Size	Mean	Standard Deviation	Degree of Freedom	T-test	Significance
Posttest I	30	73.2667	4.34649	29	92.327	0.000
Posttest II	30	65.0667	2.71564	29	131.234	0.000

**Table (6): Stepwise Multiple Linear Regression for the Relationship between High School Female Students' Nutritional Knowledge and Their Socio Demographic Characteristics**

Model	Sum of Squares	Degree of Freedom	Mean Square	F-Statistics	Significance
Regression	168.200	1	168.200	8.727	0.006 <sup>b</sup>
Residual	539.667	28	19.274		
Total	707.867	29			

a. Dependent Variable: Nutritional Knowledge, b. Predictors: (Constant), Age

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