

## The impact of educational nutritional sessions for prospective preschool teachers on their knowledge, practice and awareness regarding nutritional needs of preschool children in Damanhour City

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**Abstract:** The first six years in human life is a period when children develop quickly and effectively. Early childhood is a critical time for the development of food preferences and eating patterns. Feeding habits formed in the toddler years are important building blocks for adult health. Preschool is the perfect setting to educate children on the principles of good nutrition. The preschool or child care center where young children are spending large amounts of time is an effective setting for learning nutrition and increasing preference for foods that are nutritionally beneficial. The nutritional knowledge and awareness of preschool teachers are one of the important factors affecting preschool children's nutritional habit. **Aims of this study** are to assess the nutritional knowledge, practices and awareness of prospective kindergarten teachers and to identify the effect of implementing the nutritional sessions for prospective preschool teachers on their knowledge, practices and awareness regarding nutritional needs of preschool children. **Material and Methods:** quasi experimental design, structured questionnaire was used to collect data before and after the conduction of the nutritional sessions. It was conducted in the faculty of kindergarten in Damanhour University. **Results:** revealed that most of the students (91%) supported the importance of nutritional education to preschool age children and the majority of them had mentioned that they didn't receive any previous nutritional education before. In addition, the majority of the studied sample didn't know the daily nutritional requirement of preschool age children. **Conclusion and recommendations:** The influences of kindergarten teacher nutritional knowledge on preschoolers nutritional habit is evident. Thus their knowledge, attitude and practices must be comprehensive and up-to-date. Nutritional courses for undergraduate teachers must be incorporated in the faculty curriculum and nutrition education and nutrition related activities must be compulsory.

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### 1. Introduction:

The first six years in human life is the most quick and effective period in child development. During this period, changes occur in children's rates of physical growth and continuing maturation of growth and fine motor skills, which in turn influences social and emotional behavior. Preschool children's personality development influences the amount of food they consume and the food that are acceptable to them. Food habits, likes and dislikes are formed in early years and carry through adulthood where change is often met with resistance and difficulty. It has been confirmed that young children are cognitively and intellectually ready for learning more about food, nutrition and positive health habits than previously believed.<sup>(1,2)</sup>

Early childhood is a critical time for the development of food preferences and eating patterns. Consumption of a healthy diet by young children is essential for normal growth and development and to prevent a variety of nutritional related health problems, such as anemia, growth retardation, malnutrition,

compromised cognitive achievement, obesity, dental caries, and chronic diseases in later life. Children are the nation's most important resource and thus deserve the best possible education for their present and future health. Research evidence suggests that children are not born with the innate ability to choose a nutritious diet; instead, their food habits are learned through experience, from familiarity through exposure to numerous food and education. Feeding habits formed in the toddler years are important building blocks for adult health.<sup>(1,3,4)</sup>

During the preschool years, children are still developing their eating patterns and often need encouragement to eat healthy meals and snacks. Kindergarten or child care center where young children are spending large amounts of time is considered as the most perfect and effective setting for educating children on the principles of good nutrition and increasing preference for foods that are nutritionally beneficial. They can be a critical factor in influencing children's food habits. A key factor in the success of preschool nutritional education programs is

the use of developmentally appropriate learning experiences for children. Preschool learning environments offer prime opportunities for establishing healthful attitudes and knowledge about food and nutrition.<sup>(3,5)</sup>

Preschoolers' intakes of total fat, saturated fat, sodium, and sugar-sweetened beverages have increased over the last 3 decades, whereas consumption of fruits and vegetables remains low. WHO reported that 29% of Egyptian children less than 5 years are malnourished. Furthermore, 47% of Egyptian children don't receive their breakfast and 40 % of them suffering from iron deficiency anemia. This problem appears to be largely attributable to poor dietary quality and micronutrient deficiencies, such as iron and vitamin A.<sup>(6,7)</sup>

Recent evidence documents the increasing global public health concern that preschool children who are overweight or obese experience many health-related problems throughout their childhood and adolescence and into their adult years. The prevalence of preschoolers who meet overweight status criteria in the United States has been increasing over the last three decades, from 5% to 12.4%.<sup>(6)</sup> The health risk consequences of early overweight and obesity in childhood are present in adolescence, with higher risks for cardiovascular disease, high blood pressure, high cholesterol, and Type 2 diabetes. The best way to prevent feeding problems is to teach the child about the health food as early as possible, provide them with healthy choices.<sup>(7,8,9)</sup>

Children are growing and developing bones, teeth, muscles and blood. They need nutritious food in proportion to their weight than do adults, they can become at risk for malnutrition when they accept a limited number of foods, or dilute their diet with nutrients poor food. According to daily requirements of many nutritional guide lines a healthy diet for preschoolers should include a variety of foods from each food group.<sup>(9,10)</sup>

Energy is used for growth and physical activities. Dietary energy must be sufficient to ensure growth and spare protein from being used for energy, without being so excessive that obesity result. A suggested proportion of energy is 55 to 60% as carbohydrates, 25 to 35 as fat and 10-15 % as protein. Also vitamins (A, D, C, B) are necessary for normal growth and development. Its requirement is relatively increased in childhood. Insufficient intake can cause impaired growth and result in deficiency disease.<sup>(9,10,11)</sup>

Furthermore, mineral elements are involved indirectly in the growth process. It has many roles with different type of mineral. Calcium for preschool age group is needed for adequate mineralization and maintenance of growing bones and teeth. Iron has a role in many body functions as respiratory function,

immune system, in cognitive performance and expanding red tissues for infant and children. Zinc is essential for growth and immune function.<sup>(11,12)</sup>

Early learning experiences are crucial to the future well-being of children, and establish the foundation for the acquisition of knowledge and skills that will affect later learning and behavior. Children are great learners, they learn from their parents, friends, teachers and the mass media. Before they go to school, children have been learning in a variety of environments in their homes and in childcare and community settings. Children arrive at school with different backgrounds and experiences and at different stages of development. Positive early experiences with school are of paramount importance to young children.<sup>(13,14)</sup>

There are many sources of nutritional information of those who care of young children as parents, kindergarten personnel. The sources of nutritional information vary in which it may lack in validity, accuracy and not being up to date. The kindergarten care giver is considering one of the preschool children's sources of nutritional information. Thus their nutrition knowledge, attitude and practices is an important factor positively influences the nutritional quality and foster effectively the development of good food habits of young children.<sup>(12,15)</sup>

School environments are places where there is an opportunity to practice healthy eating habits. School nurses can play a vital role in planning policies at the local and national level that support and encourage healthy food environments, performing assessments of the nutritional status of students, and spearheading the implementation of evidence-based health promotion programs. It is time for school nurses to take the lead in efforts aimed at improving the quality of students' dietary intake in the school setting in collaboration with other kindergarten staff. Also, the School Nurse must be dedicated to health promotion for students, staff and school community.<sup>(16,17)</sup>

Kindergarten teachers perform a complex and multidimensional role. They are responsible for implementing a program that is thoughtfully planned, challenging, engaging, integrated, developmentally appropriate, and culturally and linguistically responsive, and that promotes positive outcomes for all children.<sup>(15)</sup>

Optimal nutrition throughout childhood is associated with major public health, economic and social gains for children, their families and the community.<sup>(18,19)</sup>

Kindergartens or Child care centers can play a major role in promoting healthy eating in young children. Preschool teachers may be particularly influential in affecting young children's eating habits and are potentially key agents of change in improving

the preschool nutrition environment. Because they have opportunities throughout the day to integrate nutrition education activities. The nutritional knowledge and awareness of preschool teachers are one of the important factors affecting preschools' children's nutritional habit.<sup>(19,20)</sup> Thus, this research was conducted to assess the nutritional knowledge, practices and awareness of prospective kindergarten teachers and to identify the effect of implementing the nutritional sessions for prospective preschool teachers on their knowledge, practices and awareness regarding the nutritional needs of preschool children.

#### **Hypothesis of this interventional study was:**

There is effect of a nutritional educational sessions on the perspective teachers' knowledge and practice or not?

## **2. Material and methods**

### **Research design:**

Quasi experimental study design was adopted to carry out this study.

### **The study involved the following:**

A quasi experimental research design was carried out to assess the effect of the nutritional educational sessions on the perspective teachers' knowledge and practice.

### **Study setting:**

Study was conducted in the Faculty of Kindergarten in Damanhour University.

### **Subjects:**

All students enrolled in the third and fourth year in the previously mentioned setting were included in the study. Their total number was 140 students (90 enrolled in the third year and the rest in the fourth year) for the academic year 2011- 2012. All of them received their practical training in the different nurseries in Damanhour City.

### **Tools for data collection:**

Two tools were developed and used by the researchers in order to collect the necessary information from the studied sample.

### **These tools includes:**

#### **Tool I:**

Questionnaire to assess the prospective teacher's knowledge regarding their nutritional information and their awareness towards the nutrition process for preschool children.

#### **It includes the following parts :-**

**Part 1:** Prospective teacher's knowledge regarding nutritional disease.

**Part 2:** Prospective teachers' nutritional knowledge during preschool age.

**Part 3:** Prospective teachers' nutritional background.

**Part 4:** Prospective teachers' nutritional education provided to preschool children and their parents.

**Tool II:** Prospective teachers' awareness regarding preschool nutrition

**Part 1:** Prospective teacher's guidance to the preschool children during mealtime

**Part 2 :** Health and nutritional facilities available in kindergarten and role of the care-provider in assessing nutritional status.

### **Methods**

- 1- Official letter was directed from the faculty of nursing, Damanhour University to dean of Kindergarten in Damanhour University in order to clarify the purpose of the study, to set the time for beginning the study and to explain the process of the study as well as to gain her cooperation and support during data collection.
- 2- Tools were developed by the researchers based on the relevant literatures and was revised for its content clarity and validity by 5 experts in the field.
- 3- Pilot study was carried out on a sample of 10 students (those students were excluded from the sample).
- 4- Data was collected during the academic year 2011 - 2012.
- 5- The structured questionnaire was used to collect data about knowledge and practice of the students in relation to preschool nutrition

### **Preparation and organizational session :**

#### **Preparation of sessions**

Nutritional educational program's sessions were prepared by the researchers. The content of the sessions was based on review of literature.

#### **1-The aim of the sessions is to:**

To identify the effect of implementing the nutritional sessions for prospective preschool teachers on their knowledge, practices and awareness regarding nutritional needs of preschool children.

#### **2- Nutritional educational program strategies**

##### **A- Nutritional educational program methods:**

Different methods of instructions were adopted. These methods included brain storming, power point presentation, and group discussion.

##### **B- Teaching aids:**

Different aids were used to facilitate and illustrate teaching such as posters, handouts, food models and real natural food stuffs.

#### **3- Implementation of sessions:**

This phase included the implementation of the planned nutritional educational program. The questionnaire (pretest) was distributed to the students before conducting nutritional sessions. The data were collected during their free time, it lasted from 3- 4 weeks. All students were divided into 8 groups and each group have two nutritional sessions, each one lasted 3 hours using different educational methods (brain storming, lecture, power point presentation and discussion.

Firstly, discussion of the session objectives and content were dedicated. Then, time was available for student's participation and interaction. Different methods of instructions and teaching aids mentioned before were used.

#### 4- Evaluation phase:

Assessment was done immediately after the completion of the nutritional educational program by using posttest.

#### Ethical consideration:

1- Informed consent (oral) was obtained from the students after explanation of the aim of the study to ensure their cooperation and willing, all students enrolled in the third and fourth grades accept and were interested to participate in the study.

#### Statistical analysis:

After data were collected, they were coded and transferred into a specially designed format, to be suitable for computer feeding. Following data entry, checking and verification processes were carried out to avoid any errors during data entry. Frequency analysis, cross tabulation, and manual revision were all used to detect any errors. The SPSS 13.0 for windows statistical package was utilized for both data presentation and statistical analysis of the results. The following statistical measures were used: Descriptive measures included: count, percentage, arithmetic mean, standard deviation.

1. Statistical tests included: Paired t-test

2. Graphical presentation included bar graph

The level of significance selected for this study was P equal to or less than 0.05.

#### Scoring system

This section of the questionnaire includes fifty five items composed of nutritional knowledge during preschool age. The items were scoring as following: The correct answers were pre-determined according to the literature. A score of (1) was given to the correct answer, a score of (0) for incorrect (wrong or missed answers). The total score was obtained for each student (0-55) and nutritional awareness total score was (0-18). Percent total score was calculated as follows;

- Poor (<50%)
- Fair (50- <75%)
- Good (<75 %)

### 3. Results:

**The results of this study are presented in two parts as follow:**

1-Prospective teacher nutritional knowledge regarding preschool children and the effect of nutritional educational sessions on them.

2-Prospective teachers'role concerning preschool feeding practices.

#### Part (I) Prospective teacher nutritional knowledge regarding preschool children and the effect of nutritional educational sessions on them.

**Table (1)** portrays the prospective teacher's knowledge regarding nutritional disease that 85.4% of them stated correctly the that Egyptian preschool children are suffering from nutritional disease, as the majority (92.8%) of the sample reported that anemia is most common, while around one third (31.5%) of them mentioned obesity as another nutritional problem among them. Furthermore, approximately the entire sample (99.2%) mentioned that nutritional disease affects negatively the preschool's child skills and mental abilities.

**Table (1):** Prospective teacher's knowledge regarding nutritional diseases.

| Items                                                                             | No (130) | %    |
|-----------------------------------------------------------------------------------|----------|------|
| <b>Common nutritional problems affecting pre-school children in Egypt.</b>        |          |      |
| • Yes                                                                             | 111      | 85.4 |
| • No                                                                              | 19       | 14.6 |
| <b>*Some preschool nutritional problems (n = 111)</b>                             |          |      |
| Anemia                                                                            | 103      | 92.8 |
| Calcium deficiency                                                                | 100      | 90.1 |
| Wasting                                                                           | 52       | 46.4 |
| Obesity                                                                           | 35       | 31.5 |
| <b>Effect of nutritional disease on the child's skills and his mental ability</b> |          |      |
| • Yes                                                                             | 129      | 99.2 |
| • No                                                                              | 1        | 0.8  |

\* More than one answer

**Table (2)** illustrates the prospective teachers' nutritional knowledge during preschool age it was obvious from the table that more than three quarters (82.3%) of their knowledge about the effect of nutrition on preschoolers growth and development were good in the pre nutritional session compared to 86.2% after the session. Their mean score regarding the same item was  $2.94 \pm 0.59$  before session and  $3.25 \pm 0.81$  after the session. While, regarding their nutritional information sources of food energy it was observed that their knowledge improved after the session as only 9.2% of them had fair knowledge before the nutritional session compared to 37.7% after the session. Also, it was observed from the same table that nearly half of them (43.8%) had poor knowledge about natural fiber sources before the session compared to only 9.2% post session. The mean score were  $0.82 \pm 0.82$  and  $1.35 \pm 0.65$  for pre and post the execution of educational sessions respectively.

Concerning prospective teachers mean score knowledge about vitamins it was clear from the table that it was improved from  $2.49 \pm 1.48$  to  $3.17 \pm 1.27$  for

post educational session. While, regarding their knowledge about dietary source of mineral, only 0.8% of them had good knowledge before the session and improved to 40 % after the session. Moreover, it was observed from the same table that the majority (79.3%) of the studied sample had poor knowledge about the daily nutritional requirement of preschool age children before the nutritional session. While after the session it was account only 8.5% and the mean score were  $1.89 \pm 0.46$  and  $3.0 \pm 0.78$  for pre and post the execution of educational sessions respectively.

Additionally, the same table reveals that the majority of the prospective teachers (92.3% and 98.8%) at pre and post the session had good knowledge respectively about the factors that affect the absorption of calcium and iron. Also, only 12.3% of the studied sample had good knowledge about the nutritional disease before the nutritional session and this was improved to less than three quarters (70.8%) after the session. The average mean score were  $1.72 \pm 0.86$  and  $3.02 \pm 0.80$  pre and post session respectively. It is apparent from the table that only 3.1% of the prospective teachers had good knowledge about the food groups before the nutritional session compared to nearly half of them (44.6%) after the session.

While, regarding their knowledge about possible bad nutritional habit it was observed that only 6.2% of them had good knowledge before the nutritional session and their knowledge was improved to reach more than one third (35.4%) after the session about the same item. The average mean score was  $1.32 \pm 2.03$  and  $3.99 \pm 3.68$  for pre and post the execution of nutritional session respectively. Generally it was observed that the average total score of prospective teachers' nutritional knowledge was  $22.3 \pm 4.16$  (which consider poor) before the session and  $32.99 \pm 5.91$  good after the nutritional session. The total knowledge score of the studied sample was significantly different before and after the nutritional session ( $t=16.100$ ,  $p < 0.001$ ).

**Table (3)** portrays the prospective teachers' nutritional awareness regarding preschool children's food practices. It reveals that less than three quarters (70%) had correct awareness about the preschool children food like and dislike pre nutritional session compared to the majority of them (87.7%) their

awareness were correct about the same items after the nutritional session. The average score was  $3.78 \pm 0.83$  before the session and  $4.36 \pm 0.69$  after the session.

Furthermore, the table shows that less than one quarter (23.8%) of prospective teachers had correct awareness about the conditions that the child respond for eating before the nutritional session and it was improved to reach more than two third (69.2%) after the session. Also it was obvious that, more than one third (36.9%) of studied sample had correct knowledge about the practices help child to develop vegetable preferences before the nutritional session and it was improved to reach more than three quarters (76.9%) after session. In the general, it was observed that the average total score of prospective teachers' nutritional awareness was  $11.65 \pm 1.84$  before the session and  $14.38 \pm 1.91$  after the nutritional session. The total knowledge score of the studied sample was significantly different before and after the nutritional session. ( $t=8.796$ ,  $p < 0.001$ ).

**Table (4)** portrays the prospective teacher's nutritional background. It was observed from the table that all of the studied sample hadn't any nutritional training courses. Furthermore, the majority of the studied sample mentioned that they believe they had a role in teaching preschooler about nutrition.

**Figure (1)** presents distribution of prospective teachers' according to their source of nutritional related knowledge. The figure portrays, that mass media was considered the main source of their knowledge, that more than three quarters (80.7 %) of them had either from TV or internet. Furthermore, more than one third (37.7%) of them stated that they acquired their nutritional knowledge from their family members and 17.6% from reading.

**Table (5)** shows the Prospective teacher's guidance to the preschool children during mealtime. It reveals that the majority of them (96.9%) declared that they guided the children during meal time. 50% of them guided the children about the proper nutritional health habit and only 7.1% of them encouraged the children about the importance of food hygiene. Furthermore, more than two third (69.2%) of prospective teacher reported that they eat with children as a role model.

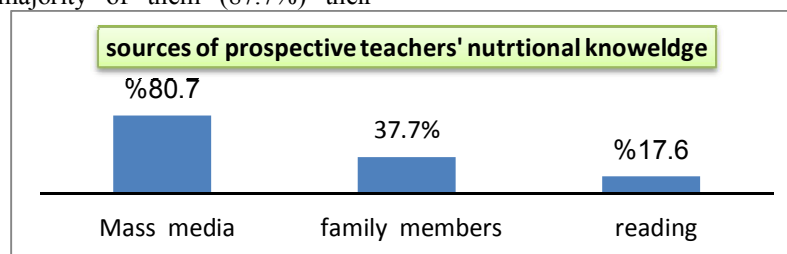


Figure (1) Sources of prospective teachers' nutritional knowledge  
Part (II) Prospective teachers' role concerning preschool children feeding practices.

**Table (2): Prospective teachers' nutritional knowledge during preschool age.**

| Nutritional knowledge                                         |     | Pre program |      |      | Post program |      |      | t             | P                 |
|---------------------------------------------------------------|-----|-------------|------|------|--------------|------|------|---------------|-------------------|
|                                                               |     | Poor        | Fair | Good | Poor         | Fair | Good |               |                   |
| Child development preschool                                   | No. | 2           | 21   | 107  | 6            | 12   | 112  |               |                   |
|                                                               | %   | 1.5         | 16.2 | 82.3 | 4.6          | 9.2  | 86.2 |               |                   |
| Mean ± SD                                                     |     | 2.94±0.59   |      |      | 3.25±0.81    |      |      | <b>3.612</b>  | <b>&lt;0.001*</b> |
| Source of food energy                                         | No. | 118         | 12   | 0    | 79           | 49   | 2    |               |                   |
|                                                               | %   | 90.8        | 9.2  | 0.0  | 60.8         | 37.7 | 1.5  |               |                   |
| Mean ± SD                                                     |     | 2.65±1.33   |      |      | 3.73±1.95    |      |      | <b>6.219</b>  | <b>&lt;0.001*</b> |
| Food source of natural fibers                                 | No. | 57          | 39   | 34   | 12           | 60   | 58   |               |                   |
|                                                               | %   | 43.8        | 30.0 | 26.2 | 9.2          | 46.2 | 44.6 |               |                   |
| Mean ± SD                                                     |     | 0.82±0.82   |      |      | 1.35±0.65    |      |      | <b>5.681</b>  | <b>&lt;0.001*</b> |
| About vitamins                                                | No. | 61          | 58   | 11   | 35           | 76   | 19   |               |                   |
|                                                               | %   | 46.9        | 44.6 | 8.5  | 26.9         | 58.5 | 14.6 |               |                   |
| Mean ± SD                                                     |     | 2.49±1.48   |      |      | 3.17±1.27    |      |      | <b>4.094</b>  | <b>&lt;0.001*</b> |
| About Dietary minerals                                        | No. | 60          | 69   | 1    | 38           | 40   | 52   |               |                   |
|                                                               | %   | 46.2        | 53.1 | 0.8  | 29.2         | 30.8 | 40   |               |                   |
| Mean ± SD                                                     |     | 2.67±1.02   |      |      | 3.31±1.39    |      |      | <b>4.432</b>  | <b>&lt;0.001*</b> |
| The daily caloric requirement for preschool children          | No. | 103         | 15   | 12   | 11           | 26   | 93   |               |                   |
|                                                               | %   | 79.3        | 11.5 | 9.2  | 8.5          | 20   | 71.5 |               |                   |
| Mean ± SD                                                     |     | 1.89±0.46   |      |      | 3.0±0.78     |      |      | <b>5.631</b>  | <b>&lt;0.001*</b> |
| Factors affecting calcium and iron absorption                 | No. | 1           | 9    | 120  | 0            | 2    | 128  |               |                   |
|                                                               | %   | 0.8         | 6.9  | 92.3 | 0.0          | 1.5  | 98.8 |               |                   |
| Mean ± SD                                                     |     | 3.45±0.66   |      |      | 3.82±0.43    |      |      | <b>5.234</b>  | <b>&lt;0.001*</b> |
| Nutritional diseases                                          | No. | 48          | 66   | 16   | 1            | 37   | 92   |               |                   |
|                                                               | %   | 36.9        | 50.8 | 12.3 | 0.8          | 28.5 | 70.8 |               |                   |
| Mean ± SD                                                     |     | 1.72±0.86   |      |      | 3.02±0.80    |      |      | <b>13.174</b> | <b>&lt;0.001*</b> |
| Food group                                                    | No. | 63          | 63   | 4    | 14           | 58   | 58   |               |                   |
|                                                               | %   | 48.5        | 48.5 | 3.1  | 10.8         | 44.6 | 44.6 |               |                   |
| Mean ± SD                                                     |     | 2.35±1.49   |      |      | 4.35±1.77    |      |      | <b>10.067</b> | <b>&lt;0.001*</b> |
| Bad nutritional habits                                        | No. | 117         | 5    | 8    | 73           | 11   | 46   |               |                   |
|                                                               | %   | 90.0        | 3.8  | 6.2  | 56.2         | 8.5  | 35.4 |               |                   |
| Mean ± SD                                                     |     | 1.32±2.03   |      |      | 3.99±3.68    |      |      | <b>6.846</b>  | <b>&lt;0.001*</b> |
| Total Nutritional knowledge score of prospective teacher (55) | No. | 118         | 12   | 0    | 17           | 110  | 3    |               |                   |
|                                                               | %   | 90.8        | 9.2  | 0.0  | 13.1         | 84.6 | 1.3  |               |                   |
| Mean ± SD                                                     |     | 22.3±4.16   |      |      | 32.99±5.91   |      |      | <b>16.100</b> | <b>&lt;0.001*</b> |

p: p value for Paired t-test

\*: Statistically significant at  $p \leq 0.05$ **Table (3) Prospective teachers' nutritional awareness regarding preschool children's food practices.**

| Prospective teachers' awareness about                                                |     | Pre program |         | Post program |         | t            | P                 |
|--------------------------------------------------------------------------------------|-----|-------------|---------|--------------|---------|--------------|-------------------|
|                                                                                      |     | Incorrect   | correct | Incorrect    | Correct |              |                   |
| Preschoolers' food like and dislike                                                  | No. | 39          | 91      | 16           | 114     |              |                   |
|                                                                                      | %   | 30          | 70.0    | 12.3         | 87.7    |              |                   |
| Mean ± SD                                                                            |     | 3.78±0.83   |         | 4.36±0.69    |         | <b>6.600</b> | <b>&lt;0.001*</b> |
| Conditions that child respond for eating practices                                   | No. | 99          | 31      | 40           | 90      |              |                   |
|                                                                                      | %   | 76.2        | 23.8    | 30.8         | 69.2    |              |                   |
| Mean ± SD                                                                            |     | 3.72±1.01   |         | 4.35±1.18    |         | <b>4.698</b> | <b>&lt;0.001*</b> |
| The practice help child to develop vegetables Preferences                            | No. | 82          | 48      | 30           | 100     |              |                   |
|                                                                                      | %   | 63.1        | 36.9    | 23.1         | 76.9    |              |                   |
| Mean ± SD                                                                            |     | 4.15±1.20   |         | 5.67±0.94    |         | <b>4.166</b> | <b>&lt;0.001*</b> |
| Total score of teachers' point of view about preschooler food practice (degree = 18) | No. | 89          | 41      | 43           | 87      |              |                   |
|                                                                                      | %   | 68.5        | 31.5    | 33.1         | 66.9    |              |                   |
| Mean ± SD                                                                            |     | 11.65±1.84  |         | 14.38±1.91   |         | <b>8.796</b> | <b>&lt;0.001*</b> |

p: p value for Paired t-test

\*: Statistically significant at  $p \leq 0.05$ **Table (4) Prospective teachers' nutritional background**

| Items                                                                                         | No  | %    |
|-----------------------------------------------------------------------------------------------|-----|------|
| ➤ Didn't receive any nutritional training courses                                             | 130 | 100  |
| ➤ The importance of prospective teachers' roles in nutritional education at preschool period. |     |      |
| • Yes                                                                                         | 118 | 90.8 |
| • No                                                                                          | 12  | 9.2  |

\*More than one answers

**Table (5): Prospective teacher's guidance to the preschool children during mealtime**

| Items                                                               | No  | %    |
|---------------------------------------------------------------------|-----|------|
| <b>The guidance of children at mealtimes by P. teacher (n= 130)</b> |     |      |
| • Yes                                                               | 126 | 96.9 |
| • No                                                                | 4   | 3.1  |
| <b>* The guidance items (n = 126)</b>                               |     |      |
| Nutritional healthy habit                                           | 63  | 50.0 |
| The importance of break fast                                        | 27  | 21.4 |
| Food hygiene                                                        | 9   | 7.1  |
| Importance of food groups                                           | 49  | 38.6 |
| Avoidance of unhealthy food                                         | 40  | 31.7 |
| The acceptable behavior during meal time                            | 15  | 11.9 |
| <b>Teachers role models for children at mealtime</b>                |     |      |
| • Yes                                                               | 90  | 69.2 |
| • No                                                                | 40  | 30.8 |

\*More than one answer

P. teacher: prospective teachers

**Table (6) Prospective teachers' nutritional education provided to preschool children and their parents.**

| Items                                                                             | No  | %    |
|-----------------------------------------------------------------------------------|-----|------|
| <b>Teachers practices regarding preschool nutritional education. (n= 130)</b>     |     |      |
| • Yes                                                                             | 128 | 98.5 |
| • No                                                                              | 2   | 1.5  |
| <b>*Common topics provided to children about nutrition (n = 128)</b>              |     |      |
| Elements of food                                                                  | 40  | 31.3 |
| The importance of food                                                            | 90  | 70.3 |
| Food groups                                                                       | 12  | 9.4  |
| Food ethics                                                                       | 5   | 3.9  |
| Dietary habits                                                                    | 28  | 21.9 |
| <b>*Methods of teaching (n = 128)</b>                                             |     |      |
| Narrative Story                                                                   | 48  | 38.5 |
| Using real food                                                                   | 23  | 18.5 |
| Drawing and coloring Picture                                                      | 62  | 48.4 |
| Program in computer                                                               | 23  | 18.0 |
| Models                                                                            | 38  | 29.7 |
| Practical training (demonstrations)                                               | 5   | 3.9  |
| Play games                                                                        | 3   | 2.3  |
| <b>Prospective teachers cooperation with parents regarding children nutrition</b> |     |      |
| • Yes                                                                             | 62  | 47.7 |
| • No                                                                              | 68  | 52.3 |
| <b>*The teacher cooperation through (n = 62)</b>                                  |     |      |
| Provide advices for parents orally                                                | 29  | 46.7 |
| Contact by Telephone                                                              | 14  | 22.6 |
| Writing to parents                                                                | 31  | 50.0 |

\*More than one answer

It was obvious from **Table (6)** that the majority (98.5%) of the prospective teachers mentioned that they provide nutritional education for preschool children. Nearly three quarters (70.3%) mentioned that they taught them about the importance of food and only 9.4% about food groups and it is important. In addition they reported that they use various method of teaching as nearly half of them (48.4%) use drawing and coloring pictures and more than one third (38.5%)

use narrative story to convey nutritional knowledge for preschool children. The table also portrays that 52.3% of them said that they didn't raise any collaborative efforts with parents regarding feeding preschool children. Approximately half of them (46.8%) advised the parent orally and nearly one quarter (22.9%) provide them by using telephone about the nutritional status of their children.

**Table (7)** illustrates that only 5.4% of preschool teachers mentioned that kindergarten day care center had weight and height measurements apparatus and that 85.7% of these measurements was done by health visitors compared by 14.3% done by teachers. Moreover, the same table reveals that only 13.8% of prospective teachers stated that there are other personnel responsible for nutritional education and more than half (55%) of those personnel are the health visitors (nurse), followed by 50% are physician. Also, it was obvious from the table that canteen were available in the majority (94.6%) of kindergartens and all children buy from the canteen, e.g. chocolate, sweets, chips and ice cream (100%, 98.4%, 78% and 20.3%) respectively.

**Table (7): Health and nutritional facilities available in kindergarten and role of the care provider in assessing nutritional status and providing nutritional education**

| Items                                                                | No  | %     |
|----------------------------------------------------------------------|-----|-------|
| <b>Presence of nutritional status assessment instruments (n=130)</b> |     |       |
| Yes                                                                  | 7   | 5.4   |
| No                                                                   | 123 | 94.6  |
| <b>*If yes (n = 7)</b>                                               |     |       |
| Height and weight measurements                                       | 5   | 71.4  |
| Scale                                                                | 6   | 85.7  |
| <b>*Care provider's role in nutritional status assessment (n=7)</b>  |     |       |
| The teacher                                                          | 1   | 14.3  |
| Physician                                                            | 1   | 14.3  |
| Health visitor                                                       | 6   | 85.7  |
| <b>Other Personnel responsible for nutritional education (n=130)</b> |     |       |
| No                                                                   | 112 | 86.2  |
| Yes                                                                  | 18  | 13.8  |
| <b>*The responsible person as : (n= 18)</b>                          |     |       |
| Physician                                                            | 9   | 50.0  |
| Health visitor (nurse)                                               | 10  | 55.6  |
| <b>Presence of canteen in the nursery</b>                            |     |       |
| Yes                                                                  | 7   | 5.4   |
| No                                                                   | 123 | 94.6  |
| <b>Are children buy from kindergarten canteen (n = 123)</b>          |     |       |
| Yes                                                                  | 123 | 100.0 |
| No                                                                   | 0   | 0.0   |
| <b>*Kinds of food available in canteen (n = 123)</b>                 |     |       |
| Chips                                                                | 96  | 78.0  |
| Sweet                                                                | 121 | 98.4  |
| Chocolate                                                            | 123 | 100.0 |
| Ice cream                                                            | 25  | 20.3  |

\*More than one answer

#### 4. Discussion

Nutrition is fundamental for growth and development from conception to adulthood. It is essential for health and quality of life at every stage. Many preschools do not have a well-developed food, nutrition and physical activity program. Children at preschool age are not responsible for their food supply and the quality of their nutrition. However, they cognitively ready for learning about food nutrition and positive health habits. <sup>(1, 21)</sup>

The present study was conducted to assess the nutritional knowledge, practices of the prospective teachers before and after the execution nutritional educational session.

Care provider must have up to date knowledge regarding preschoolers' nature of growth and development and the basic principles of infant and child nutrition to help them form the right dietary attitudes. The present study revealed that the total knowledge score of prospective teachers was  $22.3 \pm 4.16$  which is considered poor score. This is in agreement with **Sobhi (1999)** who reported the same finding with other different group (care-giver). <sup>(22)</sup> The finding of the study shows that prospective teachers has good knowledge about the relation between child growth and nutritional status this finding in the line with **Tedstone et al., (2009)** who mentioned that children level of understanding was positively correlated to age, parents and carers' level of nutrition knowledge. <sup>(23)</sup> This finding may be related to their educational background about preschool growth and development.

Furthermore, this study show that the prospective teachers lack in knowledge score regarding dietary source of mineral, the daily requirement for preschool children and bad nutritional habit. These finding is contradict with **Sobhi (1999)** who revealed that around two third of his sample has general nutrition knowledge. <sup>(22)</sup> this may be attributed to lack in the undergraduate specialized nutritional course and lack of experiences.

It has been generally accepted that pattern of food choices, like and dislike are developed early in life which form the base for lifetime nutrition intake. <sup>(1, 15)</sup> The present study show that the studied sample mean score of awareness was  $11.65 \pm 1.84$  which was considered fair regarding preschooler's food likes and dislike, the conditions motivate the child for feeding and enhancing child's vegetable preferences. These finding was in agreement with **Korwanich et al (2007)** that he found the school teacher were concerned with specific type of eaten by children. <sup>(24)</sup>

Planned opportunities for preschool children during providing meal is very important in learning healthy nutritional habit experiences during meal time as an good opportunity for nutritional education in the

every kindergarten day care centers, these activities must use various method of teaching to enhance proper preschoolers learning experiences. <sup>(25, 26)</sup>

With respect to prospective teachers' nutritional practices, results of the present study revealed that the majority of the studied sample stated that they guide preschool children during meal time about nutritional healthy habit and the importance of various food group by using various methods of teaching. These result was contradict with their knowledge about the various nutritional topics that the majority of them had poor nutritional knowledge regarding these items. These finding was in agreement with **Kenny (2011)**, who mentioned that teacher perceived themselves playing an important role in keeping children healthy and the formation of their nutritional preference, while more of them have believed that overweight and obesity was an issues for preschool children. <sup>(27)</sup>

While regarding using different methods of teaching, the present study shows that the prospective teachers used various methods as coloring, narrative story and use real model for conveying healthy nutritional knowledge. These finding may be attributed to the intensive faculty curriculum on various method of teaching. Children should be engaged in nutritional education activities and be an integral part in any kindergarten program for better nutritional preschool health. The present study assessed the prospective teachers nutritional practices regarding frequency of implementation of educational ways for simplifying the nutritional concepts during their practical work.

Furthermore, The present study revealed that all of sample stated that they don't receive any nutritional courses before and the main source of their knowledge was from mass media followed by family member and from reading. These finding was in contrast with **Magied (2007)** who reported that the majority of his studied sample (teachers) had attended various nutritional training courses. While the finding of the present study was in agreement with **Aktas et al (2011)** who mentioned that preschool teacher couldn't access to nutritional activities. <sup>(28, 29)</sup>

The optimistic effect of executing educational interventions on knowledge and practice were expected from literatures and researches findings. Generally the present study revealed that the prospective teacher nutritional knowledge was ranged from poor to fair before the executive of the educational session compared to after the session, these finding were in agreement with **Guiden (2004)**, that he mentioned training and refreshing information is very useful as an educational tool for preschool teachers. <sup>(30)</sup> The results of present study showed a significant relationship between the prospective teachers' knowledge before and after the nutritional

educational session regarding the main concepts of nutrition.

One of the role of community health nurse is to raise the awareness concerning the physical, nutritional and hygienic aspects in health promotion in the kindergarten day care centers this role can be achieved through collaboration with kindergarten teachers and parents.<sup>(31)</sup> The present study results revealed that the majority of prospective teachers mentioned that the nurse has no role in providing nutritional assessment and education.in contrast with the literature that the school nurse has various and important role as providing consultant service to classroom teachers in planning content, materials and activities related to health instruction, and assume responsibility for a program of in-service education for all school personnel<sup>(32, 33)</sup>

### Conclusion and Recommendations:

Preschool children period is the perfect time for formulating the healthy nutritional habit. The influences of kindergarten teacher nutritional knowledge on preschooler's nutritional habit is evident. Thus their knowledge, attitude and practices must be comprehensive and up-to-date. The finding of the present study illustrates that the prospective teachers have poor to fair nutritional knowledge and it was improved to some extent after the completion of the nutritional sessions. Thus nutritional courses for undergraduate teachers must be incorporated in the faculty curriculum and Nutrition education and nutrition related activities must be compulsory. The role of nurse must be activated through coordinating the efforts on the parts of all those involved in nutrition education including all kindergarten team and all kindergarten day care centers must implement unified nutritional programs to facilitate the establishment of preschoolers' nutritional health habit.

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