Dietary Intake and Nutritional knowledge among a group of lactating women in Cairo, Egypt

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Abstract: The study was done to assess the nutritional knowledge and nutrients intake among lactating women. The total sample size was 151 lactating women selected randomly from those attending the Breastfeeding clinic at the center for social and preventive medicine (CSPM) in Cairo. The results revealed a deficient dietary intake of ca, selenium, vit A, vit D and vit C. The majority of the women had very good nutrition knowledge (77.5%), while 22.5% had a good knowledge. (76.2% women were at risk of hunger and 23.8 were food secure). Poor maternal dietary quality may have implications for both mother and child, and socioeconomic status is likely to be important factor. Effective interventions to support mothers to achieve healthy diets for themselves and their families are needed.

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1. Introduction:

Lactation is the medical term for yielding milk by the mammary glands to practice breastfeeding. **(Wosje et al, 2004).** Exclusive breastfeeding means that the infant receives only breast milk, no other liquid or solids are given not even water with exception of oral rehydration solution or drops of vitamins, minerals or medicine **(WHO, 2013).** Exclusive breastfeeding is recommended by all the international agencies for the first six months of life. Hence, the nutritional status of the lactating mother is considered to be important for the wellbeing of both mother and infant **(Allen, 2005)**. Because of the immature intestinal immune function, the newborn is susceptible to intestinal and systemic infection; exclusively breastfed infants are less likely to develop infection than bottle fed infants **(Walker, 2010)**. It protects against diarrhea, pneumonia, and have a longer term benefit; as decrease mean blood pressure, cholesterol, decrease the prevalence of obesity and type 2 diabetes**(US department of health and human services, 2005).** It is shown that 15% of the global burden disease is attributed to the combined effects of child and maternal underweight or micronutrient deficiencies. Women at reproductive age are vulnerable to malnutrition since they have special nutrients needs **(WHO, 2008).**The levels of some nutrients such as thiamine, riboflavin, vitaminB-6, vitaminB-12, iodine, and selenium in breast milk are reflection of the dietary intake of mothers. Other micronutrients (such as folic acid, calcium, iron, copper, and zinc) remain at relatively high levels in breast milk even when the mother's reserves are low **(Allen, 2005).** Carbohydrates are major source of fuel for lactating mother. It is also necessary in the diet to spare the utilization of body protein and prevent ketosis. Lactating mother needs increasing carbohydrates requirements during pregnancy **(Thompson and Mannore, 2005).** Protein is responsible for various function, i.e. cell growth, tissue repair, a strong immune system,. Lactating mothers need more protein over the usual needs of non-pregnant women **(labbok et al,1990).** fats are important, especially omega-3 fatty acids. It is important for the infant's central nervous system development and also brain growth and eye development **(Lawrence , 2008).** Therefore, mothers should take a balanced diet to replenish their stores **(US department of health and human services, 2005).** Mothers are the major providers of food for their families and are also a substantial source of nutrition information for their children. It is important that mothers should have good nutrition knowledge and be aware of the recommended intakes of core food **(WHO, 2008).**Nutrition knowledge is the understanding of different types of food and how food nourishes the body and influences health .Although breastfeeding is one of the most natural functions of a women's body, knowledge about lactation can make breastfeeding a success for both the mother and infant **(Insel, et aL, 2003**) The prevalence of several micronutrients deficiencies may affect the mental status of the mother during breastfeeding **(Frith and Naved, 2009**). The nutritional status of women in these countries is usually threatened by repeated un-spaced pregnancies which may lead to several nutrient deficiencies. Egypt is one of the developing countries; food consumption studies show that there is deficient in micronutrients intake by the pregnant mother **(FAO, 2011)**. Therefore it is justified to call for

nutrition interventions for further improvement of health of lactating mothers and their infants **(Haidar, et al.,2003**

Aim of the study:

The study was designed to show the dietary and nutritional knowledge among a group of Egyptian lactating women for determining any current possible variations and to provide recommendation for nutrition support to mothers and children.

2. Subjects and Methods

Study design:

Descriptive cross-sectional study.

Study site:

Breastfeeding clinic at the center for social and preventive medicine (CSPM) of Abu El Reish children's Hospital in Cairo.

Study time:

From July 2014 till January 2015.

Study population:

A group of lactating women who accepted to participate in the study were interviewed. participants were selected randomly from the lactating women who fulfilled the inclusion criteria and who accepted to participate.

Inclusion Criteria:

The women were considered lactating if they breastfed their infant on demand.

Sample size:

151 lactated women were included in the study.

Study tools:

I -Interview questionnaires: The questionnaires, were adapted from standardized questionnaires of**.** quantitative food frequency questionnaire (QFFQ) was adapted from a validated food frequency questionnaire developed by the National Nutrition Institute.

Five types of questionnaires have been used;

1- Socio-bio Demographic Questionnaire (S-BDQ); this provided information on factors relevant to lactating woman regarding the environment she lived in. The data collected included age of the mothers, occupation, marital status, educational level, and number of children as well as number of people in the household. Data on socio-economic status were gathered about housing standards, food, water supply, and fuel sources, daily family expenditure on food and average monthly income for family while information on health status was covered by the number of visits to out-patient and in-patient clinics.

2- Nutritional knowledge; the questionnaire covered the knowledge of the mothers about the varies nutrients in food groups. A score of four or less (0-4) indicated poor nutrition knowledge .A score of five to eight indicated that the mother had good nutrition knowledge. A score of nine to 12 indicated that the mother had very good nutrition knowledge.

3- The Quantitative Food Frequency Questionnaire (QFFQ); this provided information on the eating pattern and intake. The Food Frequency questionnaire comprises a list of foods and beverages on which respondents, reported their usual amount and frequency of consumption **(WHO, 2014).**

4- The Hunger Scale; provided information on the food availability and the consumption by the lactating mothers and their households. The Hunger Scale questionnaire has three main components that might be used to determine domestic hunger. These are; household level insecurity, individual level insecurity and child hunger. It consists of eight questions, a score of five positive (yes) or more indicates a food shortage problem affecting everyone in the household. These families were considered as "hungry". A score of one to four indicates that the family is at risk of hunger **(Labadarios , et al., 1999).**

5- 24-hr Recall Questionnaire (24-H-RQ); this provides information on the types of foods consumed at mealtimes and between meals, portion sizes over the past twenty four hours. This information is then used to calculate mean daily supplies of nutrient.

II- Anthropometric Measures: weight and height were measured and then BMI was calculated for each participant.

Weight measurement procedures for participant were in accordance to **(Hammond, 1998) as follows:**

- A calibrated level plate from scale placed on a flat hard surface was used.
- Participants were measured without shoes.
- Participants were directed to stand in the center of the platform, with the body weight equally distributed between both feet.

Height measurements Procedures were performed according to **(Hammond, 1998).**

-Height was measured while the participants were without shoes

-The participant was directed to stand on a flat surface with weight distributed evenly on both feet, heels together and head positioned so that the line of vision was perpendicular to the body.

-The arms hang freely and the head, back, buttock, and heels were in contact with vertical board.

-An attached metric ruler and a movable horizontal head board was used.

-After the participant stood properly, the head board was moved down to the top of head so that the hair was compressed.

Body mass index (BMI**)** was calculated using the following formula:

Weight (Kgs)/height (m)^2.

The BMI of the participants was classified according to WHO, 1995 as;

1) Underweight if BMI is less than 18.5 Kg\m$^{2.}$
2) Normal if BMI is between 18.5- 24.9 Kg\m$^{2.}$
3) Overweight if BMI is between 25-29.9kg\m^{2}.
4) Obese if BMI is 30.0kg\m^{2}.

3. Results

Table (1) shows the sociodemographic characters of the lactating women. The mean age of the lactating women was (28.6 ± 5.5), majority of the women were married (98%) and those who received high education were (43.6%).The majority of the mothers were housewives (51.7%) followed by the employees (31.2%) then the professional (11.9%) Distribution of the mothers according to the monthly income and the money spent on food per week table (2illustrates the distribution of the mothers according to the nutritional knowledge score and hunger score of the lactating women. It was clear that 77.5% had a very good knowledge score and 22.5% had a good nutritional knowledge score. However, 76.2% of the lactating women were at risk of hunger and 23.8% were food secure. Table (4) illustrates the mean 24hr recalls intake among the lactating women; it revealed that the consumption of carbohydrates and protein covered the requirements while there was over consumption of fat. Most the micronutrients was below the recommendations as vitamin A, vitamin B12, vitamin B6, vitamin B2 and calcium. Distribution of the lactating mothers by dietary adequacy of some nutrients as shown in table (5).The majority of the women (89.4%) consumed >100% which is over consumption, and only 2% consumed <50% of the recommended daily allowance (RDA) from carbohydrates. Over half of the women 5 or 1% consumed .100% of the RDA 0f protein, 34% consumed 75-100% which is acceptable, and 10.9% between 50-75% of the recommended protein intake. Table (6) revealed that (17.7%) of the study group take their acceptable RDAs from calcium while (62.6%) had taken unacceptable (50%-75%/)or unsafe levels (<50%) of their requirements. Regarding iron (91.4%) had overconsumption and only (2.6%) had less than 50%. (43.0%) of the study group consumed their acceptable RDAs from Zinc. (79) Of the study group consumed Vit.B12 below 50% of the recommended daily allowances (RDAs) and (75) of the study group consume iodine below 50% of the RDAs table (7). Table (8) shows the results of the BMI of the lactating women, we noticed that obesity was more prominent 47.7%, while normal weight and overweight was 25.8% and 26.5% respectively.

Table (1): The sociodemographic characteristics of the study group.

Lactating mothers	Mean ±SD	Min - Max
Age in years	28.6±5.5	18.0 – 38.0
Baby age in months	8.1 ±3.9	2.0 – 18.0
	No	%
Marital status Married Divorced	 148 3	 98.0 2.0
Education level Illiterate Primary Preparatory Secondary University	 19 11 14 41 66	 12.6 7.3 9.3 27.2 43.6
Occupation Housewives Non-skilled Skilled Employees Professional	 78 4 4 47 18	 51.7 2.6 2.6 31.2 11.9
No of the family members 3 4 5 6 > 6	 33 46 54 16 2	 21.9 30.5 35.7 10.6 1.3
Total	151	100%

Table (2): distribution of the mothers according to the monthly income, the money spent on food per week.

Income and expenditure	No	%
Monthly income (L.E) < 500 500-1000 1001-3000 3001-5000 > 5001	 6 48 79 6 12	 4.0 31.8 52.3 4.0 7.9
Money spent on food per week (L.E) < 100 100-200 201-300 301-500 > 500	 22 75 36 7 11	 14.6 49.7 23.8 4.6 7.3

Table (3): distribution of the mothers according to the nutritional knowledge score and hunger scale score of the study group.

Parameters	**No**	**%**
Nutritional knowledge score Very good Good Poor	 117 34 0	 77.5 22.5 0
Hunger scale score At risk of hunger Food secure Hunger	 115 36 0	 76.2 23.8 0

Table (4): Mean of 24 hours intake among the study group.

Intake	Mean ±SD	WHO recommendations
Calories	2900.4 ±440.0	2803
Protein (gm.)	74.3 ±18.3	71
Carbohydrate (gm.)	301.0 ±69.4	210
Fat (gm.)	65.8 ±23.0	27
Calcium (mg.)	721±343.6	1300
Iron (mg.)	20±7.6	10
Vitamin A (µg)	560±733.3	1300
Vitamin D (µg)	4.11±8.7	5
Vitamin C (mg)	169±150	120
Magnesium (mg)	146±62.0	270
B 12 (µg)	0.29±0.4	2.8
B 6(mg)	0.14±0.1	2
B 1 (thiamine) (mg)	1.1±0.5	1.4
B 2(riboflavin) (mg)	0.96±0.6	1.6

Table (5): percentage distribution of the lactating mothers by dietary adequacy of macronutrients

	No	%
Carbohydrate Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100%)	 3 6 7 135	 2.0 4.0 4.6 89.4
Calories Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	11 54 77 9	7.3 35.7 51.0 6.0
Protein Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	 19 51 81	 10.9 34.0 55.1

Table (6): percentage distribution of the lactating mothers by dietary adequacy of micronutrients

	No	%
Calcium < Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	 41 51 26 29	 27.9 34.7 17.7 19.7
Iron < Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	 4 6 3 138	 2.6 4.0 2.0 91.4
Zinc < Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	 14 29 65 43	 9.3 19.2 43.0 28.5
Selenium Unsafe (< 50%)	75	49.7

Table (7): percentage distribution of the lactating mothers by dietary adequacy of some nutrients

	No	%
Vit.B12 < Unsafe (< 50%)	79	52.3
Vit.A < Unsafe (< 50%) Unacceptable (50 – 75%) Acceptable (75 – 100%) Overconsumption (> 100)	 115 19 10 7	 76.2 12.6 6.6 4.6
Iodine < 50%	75	49.7
Vit.D < 50% > 100%	121 30	80.1 19.9
Vit.C < 50% 50 – 75%	147 4	97.4 2.6

Table (8): The anthropometric measurements of the study group

	Mean ±SD	**Min - Max**
Weight	75.1±14.0	45.0 – 107.0
Height	160.0 ±5.6	145.0 – 174.0
MBI	29.3±5.2	18.6 – 42.9
	No	**%**
BMI categories Normal weight (18.5-24.9kg/m^2) Overweight (25.0-29.9kg/m^2) Obese (30kg/m^2)	 39 40 72	 25.8 26.5 47.7

4. Discussion

A study was done by ***Shalabi (2003)*** who assessed the nutrition status of lactating women in some rural areas in Menufyia governorate and found that the percent of the lactating mothers in the age group < 25 years represented 45.5%. In addition the highest percent of the lactating mothers were housewives. Additionally, finding of this study coincide with those of ***Heikel (2010)*** who conducted a study at similar CSPM and found that 17% of mothers were illiterate and 41% had a secondary or higher education. Furthermore, 90% of the studied participants were not working for cash (housewives). The Egyptian Demographic and Health Survey (E-DHS), 2008 reported similar findings to ours where 60.5% of Egyptian families have less than five individuals and the average household had 4.6 individuals per household ***(El Zanaty and Way, 2009).*** The present study revealed that the majority of the participant's family had low income, (table:1-3). A recent review of the food situation in Egypt by ***the World food programme (2011)*** concluded that the key underlying and basic factors of household food insecurity in Egypt include; low income to allow

access to more diversified foods including fruits, vegetables and animal protein leading to unbalanced diets which are often high on energy but low in micro-nutrients, Increased cost of living and Sub-optimal access to social assistance systems including the ration card for subsidized staple foods and cash assistance**.** From our study, the majority of the mothers had a very good nutritional knowledge and or a good knowledge and this could be explained that a good number of the participants of the study group had a high university education and the rest might had the knowledge from the clinic or the T.V. A study was done by ***Mcloed et al, 2011*** in England reported that Overall nutrition knowledge was found to be quite high, with mean nutrition knowledge scores of 12.5, 12.7, and 13.7 out of a possible 17, in the low, medium, and high socioeconomic groups, respectively. Maternal nutrition knowledge was found to partly mediate the association between socioeconomic position and maternal diet quality and our results indicated that, economic status only might affect diet qulity . The present study agrees with a study done by ***Asfaw (2007)*** who investigated the relationship between micronutrient deficiency and the prevalence of mothers' overweight/obesity in Egypt using the 1997 Egyptian Integrated Household Survey. This study published that the prevalence of overweight/obese is 80.8% higher for micronutrient deficient mothers than for non-deficient mothers, keeping all other variables constant. Egyptian food subsidy program, which lowers the relative prices of energy-dense, nutrient-poor food items, can be one of the major factors for the emergence of overweight/obese and micronutrient deficient mothers in the country.

Conclusion

Lactation period is an opportunity to increase awareness of the mother toward healthy nutritional practices for the benefit of the mothers and child health. Effective interventions to support mothers to achieve healthy diets for themselves and their families are needed.

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