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RESEARCH PAPER

Nutritional Status of Children Under Five Years in Hassan Sham Camp in Mosul City in Iraq

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A B S T R A C T:

Background and objective: Adequate nutrition is essential in early childhood to ensure healthy growth, proper organ formation and function, a strong immune system, and neurological and cognitive development. Economic growth and human development require well-nourished populations who can learn new skills, think critically and contribute to their communities (WHO, 2010). The aim of study was to identify nutritional status of children under five years old in Hasan Sham camps in Mosul City in Iraq.

Methods: Quantitative design, cross-sectional descriptive study has been conducted to assess the health status of children under five years in Hasan sham camps Mosul City. The data were collected in July, 2017. So 322 children were chosen randomly out of 1300 children under five years old age. For the purpose of data collection, a questioner was designed according the needs of study that contained three part. Part one included questioner related to demographic characteristics, Part two included type of feeding, Part three contain Anthropometric measurement, Data were collected through using modified questionnaires was designed through extensive review of relevant literature.

Results: the study revealed that percentage of health problems was as followings: Chronic underweight 4%, Chronic stunting8%, Acute stunting 22%, Chronic wasting 1%, Acute wasting 7%.

Conclusion: study revealed that theirs not association between age groups and underweight, stunting, and wasting among children. And there is not association between gender and underweight, stunting, and wasting among children.

Keywords: Nutritional status, Hassan Sham Camp.

KEY WORDS: Fritillaria zagrica,Tulipa kurdica,Antioxidant,Antimicrobial Activity,TPC,TFC.
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1.INTRODUCTION

The World Health Organization (WHO) defines malnutrition as "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific function (WHO, 2010)

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Malnutrition serious health problems caused by a continuing or the body's poor absorption or use of nutrients. Malnutrition is often a result of food shortages or poverty (Roberta, 2000). Overweight and obesity are serious problems related to growth in U.S. children population (Clark, 2008). The prevalence of obesity in some developing countries has reached even higher levels than in many industrialized nations (WHO, 2000). Stunting is low height for age (Doak, et al., 2005). In the line of coexistence of stunting and overweight in children, these are risk factors for chronic diseases in adulthood (Frenk, et al., 1991; Moore, 2004).

Management of many chronic diseases that may develop due to the increased incidence of obesity would be beyond the capacity of many nations (Moore, 2004). It is equally important to identify the coexistence of both under nutrition and over nutrition, as an intervention that is designed to prevent only one problem could exacerbate the other (Uauy, and Kain, 2002). Growth indices in the form of length/height for age, weight for age, weight for height, and body mass index (BMI) for age are important tools for the assessment of nutritional status of children. The prevalence of nutritional indicators in the form of stunting, underweight, wasting, risk of overweight, overweight, and obesity in children under 5 years of age is one of the ways of assessment of nutritional status of the population and used as a nutritional surveillance indictors among this age group (De Onvs, et al., 1993) Concerning length/height for age; it can help identify children who are stunted or severely stunted due to prolonged under nutrition or repeated illness (chronic malnutrition). While weight for age; it is used to assess whether a child is underweight or severely underweight. On the other hand weight for length/height is especially useful in situations where children's ages are unknown (e.g. refugee situations). It helps identify children with low weight for height who may be wasted or severely wasted (acute malnutrition). Beside that, BMI for age is an indicator that is especially useful for screening for risk of overweight (WHO, 2008). overweight and obesity. weight gain and obesity are two common manifestation of hypothyroidism. (Baban, et al., 2017). fruit has a nutritional, industrial, pharmaceutical values (Majeed, et al., 2019).

General objective

To assess the nutritional status of children under 5 years in Syrian camps of Mosul City

Specific objectives are:

1-To provide a data base for nutritional assessment indicators among children under five years in Hassan Sham Camps.

2-To identify relationship between Anthropometric measurements and gender of Children.

3-To identify relationship between Anthropometric measurements and age of Children.

Research questionnaires and data:

1-Demographical data include (name of camp, Childs name, Gender, date of birth)

2-weight kg measurement.

3- Height Measurement.

4-Body mass index (BMI)

5- z-score

MATERIALS AND METHODS

2.1. Research design

Quantitative design, cross-sectional descriptive study was conducted to assess the nutritional status of children under 5 years in Hasan Sham camp in Mosul city.

2.2. Setting of the study

The study was conducted in Hasan Sham camp in Mosul City in Iraq.

2.3. Ethical consideration

Ethical consideration was a main principle of data collection. Permission has been take from ethical committee of nursing college Hawler Medical University, permission also taken for including the parents of children participate in the study.

2.4. Administrative arrangement

For the purpose of this study, a written of an official permission obtained from the scientific committee/College of Nursing/Hawler Medical University. The data collection and permission to conduct this study has been secured from General Directorate of Erbil Asaish,

2.5. Sample of the Study

(322) children were chosen randomly out of (1300) children under five years old age was calculated according to the formula .

2.6. Inclusion criteria

Children under 5 years old, and both gender male and female, parents who refused to participate and some children has chronic illness like congenital malformation which they cannot included the study.

2.7. Exclusion criteria

Children above 5 years old, parents who refused to participate their children in the study and some children has chronic illness like congenital malformation which they cannot included the study.

2.8 Sample size estimation

The sample size was calculated using the level of significance 95%, 5% degree of precision Population size of children under five years old age was 1300. Therefore, estimated sample size

was 322 and it was calculated according to the following formula.

Sample

$$n = \frac{\left(\frac{z}{d}\right)^2 \times (0.50)^2}{1 + \frac{1}{N}\left[\left(\frac{z}{d}\right)^2 \times (0.50)^2 - 1\right]}$$

z = confident interval 95% (1.96)
d = sampling error (0.05)
N = population size (1300)
n = Sample size = (322)
(Polit, and Hunger, 1999).

2.9. Distribution of samples by camps

1- *Hassan Sham* children 1day to 5 years old age = 322.

2.10. Duration of conducting the study

The study was conducted during the period of July, 2017. The data were collected during the period of 1st July, 2017 to 15th July, 2017.

2.11. Tools, Instrument and methods of data collection

A questionnaire was developed after extensive review of relevant literature, which consisted of:

2.11.1. Part one: Socio demographic data:

This part is concerned with socio demographic characteristics of children which include items such as age and sex.

2.11.2. Part two: anthropometric measurements

This part concerned with measurement of body height, weight to find out the cases of underweight, stunting, wasting, by using WHO schedule growth standard (WHO, 2007). There are two schedule one special for males and another for females formed by WHO growth standard to calculate Z score. The prevalence of moderate and severe underweight was defined as the number of children whose weight for age was below -2 and -3, respectively. Also, the prevalence of moderate and severe wasting and stunting was well-defined as the total of children with weight for height (wasting) or height for age (stunting) who were below -2 and -3.in present study used scale of body weight measurement, and wood scale

Weight in Kg, length/height in cm, age and sex data was used to calculate z-scores i.e. standard deviation score of the different nutritional indicators. Age was determined by months (exact age). Baby was weighted with minimum amount of clothing and the result was rounded to the nearest 50 grams. Measurements were carried out using WHO/Seca scale for infants and children scales were checked for zero error daily. Length/ Height was taken without shoes using wooden board for height measurements and wood board for length measurement, both of them are of WHO/Seca, and the figures was rounded to the nearest centimeter.

2.12. Pilot study

A pilot study was conducted from 1st July, 2017 to 15th July, 2017on 35 children under five years in Hassan sham camp from the samples of pilot study were excluded from the original study. Pre-test and post-test method was used to determine the readability of the questionnaire. The analysis of data was done via using correlation coefficient test this test revealed that there is no significant differences between both results (r = 0.88).

2.13. Pilot study were to:

1. Identify the reliability of questionnaire.
2. Determine the clarity and content acceptability of questionnaire
3. Identify the barriers and complication during data collection.
4. Identify the average time require for data collection.

2.13.1. Person coefficient correlation r-test

It was making to evaluate the reliability of questionnaire as following

r = correlation coefficient for variable x and y, if r = (± 1) =Perfect, (± 0.75–± 1) =Strong, (± 0.5–± 0.75) =Moderate (< 0.5) =Weak, (0) =no association.
n = number of cases (sample)
x = an individual score for variable x (test)
y = an individual score for variable y (retest)
$\sum$ = summation of variables (test and retest), (Polit, and Hunger, 1999).

2.14. Validity

The questionnaire has been validated by panel of (25) experts in different specialty of nursing, medicine and statistics to investigate the content of questionnaire for clarity, relevancy and adequacy. A copy of the questionnaire was referred to each expert. The result had indicated that the common of the experts agreed upon the items of the study with few comments and suggestions which were all taken into attention. Modifications were employed and the final draft

of the instrument was complete to be suitable for conducting the study.

2.15. Statistical data analysis

Data was prepared, organized and entered into the computer. A statistical package for social sciences (SPSS, version 19) for windows was used to analyze the data categorical variable were described through frequency and percentages. The data were analyzed through the application of two approaches which are:

2.16.1. Descriptive data analysis approach

This approach is employed through:

Frequency and percentage

(Polit, and Hunger, 1999).

2.16.2 Inferential data analysis approach

This approach was presented through

Chi-square Test (X^2):

Chi-square test (X^2) was used to determine the significance association between socio demographic data (age and gender) with health condition results of children.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

(Polit, and Hunger, 1999).

P-value: the exact significance level of a statistical test that is the probability of obtaining a value of the test statistic that is at least as extreme as that observed when the null hypothesis is true. All statistical produces were tested on a probability of P. value were considered in following:

≤ 0.01 High significant (HS)
≤ 0.05 Significant (S)
>0.05 Non Significant (NS)
(Polit, and Hunger, 1999).

RESULTS AND DISCUSSION

3.1 Socio Demographical Characteristics of sample study:

3.1.1 Age group of children

Concerning Age group of children, table 1 shows that the highest percentage of age group was 1-14 which represent 39.5%, and the lowest age group was 43-56 which represent 13.6%.

3.1.2 Gender

Table 2 shows that the majority of the study sample was female which represent 51.7%. while the male group represent 48.3%.

3.1.1 Type of feeding of children

Concerning type of feeding of children, table 1 shows that the highest percentage of children was with breast feeding which represent 56.8%, and the lowest was food eating which represent 0.8%.

3.3 Anthropometric measurements

3.3.1 Underweight

Table 2 show the children with chronic underweight were represent 4%. While the number of children with acute moderate underweight was represented (10%).and representation of normal weight for age among children was 88%.

3.3.2 Stunting

Table 3 show the children with chronic stunting were represent (8%). While the While the number of children with acute stunting was represented (22%).and representation of normal weight for age among children was 67%.

3.3.3 Wasting

Table 4 show the children with chronic wasting were represents 1%. While the number of children with acute wasting was represented (7 %).and representation of normal height for weight among children was 87%.

3.4.1 Association between Anthropometric measurements of children and their weight for age group

Finding of the study show that there is not significant statistical association between weight for age of children and their age groups (P- value =0.444), This finding shown in table 29

3.4.2 Association between Anthropometric measurements of children and their Height for age group

Table 5 shows that was there is not significant statistical association between height for age of children and their age groups (P- value =0.470)

3.4.3 Association between anthropometric measurements of children and their Height for age group

Table 6 shows that was no significant statistical association between height for weight of children and their age groups (P- value =0.205).

3.5 Association between Anthropometric measurements of children and their gender

Finding of the study show that there is not significant statistical association between weight for age of children and their gender (P- value =0.893). No significant statistical association between height for age of children and their age gender (P- value =0.914), and no significant

statistical association between height for weight of children and their age groups (P- value =0.457). This finding shown in table 7. **DISCUSSION**

4.1 Socio-Demographic Characteristic of sample study:

4.1.1Age group

The highest age groups of Children were (1-14) which represent 39.5%

4.1.2 Gender

Concerning gender group of female children was represent 51.7%. While the male group represent 48.3%.

		F	%
Age group	1-14	102	39.5%
	15-28	73	28.3%
	19-42	48	18.6%
	43-56	35	13.6%
Gender	Male	125	48.3%
	Female	134	51.7%
Feeding	Breast feeding	147	56.8%
	Botol feeding	73	28.2%
	Breast and botol feeding	37	14.3%
	Only food eating	2	0.8%

Table 1: Distributions of the sample by age in months, gender and feeding type Socio-demographic characteristics

4.3 Anthropometric measurement

4.3.1 Underweight

In current study the finding reveals that children who had moderate underweight were 10%, and 4 % of children were had chronic underweight. This result is agreement the finding of another study that conducted in Erbil City which found that significant association between underweight and age group of Syrian refugee in Erbil city (Rasheed and Aziz, 2017). Additionally, the present study finding is Agree with finding of the Rapid Nutritional Assessment of under five children months in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq (UNICEF, 2012). The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012) who find the children with acute underweight which represented 7.6% and1.9% of children had chronic underweight (UNICEF, 2012).

			Age groups				
	1-14		15-28		19-42	43-56	Total
	F	%	F	%	F %	F %	F %
-3 chronic under weight	6	2	0	0	2 1	2 1	10 4
-2 acut modera te under weight	11	4	4	2	5 2	7 3	27 10
-1 normal weight	30	12	27	10	18 7	14 5	89 34
1 normal weight	5	2	3	2	1 0	1 0	10 4
Total	52	20	34	13	26 10	24 9	136 52

Table 3: Frequency and percentage of 259 children regarding their weight for age

4.3.2 Stunting.

In present study, the children who had acute stunting were 9%.and 4.5 % of children were had chronic stunting. Agree with report summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq, who find the children with acute stunting which represented 15.1% and5.3% of children had chronic stunting (UNICEF, 2012).

			age groups						
	1-14		15-28		19-42		43-56		
	F	%	F	%	F	%	F	%	Total
-3 chronic stuning	8	3	5	2	5	2	4	2	22 8
-2 Acute stuning	19	7	18	7	13	5	8	3	58 22

1 normal weight	38 15	31	12	16	6	12	5	97	37
0 Normal height	32 12	12	5	10	4	11	4	65	25
1 Normal height	3 1	3	1	3	1	0	0	9	3
2 normal height	1 0	4	2	1	0	0	0	6	2
Total	101 39	73	28	48	18	35	13	257	99

Table 4: Frequency and percentage of 363 children regarding their height for weight

4.3.3 Wasting

In current study the children who had acute wasting were 4.4%.and 1.1 % of children were had chronic wasting. Agree with report summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012). who find the children with acute wasting which represented 4.8% and2.2% of children had chronic wasting (UNICEF, 2012).

			Age groups					
	1-14		15-28		19-42	43-56		
	F	%	F	%	F %	F	%	Total
-3chronic wasting	2	1	0	0	0 0	0	0	2 1
-2 acute wasting	11	4	2	1	1 0	3	1	17 7
-1 normal height for weight	15	6	7	3	7 3	5	2	34 13
0 normal height for weight	67	26	60	23	40 15	25	10	192 74
Total	95	37	69	27	48 18	33	13	245 94

Table 4: Frequency and percentage of 363 children regarding their height for weight

4.9 Association between age and Anthropometric measurements

There is different factor affecting underweight ,stunting and wasting in children in camps which included poverty ,nutritional supplement in camps by polices ,organization like UN ,WHO, And perception, Religion ,culture ,diet habit of parents which affect significantly on children .

		Age group				Total	P-value
		1-14	15-28	19-42	43-56		
weight for age group	-3 under weight	6	0	2	2	10	0.444
	-2 acut under weight	11	4	5	7	27	
	-1normal weight	30	27	18	14	89	
	1normal weight	5	3	1	1	10	
Total		52	34	26	24	136	

Table 4: Association between Anthropometric measurements of children and their weight for age group

4.10 Association between age group and underweight

The finding of present study showed significant association between age group and underweight in children in camps. This finding agree with s report study summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012). which showed that there was statistical significant association between age group and underweight (UNICEF, 2012). This finding of the study agree with study done in Kenya by Badake, *et al.,* which showed that there was significant association between age group and underweight (Badake, *et al.,* 2014). Also agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was significant

association between age group and underweight (Hien, and Kam, 2008).

4.11 Association between stunting and age group

The finding in this reveals that there were significant association between age group and stunting in children in camps. This finding agree with study report study summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012). which showed that there was statistical significant association between age group and stunting. Also agree with study done in Kenya by Badake, *et al.,* which showed that there was significant association between age group and stunting (Badake, *et al.,* 2014). Also agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was significant association between age group and stunting (Hien, and Kam, 2008).

		Age group				Total	P-value
		1-14	15-28	19-42	43-56		
Height for age group	-3 chronic stunting	8	5	5	4	22	0.470
	-2 Acute stunting	19	18	13	8	58	
	1 normal weight	38	31	16	12	97	
	0 Normal height	32	12	10	11	65	
	1 Normal height	3	3	3	0	9	
	2 normal height	1	4	1	0	6	
Total		101	73	48	35	257	

Table 5: Association between age groups of children and their height for age group

4.12 Association between wasting and age group

The finding of present study showed significant association between age group and wasting in children in camps. This finding agree with s report study summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq, (2012) which showed that there was statistical significant association between age group and wasting prevalence (UNICEF, 2012). Agree with study done in Kenya by Badake, *et al.,* which showed that there was significant association between age group and wasting (Badake, *et al.,* 2014). Also agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was significant association between age group and wasting (Hien, and Kam, 2008).

		Age group				Total	P-value
		1-14	15-28	19-42	43-56		
Height for weight	3chronic wasting	2	0	0	0	2	0.205
	-2 acute wasting	11	2	1	3	17	
	-1 normal height for weight	15	7	7	5	34	
	0 normal height for weight	67	60	40	25	192	
Total		95	69	48	33	245	

Table 6: Association between age groups of children and their height for weight group

4.13 Association between age and Anthropometric measurements:

Thiers different factor affecting underweight ,stunting and wasting in children in camps which included poverty ,nutritional supplement in camps by polices ,organization like UN ,WHO, And perception, Religion ,culture ,diet habit of parents which affect significantly on children

4.14 Association between gender and underweight:

In presence study showed that there significant associated between gender and underweight females was significant more than males. This finding disagree with report study summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012). which showed that there was no statistical significant association between gender and underweight (UNICEF, 2012). Disagree with study done in Kenya by Badake, *et al.,* which showed that there was no significant association between gender and underweight (Badake, *et al.*, 2014). Agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was significant association between gender and underweight (Hien, and Kam, 2008).

4.15 Association between gender and stunting

In current study showed that there are no significant associated between gender and stunting. This finding agree with study report summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq (UNICEF, 2012) which showed that there was no statistical significant association between gender and stunting (UNICEF, 2012). Our study disagrees with study done in Kenya by Badake, *et al.,* which showed that there was significant association between gender and stunting who find that the prevalence of boys more than girls (Badake, *et al.,* 2014). Agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was no significant association between gender and stunting (Hien, and Kam, 2008).

		Gender		
		Male	Female	P-value
		Count	Count	
weight for age group	-3 under weight	4	6	0.893
	-2 acute under weight	14	13	
	-1normal weight	40	49	
	1normal weight	5	5	
Height for age group	-3 chronic stunting	12	10	0.914

	-2 Acute stunting	29	30	
	1 normal weight	48	49	
	0 Normal height	29	36	
	1 Normal height	5	4	
	2 normal height	2	4	
Height for weight	-3chronic	0	2	0.457
	-2 acute wasting	7	10	
	-1 normal height for weight	15	19	
	0 normal height for weight	96	97	

Table 7: Association between Anthropometric measurements of children and their gender

4.16 Association between gender and wasting

In our study showed that there are no significant associated between gender and wasting in children. This finding disagree with report study summarize the results of the Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq. The survey was carried out by the Nutritional Research Institute (NRI) / Ministry of Health-Iraq with the supported provided by UNICEF Iraq, (2012) which showed that there was no statistical significant association between gender and wasting with higher prevalence in girls (UNICEF, 2012). Disagree with study done in Kenya by Badake, *et al.,* which showed that there was significant association between gender and wasting. who found that the prevalence of boys more than girls (Badake, *et al.,* 2014). Agree with study of Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, Vietnam by Hien and Kam (2008) which showed that there was no significant association gender and wasting (Hien, and Kam, 2008).

CONCLUSIONS

Through the course of data analysis and discussion of the health status of Children under five years in Syrian refugee camps, the study concluded that:

Concerning Age group of children, table 1 shows that the highest percentage of age group was 1-14 which represent 39.5%, and the lowest age group was 43-56 which represent 13.6%

1- The highest percentage of age group was 1-14 month which represents 39.5%, and the lowest age group was 43-56 month which represents 13.6%.

2-The majority of sample study was female.

3-The highest percentage of children was with breast feeding which represent 56.8%

4- Findings of the study show that the no significant statistical association between weight,

height, and height for weight for age of children and their age groups

5- Findings of the study show that the no significant statistical association between weight, height, and height for weight for age of children and their age groups.

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References

Baban, A.A., Ahmed, S.A., Ahmed, B.S. and Hameed, S.A. (2017). Correlation between thyroid hormones and body weight in hypothyroid females in Erbil city. *Zanco Journal of Pure and Applied Sciences*, 29(5): 186-191.

Badake, Q.D., Maina, I., Mboganie, M.A., Muchemi, G., Kihoro, E.M., Chelimo, E. and Mutea, K., (2014). Nutritional status of children under five years and associated factors in Mbeere South District, Kenya. *African Crop Science Journal*, Vol. 22, Issue Supplement s4, pp. 799–806.

Clark, M J. (2008). Community Health Nursing Advocacy for population Health. 5th edition. p384.

De Onvs, M., Monteiro, C., Akrı, J. and Glugston, G. (1993). The worldwide magnitude of protein energy malnutrition: An overview from the WHO Global Database on Child Growth. *Bull World Health Organ*; 71(6):703-12.

Doak, C.M., Adair, L.S., Bentle, M., Monteiro, C. and Popkin, B.M. (2005). The dual burden household and the nutrition transition paradox. *Int J Obes*; 29(1):129-136

Frenk, J., Bobadilla, J., Stern, C., Frejka, T. and Lozano R. (1991). Elements for a theory of the health transition. *Health Transit Rev*. 1(1):21-38.

Hien, N.N. and Kam, S. (2008). Nutritional Status and the Characteristics Related to Malnutrition in Children Under Five Years of Age in Nghean, *Vietnam. J Prev Med Public Health*. 41(4):232-240.

Majeed, Z.R., Qasim, F.K. and Hassan, H.A. (2019). Hypotensive Action of Pomegranate Seed Extract and Zinc Chloride in Hypertensive Rats. *ZANCO Journal of Pure and Applied Sciences*, 31(5):44-52.

Moore, T.R, (2004). Adolescent and adult obesity in women: a tidal wave just beginning. *Clin Obstet Gynecol*. 47(4):884 -889, 980-981.

Polit, O. and Hunger, B. (1999), Nursing Research, Principle Methods 6th Edition. Philadelphia, Lippincott: 354-698

Rasheed, A.A. and Aziz, K.F. (2017). Health status of children under five years old age in Syrian refugee camps in Erbil city. The Second International Conference College of Medicine, HMU, 22nd - 24th November, 2017, Divan Hotel - Erbil - Kurdistan, Iraq .[Internet],Available.from http: https:/ /hmu.edu.krd/images/Medicine/Conference/2-11.pdf

Roberta, L.D., (2000). Nutrition and Wellness. Teacher's Annotated Edition. p81.

Uauy, R. and Kain, J., (2002). The epidemiological transition: need to incorporate obesity prevention into nutrition programmes. *Public Health Nutr*; 5(1A):223-229.

UNICEF, (2012). Rapid Nutritional Assessment of under five children in Syrian refugee camp located in Al-Anbar governorate/Al-Qa'im district in Iraq.[Internet], Available from file:///C:/Users/Future/Downloads/RapidNutritionalAssessmentforChildren6_59months%20(1).pdf

United Nations Refugee Agency, (2013). UNHCR Registration Trends for Syrians (02 April). Available at http://data.unhcr.org/syrianrefugees/country.php?id=103 (accessed 10 March 2013).

United Nations Refugee Agency, (2014a). UNHCR Registration Trends for Syrians (28 February). Available at http://data.unhcr.org/syrianrefugees/country.php?id=103 (accessed 1 March 2014).

United Nations Refugee Agency, (2014b). UNHCR Registration Trends for Syrians (05 March). Available at http://data.unhcr.org/syrianrefugees/country.php?id=103 (accessed 10 March 2014)

World Health Organization (WHO), (2007). Child Growth Standards and the National Center for Health Statistics/WHO international growth reference: implications. for. child. Healthprogrammes. www.ncbi.nlm. nih.gov/pmc/ articles /pmc3225111/#b18

World Health Organization, (2000). Obesity: Preventing and Managing the Global Epidemic. Report No.894; 23-28.

World Health Organization, (2002). Reducing risk, Promoting Healthy Life. The World Health Report: Geneva: WHO; 98-122.

World Health Organization, (2008). Training Course on Child Growth, WHO Child Growth Standards, Interpreting Growth Indicators. WHO, Geneva; 13-14.

World Health Organization, (2010). Malnutrition the Global Picture. WHO. http://www.who. int/home-page/. [cited 2010 Dec 10].