Prevalence of under nutrition and associated maternal risk factors in children under five years of age in Babylon 2013

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Abstract

Background: Malnutrition is one of most serious world health problems and is the major cause of illness and death throughout the world. It is associated with about half of all child death. It affects physical growth, morbidity, mortality, cognitive development, reproduction, and physical work capacity, and it consequently impact on human performance, health and survival. Thus, when attempting to reduce child mortality, monitoring and reducing the prevalence of malnutrition in vulnerable population is essential. Malnutrition is an outcome of various factors resulting from unfavorable socioeconomic circumstances.

Objective: To determine the prevalence of undernutrition (wasting, stunting and underweight) and associated maternal risk factors of children under 5years in Babylon.

Methods: Across-sectional study design was used to study a group of 400 children, aged 2- 60 months. The sample was convenient, the data collected from four health centers during the period from 25th of February to 10th of May 2013. Assessment of maternal risk factors for child malnutrition was accomplished through a structured questionnaire used to interview child's mother. The anthropometric measurements were assessed according to standard techniques used to calculate z-score for height for age (stunting), weight for height (wasting) and weight for age (underweight). As reference curve, the World Health Organization Child Growth Standard was used

Results: The prevalence of malnutrition of children under five years in Babylon was 19.25% found as 15% for stunting, 3%for wasting and 4.75% for underweight. The majority 52% were males, 48% were females. Malnutrition was higher among children aged 13-24months (35%) and higher among family who had three or more children less than 5 years (16%). Also the study revealed that malnutrition was higher among mothers who had primary education (62%). Higher prevalence (66%) was present among children who live in rural area. In this study, the prevalence of acute malnutrition (wasting) was higher among infant aged 2-12 months (84%) and higher prevalence of wasting (50%) among those children who had history of illness (acute or chronic).

Conclusion: There was high prevalence of malnutrition in Babylon and there are several risk factors associated with malnutrition. Prominent risk factors include low educated mothers, child age, child birth order, high numbers of children under five years and living in rural area.

Key words: Under nutrition, maternal risk factors, children, Babylon

Introduction

Malnutrition is one of the most serious world health problems and is a major cause of illness and death throughout the world. Throughout the developing world, malnutrition affects almost 800 million, or 20 percent of the population. [1] The effects of malnutrition on human performance, health and survival have been the subject of extensive research for several decades and studies show that malnutrition affects physical growth, morbidity, mortality, cognitive

development, reproduction, and physical work. [2] It is associated with about half of all child death worldwide. Malnourished children have lowered resistance to infection; they are more likely to die from common childhood aliments like diarrheal diseases and respiratory infections; and for those who survive, frequent illness saps their nutritional status, putting them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability. [3, 4] The term "protein energy malnutrition" is used to describe abroad array of clinical conditions ranging from mild malnutrition manifesting itself in poor growth to the serious type of kwashiorkor and marasmus, which have high fatality rate .Children with mild or moderate malnutrition may not have any clinical signs but are always shorter or thinner for their age. Such children are at risk of becoming severely malnourished. [5,6] Thus , when attempting to reduce child mortality, monitoring and reducing the prevalence of malnutrition in vulnerable population is essential. [7] The prevalence of malnutrition among preschool children can be used to determine the need for nutritional surveillance, nutritional care or appropriate nutritional intervention programmes in a community. [7] The prevalence of underweight children vary among different continents of the world , 19.3% in Africa, 19.5 % in Asia and 3.3% in Latin America and Caribbean. On average the prevalence of underweight is similar in Africa and Asia, while low in Latin American and the Caribbean While the prevalence of stunting is higher in Africa than in Asia. The prevalence of stunting, 38% in Africa, 28% in Asia and 13.5% in Latin America and Caribbean. [8] In Iraq, a survey showed that the prevalence of underweight children under 5 years was 6.2%, while, the prevalence of stunting was 13.1%. [9] Because of the serious consequences of malnutrition on a child's growth and health, as well as economic consequences for nation, nutritional status of children should be periodically assessed to monitor the situation and appropriate action should be taken to combat and prevent malnutrition. [6 ,10] The goal of nutritional assessment in childhood is to determine if there are growth abnormalities that point to the presence of an underlying disease, also to prevent nutritional disorders, the increased morbidity and mortality that accompany them. [11] To meet these goals, pediatric clinicians must know the risk factors for malnutrition and must understand the normal and abnormal patterns of growth and the changes in body composition during childhood and adolescence. In addition, they must be able to accurately perform and interpret the results of the nutritional evaluation. [11]

Patients and methods

A cross-sectional descriptive study was conducted to assess the nutritional status and maternal risk factors for acute and chronic malnutrition in children less than five years of age. The study was conducted in four primary health care centers in Babylon, two health centers are rural and two are urban. Convenient sample, total sample was 400 children aged 2 months to 60 months, 100 children from each health center. The data collected during the period from 25th of Feb. 2013 to the 10th of May 2013.The assessment of maternal risk factors for child malnutrition was accomplished through a structured questionnaire , filled through direct interviews with the child's mother . The questionnaire covered demographic information, mother's age, mother's education, mother's occupation and father's education, antenatal care, pregnancy associated diseases. The sample was limited to those children aged 2 months to 60 months attending primary health care centers. The exclusion criteria applied to this group were the presence of underlying conditions that lead to the faltering of growth, such as chronic diseases, congenital malformations and chromosomal anomalies.

The dependent variables for this study were the three anthropometric measurements:

1. Wasting means a low weight for length/height. Children are below -2SD of the

reference weight for length/height. It refers to acute nutritional disorder.
2. Stunting means a low length/height for age. This is a length/ height below -2SD of the reference population. It refers to chronic nutritional disorder.
3. Underweight means a low weight for age .This is a weight below -2 SD of the reference population. It refers to acute and chronic nutritional disorder.

Measurements were taken according to WHO standard techniques and compared with WHO child growth Standards [43] and presented as Z scores with cut-off point of two standard deviations (2 SD) as recommended by the WHO.

Results

The overall mean age of study group was (18.13 ± 14.74) months old. Majority (52%) were males. There was no significant difference between the mean age of males (19.11± 14.93) months old and females (17.08 ± 14.5) months old, t= 1.372, df =398, p= 0.171. (49% and 44% respectively) of mothers and fathers had only primary education. (79%) of mothers were between 20 and 35 years old. Majority (95%) of children (under 5 years of age) were present in normal weight for age (within median (0) and below (-1). Majority (85%) of children (under 5 years of age) were present in normal length/height for age (within >2 , median (0) and below (-1). Majority (97%) of children (under 5 years of age) were present in normal weight for height (within median (0) and below (-1). Majority (86%) of children under 5 years of age started weaning food at time of data collection from them (59%) started weaning food at 6-9 months of age. The prevalence of total malnutrition was (19.25%). According to type of malnutrition the highest prevalence was for chronic malnutrition (15%) from which (12%) stunted (length/height for age <-2) and (3%) severely stunted (length/height for age <-3), table 1. There was significant association between acute malnutrition with age and history of acute or chronic diseases in a child, meanwhile there was no significant association between acute malnutrition and sex of the baby, type of feeding, number of feeding per day, vaccination history, weight monitoring, child birth order, number of children under 5 years and time of introducing weaning food. Most of children (84%) with acute malnutrition presented with (2-12 months) age, (58%) of them were female, (100%) of them with regular weight monitoring, (33%) of them with no or incomplete vaccination history, table 2. There was no significant association between acute malnutrition and these maternal variables ,(92%) of mothers with wasted children presented with (20-35) years of age , (50%) of them with only primary education, (100%) of them were house wife and (75%) of them came from rural area, table 3. There was significant association between chronic malnutrition with age, weight monitoring and child birth order, meanwhile there was no significant association between chronic malnutrition and sex of the baby , type of feeding, number of feeding per day, vaccination history, history of child illness, number of children under 5 years and time of introducing weaning food . (42%) of children with chronic malnutrition presented with age of (13-24 months) , (60%) of them were male , (90%) of them with regular weight monitoring, (15%) of them with no or incomplete vaccination history table 4. There was significant association between chronic malnutrition with maternal education and residence meanwhile there was no significant association between chronic malnutrition and other maternal variables,(80%) of mothers with stunted and severely stunted children presented with (20-35) years of age , (67%) of them with only primary education, (98%) of them were house wife and (65%) of them came from rural area, table 5. There was significant association between underweight and regular weight monitoring, meanwhile there was no significant association between underweight and other child variables. (42%) of children with underweight presented with age of (2-12 months), (53%) were female, (84%) of them with regular weight monitoring, (21%) of them with no or

incomplete vaccination history, table 6. There was no significant association between underweight with maternal variables,(68%) of mothers with underweight children presented with (20-35) years of age , (68%) of them with only primary education, (95%) of them were house wife and (58%) of them came from rural area, table 7. There was significant association between total malnutrition with age, regular weight monitoring, child birth order and number of children under 5 years meanwhile there was no significant association between total malnutrition and other child variables. (35%) of malnourished children presented with age of (13-24 months), (53%) them were male, (90%) of them with regular weight monitoring, (18%) of them with no or incomplete vaccination history, table 8. There was significant association between total malnutrition with maternal education and residence meanwhile there was no significant association between total malnutrition and other maternal variables,(80%) of mothers with malnourished children presented with (20-35) years of age , (62%) of them with only primary education, (97%) of them were house wife and (66%) of them came from rural area, table 9.

Table 1 show the prevalence of malnutrition according to type

Type of malnutrition	Number of malnourished children	Number of study group	Prevalence
Acute malnutrition	12	400	3%
Chronic malnutrition	60	400	15%
Stunted	48	400	12%
Severely stunted	12	400	3%
Underweight	19	400	4.75%
Total malnutrition	77	400	19.25%

Table (2) The association of acute malnutrition by child variables

Variable	Wasted (<-2)	Normal (weight for length/ height)	Total	χ^2	df	P-value
Age						
(2-12 months)	10 (84%)	175 (45%)	185 (46%)			**0.041*** [a]
(13-24 months)	1 (8%)	105 (27%)	106 (27%)			
(25-60 months)	1 (8%)	108 (28%)	109 (27%)			
Sex						
Male	5 (42%)	203 (52%)	208 (52%)	0.529	1	0.467
Female	7 (58%)	185 (48%)	192(48%)			
Type of feeding						
Breast feeding	7 (58%)	189 (49%)	196 (49%)			0.864 [a]
Bottle feeding	2 (17%)	86 (22%)	88 (22%)			
Mixed feeding	3 (25%)	113 (29%)	116 (29%)			
Number of feeding per day						

<8 times	5 (42%)	79 (20%)	84 (21%)	0.14 [a]
8 or more times	7 (58%)	309 (80%)	316 (79%)	
History of diseases				
Present (acute or chronic)	6 (50%)	85 (22%)	91 (23%)	**0.03*** [a]
Absent	6 (50%)	303 (78%)	309 (77%)	
Vaccination history				
No or incomplete	4 (33%)	57 (15%)	61 (15%)	0.094 [a]
Complete	8 (67%)	331 (85%)	339 (85%)	
Weight monitoring				
Present	12 (100%)	372 (96%)	384 (96%)	1.000 [a]
Absent	0 (0%)	16 (4%)	16 (4%)	
Birth order				
First	5 (42%)	125 (32%)	130 (33%)	0.115 [a]
Second	5 (42%)	93 (24%)	98 (24%)	
Third or more	2 (16%)	170 (44%)	172 (43%)	
Number of children under 5years in family				
(3 or more)	1 (8%)	36 (9%)	37 (9%)	1.000 [a]
(<3)	11 (92%)	352 (91%)	363 (91%)	
Time of introducing weaning food				
(<6and>9 months)	4 (67%)	139 (41%)	143 (41%)	0.237 [a]
(6-9 months)	2 (33%)	200 (59%)	202 (59%)	

*p value ≤ 0.05 was significant; **p value ≤ 0.01 was significant; a : Fisher – exact test .

Table (3): The association of acute malnutrition (weight for length/ height growth indicator) by maternal variables

Variable	Wasted (<-2)	Normal (weight for length/ height)	Total	χ^2	df	P-value
Age						
<20 and >35	1 (8%)	83 (21%)	84 (21%)			0.473 [a]
20-35	11 (92%)	305(79%)	316(79%)			
Education						
Illiterate	0 (0%)	40 (10%)	40 (10%)			0.656 [a]
Primary	6 (50%)	192 (50%)	198 (49%)			
Secondary	5 (42%)	107 (28%)	112 (28%)			
Higher education	1 (8%)	49 (12%)	50 (13%)			
Occupation						
House wife	12 (100%)	363 (94%)	375 (94%)			1.000 [a]
Employee	0 (0%)	25 (6%)	25 (6%)			
Residence						
Rural	9 (75%)	191 (49%)	200 (50%)	3.09	1	0.079

Urban	3 (25%)	197 (51%)	200 (50%)			
Antenatal care						
Present	11 (92%)	346 (89%)	375 (89%)			1.000 [a]
Absent	1 (8%)	42 (11%)	43 (11%)			
Pregnancy associated diseases						
Present	4 (33%)	116 (30%)	120 (30%)			0.758 [a]
Absent	8 (67%)	272 (70%)	280 (70%)			

*p value ≤ 0.05 was significant, **p value ≤ 0.01 was significant , a : Fisher – exact test .

Table (4) The association of chronic malnutrition (length/height for age growth indicator) by child variables

Variable	Stunted and severely stunted	Normal (length/height for age)	Total	χ^2	df	P-value
Age						
(2-12 months)	13 (22%)	172 (51%)	185 (46%)	17.64	2	**<0.001****
(13-24 months)	25 (42%)	81 (24%)	106 (27%)			
(25-60 months)	22 (36%)	87 (25%)	109 (27%)			
Sex						
Male	36 (60%)	172 (51%)	208 (52%)	1.81	1	0.179
Female	24 (40%)	168 (49%)	192 (48%)			
Type of feeding						
Breast feeding	33 (55%)	163 (48%)	196 (49%)	1.885	2	0.39
Bottle feeding	14 (23%)	74 (22%)	88 (22%)			
Mixed feeding	13 (22%)	103 (30%)	116 (29%)			
Number of feeding per day						
<8 times	10 (17%)	74 (22%)	84 (21%)	0.799	1	0.371
8 or more times	50 (83%)	266 (78%)	316 (79%)			
History of diseases						
Present (acute or chronic)	12 (20%)	79 (23%)	91 (23%)	0.304	1	0.582
Absent	48 (80%)	261 (77%)	309 (77%)			
Vaccination history						
No or incomplete	9 (15%)	52 (15%)	61 (15%)	0.003	1	0.953
Complete	51 (85%)	288 (85%)	339 (85%)			
Weight monitoring						
Present	54 (90%)	330 (97%)	384 (96%)			**0.021*** [a]
Absent	6 (10%)	10 (3%)	16 (4%)			
Birth order						
First	10 (16%)	120 (35%)	130 (33%)	11.39	2	**0.003***
Second	13 (22%)	85 (25%)	98 (24%)			
Third or more	37 (62%)	135 (40%)	172 (43%)			
Number of children under 5years in family						
(3 or more)	8 (13%)	29 (9%)	37 (9%)	1.402	1	0.236

(<3)	52 (87%)	311 (91%)	363 (91%)			
Time of introducing weaning food						
(<6and>9 months)	20 (35%)	123 (43%)	143 (41%)	1.139	1	0.286
(6-9 months)	37 (65%)	165 (57%)	202 (59%)			

*p value ≤ 0.05 was significant
**p value ≤ 0.01 was significant
a : Fisher – exact test .

Table (5): The association of chronic malnutrition (length/height for age growth indicator) by maternal variables

Variable	Stunted and severely stunted	Normal (length/height for age)	Total	χ^2	df	P-value
Age						
<20 and >35	12 (20%)	72 (21%)	84 (21%)	0.043	1	0.837
20-35	48 (80%)	268 (79%)	316 (79%)			
Education						
Illiterate	10 (17%)	30 (9%)	40 (10%)	17.508	3	**0.001****
Primary	40 (67%)	158 (46%)	198 (49%)			
Secondary	8 (13%)	104 (31%)	112 (28%)			
Higher education	2 (3%)	48 (14%)	50 (13%)			
Occupation						
House wife	59 (98%)	316 (93%)	375 (94%)	0.149 [a]		
Employee	1 (2%)	24 (7%)	25 (6%)			
Residence						
Rural	39 (65%)	161 (47%)	200 (50%)	6.353	1	**0.012***
Urban	21 (35%)	179 (53%)	200 (50%)			
Antenatal care						
Present	53 (88%)	304 (89%)	357 (89%)	0.062	1	0.804
Absent	7 (12%)	36 (11%)	43 (11%)			
Pregnancy associated diseases						
Present	22 (37%)	98 (29%)	120 (30%)	1.494	1	0.22
Absent	38 (63%)	242 (71%)	280 (70%)			

*p value ≤ 0.05 was significant,**p value ≤ 0.01 was significant, a : Fisher – exact test .

Table (6) The association of underweight (weight for age growth indicator) by child variables

Variable	Under weight (<-2)	Normal (weight for age)	Total	χ^2	df	P-value
Age						
(2-12 months)	8 (42%)	177 (47%)	185 (46%)	0.275	2	0.872
(13-24 months)	6 (32%)	100 (26%)	106 (27%)			
(25-60 months)	5 (26%)	104 (27%)	109 (27%)			
Sex						
Male	9 (47%)	199 (52%)	208 (52%)	0.171	1	0.679
Female	10 (53%)	182 (48%)	192 (48%)			
Type of feeding						
Breast feeding	10 (53%)	186 (49%)	196 (49%)	4.399	2	0.111
Bottle feeding	7 (37%)	81 (21%)	88 (22%)			
Mixed feeding	2 (10%)	114 (30%)	116 (29%)			
Number of feeding per day						

<8 times	4 (21%)	80 (21%)	84 (21%)	1.000 [a]		
8 or more times	15 (79%)	301 (79%)	316 (79%)			
History of diseases						
Present (acute or chronic)	6 (32%)	85 (22%)	91 (23%)	0.399 [a]		
Absent	13 (68%)	296 (78%)	309 (77%)			
Vaccination history						
No or incomplete	4 (21%)	57 (15%)	61 (15%)	0.509 [a]		
Complete	15 (79%)	324 (85%)	339 (85%)			
Weight monitoring						
Present	16 (84%)	368 (97%)	384 (96%)	**0.034*** [a]		
Absent	3 (16%)	13 (3%)	16 (4%)			
Birth order						
First	5 (26%)	125 (33%)	130 (33%)	0.350	2	0.839
Second	5 (26%)	93 (24%)	98 (24%)			
Third or more	9 (48%)	163 (43%)	172 (43%)			
Number of children under 5years in family						
(3 or more)	3 (16%)	34 (9%)	37 (9%)	0.403 [a]		
(<3)	16 (84%)	347 (91%)	363 (91%)			
Time of introducing weaning food						
(<6and>9 months)	6 (38%)	137 (42%)	143 (41%)	0.108	1	0.743
(6-9 months)	10 (62%)	192 (58%)	202 (59%)			

*p value ≤ 0.05 was significant
**p value ≤ 0.01 was significant
a : Fisher – exact test .

Table (7): The association of underweight (weight for age growth indicator) by maternal variables

Variable	Underweight (<-2)	Normal (weight/ age)	Total	χ^2	df	P-value
Age						
<20 and >35	6 (32%)	78 (20%)	84 (21%)	0.252 [a]		
20-35	13 (68%)	303 (80%)	316 (79%)			
Education						
Illiterate	0 (0%)	40 (11%)	40 (10%)	0.312 [a]		
Primary	13 (68%)	185 (48%)	198 (49%)			
Secondary	5 (26%)	107 (28%)	112 (28%)			
Higher education	1 (6%)	49 (13%)	50 (13%)			
Occupation						
House wife	18 (95%)	357 (94%)	375 (94%)	1.000 [a]		
Employee	1 (5%)	24 (6%)	25 (6%)			
Residence						
Rural	11 (58%)	189 (50%)	200 (50%)	0.497	1	0.481
Urban	8 (42%)	192 (50%)	200 (50%)			
Antenatal care						
Present	16 (84%)	341 (89%)	357 (89%)	0.444 [a]		
Absent	3 (16%)	40 (11%)	43 (11%)			

Pregnancy associated diseases						
Present	5 (26%)	115 (30%)	120 (30%)	0.129	1	0.720
Absent	14 (74%)	266 (70%)	280 (70%)			

*p value ≤ 0.05 was significant
**p value ≤ 0.01 was significant , a : Fisher – exact test .

Table (8) The association of total malnutrition by child variables

Variable	Total malnourished children	Normal	Total	χ^2	df	P-value
Age						
(2-12 months)	26 (34%)	159 (49%)	185 (46%)	6.39	2	**0.041***
(13-24 months)	27 (35%)	79 (25%)	106 (27%)			
(25-60 months)	24 (31%)	85 (26%)	109 (27%)			
Sex						
Male	41 (53%)	167 (52%)	208 (52%)	0.059	1	0.807
Female	36 (47%)	156 (48%)	192 (48%)			
Type of feeding						
Breast feeding	41 (53%)	155 (48%)	196 (49%)	2.237	2	0.327
Bottle feeding	19 (25%)	69 (21%)	88 (22%)			
Mixed feeding	17 (22%)	99 (31%)	116 (29%)			
Number of feeding per day						
<8 times	16 (21%)	68 (21%)	84 (21%)	0.003	1	0.958
8 or more times	61 (79%)	255 (79%)	316 (79%)			
History of diseases						
Present (acute or chronic)	19 (25%)	72 (22%)	91 (23%)	0.201	1	0.654
Absent	58 (75%)	251 (78%)	309 (77%)			
Vaccination history						
No or incomplete	14 (18%)	47 (15%)	61 (15%)	0.634	1	0.426
Complete	63 (82%)	276 (85%)	339 (85%)			
Weight monitoring						
Present	69 (90%)	315 (98%)	384 (96%)			**0.005**** [a]
Absent	8 (10%)	8 (2%)	16 (4%)			
Birth order						
First	15 (19%)	115 (36%)	130 (33%)	8.014	2	**0.018***
Second	20 (26%)	78 (24%)	98 (24%)			
Third or more	42 (55%)	130 (40%)	172 (43%)			
Number of children under 5years in family						
(3 or more)	12 (16%)	25 (8%)	37 (9%)	4.558	1	**0.033***
(<3)	65 (84%)	298 (92%)	363 (91%)			
Time of introducing weaning food						
(<6and>9 months)	26 (39%)	117 (42%)	143 (41%)	0.239	1	0.625
(6-9 months)	41 (61%)	161 (58%)	202 (59%)			

*p value ≤ 0.05 was significant
**p value ≤ 0.01 was significant
a : Fisher – exact test .

Table (9): The association of total malnutrition by maternal variables

Variable	Total malnourished children	Normal	Total	χ^2	df	P-value
Age						
<20 and >35	15 (20%)	69 (21%)	84 (21%)	0.133	1	0.716
20-35	62 (80%)	254 (79%)	316 (79%)			
Education						
Illiterate	10 (13%)	30 (9%)	40 (10%)	11.448	3	**0.01***
Primary	48 (62%)	150 (46%)	198 (49%)			
Secondary	16 (21%)	96 (30%)	112 (28%)			
Higher education	3 (4%)	47 (15%)	50 (13%)			
Occupation						
House wife	75 (97%)	300 (93%)	375 (94%)	0.191 [a]		
Employee	2 (3%)	23 (7%)	25 (6%)			
Residence						
Rural	51 (66%)	149 (46%)	200 (50%)	10.052	1	**0.002****
Urban	26 (34%)	174 (54%)	200 (50%)			
Antenatal care						
Present	68 (88%)	289 (90%)	357 (89%)	0.088	1	0.767
Absent	9 (12%)	34 (10%)	43 (11%)			
Pregnancy associated diseases						
Present	28 (36%)	92 (29%)	120 (30%)	1.839	1	0.175
Absent	49 (64%)	231 (71%)	280 (70%)			

*p value ≤ 0.05 was significant
**p value ≤ 0.01 was significant , a : Fisher – exact test .

Discussion

This study shows that the prevalence of undernutrition in Babylon was (19.25), 3% for wasting, 15% for stunting and 4.75% for underweight. The prevalence of undernutrition in Iraq, from 25% in 1997**[13]**, to 4.4% for wasting, 27.6% for stunting and 11.5% for underweight in 2003**[14]**,while in 2006 shows 5.8% for wasting,27.5% for stunting and 7.1% for underweight.**[15]** In 2011 revealed that the prevalence of wasting was 6.2%, stunting 13.1% [9] this high level of stunting in our study may have been influenced by the fact that the sample of the current study was taken from regions which differs in the level of socio-economic, demographic, child care and environmental factors. Our results are nearly similar to result of a study was done in Sudan 2011, which shows 27.5% as severe malnutrition and 35% suffered from either mild or moderate malnutrition.[16]And lower than the result done in Africa which revealed 47% as stunting , wasting 7% and underweight 30%.[17]Where is in India revealed 43.3% as underweight and 47.9% stunting, this high prevalence of malnutrition in these developed countries may be expected related to poor socio-demographic characteristics than our region.

Regarding the educational level of mothers, the majority 49% had primary education, while the educational level of fathers the majority 44 % had primary education, as shown in figure (2) and 79% of mother's age were between 20 and 35 years old as shown figure (3). The study revealed that there was no significant association between undernutrition and maternal age as shown in table (5). From our sample, it was found that 21% mothers ages below 20 years or more than 35 years , 79% mothers ages(20-35) years while 20% of mothers with malnourished children who ages below 20 years or more than 35 years, 80% of mothers ages between (20-35)years. This agrees

with study done in Turkey [18] while other studies reported that younger childbearing was identified as risk factor. It is suggested that adolescent mothers are not ready to take care of a child, whereas older mothers have more experience in child care and are likely to find solutions to their problems.[6]In this study, the percentage of adolescent mothers was low and may explain why no significant relation could be found between mother's age and malnutrition. In this study, there was significant association between mother's education and chronic undernutrition (stunting) as seen in table (3) but no association with wasting or underweight as shown table (2,4) respectively. Education, especially maternal education, is a powerful predicator of children's nutritional status. [6] Mother's education plays a vital role in increased receptivity to knowledge and awareness related to nutritional requirements of their infants.[19]Education improves the mothers abilities and behavior in health matters in general;nutrition, sanitation and disease management in particular. Our results are similar to other result done by studies in Botswana[20] and Turkey[18]and differ from result of other studies. [21,22] The current study revealed no association between mother's occupation and undernutrition as shown in table(5). It was found that 94% of mothers were house wife, 6% were employed, while the percentage of mothers with malnourished children, 97% was house wife, 3% were employed. Similar finding in other study in Nigra[23] The study revealed that significant association between the residence and the chronic undernutrition(stunting) as seen in table (3) ($P<0.012$) while no association with wasting or underweight as shown in table(2,4) respectively. Among the stunted children 65% lived in rural area while 35% lived in urban. Similar studies reported in Turkey.[18]Other study done in Malaysia that reported the prevalence of underweight and stunting were high among children in poor rural area.[24]The reason for this is explained mainly by lacking of social security leading to poor accessibility to education and health services. This study showed that, there was no significant association between undernutrition and the number of antenatal care visits of mother during pregnancy as show in table (5). In our sample, there was 89% of mothers had antenatal care visits during pregnancy,11% of mother had no antenatal care visits during pregnancy. Among the malnourished children 88% whose mothers had antenatal care visits while 12% whose mother had no antenatal care visits during pregnancy .This an disagreement with other study done in Ethiopia [25]whichshowed that the number of antenatal care visits a woman during the pregnancy of the child had a significant effect on chronic malnutrition. Antenatal care can help to prevent low birth- weight and birth complications while, at the same time, providing mothers with valuable information about childcare, health and nutrition. Thus, availability and accessibility of antenatal care services to pregnant women should be increased as a means to improve long term nutritional and survival status of children. There was no significant association between diseases during pregnancy and undernutrition (wasting, stunting and underweight) as seen in table (5). In our sample, it was found that 30% of mothers had history of associated diseases during pregnancy, 70% of mothers had no associated diseases during pregnancy. Among the malnourished children 36% their mother had history of diseases during pregnancy, 64% their mother didn't have history of diseases during pregnancy. Malnutrition has shown to be an important concern in women, children, and the elderly. Because of pregnancies and breastfeeding, women have additional nutrient requirements.[23]Children can be at risk for malnutrition even before birth, as their nutrition levels are directly tied to the nutrition of their mothers.[24]

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