Results

The results of this study are presented as follow:

Part I:

- Characteristics of the studied children and their parents [Tables, 1-3] and [Figure, 1].

Part II:

- Nutritional states of the studied children [Tables, 4-5] and [Figure, 3] .

Part III:

- Nutritional assessment of the studied children [Tables, 6-8].

Part IV:

- Physical assessment of the studied children [Tables, 9].

Part V:

- Knowledge of the studied children about nutrition, renal failure and haemodialysis therapy [Tables, 10-13].

Part VI:

- Relation between variables of the study [Tables, 14-15].

Part (I) : Characteristics of the Studied Children

Table (1): Distribution of the studied children according to their sociodemographic characteristics

Characteristics of the studied children	Total Number (n = 100)	Percentage (100.0%)
Age in years		
12<14	10	10.0
14<16	10	10.0
16≤18	80	80.0
$\overline{X} \pm SD$ **16.1 ± 3.23**		
Gender		
Male	42	42.0
Female	58	58.0
Rank of child in the family		
First	15	15.0
Second	22	22.0
Third	59	59.0
Fourth	4	4.0
Type of children's feeding in their infancy stage		
Exclussive breast Feeding	22	22.0
Artificial feeding	46	46.0
Both of the above	32	32.0

Table (1): Showed that the mean age of the children undergoing haemodialysis therapy was 16.1 ± 3.23years. Regarding to the children's gender, more than half (58%) of them were females. As regards to type of feeding during their infancy stage, it was found that 22% of them had exclusive breast feeding and 46% of them had artificial feeding.
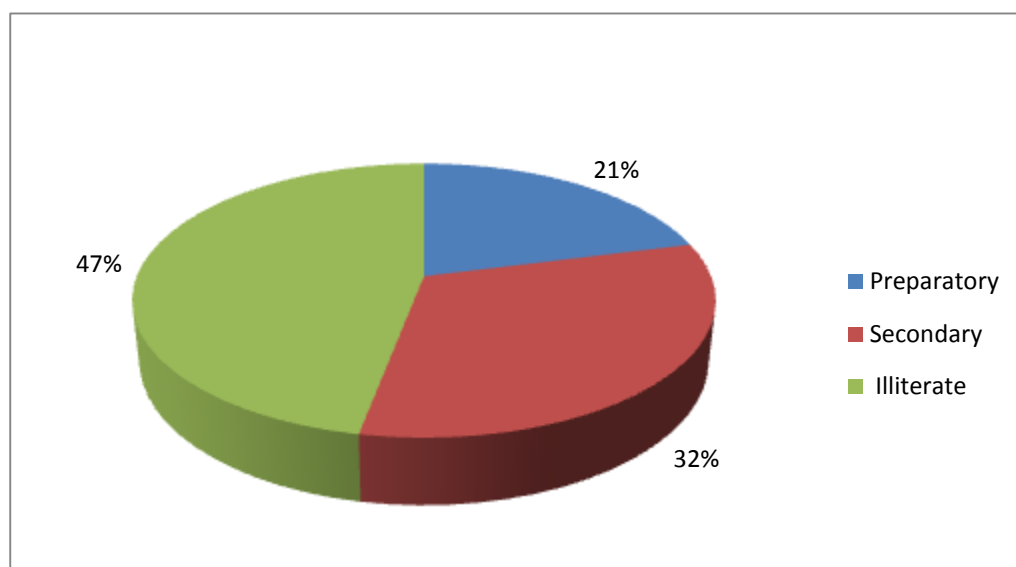
21%

47%

32%

■ Preparatory

■ Secondary

■ Illiterate

Figure (1): Percentage distribution of the studied children according to their educational status

This figure showed distribution of the studied children according to their educational status, it reflected that, less than half (47%) of them are illiterate.

Table *(2):* Distribution of parents of the studied children according to their characteristics

Characteristics of Parents	Mothers		Fathers	
	No.	%	No.	%
Age in years				
20-	10	10.0	10	10.0
30 -	50	50.0	33	33.0
≥ 40	40	40.0	57	57.0
	$\overline{X} \pm SD$	31.2 ± 9.8	$\overline{X} \pm SD$	38.7±11.3
Educational level				
Illiterate	46	46.0	52	52.0
Can read and write	10	10.0	30	30.0
Middle education	44	44.0	18	18.0
Job				
Work	10	10.0	87	87.0
Not work	90	90.0	13	13.0
Family size				
3-	50		50.0	
5-	30		30.0	
≥ 7	20		20.0	

Table (2): Described characteristics of parents of the studied children where the mean age of the mothers was 31.2 ± 9.8 years, while the mean age of fathers was 38.7±11.3 years. Regarding to level of education, it was found that, more than half (52%) of fathers were illiterate, while 46% of mothers were illiterate. As regards to job, the vast majority of mothers (90%) were not working (housewife) while 87% of fathers were working.

Table (3): Distribution of the studied children according to their housing condition

Housing condition	No. (n = 100)	% (100.0)
Residence		
Rural	73	73.0
Urban	27	27.0
Ventilation		
Good	63	63.0
Bad	57	57.0
Sanitary water disposable (sewage)		
Present	52	52.0
Not present	48	48.0
Safe water supply		
Present	78	78%
Not present	22	22%

Table (3): Illustrated that nearly three quarters (73%) of the studied children live in rural area and 63% of them have good ventilation. According to sanitation, it was found that half (52%) of the studied children have sanitary water disposable. As regards to safe water supply, it was found that 78% of the studied children have safe water supply.

Part II: Nutritional State of the Studied Children

Table (4): Distribution of the studied children according to characteristics of their meals

Characteristics of the studied children's meals	No. (n = 100)	% (100.0)
Number of meals / day		
Once	5	5.0
Twice	50	50.0
Thrice	45	45.0
Quantity of food/ meal		
Large amount	31	31.0
Small amount	69	69.0
Snacks between meals		
Yes	58	58.0
No	42	42.0
Fluid intake / day		
One cup/ day	60	60.0
Three cups/ day	10	10.0
More than five cups/ day	30	30.0
Satisfactions of fluid and water amount intake/day		
Yes	30	30.0
No	70	70.0

Table (4): Described meals characteristics of the studied children, it was found that 50% of them had two meals/day and more than two third (69%) of children had small amount in each meal. According to snacks between meals, it was found that, more than half (58%) of the studied children had snacks between meals, as well as more than two thirds (70%) of them take unsatisfactory amount of fluid and water.

Table (5): Distribution of the studied children according to food consumption.

Food consumption		Protein	Carbohydrates	Fatty food	Vitamins	Jungle foods
Daily	No.	3	17	7	91	90
	%	3.0	17.0	7.0	91.0	90.0
Weekly	No.	77	61	46	7	8
	%	77.0	61.0	46.0	7.0	8.0
Monthly	No.	20	22	47	2	2
	%	20.0	22.0	47.0	2.0	2.0

Table (5): Showed that in more than three quarters (77%) of the studied children having protein and 61% of them having carbohydrates perweek. Meanwhile, the majority of the studied children (91% and 90%) having vitamins and jungle food daily intake respectively.
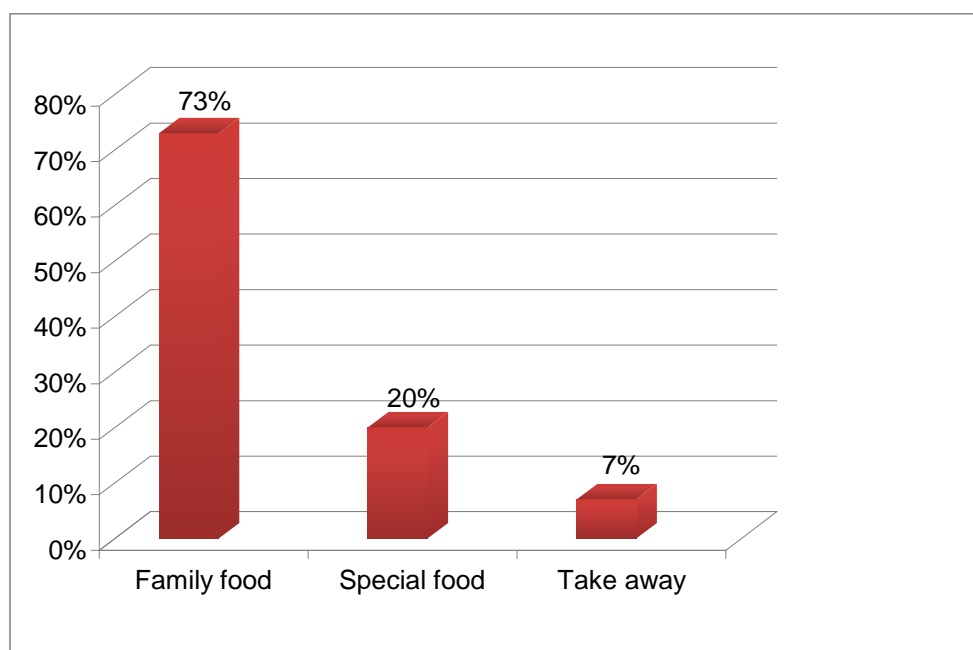
Figure (2): Percentage distribution of the studied children undergoing haemodailysis therapy according to characteristics of their meals

This figure showed that more than two thirds of the studied children (73%) had family food, but only 20% of them had special prepared food suitable for their health status.

Part III: Nutritional Assessment of the Studied Children

Table (6): Distribution of the studied children according to result of their serum laboratory tests compared to their normal peers

Laboratory tests	No. (n = 100)	% (100.0)
Calcium level		
Normal	13	13.0
Abnormal	87	87.0
Sodium level		
Normal	17	17.0
Abnormal	83	83.0
Magnesium level		
Normal	10	10.0
Abnormal	90	90.0
Iron level		
Normal	32	32.0
Abnormal	68	68.0
Potassium level		
Normal	11	11.0
Abnormal	89	89.0

Table (6): Explained the nutritional assessment of the studied children according to their laboratory tests, it reflects that 87% , 90% and 68% had abnormal laboratory level of calcium, magnesium and iron respectively. While 17% of the studied children had normal laboratory sodium level compared with their normal peers.

Table (7): Distribution of the studied children undergoing haemodialysis therapy according to their feeding pattern

Items	No. (n = 100)	% (100.0)
Restrictions in diet		
↓ Salt intake	26	26.0
↓ Protein intake	32	32.0
↓ Fat intake	4	4.0
↓ Water intake	38	38.0
Preferable food		
All food	22	22.0
Vegetables	12	12.0
Fruits	66	66.0

Table (10): Showed that more than one quarter (26%) of the studied children were restricting salt in their diet, while 32% of them were restricting protein intake. It also reflected that, about two thirds 66% of the studied children prefer to eat fruits.

Table (8): Distribution of the studied children according to their BMI compared with their normal peers

Nutritional status of children regarding BMI	No. (n = 100)	% (100.0)
Under-nutrition	81	81.0
Normal	19	19.0

Table (8): Illustrated that the majority (81%) of the studied children were suffering from under-nutrition in relation to their BMI, meanwhile 19% of them were normal compared to their normal peers.

*Part (**IV**): Physical Assessment of the Studied Children*

Table (9): Distribution of the studied children according to their physical state compared with their normal peers

Items	Normal		Less than normal	
	No.	**%**	**No.**	**%**
Body weight	36	36.0	64	64.0
Height	21	21.0	79	79.0
Head circumference	51	51.0	49	49.0
Mid arm circumference	32	32.0	68	68.0
Body mass index	23	23.0	77	77.0

Table (9): Revealed that, more than half (51%) of the studied children had normal head circumference, while 36% and 32% of them had normal body weight and mid arm, respectively. It was found that, more than three quarters of the studied children (77% and 79%) less than normal in relation to their body mass index and height respectively. Meanwhile, it was clear that 68% and 64% the studied children were less than normal in relation to their mid arm circumference and body weight respectively.

Part V: Knowledge of the Studied Children about Nutrition, Renal Failure and Haemodialysis therapy

Table (10): Distribution of the studied children's knowledge about characteristics of healthy diet

Items	No (n = 100)	% (100.0)
Diet regimen for children		
Decrease salt and protien in diet	26	26.0
Decrease fat in diet	2	2.0
Decrease fluid intake	26	26.0
Don't Know	46	46.0

Table (10): Illustrated that, 46% of the studied children didn't know the diet regimen suitable for their health condition while 26%, 26% and 2% of them reported ↓ in salt, ↓ in fluid intake and ↓ of fat in diet respectively.

Table (11): Distribution of the studied children according to their knowledge about renal failure

Items	No. (n = 100)	% (100.0)
Concept of renal failure:		
Correct	49	49.0
Incorrect	51	51.0
Causes of renal failure:		
Hypertension	21	21.0
Genetic diseases	16	16.0
All the above	21	21.0
Don't know	42	42.0
Clinical manifestations:		
Headache	20	20.0
Anorexia	10	10.0
Both of the above	40	40.0
Don't know	30	30.0
Complications:		
Coma	18	18.0
Muscle camps	31	31.0
Both of the above	29	29.0
Don't know	22	22.0
Management:		
Haemodialysis	59	59.0
Kidney transplantation	20	20.0
Medication	10	10.0
Don't know	11	11.0

Table (11): Showed that, 51% of the studied children had incorrect knowledge about the concept of renal failure, while 42% of them didn't know causes of renal failure. It also reflected that 22% of the studied children didn't know the complications of renal failure but more than half (59%) of them know the management for children under going haemodialysis therapy.

Table (12): Distribution of the studied children according to their knowledge about haemodialysis therapy

Items	No. (n = 100)	% (100.0)
Concept of haemodialysis:		
Remove of waste products	25	25.0
Punishment	11	11.0
Don't know	64	64.0
Importance of haemodialysis		
Relieve of symptoms	8	8.0
Let child to live normal	15	15.0
Don't know	77	77.0
Number of haemodialysis sessions weekly		
Two sessions/ week	8	8.0
Three sessions/ week	92	92.0

Table (12): Illustrated that, 64% of the studied children didn't know the correct concept of haemodialysis and more than three quarters (77%) of them didn't know the importance of haemodialysis. In relation to number of heamodialysis sessions/ week for children undergoing haemodialysis therapy, it was found that, the majority of them (92%) mentioned three sessions/ week.

Table (13): Distribution of the studied children according to their total knowledge regarding renal failure and haemodialysis therapy

Level of knowledge	Children's knowledge	
	No. (n =100)	% (100.0)
Good (80-100%)	20	20.0
Average (60-80%)	80	80.0
Poor (<60%)	0	0.0
Total	100	100.0

Table (13): Showed that, 80% of the studied children had average knowledge, while 20% of them had good knowledge regarding renal failure and haemodialysis therapy.

Part VI: Relation between Variables of the Study

Table (14): Relation between the total score of children's knowledge and their age and gender

Age	Children's Knowledge (n=100)						X^2	P
	Good		Average		Poor			
	No.	%	No.	%	No.	%		
12< 14 Years	2	2.0	8	8.0	0	0	55.29	<0.001
14<16 Years	3	3.0	7	7.0	0	0		
16 ≤18 Years	15	15.0	6	65.0	0	0		
Gender								
Male	12	12.0	30	30	0	0	45.3	<0.001
Female	8	8.0	50	50.0	0	0		
Total	20	20.0	80	80.0	0	0		

Table (14): As regards the relation between the children knowledge and their ages it was clear that, 65% of the studied children in the age group of 16 ≤ 18 years were having average knowledge compared with children in the rest of age groups with highly the statistical significant difference. Also assd was found between the studied children knowledge and their gender where 50% of females were having average knowledge compared with 30% of males children.

Table (15): Relation between the total score of children's knowledge and their level of education and residence area

Level of education	Child's knowledge (n=100)						X^2	P
	Good		Average		Poor			
	No.	%	No.	%	No.	%		
Preparatory	9	9.0	11	11.0	0	0		
Secondary	11	11.0	21	21.0	0	0	40.29	<0.001
Illiterate	0	0.0	48	48.0	0	0		
Residence condition								
Rural	3	3.0	70	70.0	0	0	38.4	< 0.001
Urban	17	17.0	10	10.0	0	0		

Table (15): Showed that there was highly statistical difference (P<0.001) between the children's knowledge and their level of education and residence condition. It was reflected that 48% of illiterate children had average knowledge meanwhile, 9% of children preparatory school had good knowledge. Also it was revealed 70% of the studied children who lived in rural area have average knowledge compared with 17% who lived at urban areas were having good knowledge.