Results

The results of this study are presented in seven parts:

Part I **:** Sociodemographic characteristics of nurses and clients (Table 1 & 2)

Part II **:** Nurse's knowledge (Tables 3-5).

Part III **:** Quality of nurses' knowledge before and after program (Table 6)

Part IV **:** Nurses performance before and after program (Table 7).

Part V **:** Client's satisfaction about care and cleanliness of unit (Table,s 8 – 11 ; figure 1:4).

Part VI **:** The relations between nurses' sociodemographic characteristics and client satisfaction about kidney dialysis (Table 12 & 13;figure 5:6).

Part VII **:** The relations between nurses' education and experience as regards knowledge in relation to renal failure and dialysis (Tables 14-16; figure 7:8).

Part (I): Socio-demographic Characteristics of Nurses and Clients

Table (1): Distribution of nurses in relation to their socio-demographic characteristics (n=65).

Items	No	%
Age		
25-	16	25
30-	24	38
35-	15	23
≤40+	10	14
Residence		
City	23	35.4
Village	42	64.6
Marital Status		
Married	55	85
Not Married	9	14
Widowed	1	1
Education		
Diploma	56	86
Dip. & Specialization	2	3
Technical institute	2	3
B.Sc.	5	8
Position		
Nurse	58	89
Dept. Supervisor	7	11
Numberof Children		
No Kids	9	14
One	6	9
Two	33	51
Three	17	26
Experience(years)		
One	10	15
Six	32	50
Twelve	15	23
Eighteen	8	12
Training Courses		
None	58	89
One	6	9
Two	1	2

Table (1) shows that more than one third (38%) of nurse's age ranged between 25-<30 years, less than two thirds (64.6%) lived in village, while the majority of them (85%) were married. According to their education and working position, the majority had diploma (86%) and working as a staff nurses (89%). Regarding to, their children number, slightly more than half had two children (51%). As well, half (50%) of them had 6 years of experience, while the majority (89%) had no training courses. The differences were highly significant for all items ($p<0.001$).

Table (2): Distribution of the clients in relation to their socio-demographic characteristics (n=100).

Item	No & %
Age	
20-	20
30-	15
40-	30
50-	30
≤60+	5
Sex	
Male	45
Female	55
Place	
Rural	75
Urban	25
Marital Status	
Married	60
Not Married	20
Widowed	20
Education	
Illiterate	55
Diploma	25
B.Sc.N.	20

Table (2) states that less than one third (30%) of clients, their age ranged from 40 to less than 50 years old; more than half (55%) were females, one quarter (25%) lived in urban areas three fifths (60%), were married; and more than half (55%), were illiterates.

Part II: Nurse's Knowledge

Table (3): The mean score of nurse's knowledge about types of renal failure pre/post program (n=65).

Item	Mean Score ± SD		t-test	p-value
	Pretest	Posttest		
Definition of renal failure	2.769±0.7617	3.630± 1.1148	4.66	0.000***
Type I Acute Renal Failure				
Causes	3.846± .0000	4.000± 0.4753	2.60	0.01**
Symptoms	4.584± .0000	5.000±1.0590	3.16	0.002***
Diagnostics	3.584± .0000	4.000±0.6347	5.27	0.000***
Prevention	3.753± .0000	4.000±0.7077	2.80	0.007***
Medications	3.476± .0000	4.000±0.8679	4.85	0.000***
Type II Chronic Renal Failure				
Causes	4.938± .0000	5.000±0.4961	1.00	0.32*
Symptoms	3.424± .0000	4.000± 1.0386	4.51	0.000***
Diagnostics	3.246± .0000	4.000±0.9847	6.17	0.000***
Medications	3.338± .0000	4.000±0.5936	8.98	0.000***
Prevention	2.812±0.9407	3.312± 1.2198	2.80	0.007***
Health education	3.078±0.7055	3.703±0.9479	5.08	0.000***
Total	**31.721±13.51**	**52.71±10.77**	**13.55**	**<0.001***

*N.S > 0.05 ** : Significant (P< 0.05) ***: Highly significant (p< 0.001)

Table (3) indicates that there are highly statistically significant differences between pre/post program about nurses knowledge related to renal failure as for definition; types of acute and chronic renal failure prevention; and health education; except for the acute renal failure causes, it was only significant, and for chronic renal failure causes, it was insignificant.

Table (4): The mean score of nurse's knowledge about dialysis before and after the program (n=65).

Item	Mean Score ± SD		t-test	p-value
	Pretest	Posttest		
Dialysis procedure	3.200±.0000	4.000±1.0925	5.90	0.000***
Causes for dialysis	3.3077 ±.0000	4.000±0.98303	5.678	0.000***
Types of renal dialysis	2.723±.0000	4.000±0.5450	18.88	0.000***
Meaning of peritoneal dialysis	3.4154 ±.0000	4.000±1.01385	4.649	0.000***
Meaning of hemodialysis	2.4462 ±.0000	4.000±0.81069	15.453	0.000***
Number.of dialysis sessions	2.4462 ±.0000	4.000±0.81069	15.453	0.000***
Care before dialysis	3.5692 ±.0000	4.000±0.91804	3.783	0.000***
Care during dialysis	4.000±.0000	4.292±1.12809	2.089	0.041**
Care after dialysis	3.5846±.0000	4.000±0.82712	4.049	0.000***

** : Significant (P< 0.05) ***: Highly significant (p< 0.001)

Table (4) represents nurse's knowledge improvement post program implementation. The differences were highly statistically significant for dialysis procedure (t=5.90), causes for dialysis (t=5.678), types of renal dialysis (t=18.88), meaning of peritoneal dialysis (t=4.649), meaning of hemodialysis (t=15.453), number. of dialysis sessions (t=15.453), preparation of dialysis (t=3.783) and care after dialysis (t=4.049) at p<0.001. However, the difference was only statistically significant for care during dialysis (t=2.089 at p<0.05).

Table (5): The mean score of nurse's knowledge about infection control measures before and after program (n=65).

Item	Mean Score ± SD		t-test	p-value
	Pretest	Posttest		
Hand washing	2.8462±0.47535	2.2615±0.64413	5.698	0.000***
Gloves wearing	4.0769± .0000	5.0000±1.29068	5.766	0.000***
Preparing machine	4.6615± .0000	5.0000±0.73478	3.714	0.000***
Machine cleaning	3.6923± .0000	4.0000±0.46513	5.333	0.000***
Post dialysis	3.6154± .0000	4.0000±0.67759	4.576	0.000***

***: Highly significant (p< 0.001)

Table (5) reveals that there were highly statistically significant differences between pre and post program implementation for all items of infection control measures (p<0.001).

Part III- Quality of nurses, knowledge before and after program

According to research question no (3):

Is there improvemnt of the quality of nurses, knowledge before and after program?

Table (6): The mean score of nurses' knowledge about, the quality before and after program (n=65).

Nurses' Knowledge Quality	Mean Score ± SD		t-test	p-value
	Pretest	Posttest		
Definition	3.6154±.0000	4.0000±0.67759	4.576	0.000***
Dimensions	4.6462±.0000	5.0000±0.67154	4.248	0.000***
Elements	4.5846±.0000	5.0000±0.78844	4.248	0.000***
Reviewing procedures	3.8308±.0000	4.0000±0.51748	2.637	0.010**
Continuing quality improvement	3.1250 ±.0000	4.000±1.32737	5.274	0.000***

** : Significant (P< 0.05) ***: Highly significant (p< 0.001)

Table (6) indicates that the nurse's knowledge about quality improved after the program, there were highly statistically significant differences concerning definition, dimensions, elements and continuing quality improvement. The mean scores were t=4.576, 4.248, 4.248 and 5.274 respectively at p<0.001. However, the improvement was only statistically significant as regards reviewing procedures (t=2.637 at p<0.05).

Part IV: Nurses, Performance

Table (7): The mean score of nurse's performance about dialysis before and after program (n=65).

Item	Mean Score ± SD		t-test	p-value
	Pretest	Posttest		
Pre dialysis preparation	0.5000±0.51887	0.9286±0.26726	3.122	0.008***
Gathering of all dialysis supplies	0.5789±0.50726	0.7895±0.41885	1.455	0.163*
Termination of dialysis	0.4000±0.50262	0.8000±0.41039	2.990	0.008***
Post dialysis	0.3750±0.51755	0.8750±0.35355	2.646	0.033**
Between dialysis	0.0000±0.0000	1.0000±0.0000	-	-
Hand washing	0.4000±0.54772	1.0000±0.0000	2.449	0.070
Equipment & supplies	0.2000±0.44721	0.6000±0.54772	1.633	.178*
Cleaning & disinfecting equipment	0.2500±0.50000	0.5000±0.57735	1.000	.391*
Environmental cleaning	0.4444± .52705	1.0000±0.0000	3.162	0.013**

*Insignificant (p>0.05) ** : Significant (P< 0.05) ***: Highly significant (p<0.001)

Table (7) shows that the nurses performance improved after implementation of the program. There significant highly were statistically differences between before and after program implementation in pre dialysis preparation ,and termination dialysis, (t =3.122&2.990 at p < 0.001 respectively) while it was only significant in post dialysis, environmental cleaning (t=2.646 & 3.162 respectively at p<0.05), and there were insignificant differences in dialysis- in relation to gather all supplies, between dialysis, hand washing, equipment and supplies, cleaning and disinfecting equipment (p> 0.05).

Part V: Client Satisfaction

Table (8): Client's satisfaction about unit environment regarding to kidnky dialysis before and after the program.

Client Satisfaction	Pre		Post		X^2	P-value
	Satisfied	Not	Satisfied	Not		
Clean room	10	90	80	20	98.990	<0.001*
Clean toilets	15	85	70	30	61.893	<0.001*
Clean bed linen	15	85	70	30	61.893	<0.001*

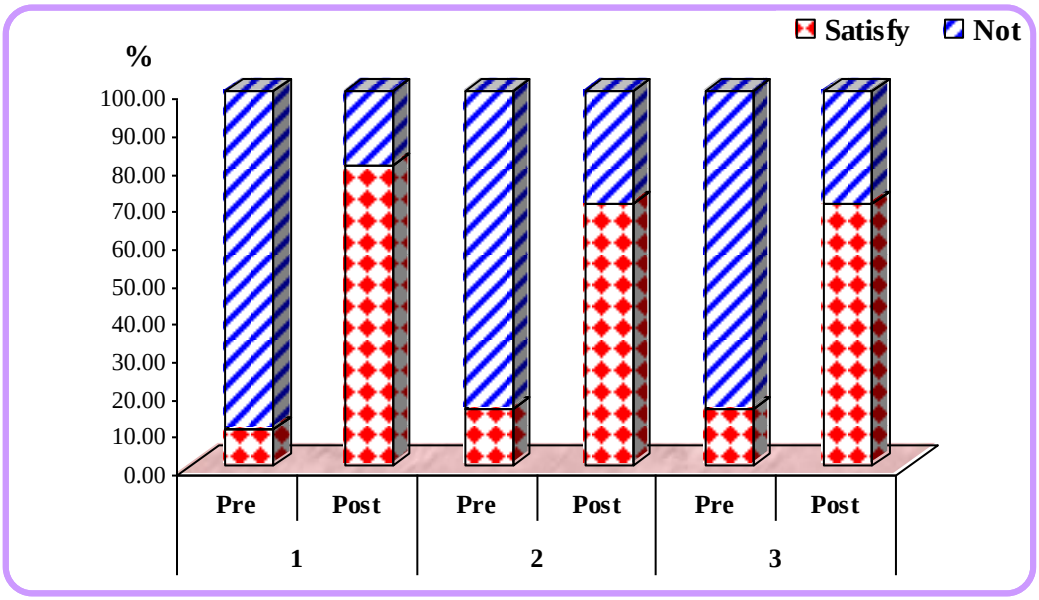

Figure (1): Client's satisfaction about unit environment regarding to kidnky dialysis before and after the program.

Table (8) and Figure (1) show that there are highly statistically significant differences pre/post program about client satisfaction for cleaning room, toilets and bed linen ($p<0.001$).

Table (9): Client's satisfaction about general unit environment.

Client Satisfaction	Pre		Post		X^2	P-value
	Satisfied	Not	Satisfied	Not		
Room ventilation	5	95	60	40	68.946	<0.001*
Availability bathroom suitability	10	90	70	30	75.000	<0.001*
Time of earliness Degree of unity.	5	95	70	30	90.133	<0.001*
Unit quietness (waiting for dialysis).	5	95	65	35	79.121	<0.001*

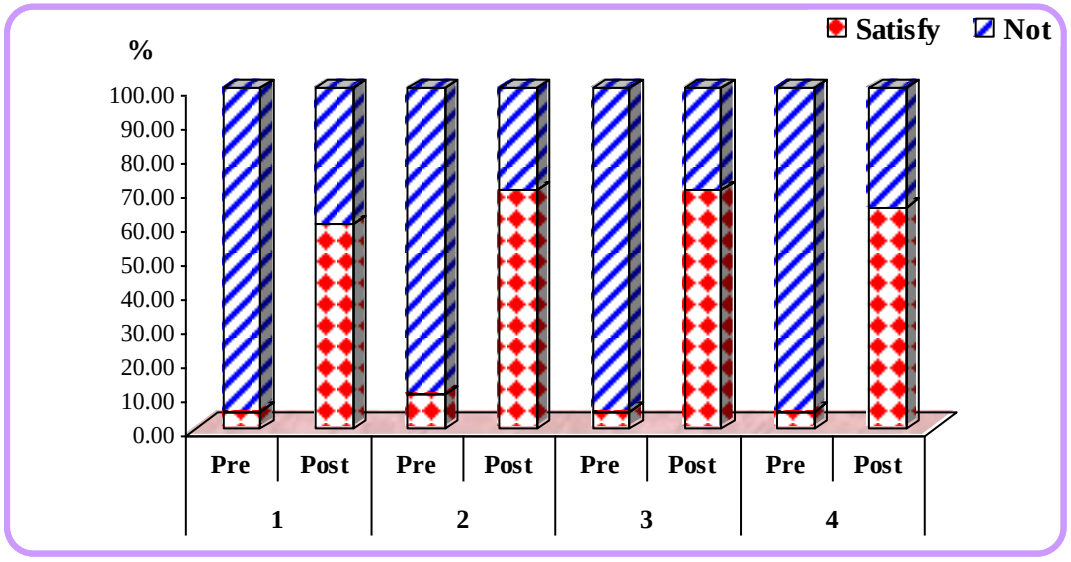

Figure (2): Client,s satisfaction about general unit environment.

Table (9) and Figure (2) reveal that there were highly statistically significant differences between pre and post program for all items of clients satisfiaction in relation to unit environment ($p<0.001$).

According to research question no (4):

Is client satisfaction will improve after imelemtation the program?

Table (10): Client's satisfaction of nurses performance before and after the program.

Client satisfaction	Pre		Post		X^2	P-value
	Satisfied	Not	Satisfied	Not		
Nurse's skills	5	95	80	20	115.090	<0.001*
Nurse's treatment	10	90	90	10	0.000	1.000
Nurses responsiveness	5	95	90	10	144.862	<0.001*
Nurse's information about dialysis and hospital	5	95	85	15	129.293	<0.001*
Nurses listening & responding to complaints	10	90	95	5	1.802	0.179
Nurses explain procedure treatment before intervention	15	85	90	10	1.143	0.285

*N.S>0.05 ** : Significant (P< 0.05) ***: Highly significant (p< 0.001)

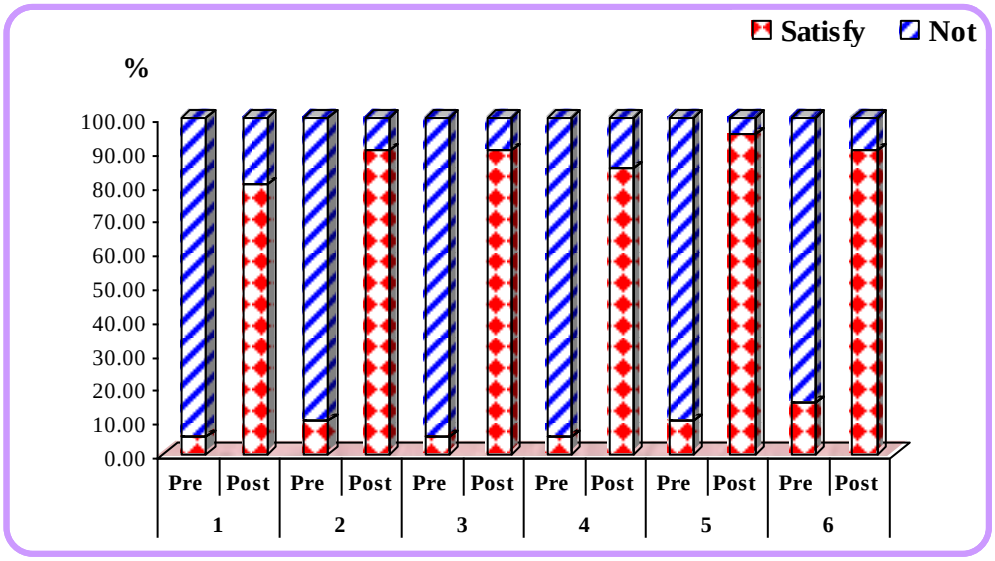

Figure (3): Client's satisfaction of nurses performance before and after the program.

Table (10) and Figure (3) indicate that there are highly statistically significant differences pre/post program about client satisfaction regarding to nurses' skills(X^2 = 115.090) nurse responsiveness (X^2 = 144.862) and information about dialysis and hospital (X^2 = 129.293) at $p< 0.001$, while for nurses listening and responding to complaints, nurses explain procedure, treatment before intervention, they were statistically insignificant ($p>0.05$

Table (11): Client 's satisfaction for doctors' before and after program.

Client Satisfaction	Pre		Post		X^2	P-value
	Satisfied	Not	Satisfied	Not		
Availability of doctors all time	10	90	90	10	0.000	1.000
Physician skills for treatment	10	90	90	10	0.000	1.000
Doctors treatment	5	95	80	20	115.090	<0.001*
Doctors listen about patient problems	10	90	80	20	98.990	<0.001*
Ability of doctors to deal with any comment	5	95	90	10	144.862	<0.001*
Doctors explain the extent and treatment of the disease	15	85	80	20	84.712	<0.001*
Availability of doctors when needed	15	85	80	20	84.712	<0.001*

*N.S>0.05 ** : Significant (P< 0.05) ***: Highly significant (p< 0.001)

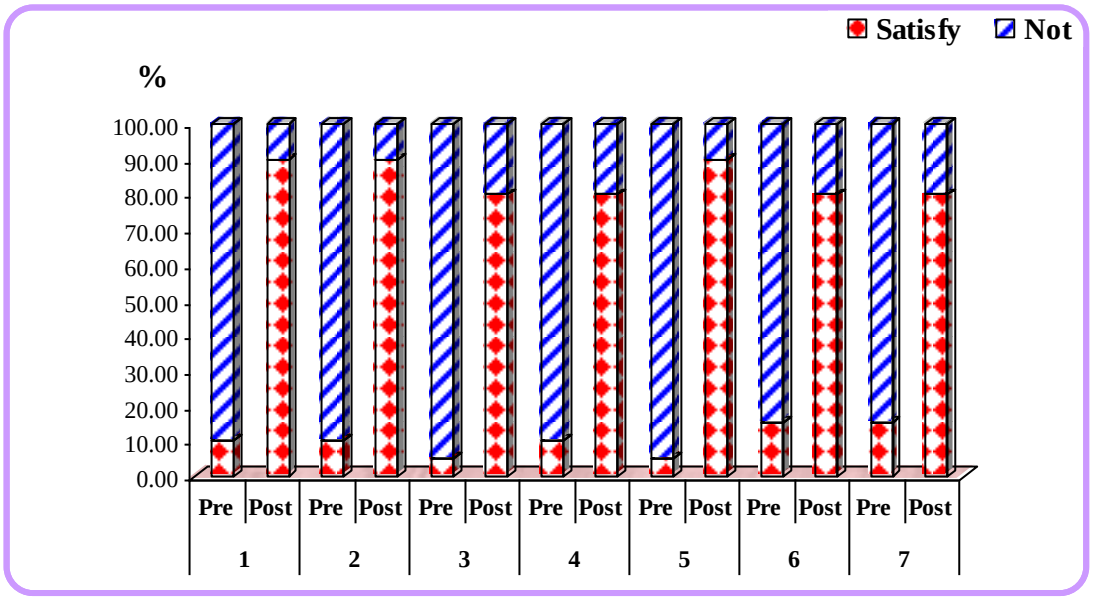

Figure (4): Client 's satisfaction for doctors, before and after program.

Table (11) and Figure (4) show client satisfaction regarding doctors' skills pre- post program implementation. The differences were highly statistically significant for doctors treatment (X^2 115.090), doctors are listening (X^2 98.990), the ability of doctors to deal with any comment (X^2 144.862), doctors explain the extent and treatmant of disease (X^2 84.712) and availability of doctors when needed (X^2 84.712 at $p<0.001$) However, the difference was statistically insignificant for availability of doctor all time and diagnosis and physician skills ($p>0.05$).

Part VI: Relations between Nurses' Sociodemographic Characteristics and Clients, Satisfaction about Kidney Dialysis

According to research question no (2):
Is there a Relations between Nurses' Sociodemographic Characteristics and Clients, Satisfaction about Kidney Dialysis?

Table (12): Relationship between clients' age and satisfaction (n=100).

Age	Satisfied	Not Satisfied	Total
20-	10	10	20
30-	12	3	15
40-	29	1	30
50-	29	1	30
60+	5	0	5
Total	85	15	100
X^2 = 26.797		P <0.001* **	

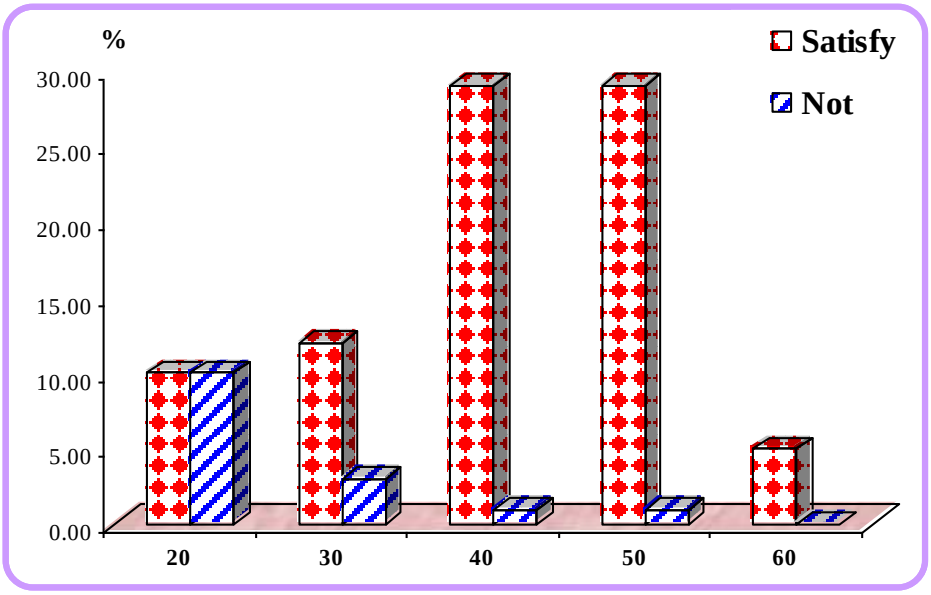

Figure (5): Relationship between clients, age and satisfaction (n=100).

Table (12) and figure (5) represent the relationship between age and client satisfaction, they reveal that the highest percentage of clients, satisfaction was 29% among age groups 40≤50 and 50≤60. However, the least clients' satisfaction was among the age group of 60 years and above, representing 5%. The difference was statistically highly significant among age groups (X^2 26.797 at p<0.001).

Table (13): Relationship between client's education and satisfaction (n=100).

Education	Satisfied	Not Satisfied	Total
Illiterate	39	11	50
Diploma	27	3	30
B.Sc.	19	1	20
Total	85	15	100
$X^2 = 4.087$		P-value = 0.130	

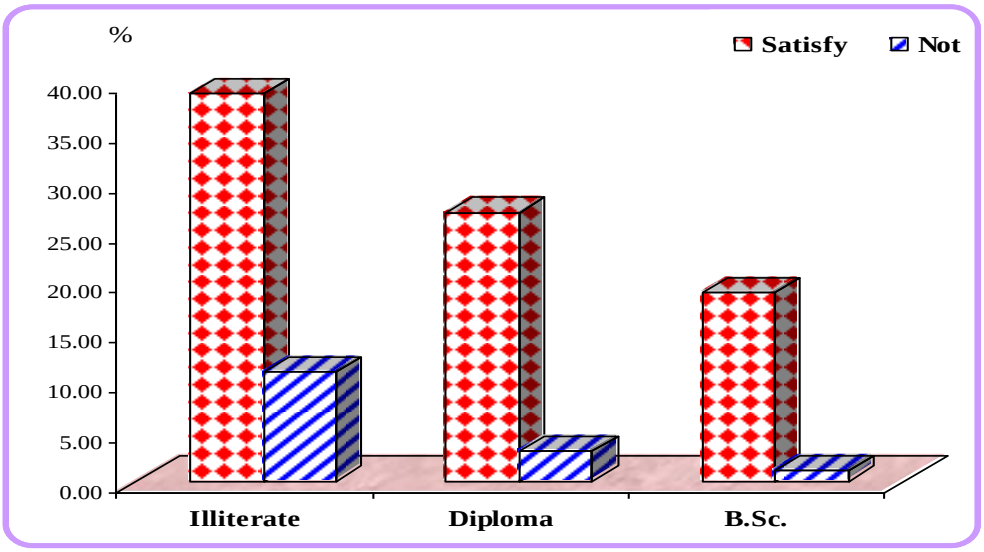

Figure (6): Relationship between client's education and satisfaction (n=100).

Table (13) and figure (6) display the relationship between education and client satisfaction. They reveal that the highest percentage of clients' satisfaction was 39% among illiterate clients. However, the least client satisfaction was among the B.Sc 19%. The difference was statistically insignificant among educational groups (X^2 4.087 at p 0.130).

Part VII: Relations between Nurses, Education and Experience as Regards Knowledge in Relation to Renal Failure and Dialysis

According to research question no (1):

Is nurses' sociodemographic affect their knowledge and performance as regerd renal failure and dialysis?

Table (14): Relationship between nurses' education, and their knowledge about renal failure and dialysis.

Item	Diploma	Other	t-test	p-value
Renal failure	7.72 ± 1.27	11.55 ± 0.8	8.739	<0.001*
Dialysis	4.26 ± 1.12	7.31 ± 1.81	6.909	<0.001*

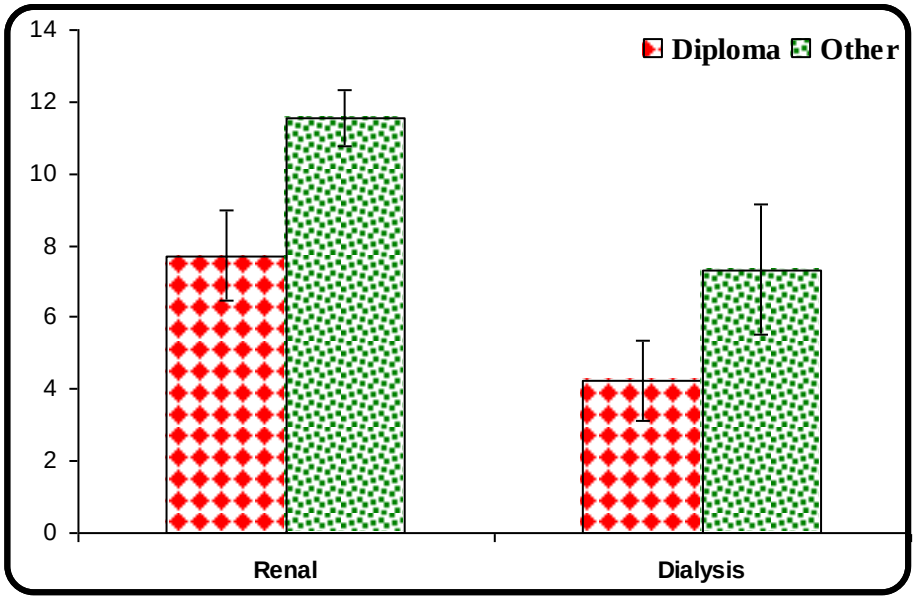

Figure (7): Relationship between nurses' education, and their knowledge about renal failure and dialysis.

Table (14) and Figure (7) reveal that the highest mean scores of knowledge as regards renal failure and dialysis were among others (B.Sc., technical institutes and diploma with specialty), while the least mean scores were among diploma nurses and the difference was statistically highly significant ($p<0.001$).

Table (15): Relationship between nurses' years of experience and their performance regarding renal failure and dialysis.

Experience (in years)	Renal failure	Dialysis
One -	6.35 ± 1.71	4.22 ± 0.91
Six -	6.92 ± 1.92	5.60 ± 1.16
Twelve -	9.87 ± 1.11	6.32 ± 1.32
Eighteen -	10.31 ± 1.78	7.05 ± 1.55
ANOVA	10.561	12.660
P-value	0.003*	<0.001*

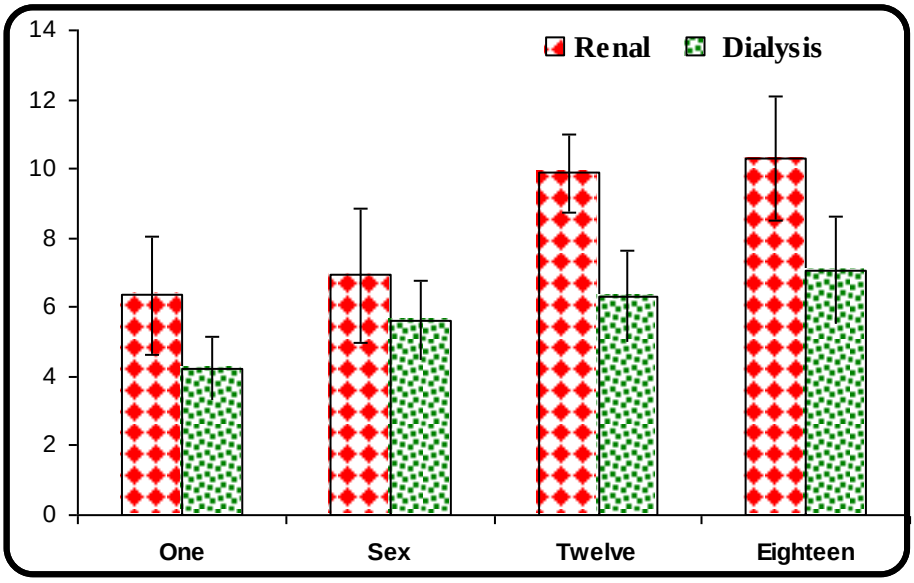

Figure (8): Relationship between nurses' years of experience and their performance regarding renal failure and dialysis.

Table (16) and Figure (8) indicate that the highest mean scores of performance in renal failure (10.31±1.78) and in dialysis (7.05±1.55) were shown among nurses with 18 years of experience, while the least mean scores were 6.35±1.71 and 4.22±0.91 respectively. The differences were highly significant for both items (p= 0.003 & <0.001 respectively).