RESULTS

Presentation and Analysis of Data

The aim of the current study was to assess nurses' performance in controlling complications for patients undergoing haemodialysis.

To fulfill the aim of the study, the collected data was analyzed, tabulated and presented in the following order:

First Part is devoted to represent the analyzed data that are related to socio-demographic variables. (Table 1).

Second Part deals with the analyzed data that are related to nurses' knowledge regarding to anatomy, physiology of urinary system, knowledge about renal failure, investigative tests, treatment modalities, complications of HD, nursing care given to the patient during session, as well nursing care given to the patient in case of complications from HD (Tables 2-6).

Third Part is concerned with the analyzed data that are related to nurses' attitude toward patients before, during, and after the session (Tables 7-9).

Fourth Part deals with the analyzed data that are related to nurses' practice during the session regarding to preparation of the equipment, preparation of the patient, nurses' practice immediately before HD, nurses' practice in relation to starting HD, monitoring the patient during HD session ,and finishing HD (Tables 10-15)**.**

Fifth Part is concerned with the analyzed data that are related to nurses' practice in case of complications (Tables 16-27).

Sixth Part deals with the analyzed data that are related to relationship of total scores between nurses' sociodemographic characteristics and their knowledge, attitude, practice and their management in case of complications (Tables 28,29,30, & 31).

Seventh Part: represents correlation between nurses' knowledge, Attitude, Practice, and their management in case of complications (Table 32).

Eighth Part: reveals distribution of nurses' knowledge, Attitude, Practice, and their management in case of complications (Table 33, figure 1).

Part I: Sociodemographic Characteristics of the Studied Sample

Table :-(1) Frequency and percentage distribution of the studied sample according to their sociodemographic characteristics (n=60).

Frequency / Socio Demographic Data	No	%
*** Age (in years)**		
20-	30	50.00
30-	22	36.67
40->	8	13.33
- Mean ± SD	**31.333± 7.122 y**	
*** Education:**		
Diploma	53	88.33
Technical institute	1	1.67
Bachelor	6	10.00
*** Occupation:**		
Nursing supervisor	5	8.30
Staff nurse	55	91.70
*** Residence:**		
Rural	40	66.67
Urban	20	33.33
*** Marital status:**		
Single	16	26.67
Married	42	70.00
Widow	2	3.33
*** Income:**		
Sufficient to some extent	46	76.67
Insufficient	14	23.33
*** Years of experience in haemodialysis unit:**		
1-	10	16.67
5-	16	26.67
10-	10	16.67
15->	24	40.00
- Mean ± SD	**11.500± 5.734 y**	
*** Number of training courses about infection control:**		
One course	60	100.00

As shown in table (1), the socio-demographic data of the present study among nurses included age, level of education, occupation, residence, marital status, income, years of experience, and number of training courses. As regards age, half (50%) of the studied group were within age group of (20-<30 years with a mean age of 31.333± 7.122 years). Concerning their education and working position, the majority of them (88.33%) had diploma and working as a staff nurses (91.70%), more than half (66.67) lived in rural areas, the majority of them (70%) were married. According to, their Income, more than three quarters said that their income was sufficient to some extent (76.67%). As well, less than half (40%) of them had more than 15 years of experience with a mean number of 11.500± 5.734 years, while all of them (100%) had only one training course about infection control.

Part II: Nurses' knowledge about HD.

Table (2): Frequency and percentage distribution of nurses' score level of knowledge related to anatomy, physiology of urinary system and about renal failure (n=60).

Frequency / Items	Correct		Incorrect		Chi-square	
	No	%	No	%	X_2	P-value
1 – Anatomy of urinary system.	60	100.00	0	0.00		
2 - Kidney function.	60	100.00	0	0.00		
3 - Types of renal failure.	51	85.00	9	15.00	29.400	<0.001**
4 - Signs and symptoms of renal failure.	57	95.00	3	5.00	48.600	<0.001**
5 - Diagnostic methods that are used for diagnosis of renal failure.	60	100.00	0	0.00		
6 - Complications of these diagnostic methods.	46	76.67	14	23.33	17.067	<0.001**
7 - Ways to treat chronic renal failure.	57	95.00	3	5.00	48.600	<0.001**

* = Statistically significant at $p \leq 0.05$
** = Highly statistically significant at $p \leq 0.001$

Table (2): Reveals that all of nurses (100%) had correct answers about anatomy of urinary system, kidney function, and diagnostic methods used to diagnose renal failure. While, more than one third (23.33%) of them had incorrect answers about complications of diagnostic methods. There were highly statistically significant differences between correct & incorrect answers of all items except the first, second, and fifth ones.

Table (3): Frequency and percentage distribution of nurses' score level of knowledge related to complications of HD (n=60).

Frequency / Items	Correct		Incorrect		Chi-square	
	No	%	No	%	X_2	P-value
8 - Cases in which haemodialysis is not preferred.	59	98.33	1	1.67	56.067	<0.001**
9 - Complications from haemodialysis: I-cardiovascular system	47	78.33	13	21.67	19.267	<0.001**
II-Respiratory system	51	85.00	9	15.00	29.400	<0.001**
III-nervous system	41	68.33	19	31.67	8.067	0.005*
IV-musculoskeletal system	55	91.67	5	8.33	41.667	<0.001**
l V- digestive system	60	100.00	0	0.00		
10 - Complications that result from haemodialysis machine.	54	90.00	6	10.00	38.400	<0.001**

* = Statistically significant at p ≤0.05
** = Highly statistically significant at p ≤0.001

Table (3): Displays that all of nurses (100%) had correct answers about complications of the digestive system. While, less than half (31.67%) of them had incorrect answers about complications of the nervous system. There were highly statistically significant differences between correct & incorrect answers of all items except the item related to complications of the nervous system, there were statistically significant differences.

Table (4):- Frequency and percentage distribution of nurses' score level of knowledge related to nursing care given during session (n=60).

Items \ Frequency	Correct		Incorrect		Chi-square	
	No	%	No	%	X_2	P-value
11 - Procedures should be done firstly to the patient in haemodialysis unit.	58	96.67	2	3.33	52.267	<0.001**
12 - Importance to measure blood pressure to haemodialysis patient during sleeping and sitting in the session.	39	65.00	21	35.00	5.400	0.005*
13 – Weighing the patient's before and after session.	39	65.00	21	35.00	5.400	0.005*
14 - Observation of the fistula site in the patient's arm before haemodialysis session.	59	98.33	1	1.67	56.067	<0.001**
15 - kind of food that must be introduced to the patient during the session.	38	63.33	22	36.67	4.267	<0.005*
16 - Importance to observe the patient during the session.	59	98.33	1	1.67	56.067	<0.001**
17 - Vital signs which are measured to the patient during the session.	16	26.67	44	73.33	13.067	<0.001**
18 - Instructions given to the patient after the end of the session.	34	56.67	26	43.33	1.067	<0.005*
19 - Measures used to avoid infection to nurse and patient during the session.	54	90.00	6	10.00	38.400	<0.001**

* = Statistically significant at p ≤0.05
** = Highly statistically significant at p ≤0.001

Table (4): Shows that the majority of nurses (98.33%) had correct answers related to observation of the fistula site in the patient's arm before the session. Also, they had correct answers about the necessity to observe the patient during the session. While, more than two thirds (73.33%) of them had incorrect answers related to vital signs which are measured to the patient during the session. There were highly statistically significant differences between correct & incorrect answers of all items except items related to (importance to measure BP to patient sleeping and sitting during the session, weighing the patient's before and after the session & kind of food that must be introduced to the patient during the session) there were statistically significant differences .

Table (5): Frequency and percentage distribution of nurses' score level of knowledge related to heparin given to HD patient(n=60).

Items \ Frequency	Correct		Incorrect		Chi-square	
	No	%	No	%	X_2	P-value
20 – Indications for giving heparin.	59	98.33	1	1.67	56.067	<0.001**
21 – Time of heparin injection.	24	40.00	36	60.00	2.400	>0.005
22 - Measuring heparin dose.	57	95.00	3	5.00	48.600	<0.001**
23 - Diseases with which heparin is contraindicated .	32	53.33	28	46.67	0.267	>0.005
24 - Precautions that must be taken into account when giving heparin.	41	68.33	19	31.67	8.067	0.005*

* = Statistically significant at p ≤0.05
** = Highly statistically significant at p ≤0.001

Table (5): Shows that the majority of nurses (98.33%) had correct answers related to the indications of giving heparin during the session. while, more than half (60%) of them had incorrect answers about when to inject heparin. There were highly statistically significant differences between correct & incorrect answers of items related to indications of giving heparin and measuring heparin dose. While, there were statistically significant differences between correct & incorrect answers regarding precautions that must be taken into account when giving heparin. Also, there were no statistically significant differences between correct & incorrect answers related to time of heparin injection and diseases with which heparin is contraindicated.

Table (6): Frequency and percentage distribution of nurses' score level of knowledge related to nursing care given to the patient in case of complications from HD (n=60).

Items \ Frequency	Correct		Incorrect		Chi-square	
	No	%	No	%	X_2	P-value
25 - Nursing care given to hemodialysis patient in case of chest pain during the session.	54	90.00	6	10.00	38.400	<0.001**
26 – Nursing care given to hemodialysis patient in case of vomiting or nausea during the session.	54	90.00	6	10.00	38.400	<0.001**
27 - Role of the nurse in case of itchy skin reaction to the patient's body during the session.	22	36.67	38	63.33	4.267	<0.005*
28 - Nursing care provided to hemodialysis patient in case of disturbances in the breathing during the session.	56	93.33	4	6.67	45.067	<0.001**
29 - Actions that are made if there was a decrease in blood pressure to hemodialysis patient during the session.	26	43.33	34	56.67	1.067	>0.005
30 - Nursing care given to hemodialysis patient in the event of muscle cramps.	21	35.00	39	65.00	5.400	<0.005*
31 - Role of nurse in case of presence of air bubbles in hemodialysis machine connections.	15	25.00	45	75.00	15.000	<0.001**

* = Statistically significant at $p \leq 0.05$
** = Highly statistically significant at $p \leq 0.001$

Table (6): Displays that the majority of nurses (93.33%) had correct answers related to nursing care provided to the patient in case of disturbances in breathing during the session. While three quarters (75%) of them had incorrect answers about role of nurse in case of presence of air bubbles in HD machine connections. There were highly statistically significant differences between correct & incorrect answers of items related to nursing care given to the patient in case of chest pain, vomiting or nausea, disturbances in the breathing during the session, and presence of air bubbles in HD machine connections. While, there were statistically significant differences between correct & incorrect answers regarding

role of the nurse in case of itchy skin reactions & muscle cramps. Also, there were no statistically significant differences between correct & incorrect answers related to actions that are made if there was a decrease in BP to HD patient during the session.

Part III- Nurses' Attitude toward patients before, during, and after the session.

Table (7): Frequency and percentage distribution of nurses' attitude toward patients in relation to their preparation before the session (n=60).

Items \ Frequency	strongly agree		agree		not sure		Disagree		strongly disagree		Chi-square	
	No	%	No	%	No	%	No	%	No	%	X2	P-value
1 – I see that explanation of preparation steps for haemodialysis patient before the beginning of the session makes him more co-operative.	43	71.67	15	25.00	1	1.67	1	1.67	0	0.00	78.400	<0.001**
2 – I believe that nursing care does not have a direct impact on haemodialysis patient	3	5.00	5	8.33	1	1.67	26	43.33	25	41.67	51.333	<0.001**
3 – I think that renal failure leads a person to death in a short period.	2	3.33	12	20.00	21	35.00	21	35.00	4	6.67	27.167	<0.001**
4 – I think that ignorant patient who didn't know the fact of his illness is comfortable in dealing with.	13	21.67	4	6.67	8	13.33	19	31.67	16	26.67	12.167	<0.005*
5 – I think that the psychological disorder of haemodialysis patient before the start of the session affects the psychological status to those who work with him.	22	36.67	30	50.00	3	5.00	3	5.00	2	3.33	57.167	<0.001**
6 – I think that hemodialysis patient can live with his illness and live a normal life to some extent.	24	40.00	33	55.00	3	5.00	0	0.00	0	0.00	23.700	<0.001**
7 – I think that hemodialysis patient must know the fact of his illness in order to ensure that problems will not occur from lack of knowledge about his illness.	24	40.00	30	50.00	6	10.00	0	0.00	0	0.00	15.600	<0.001**
8 – I think that explaining the disease to the family may guarantee us the cooperation of relatives to reduce complications.	40	66.67	16	26.67	3	5.00	1	1.67	0	0.00	64.400	<0.001**
9 – I do not feel afraid of dealing with haemodialysis patient who has itchy skin when preparing him before the start of the session.	15	25.00	15	25.00	5	8.33	20	33.33	5	8.33	15.000	0.005*
10 – I feel confident when installing the machine connections in the patient's arm.	26	43.33	19	31.67	7	11.67	6	10.00	2	3.33	33.833	<0.001**

* = Statistically significant at p ≤0.05 ** = Highly statistically significant at p ≤0.001

Table (7): Reveals that more than two thirds (71.67%) of nurses strongly agreed with that explanation of preparation steps for the patient before the beginning of the session makes him more co-operative. more than half (55%) of them agreed with that HD patient can live with his illness and live a normal life to some extent., more than one third (35%) of them were not sure about that renal failure leads a person to death in a short period., less than half (43.33%) of them disagreed with the that nursing care does not have a direct impact on HD patient, while, (41.67%) of them strongly disagreed with the same item. There were highly statistically significant differences in nurses' attitude between all items except, items which demonstrate that ignorant patient who didn't know the fact of his illness is comfortable in dealing with, and that the nurse doesn't feel afraid of dealing with HD patients who has itchy skin, there were statistically significant differences.

Table (8): Frequency and percentage distribution of nurses' attitude toward patients during the session (n=60).

Items \ Frequency	strongly agree		agree		not sure		Disagree		strongly disagree		Chi-square	
	No	%	No	%	No	%	No	%	%	No	X2	P-value
11 – I believe that haemodialysis patient aggressive and moody.	9	15.00	9	15.00	16	26.67	20	33.33	6	10.00	11.167	<0.005*
12 – I think that the first session of haemodialysis patient greatly affects his psychological condition.	41	68.33	14	23.33	4	6.67	0	0.00	1	1.67	66.267	<0.001**
13 – I think that staying with haemodialysis patient during session may reduce the incidence of complications.	37	61.67	19	31.67	4	6.67	0	0.00	0	0.00	27.300	<0.001**
14 – I think that giving attention to the patient during the session affects his status positively.	41	68.33	17	28.33	2	3.33	0	0.00	0	0.00	38.700	<0.001**
15 – I feel slow to ambulance patient when wearing a full sterilization clothing during the session.	6	10.00	11	18.33	14	23.33	22	36.67	7	11.67	13.833	<0.005*
16 – I think that continuous supervision on nurses during haemodialysis session affects positively the delivery of nursing care.	33	55.00	17	28.33	4	6.67	5	8.33	1	1.67	58.333	<0.001**
17 – I see that the patient feels scared as a result of exit of his blood outside his body	14	23.33	25	41.67	14	23.33	7	11.67	0	0.00	11.067	<0.005*
18 – I think that having suction and oxygen is not important for the patient during the session	1	1.67	6	10.00	5	8.33	28	46.67	20	33.33	43.833	<0.001**
19 – I see that the provision of advice to haemodialysis patient is useless.	4	6.67	6	10.00	4	6.67	28	46.67	18	30.00	38.000	<0.001**
20 – I think that leaving the patient during the session leads to a sense of insecurity.	26	43.33	25	41.67	3	5.00	6	10.00	0	0.00	29.733	<0.001**
21 – I think that there is rarely haemodialysis patient comfortable in dealing with others.	7	11.67	9	15.00	23	38.33	17	28.33	4	6.67	20.333	<0.001**
22 – I think that listening to patient's complaint is boring to repeat it every day.	8	13.33	5	8.33	7	11.67	27	45.00	13	21.67	26.333	<0.001**
23 – I think that the nature of the work makes me more nervous and aggressive.	4	6.67	5	8.33	16	26.67	22	36.67	13	21.67	19.167	<0.001**
24 – I feel upset when dealing with a patient that is hopeless to recover.	6	10.00	6	10.00	10	16.67	20	33.33	18	30.00	14.667	0.005*

* = Statistically significant at p ≤0.05 ** = Highly statistically significant at p ≤0.001

Table (8): Shows that nearly two thirds (68.33%) of nurses strongly agreed with that the first session greatly affects the psychological condition of the patient, and that giving attention to the patient for the duration of the session affects his status, less than half (41.67%) of them agreed with that the patient feels scared as a result of exit of blood outside the body and that leaving the patient during the session leads to a sense of insecurity , more than one third (38.33%) of them were not sure about that there is rarely HD patient comfortable in dealing with , less than half (46.67%) of them disagreed with that having a suction and oxygen is not important for the patient during the session and that the provision of advice to HD patient is useless. There were highly statistically significant differences in nurses' attitude between all items except, items related to that (HD patient is aggressive and moody, that the nurse feels slow to ambulance patient when wearing a full sterilization clothing during the session, that the patient feels scared as a result of exit of his blood outside his body, and that the nurse feels upset when dealing with a patient that is hopeless to recover), there were statistically significant differences.

Table (9): Frequency and percentage distribution of nurses' attitude toward patients after the session (n=60).

Items \ Frequency	strongly agree		agree		Not sure		Disagree		strongly disagree		Chi-square	
	No	%	No	%	No	%	No	%	%	No	X2	P-value
25 – I think that after completion of haemodialysis session I feel afraid of complications after the patient goes home.	14	23.33	20	33.33	12	20.00	13	21.67	1	1.67	15.833	<0.005*
26 – I think that continuous contact with the patient after the completion of the session may benefit him in any inquiry he wants.	29	48.33	20	33.33	6	10.00	5	8.33	0	0.00	26.800	<0.001**

* = Statistically significant at p ≤0.05
** = Highly statistically significant at p ≤0.001

Table (9): Shows that nearly half (48.33%) of nurses strongly agreed with that continuous contact with the patient after the completion of the session may benefit him in any inquiry he wants, one third (33.33%) of them agreed with the same item. Also they agreed with that after completion of HD session they feel afraid of complications after the patient goes home. One fifth (20%) of them were not sure about the same item, more than one fifth (21.67%) of them disagreed with the same item, while, only one nurse (1.67%) of them strongly disagreed with the same item. There were highly statistically significant differences in nurses' attitude related to that continuous contact with the patient after the completion of the session may benefit him in any inquiry he wants. While, there were statistically significant differences related to that after completion of HD session the nurse feels afraid of complications after the patient goes home.