Patients' Satisfaction With Nursing Care In Hemodialysis Units

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Abstract

Background: Patient satisfaction is a major goal of long term nursing care. Patient satisfaction is a subjective concept and is measured by the patients' perceptions, expectations and previous experiences with hospital personnel or the healthcare organization. It is an important indicator of the quality and efficiency of healthcare systems. Quality of care could be lost if patient expectations are not met. Regular assessment of hemodialysis patient satisfaction with nursing care is effective in increasing the quality of nursing care through identification of defects in nursing practices and implementation of necessary modifications. **Objectives:** the present study aimed to identify level of patients' satisfaction with nursing care in hemodialysis units. **Settings**: the study was carried out at the hemodialysis units of The Medical Research Institute Hospital (university hospital), Gamal Abd El Nasser Hospital (health insurance hospital), Sharq El Madina Hospital (governmental hospital) and El Shefaa Hospital (private hospital) in Alexandria, Egypt using a descriptive research design. **Subjects**: The study included 120 patients (30 from each hospital. **Tool**: one developed tool was used for data collection: "Hemodialysis patients' satisfaction with nursing care questionnaire sheet". **Results**: the majority (93.3%) of participants were dissatisfied with all aspects of nursing care at the selected settings. A statistical significant difference was found between the four selected settings about patients' satisfaction with introduced nursing care at hemodialysis units at the favor of private hospital**.** A statistical significant relation was found between level of education and patients' overall satisfaction with nursing care with p value equal (0.003[*]) as, 75% of satisfied patients were illiterate while, no patient with university education was satisfied. **Conclusion**: the majority of participants were dissatisfied with nursing care at hemodialysis units. **Recommendation**: Nurses should assess and identify the defects in nursing care, and carry out appropriate changes to improve the quality of nursing care and raise the patients' level of satisfaction.

Keywords: **Patients , Satisfaction , Nursing Care & Hemodialysis.**

Introduction

Chronic kidney disease (CKD) is a worldwide public health problem with an increasing prevalence (**Ozcan et al., 2011**). According to national chronic kidney disease fact sheet (2014), it is estimated that more than 20 million people in the United States have CKD (**Naicker et al., 2009**). It is at least 3 - 4 times more frequent in Africa than in developed countries. Cardiovascular disease (CVD) and infections are the main causes for the increased occurrence of morbidity and mortality among patients with CKD (**Cohen et al., 2012**).

The last stage of CKD is kidney failure that occurs when the glomerular filtration rate (GFR) is less than 15 ml/min (**Headley, 2011**). Kidney failure or end stage renal disease (ESRD) is an irreversible progressive renal disorder that removes the body power for balancing liquids and electrolytes and causes uremia and azotemia

(**Mottahedian et al., 2009**). The standard management of ESRD is either dialysis or kidney transplantation (**Larson et al., 2013**).

Patients with ESRD consume a vastly disproportionate amount of financial and human resources (**Foley et al., 2007**). The number of patients being treated for ESRD all over the world was 3,200,000 at the end of 2013, and with a 6 % growth rate. Approximately 2,522,000 were undergoing dialysis treatment (hemodialysis [HD] and peritoneal dialysis [PD]) (**Fresenius Medical Care, 2013**). In Egypt, the estimated annual incidence of ESRD is around 74 per million [10] and the total prevalence of ESRD is 650 per million (**Ahmed et al., 2010 & Barsoum et al., 2013**).

Hemodialysis is the most common form of renal replacement therapy (**Smith, 2013**). Hemodialysis patients are commonly affected by

a multitude of clinical problems as anemia, mineral and bone disorder (MBD), malnutrition, inflammation, vascular access related- infection, and Fluid volume management (**Castner, 2011**). Caring for dialysis patients and their families can be highly stressful because of the intensity of care required, the nature of CKD and the patients' struggles with dependence (**Kallenbach, 2012**).

Nurses have always been central to the provision of care in a variety of care settings (**Lawson et al., 2009**). The role of a nurse is dynamic; it develops and appears in all aspects of health care (**Peate, 2010**). The role of the nephrology nurse includes provision of nursing care, patient and family education, ongoing reinforcement and support for self-care, ongoing assessment of patient to identify his physical, emotional and social needs. Moreover, nephrology nurse can act as researcher, administrator, case manager and advocate for patients who need assistance (**Kallenbach, 2012**).

Nephrology nurses have always been responsible for the majority of the care of patients with kidney disease and that nursing care is much more than delivering a treatment (**Bednar et al., 201**4). Nursing care can decrease patients' feelings of helplessness and increase their action ability and further their life satisfaction (**Fex et al., 2012**). Nurses play an important role in improving quality of life and health outcomes of patients with chronic disease, including maintenance dialysis (**Quan et al., 2013**).

Patient satisfaction is a major goal of long term nursing care (**Kane, et al., 201**1). Patient satisfaction is a subjective concept and is measured by the patients' perceptions, expectations and previous experiences with hospital personnel or the healthcare organization (**Filosa, 2008**). It is an important indicator of the quality and efficiency of healthcare systems (**Merkouris, et al; 2013**). Quality of care could be lost if patient expectations are not met (**Houseworth, 2008**).

Identifying patients' satisfaction with nursing care will contribute to nursing care improvement. However, satisfaction with nursing care has been a deciding factor for patient decisions regarding return visit, increased compliance with care, and achieving healthier outcomes of care (**Houseworth, 2008**). Moreover, patients who had previously received good service or care would most likely continue to go to the same hospital, and also refer their friends and family to the same facility, thus increasing the market share and reputation of the hospital (**Grove,**

2008). Currently, patient satisfaction surveys are becoming routine parts of every healthcare organization as patient satisfaction data can be used to make improvements in the quality of care provided (**Abusalem et al., 2012 & Black et al., 2012**).

Aim of the study is to

Identify level of patients' satisfaction with nursing care in hemodialysis units.

Research question

What is the level of patients' satisfaction with nursing care provided in hemodialysis units?

Operational definition of patients' satisfaction with nursing care

- Patients' subjective evaluation of their cognitive and their emotional reaction as a result of interaction between their expectations regarding nursing care and their perception of actual nursing care.
- Satisfaction occurs when the patient's expectations are either met or exceeded while, dissatisfaction results when performance is below expectations.

Materials & Method

Materials
Design
A descriptive design was utilized for this study.
Setting
This study was conducted at the hemodialysis units of The Medical Research Institute Hospital (university hospital), Gamal Abd El Nasser Hospital (health insurance hospital), Sharq El Madina Hospital (governmental hospital) and El Shefaa Hospital (private hospital) in Alexandria, Egypt.
Subjects
A purposive sample of 120 adult patients (statistically calculated from total population according to "power analysis test") admitted to the above mentioned settings (30 from each hospital), were selected according to the following criteria: adult patients diagnosed with ESRD, on hemodialysis for at least 6 months, alert, able to communicate, and agree to participate in the current study.

Tool: one tool was used for data collection: **"Hemodialysis patients' satisfaction with nursing care questionnaire sheet".** This tool was developed by the researchers, based on reviewing the recent related literature (**Hinkle et al., 2014, Timby et al., 2014, Deal & Grassley 2012, Shirley & Norazliah, 2012, Chunlaka, 2010, Ahmed, et al., 2013, Tang, et al., 2013, & Ndambuki et al., 2013**) to identify patients'

level of satisfaction with nursing care provided in hemodialysis units. It is consisted of two parts:
Part I: included **Socio-demographic characteristics and medical data.** Socio-demographic characteristics of the patients included sex, age, etc. **Medical Data Included** information about previous hospitalization, and its causes, associated chronic diseases, duration of management by hemodialysis, number and duration of hemodialysis sessions per week and hospital name.

Part II: included **Data related to hemodialysis patients' satisfaction with nursing care:** This part included 132 statements which were answered by the study patients regarding different aspects of nursing care:

I- **Physical Care**: It included 68 statements related to: physical assessment, vascular access assessment, medication administration, maintaining patient safety, prevention and management of HD related-complications.

II- **Psychological Care:** It included 24 statements related to: trustful confidential relationship, using a therapeutic communication technique, and dealing with patient anxiety, acceptance of patient, and humanity of care.

III- **Social care:** It included 8 statements related to: orientation about place, time and person, Social contact and interactions, and referral to social support resources.

IV- **Spiritual care:** It included 4 statements related to: meeting spiritual needs, and dealing with spiritual distress.

V- **Nursing health teaching**: It included 28 statements related to: dietary and fluid intake, exercise, vascular access care, and skin care, medications as well as follow up schedule**.**

Scoring system
Every participant expressed response for statements about different aspects of nursing care on a three points Likert scale ranging from strongly agree (3 score),agree (2 score) and disagree (1 score). Strongly agree means highly satisfied, agree means satisfied and disagree means dissatisfied. The total score was summed and transformed to percentage. Afterwards, the patients' responses were categorized into highly satisfied, satisfied and dissatisfied as follows:
Highly Satisfied: equal to or more than 80% of total score of patient's responses to the provided care aspects, satisfied**:** equal to or more than 60% to less than 80% of total score of patient's responses to the provided care aspects,

Dissatisfied: less than 60% of total score of patient's responses to the provided care aspects.
Method
- An official permission to carry out the study was obtained from the hospitals directors at the selected settings, after explanation of the aim of the study.
- The tool was developed and translated to Arabic language. The tool was tested for content validity by 5 experts in the field of Medical Surgical Nursing (University of Alexandria). Some omissions, corrections and clarification of some items were done accordingly.
- The reliability of the tool was measured by Cronbach's alpha test and was equal 0.933 that indicated high reliability of the tool.
- The pilot study was conducted on 10 patients to assess clarity, feasibility and applicability of the developed tool and modifications were done accordingly. They were excluded from the study subjects.
- The included subjects were randomly selected from hemodialysis units in the previously mentioned hospitals, according to the previously identified criteria.
- Each subject was interviewed individually once for 30-45 minutes at the beginning of a hemodialysis session by the researcher to collect the needed data. The interview was conducted at the hemodialysis unit after the patient was attached to the hemodialysis machine, vital signs were measured, and patient became physically and psychologically at ease.

Ethical considerations
Informed consent was obtained from each participant after explanation of the aim of the study, keeping privacy and assuring confidentiality of data as well as, the right to withdraw at any time during this study was respected and accepted.
Statistical Analysis
Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. Qualitative data were described using number and percent. Quantitative data were described using minimum and maximum, mean and standard deviation. Comparison between the four selected hospitals regarding categorical variables was tested using Chi-square test. For normally distributed data, comparison between the four selected hospitals was analyzed using F-test (ANOVA) . Significance of the obtained results was judged at the 5% level.

Results

Table (1): Distribution of the studied patients in hemodialysis (HD) units of the four selected hospitals according to their socio-demographic data (n= 120).

| | Hospital name | | | | | | | | Total (n=120) | |
| | Gamal Abd El Nasser(n=30) | | Medical Research Institute(n=30) | | Sharq El Madina(n=30) | | El Shefaa (Mohammed Ragab)(n=30) | | | |
	No.	%	No.	%	No.	%	No.	%	No.	%
Sex										
Male	17	56.7	17	56.7	18	60.0	21	70.0	73	60.8
Female	13	43.3	13	43.3	12	40.0	9	30.0	47	39.2
Age										
20 years : < 30 years	6	20.0	3	10.0	4	13.3	6	20.0	19	15.8
30 years : < 40 years	5	16.7	5	16.7	7	23.3	6	20.0	23	19.2
40 years : < 50 years	9	30.0	10	33.3	10	33.3	8	26.7	37	30.8
50 years : < 60 years	10	33.3	12	40.0	9	30.0	10	33.3	41	34.2
Area of residence										
Urban	25	83.3	26	86.7	27	90.0	25	83.3	103	85.8
Rural	5	16.7	4	13.3	3	10.0	5	16.7	17	14.2
Level of education										
Illiterate	6	20.0	1	3.3	8	26.7	11	36.7	26	21.6
Primary or preparatory	7	23.3	11	36.7	8	26.7	4	13.3	30	25.0
Secondary	6	20.0	8	26.7	10	33.3	8	26.7	32	26.7
University	11	36.7	10	33.3	4	13.3	7	23.3	32	26.7
Occupation										
Employee	11	36.7	3	10.0	7	23.3	9	30.0	30	25.0
Worker	2	6.7	4	13.3	5	16.6	2	6.7	13	10.9
Retirement	1	3.3	3	10.0	7	23.3	7	23.3	18	15.0
Housewife	9	30.0	9	30.0	4	13.3	4	13.3	26	21.6
not work	7	23.3	11	36.7	7	23.3	8	26.7	33	27.5
Marital Status										
Single	5	16.7	7	23.3	3	10.0	3	10.0	18	15.0
Married	17	56.7	19	63.3	21	70.0	23	76.7	80	66.7
Divorced	5	16.7	1	3.3	4	13.3	3	10.0	13	10.8
Widow	3	10.0	3	10.0	2	6.7	1	3.3	9	7.5
Income										
Enough	10	33.3	10	33.3	13	43.3	16	53.3	49	40.8
Not Enough	20	66.7	20	66.7	17	56.7	14	46.7	71	59.2

Table (2): Distribution of the studied patients in hemodialysis (HD) units of the four selected hospitals according to their medical data (n= 120).

| | Hospital name | | | | | | | | Total (n=120) | |
| | Gamal Abd El Nasser (n=30) | | Medical Research Institute (n=30) | | Sharq El Madina (n=30) | | El Shefaa (Mohammed Ragab) (n=30) | | | |
	No.	%	No.	%	No.	%	No.	%	No.	%
Previous hospitalization										
No	15	50.0	5	16.7	8	26.7	7	23.3	35	29.2
Yes	15	50.0	25	83.3	22	73.3	23	76.7	85	70.8

	Hospital name									
	Gamal Abd El Nasser (n=30)		Medical Research Institute (n=30)		Sharq El Madina (n=30)		El Shefaa (Mohammed Ragab) (n=30)		Total (n=120)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Reason of patient hospitalization? (n = 85)										
Cardiovascular &pulmonary disorders	6	40	4	16	6	27.3	10	43.5	26	30.5
Renal disorders	4	26.7	15	60	12	54.5	5	21.7	36	42.3
Endocrine disorders	4	26.7	0	0.0	0	0.0	2	8.7	6	7.1
Surgical procedures	1	6.6	5	20	1	4.6	5	21.7	12	14.1
Cerebrovascular disorders, road traffic accident and fever	0	0.0	1	4	3	13.6	1	4.4	5	6
Associated chronic diseases										
No	5	16.7	6	20.0	5	16.7	6	20.0	22	18.4
Cardiac Disease	7	23.3	6	20.0	7	23.3	5	16.7	25	20.8
Hypertension	10	33.3	11	36.7	11	36.7	11	36.7	43	35.8
Diabetes Mellitus	7	23.3	3	10.0	5	16.7	6	20.0	21	17.5
Cancer	0	0.0	4	13.3	1	3.3	1	3.3	6	5.0
Others (Hepatitis & Rheumatoid Arthritis)	1	3.3	0	0.0	1	3.3	1	3.3	3	2.5
When did you start hevmodialysis sessions										
> 6 months	3	10.0	1	3.3	0	0.0	9	30.0	13	10.8
> 1 year	8	26.7	5	16.7	4	13.3	7	23.3	24	20.0
> 2 years	11	36.7	7	23.3	10	33.3	3	10.0	31	25.8
> 3 years	8	26.7	17	56.7	16	53.3	11	36.7	52	43.4
Number of hemodialysis sessions per week										
Two sessions	3	10.0	0	0.0	3	10.0	11	36.7	17	14.2
Three sessions	27	90.0	30	100.0	27	90.0	19	63.3	103	85.8
Number of hemodialysis hours per session										
Three hours	5	16.7	3	10.0	4	13.3	4	13.3	16	13.3
Four hours	23	76.7	24	80.0	24	80.0	24	80.0	95	79.2
Five hours	2	6.7	3	10.0	2	6.7	2	6.7	9	7.5

Table (3): Mean percent scores of patients' satisfaction with Nursing Care of Physical Aspects in Hemodialysis (HD) Units of the four Selected Hospitals (n= 120).

I- Physical care	Gamal Abd El Nasser (n= 30)	Medical Research Institute (n= 30)	Sharq El Madina (n= 30)	El Shefaa (n= 30)	Total (n = 120)
General physical assessment					
Min – Max	13.79 – 29.31	10.34 – 48.28	10.34 – 53.45	13.79 – 58.62	10.34 – 58.62
Mean ± SD	21.72 ± 4.31	26.09 ± 7.61	30.11 ± 9.17	30.80 ± 13.04	27.18 ± 6.69
F (p)	6.376^* $(<0.001^*)$				
Assessment before the HD session					
Min – Max	7.50 – 27.50	7.50 – 57.50	10.0 – 55.0	7.50 – 65.0	7.50 – 65.0
Mean ± SD	18.42 ± 5.78	23.33 ± 10.03	25.92 ± 11.68	31.08 ± 16.98	24.69 ± 12.54
F (p)	5.984^* (0.001^*)				
Assessment during the HD session					
Min – Max	0.0 – 37.50	0.0 – 75.0	0.0 – 62.50	0.0 – 50.0	0.0 – 75.0
Mean ± SD	20.0 ± 7.77	27.92 ± 14.93	35.42 ± 14.71	24.17 ± 12.25	26.88 ± 13.81

I- Physical care	Gamal Abd El Nasser (n= 30)	Medical Research Institute (n= 30)	Sharq El Madina (n= 30)	El Shefaa (n= 30)	Total (n = 120)
F (p)	7.919^* ($<0.001^*$)				
Assessment after the HD session					
Min – Max	20.0 – 40.0	10.0 – 50.0	10.0 – 60.0	10.0 – 70.0	10.0 – 70.0
Mean ± SD	36.33 ± 7.18	35.67 ± 10.40	42.67 ± 11.12	35.0 ± 12.25	37.42± 10.73
F (p)	3.473^* (0.018^*)				
B- Vascular Access Care					
Min – Max	15.0 – 50.0	5.0 – 55.0	15.0 – 60.0	15.0 – 75.0	5.0 – 75.0
Mean ± SD	33.50 ± 10.01	31.33 ± 10.66	28.67 ± 12.03	40.0 ± 14.38	33.38 ± 12.47
F (p)	4.968^* (0.003^*)				
C- Medication Administration					
Min – Max	16.67 – 100.0	16.67 – 100.0	16.67 – 100.0	16.67 – 83.33	16.67 – 100.0
Mean ± SD	63.89 ± 21.03	60.0 ± 20.34	46.67 ± 26.04	60.56 ± 20.29	57.78 ± 22.76
F (p)	3.566^* (0.016^*)				
D- Maintaining patient safety					
Min – Max	50.0 – 100.0	40.0 – 100.0	40.0 – 100.0	50.0 – 100.0	40.0 – 100.0
Mean ± SD	73.3 ± 17.45	76.67 ± 20.23	73.33 ± 20.90	81.33 ± 18.14	76.08 ± 19.29
F (p)	1.216 (0.307)				
E-Prevention and Management of complications					
Min – Max	26.19- 76.19	40.48-80.95	21.43 – 78.57	23.81 – 85.71	21.43 – 85.71
Mean ± SD	52.78±8.80	56.98±10.65	55.40±12.14	61.43±13.80	56.65±11.78
F (p)	2.989^* (0.034^*)				
Hypotension					
Min – Max	0.0 – 75.0	33.33 – 100.0	33.33 – 83.33	0.0 – 100.0	0.0 – 100.0
Mean ± SD	51.94 ± 14.79	55.28 ± 14.76	58.61 ± 13.75	69.44 ± 22.46	58.82 ± 17.86
F (p)	6.114^* (0.001^*)				
Muscle cramps					
Min – Max	12.50 – 62.50	12.50 – 75.0	0.0 – 87.50	0.0 – 75.0	0.0 – 87.50
Mean ± SD	32.92 ± 11.60	38.75 ± 14.06	33.75 ± 24.38	33.75 ± 21.06	34.79±18.42
F (p)	0.623 (0.601)				
Arrhythmia and chest pain					
Min – Max	0.0 – 80.0	0.0 – 100.0	20.0 – 80.0	0.0 – 90.0	0.0 – 100.0
Mean ± SD	50.67 ± 15.30	60.0 ± 18.19	56.0 ± 14.99	63.33 ± 23.24	57.50 ± 18.62
F (p)	2.683^* (0.049^*)				
Headache					
Min – Max	0.0 – 100.0	50.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0
Mean ± SD	78.33 ± 28.42	83.33 ± 23.97	68.33 ± 30.75	76.67 ± 31.44	76.67 ± 28.94
F (p)	1.407 (0.244)				
Blood line separation					
Min – Max	30.0 – 100.0	20.0 – 100.0	20.0 – 100.0	30.0 – 100.0	20.0 – 100.0
Mean ± SD	66.67 ± 13.22	65.33 ± 21.45	65.67 ± 18.32	69.0 ± 22.64	66.67 ± 19.07
F (p)	0.222 (0.881)				

F: F test (ANOVA)   *: Statistically significant at $p \leq 0.05$

Table (4): Mean percent scores of patients' satisfaction with nursing care of psychological aspects in hemodialysis units of the four selected hospitals (n= 120).

I- Psychological care	Gamal Abd El Nasser(n= 30)	Medical esearch Institute (n= 30)	Sharq El Madina(n= 30)	El Shefaa (n= 30)	Total (n = 120)
A-Trustful confidential relationship					
Min – Max	25.0 – 87.50	25.0 – 100.0	25.0 – 100.0	25.0 – 100.0	25.0 – 100.0
Mean ± SD	56.67 ± 16.97	61.25 ± 14.81	55.83 ± 17.29	67.50 ± 18.45	60.31 ± 17.35

I- Psychological care	Gamal Abd El Nasser(n= 30)	Medical esearch Institute (n= 30)	Sharq El Madina(n= 30)	El Shefaa (n= 30)	Total (n = 120)
F (p)	2.996* (0.034*)				
B- Using a therapeutic communication technique					
Min – Max	35.71 – 71.43	21.43 – 100.0	14.29 – 78.57	50.0 – 85.71	14.29 – 100.0
Mean ± SD	54.05 ± 8.93	56.43 ± 16.28	62.38 ± 12.0	64.52 ± 10.85	59.35 ± 12.89
F (p)	4.786* (0.004*)				
Empathy					
Min – Max	33.33 – 83.33	33.33 – 100.0	33.33 – 83.33	50.0 – 100.0	33.33 – 100.0
Mean ± SD	50.56 ± 11.14	58.89 ± 19.44	64.44 ± 14.34	61.67 ± 13.94	58.89 ± 15.75
F (p)	4.789* (0.004*)				
Active listening					
Min – Max	0.0 – 100.0	50.0 – 100.0	0.0 – 100.0	50.0 – 100.0	0.0 – 100.0
Mean ± SD	66.67 ± 27.33	66.67 ± 23.97	73.33 ± 28.57	85.0 ± 23.30	72.92 ± 26.64
F (p)	3.347* (0.022*)				
Silence					
Min – Max	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	50.0 – 75.0	0.0 – 100.0
Mean ± SD	57.50 ± 18.74	52.50 ± 21.12	60.0 ± 20.34	62.50 ± 12.71	58.13 ± 18.66
F (p)	1.593 (0.195)				
Clarification					
Min – Max	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0
Mean ± SD	45.0 ± 27.39	46.67 ± 29.16	50.0 ± 18.57	56.67 ± 25.37	49.58 ± 25.52
F (p)	1.234 (0.301)				
C- Dealing with patient anxiety					
Min – Max	16.67 – 50.0	0.0 – 66.67	0.0 – 83.33	16.67 – 75.0	0.0 – 83.33
Mean ± SD	31.11 ± 10.25	38.06 ± 16.76	36.39 ± 19.39	45.56 ± 15.43	37.78 ± 16.45
F (p)	4.277* (0.007*)				
D- Acceptance of patient					
Min – Max	25.0 – 87.50	25.0 – 75.0	25.0 – 87.50	37.50 – 100.0	25.0 – 100.0
Mean ± SD	55.83 ± 16.65	53.33 ± 11.81	62.50 ± 18.86	70.0 ± 17.56	60.42 ± 17.48
	6.196* (0.001*)				
E- Humanity of care					
Min – Max	16.67 – 100.0	33.33 – 100.0	33.33 – 100.0	33.33 – 100.0	16.67 – 100.0
Mean ± SD	57.22 ± 18.41	76.67 ± 22.99	59.44 ± 18.92	80.56 ± 21.92	68.47 ± 22.85
F (p)	9.877* (<0.001*)				

F: F test (ANOVA)   *: Statistically significant at p ≤ 0.05*

Table (5): Mean percent scores of patients' satisfaction with nursing care of social aspects in hemodialysis units of the four selected hospitals (n= 120).

III- Social care	Gamal Abd El Nasser(n= 30)	Medical Research Institute(n= 30)	Sharq El Madina (n= 30)	El Shefaa (n= 30)	Total (n = 120)
A-Orientation to person, place and time					
Min – Max	33.33 – 100.0	0.0 – 83.33	0.0 – 100.0	33.33 – 100.0	0.0 – 100.0
Mean ± SD	50.56 ± 17.77	46.11 ± 17.33	42.22 ± 22.20	68.33 ± 26.02	51.82 ± 23.15
F (p)	8.934* (<0.001*)				
B- Social contact and interaction					
Min – Max	33.33 – 83.33	33.33 – 83.33	16.67 – 83.33	33.33 – 100.0	16.67 – 100.0
Mean ± SD	58.89 ± 16.22	57.22 ± 17.88	51.11 ± 13.08	70.0 ± 20.72	59.31 ± 18.31
F (p)	6.291* (0.001*)				
C- Referral to social support resources					
Min – Max	0.0 – 50.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0
Mean ± SD	18.33±21.71	24.17±27.45	17.50±28.73	10.83±24.29	17.71±25.81
F (p)	1.355 (0.260)				

F: F test (ANOVA)   *: Statistically significant at p ≤ 0.05*

Table (6): Mean percent scores of patients' satisfaction with nursing care of spiritual aspects in hemodialysis units of the four selected hospitals (n= 120)

IV- Spiritual care	Gamal Abd El Nasser (n= 30)	Medical Research Institute (n= 30)	Sharq El Madina (n= 30)	El Shefaa (n= 30)	Total (n = 120)
A-Meeting the spiritual needs					
Min – Max	25.0 – 75.0	25.0 – 100.0	25.0 – 100.0	25.0 – 100.0	25.0 – 100.0
Mean ± SD	50.83±20.22	53.33±20.48	52.50±23.99	77.50±23.99	58.54±24.58
F (p)	9.751* (<0.001*)				
B- Dealing with spiritual distress					
Min – Max	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0
Mean ± SD	45.83±20.85	55.83±26.0	37.50±27.66	43.33±19.62	45.63±24.40
F (p)	3.105* (0.029*)				

 F: F test (ANOVA)   **: Statistically significant at p ≤ 0.05*

Table (7): Mean percent scores of patients' satisfaction with nursing health teaching aspects in hemodialysis units of the four selected hospitals (n= 120)

V- Nursing health teaching	Gamal Abd El Nasser (n= 30)	Medical Research Institute (n= 30)	Sharq El Madina (n= 30)	El Shefaa (Mohammed Ragab) (n= 30)	Total (n = 120)
A- Dietary and fluid intake					
Min – Max	0.0 – 50.0	0.0 – 83.33	0.0 – 100.0	0.0 – 833.0	0.0 – 100.0
Mean ± SD	12.22±12.71	40.28±23.98	17.22±23.77	41.39±29.72	27.78±26.60
F (p)	12.721* (<0.001*)				
B-Exercise					
Min – Max	0.0 – 66.67	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0	0.0 – 100.0
Mean ± SD	36.11±12.44	30.0±20.25	35.0±26.02	45.0±28.75	36.53±23.10
F (p)	2.260 (0.085)				
C-Vascular access care					
Min – Max	50.0 – 81.25	25.0 – 93.75	0.0 – 87.50	12.50 – 100.0	0.0 – 100.0
Mean ± SD	63.13±9.76	57.71±17.50	42.08±27.36	65.63±18.98	57.14±21.27
F (p)	8.867* (<0.001*)				
D-Skin care					
Min – Max	0.0 – 37.50	0.0 – 75.0	0.0 – 50.0	0.0 – 62.50	0.0 – 75.0
Mean ± SD	19.17±11.71	23.75±23.06	8.33±15.16	21.25±21.31	18.13±19.10
F (p)	4.090* (0.008*)				
E-Medication					
Min – Max	0.0 – 62.50	0.0 – 75.0	0.0 – 50.0	0.0 – 75.0	0.0 – 75.0
Mean ± SD	29.58±17.82	32.08±22.90	14.58±17.08	32.50±26.18	27.19±22.32
F (p)	4.766* (0.004*)				
F-Follow up schedule					
Min – Max	33.33-100.0	33.33 – 100.0	50.0 – 100.0	33.33 – 100.0	33.33 – 100.0
Mean ± SD	83.33±18.05	72.22±19.74	72.78±12.75	84.44±20.96	78.19±18.81
F (p)	3.963* (0.010*)				

 F: F test (ANOVA)   **: Statistically significant at p ≤ 0.05*

Table (8): Relationship between patients' overall satisfaction with nursing care in hemodialysis units of the four selected hospitals and their socio-demographic data (n= 120).

Socio-demographic data	Overall satisfaction				χ^2	P
	Dissatisfied (n = 112)		Satisfied (n = 8)			
	No.	%	No.	%		
Sex						
Male	68	60.7	5	62.5	0.010	FEp=1.000
Female	44	39.3	3	37.5		
Age (years)						
20: < 30	18	16.1	1	12.5	1.846	MCp= 0.701
30 : < 40	20	17.8	3	37.5		
40 : < 50	35	31.3	2	25.0		
50 : < 60	39	34.8	2	25.0		
Area of residence						
Urban	96	85.7	7	87.5	0.020	FEp=1.000
Rural	16	14.3	1	12.5		
Level of education						
Illiterate	20	17.8	6	75.0	10.501	MCp=0.003*
Primary or preparatory	29	25.9	1	12.5		
Secondary	31	27.7	1	12.5		
University	32	28.6	0	0.0		
Occupation						
Employee	28	25.0	2	25.0	1.976	MCp=0.885
Worker	13	11.6	0	0.0		
Retirement	17	15.2	1	12.5		
Housewife	25	22.3	1	12.5		
not work	29	25.9	4	50.0		
Marital status						
Single	17	15.2	1	12.5	4.844	MCp= 0.116
Married	76	67.9	4	50.0		
Divorced	10	8.9	3	37.5		
Widow	9	8.0	0	0.0		
Income						
Enough	46	41.1	3	37.5	0.039	FEp=1.000
Not Enough	66	58.9	5	62.5		

*χ^2: value for Chi square test   MC: Monte Carlo test   FE: Fisher Exact test   *: Statistically significant at p ≤ 0.05*

Table (9): Relationship between patients' overall satisfaction with nursing care in hemodialysis units of the four selected hospitals and their medical data (n= 120).

Medical data	overall satisfaction				χ^2	p
	Dissatisfied (n = 112)		Satisfied (n = 8)			
	No.	%	No.	%		
Previous hospitalization						
No	34	30.4	1	12.5	1.152	FEp= 0.435
Yes	**78**	**69.6**	**7**	**87.5**		
The reason of patient hospitalization?						
Cardiovascular & pulmonary disorders	22	28.2	4	57.1		
Renal disorders	34	43.5	2	28.6		

Medical data	overall satisfaction				χ^2	p
	Dissatisfied (n = 112)		Satisfied (n = 8)			
	No.	%	No.	%		
Endocrine disorders	5	6.4	1	14.3		
Surgical procedures	12	15.4	0	0.0		
Cerebrovascular disorders, road traffic accident and fever	5	6.5	0	0.0		
Associated chronic diseases						
No	16	14.3	6	75.0		
Cardiac Disease	25	22.2	0	0.0		
Hypertension	43	38.4	0	0.0	15.257*	MCp= 0.003*
Diabetes Mellitus	19	17.0	2	25.0		
Cancer	6	5.4	0	0.0		
Others (hepatitis & rheumatoid arthritis)	3	2.7	0	0.0		
When did you start hemodialysis						
More than six months	10	8.9	3	37.5		
More than one year	24	21.4	0	0.0	9.463*	MCp= 0.008*
More than two years	27	24.2	4	50.0		
More than three years	51	45.5	1	12.5		
Number of hemodialysis sessions per week						
Two sessions	11	9.8	6	75.0	26.086*	FEp= 0.001*
Three sessions	101	90.2	2	25.0		
Number of hemodialysis hours per session						
Three hours	14	12.5	2	25.0		
Four hours	90	80.4	5	62.5	2.337	MCp= 0.256
Five hours	8	7.1	1	12.5		

χ^2: value for Chi square test   *: Statistically significant at $p \leq 0.05$ MC: Monte Carlo test
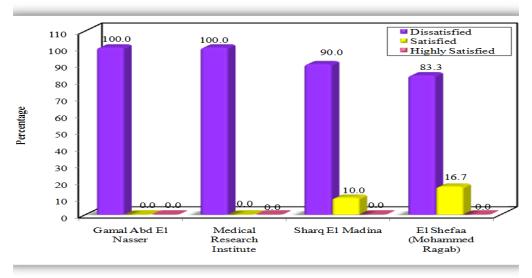FE: Fisher Exact test

Figure (1): Overall Patients' level of satisfaction with nursing care in hem dialysis units of the four selected hospitals
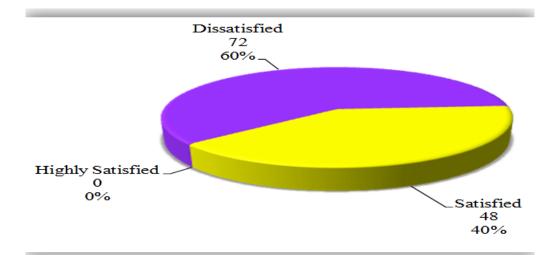
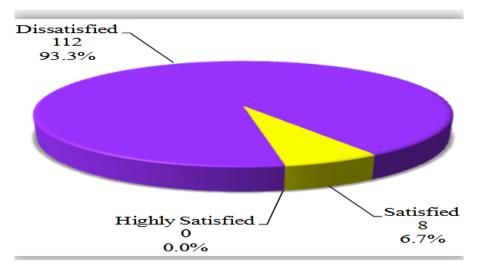**Figure (2): Patients' level of satisfaction with physical care**

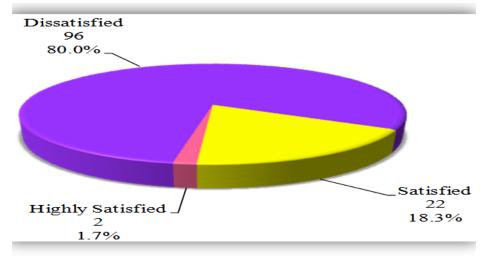**Figure (3): Patients' level of satisfaction with psychological care**

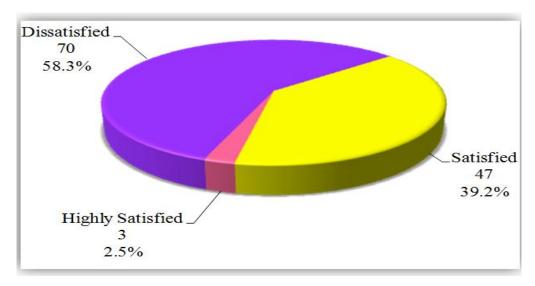**Figure (4): Patients' level of satisfaction with social care**

Figure (5): Patients' level of satisfaction with spiritual care

Table (1): Presents the studied patients according to their socio-demographic data. Males represented higher percentage 60.8 %. Around two -thirds (65 %) of patients were in the age group of 40 to less than 60 years. It was also observed that, the majority (85.8%) of patients lived in urban area. More than one-fifth (21.6%) of patients were illiterate, while the percent of patients had secondary and university level of education was equal 26.7%. In relation to occupation, 35.9% of patients were employees and workers, and two-thirds (66.7%) of patients were married. More than half (59.2%) of patients income were not enough.

Table (2): It shows that the largest percent (70.8%) of the patients had previous hospitalization; the main reason of their hospitalization was renal disorders in 42.3%. It was found that, more than one-third (35.8%) of patients had hypertension. It shows that 43.4% of the patients were undergoing HD since more than three years. It was observed that, the majority (85.8%) of patients were scheduled for HD three sessions per week. This table also reveals that the majority (79.2%) of patients had four hours/ HD session.

Table (3): Shows mean percent scores of patients' satisfaction with nursing care of physical aspects in hemodialysis units of the four selected hospitals. It can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with general physical assessment with p value equal (<0.001*) as patients were more satisfied with general health assessment provided in El Shefaa hospital as it had the highest mean percent score (30.80 ± 13.04). The table also reflects that, patients were more satisfied with assessment after the hemodialysis session where Mean ± SD was equal

(37.42± 10.73) than their assessment before and during the HD session where Mean ± SD was equal (24.69 ± 12.54) & (26.88 ± 13.81) respectively.

There was a statistical significant difference between the four selected settings about patients' satisfaction with vascular access care with p value equal (0.003*) as El Shefaa hospital has the highest patients' level of satisfaction as Mean ± SD was equal (40.0 ± 14.38). Sharq El Madina hospital however, has the lowest patients' level of satisfaction as Mean ± SD was equal (28.67 ± 12.03). There was a statistical significant difference between the four selected settings about patients' satisfaction with medication administration where p equal 0.016* as El Shefaa hospital had the highest patients' level of satisfaction as Mean ± SD was equal (60.56 ± 20.29).

A statistical significant difference between the four selected settings about patients' satisfaction with prevention and management of complications with p value equal (0.034*) as El Shefaa hospital had the highest patients' level of satisfaction as Mean ± SD was equal (61.43±13.80). While, Gamal Abd El Nasser hospital had the lowest patients' level of satisfaction as Mean ± SD was equal (52.78±8.80). Also, It was found that, prevention and management of headache had the highest patients' level of satisfaction as Mean ± SD was equal (76.67 ± 28.94), while prevention and management of muscle cramps had the lowest patients' level of satisfaction as Mean ± SD was equal (34.79±18.42). The table also reflects that, maintaining patient safety aspect had the highest patients' level of satisfaction with Mean ± SD was equal (76.08 ± 19.29). While, general physical assessment aspect had the lowest patients' level of satisfaction with Mean ± SD was equal (27.18 ± 6.69).

Table (4): illustrates mean percent scores of patients' satisfaction with nursing care of psychological aspects in hemodialysis units of the four selected hospitals. It can be observed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with trustful confidential relationship with p value equal (0.034[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (67.50 ± 18.45). While, Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (55.83 ± 17.29).

A statistical significant difference was found between the four selected settings about patients' satisfaction with using a therapeutic communication technique with p value equal (0.004[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (64.52 ± 10.85). However, Gamal Abd El Nasser hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (54.05 ± 8.93). Also, it was found that, active listening is the most therapeutic communication technique about which patients were satisfied with Mean ± SD was equal (72.92 ± 26.64), while clarification was the least with Mean ± SD was equal (49.58 ± 25.52).

There was a statistical significant difference between the four selected settings about patients' satisfaction with dealing with patient anxiety with p value equal (0.007[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (45.56 ± 15.43). While, Gamal Abd El Nasser hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (31.11 ± 10.25).

It can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with acceptance of patient with p value equal (0.001[*]) as, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (70.0 ± 17.56). However, Medical Research Institute hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (53.33 ± 11.81).

There was a statistical significant difference between the four selected settings about patients' satisfaction with humanity of care with p value equal (<0.001[*]) as, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (80.56 ± 21.92).

The table also reflects that, humanity of care aspect had the highest patients' level of satisfaction with Mean ± SD was equal (68.47 ± 22.85). While, dealing with patient anxiety aspect had the lowest patients' level of satisfaction with Mean ± SD was equal (37.78 ± 16.45).

Table (5): shows mean percent scores of patients' satisfaction with nursing care of social aspects in hemodialysis units at the four selected hospitals. As regards orientation to person, place and time, it can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with orientation to person, place and time with p value equal (<0.001[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (68.33 ± 26.02). While, Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (42.22 ± 22.20).

In relation to social contact and interaction, it can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with social contact and interaction with p value equal (0.001[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (70.0 ± 20.72) while, Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (51.11 ± 13.08).

The table also reflects that, social contact and interaction aspect had the highest patients' level of satisfaction with Mean ± SD was equal (59.31 ± 18.31), while referral to social support resources aspect had the lowest patients' level of satisfaction with Mean ± SD was equal (17.71±25.81).

Table (6): shows mean percent scores of patients' satisfaction with nursing care of spiritual aspects in HD units of the four selected hospitals. Regarding to meeting the spiritual needs, it can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with meeting the spiritual needs with p value equal (<0.001[*]) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (77.50±23.99), while Gamal Abd El Nasser hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (50.83±20.22).

In relation to dealing with spiritual distress, it can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with dealing with spiritual distress with p value equal (0.029[*]) as Medical Research Institute hospital had the highest patients' level of satisfaction with Mean ± SD was equal (55.83±26.0), while Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (37.50±27.66).

The table also reflects that, meeting the spiritual needs aspect had a higher patients' level of satisfaction with Mean ± SD was equal (58.54±24.58) than dealing with spiritual distress aspect with Mean ± SD was equal (45.63±24.40).

Table (7): Reflects mean percent scores of patients' satisfaction with nursing health teaching aspects in HD units of the four selected hospitals. Regarding to dietary and fluid intake, it can be observed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with dietary and fluid intake teaching aspect with p value equal (<0.001*) as, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (41.39±29.72), while Gamal Abd El Nasser hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (12.22±12.71).

In relation to exercise, it was found that, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (45.0±28.75), while Medical Research Institute hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (30.0±20.25) with no statistical significant difference.

As regards vascular access care, it can be noticed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with vascular access care teaching aspect with p value equal (<0.001*) as, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (65.63±18.98), while Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (42.08±27.36).

In relation to skin care, a statistical significant difference was found between the four selected settings about patients' satisfaction with skin care teaching aspect with p value equal (0.008*) as Medical Research Institute hospital had the highest patients' level of satisfaction with Mean ± SD was equal (23.75±23.06).

In relation to medication teaching aspect, it can be observed that, there was a statistical significant difference between the four selected settings about patients' satisfaction with medication teaching aspect with p value equal (0.004*) as El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (32.50±26.18), while Sharq El Madina hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (14.58±17.08).

A statistical significant difference was found between the four selected settings about patients' satisfaction with follow up schedule teaching aspect with p value equal (0.010*) as, El Shefaa hospital had the highest patients' level of satisfaction with Mean ± SD was equal (84.44±20.96), while Medical Research Institute hospital had the lowest patients' level of satisfaction with Mean ± SD was equal (72.22±19.74).

Table (8): Illustrates the relationship between patients' overall satisfaction with nursing care in HD units of the four selected hospitals and their socio-

demographic data. The results represent no statistical significant relation regarding the socio-demographic characteristics (sex, age, area of residence, occupation, marital status and income) and patients' overall satisfaction with nursing care in HD units of the four selected hospitals.

However, a statistical significant relation was found between level of education and patients' overall satisfaction with nursing care with p value equal (0.003*) as, 75% of satisfied patients were illiterate while, no patient with university education was satisfied.

Table (9): Illustrates relationship between patients' overall satisfaction with nursing care in HD units of the four selected hospitals and their medical data. No statistical significant relation was found regarding to medical data (previous hospitalization and number of hemodialysis hours per session) and patients' overall satisfaction with nursing care in hemodialysis units of the four selected hospitals.

However, a statistical significant relation was found between associated chronic diseases and patients' overall satisfaction with nursing care with p value equal (0.003*) as, 75% of satisfied patients had no associated chronic disease. Also, a statistical significant relation was found between duration of management by hemodialysis and patients' overall satisfaction with nursing care with p value equal (0.008*).

In addition, a statistical significant relation was found between number of HD sessions per week and patients' overall satisfaction with nursing care with p value equal (0.001*) as 75% of satisfied patients had two sessions per week.

Figure (1): Illustrates the overall patients' level of satisfaction with nursing care in HD units of the four selected hospitals. It clarifies that the largest percent of the study participants were dissatisfied with nursing care in hemodialysis units of the four selected hospitals.

Figure (2): Exemplifies patients' level of satisfaction with physical care. It shows that, the majority (93.3%) of patients were dissatisfied with physical care, while only 6.7% of them were satisfied.

Figure (3): Demonstrates that, three-fifths (60%) of patients were dissatisfied with psychological care, while 40% of them were satisfied.

Figure (4): Validates that the majority (80%) of patients were dissatisfied with **social care**, while 18.3% of patients were satisfied and 1.7% of them were highly satisfied.

Figure (5): Confirms that more than half (58.3%) of patients were dissatisfied with spiritual care, while 39.2% of patients were satisfied and 2.5% of them were highly satisfied.

Discussion

Hemodialysis prevents death but does not cure kidney disease and does not compensate for the loss of endocrine or metabolic functions of the kidneys. Patients experience life with hemodialysis as a new way of being in the world, with dependence on technology, healthcare professionals and significant others, and with an uncertain future (**Donia et al., 2015**).

The low management adherence and low quality of life in the hemodialysis patients are the two main challenges facing healthcare providers, particularly nurses who provide specialized care in the dialysis settings. Hemodialysis patients must be shown as they can control certain aspects of their lives and health, and indeed have the potential to live long and productive lives through engagement in coordinated program of medical treatment, diet management, education, and counseling as well as exercise (**Elsebai et al., 2011**).

Nurses working with patients on hemodialysis deal with every organ system in the body, calling for a holistic approach to patient care. Hemodialysis patients can spend years of treatment in centers with extensive interaction with dialysis staff. Patient satisfaction with care and caregivers is an important aspect of dialysis treatment. Satisfaction is a complex concept which is related to several factors such as lifestyle, previous experiences, future expectations and individual and social values. Evaluation of patient experiences of hemodialysis care can shape our knowledge about what patients' value (**Pierce, et al., 2014, Kirchgessner, et al., 2006 & Palmer, et al., 2014).**

Regarding socio-demographic characteristics and medical data of studied patients, the results of this study showed that, more than half of the patients were males. This is in line with (**Abdel Razik, 2007**) who reported that, about half of their studied hemodialysis patients were males. It could be due to obstructive uropathy that resulting from prostatic enlargement in older males (**Lewis, 2012**). In addition, men with chronic kidney disease are 50% more likely than women to have kidney failure.

Regarding age, this study represented that, more than one-third of patients were in the age group of 50 years to less than 60 years. This finding agrees with (**Zahran, 2011 & Abdallah et al., 2014**) who reported that, the mean age of the studied HD patients was 52 years and reported that, increasing mean age of ESRD patients in Egypt reflects the improvement of healthcare.

Also the results showed that, two-thirds of patients were married. Married patients might receive more social support from their families to seek and comply with treatment because they need them to care for the family and they are the only source of income for their families which increase their level of satisfaction. This finding agrees with (**Elsebai et al., 2011**) who found that, more than two thirds of the HD patients were married.

In relation to economic status, more than half of patients didn't have enough income. This finding agrees with (**Abd El Hafeez 2014**) who reported that, more than half of the hemodialysis patients experienced financial problems. It could be due to physical symptoms that negatively affected their ability to keep jobs and might necessitate that they switch to another job for costly treatment.

In relation to associated chronic diseases, it was found that, the majority of patients had associated chronic diseases as more than one-third of patients had hypertension, and more than one-fifth had cardiac disease. It might be due to complications of chronic kidney disease and hemodialysis or might be a cause of renal failure. Associated chronic diseases worsen the physical and psychological condition of patients and increase the financial burdens that negatively affect their level of satisfaction. This finding is congruent with (**Karadag et al., 2013**) who reported that, more than three quarters of HD patients had other chronic diseases besides chronic renal failure.

In relation to numbers of HD sessions per week, it was observed that, the majority of patients were scheduled for HD three sessions per week. This finding agrees with (**El Ariny, 2014**) findings. While, this finding disagrees with (**Mohamed, 2014**) who found the majority of his patients had two sessions per week. Moreover**,** the results of this study showed that, the majority of patients had four hours per session. This finding is in line with (**Mottahedian, et al., 2009**). It could be justified by a typical prescription for patients on maintenance hemodialysis should be three sessions a week for three to four hours per session to allow better fluid and waste products removal, as well as better control of blood pressure which maintain fluid and electrolyte balance and improve survival rate.

Regarding Hemodialysis patients' satisfaction with physical care, the results of the present study revealed that, the majority of patients were dissatisfied with physical care which included physical assessment, vascular access care, medication administration, maintaining patient safety, and prevention and management of complications. It could be due to lack of nurses' knowledge and skills secondary to lack of in-service educational and training programs, and lack of supervision on nurses' performance. This finding is in agreement with (**Hussain et al., 2007**) who found that, the majority of patients were dissatisfied with physical care.

In relation to physical assessment, the results showed that, all patients were dissatisfied with physical assessment performed by nurses, as the major concern of nurses was measuring blood pressure and body weight before and after hemodialysis session to estimate dry weight and ultrafiltration rate and to prevent intra-dialytic complications as hypotension. It could be justified by increased workload resulting from inappropriate nurse-patient ratio especially in afternoon shifts and lack of nurses' knowledge about the importance of complete physical assessment. This finding is supported by (**Mokhtar, 2008**) who found that the lowest mean scores of nursing performance were related to items as data collection, physical examination and health assessment.

In relation to vascular access care, the majority of patients were dissatisfied with vascular access care. It could be justified by lack of assessment performed by nurses for signs and symptoms of infection at vascular access site and for circulatory impairment in the extremity with vascular access due to lack of knowledge and skills. This finding is in line with (**Hajbaghery, et al., 2012**) who found that, overall quality of care for vascular access site was moderate and recommended continuing education programs for nurses and development of standard vascular access care protocols. (**Ribeiro, et al., 2009**) added that nearly half of nurses had difficulties in providing quality care for patients with arterio-venous fistula and nurses had many learning needs to prepare them to care for patients with arterio-venous fistula and this finding led to the development of a protocol to improve nursing care quality.

Regarding medication administration, more than half of patients were dissatisfied with medication administration aspect because nurses did not explain the action and purpose of drugs before their administration. This finding is in contrast with (**Ndambuki, 2013**) who found that, the majority of patients reported neutral to very satisfied levels with nurses' administration of drugs.

In relation to maintaining patient safety, the results from this study illustrated that, more than half of hemodialysis patients were highly satisfied with maintaining patient safety aspect; this finding is supported by (**Ulrich & Kear 2014**) who reported that nephrology nurses have an interest in patient safety practices. While, this finding disagrees with (**Yassin, et al., 2012**) who found that, the hemodialysis nurses in two public hospitals In Egypt had poor performance related to application of the standard precautions and centers for disease control and prevention guidelines compared to nurses in two private dialysis units who had satisfactory performance as they received training programs. In addition, this finding contradicts with (**Abd El Aziz, 2013**) who found that more than half of nurses in dialysis units did not perform safe handling of medication, infection control and patient care standards.

Concerning prevention and management of HD complications, it was found that, more than two-thirds of hemodialysis patients were dissatisfied with prevention and management of complications. Also, the results illustrated that, prevention and management of headache had the highest patients' level of satisfaction while prevention and management of muscle cramps had the lowest patients' level of satisfaction. It could be due to lack of in-service educational programs for nurses about prevention and management of hemodialysis complications. This fact is supported by (**Mottahedian et al., 2009**) who found that there were significant differences at frequency of hypotension, hypertension, nausea and vomiting and muscles cramp after and before performing programmed nursing care as patients who received the programmed nursing care had a significant decrease of these complications. While, this finding disagrees with (**El Moghazy, 2012**) who found that the majority of nurses deal adequately with hemodialysis complications and (**Hassan et al., 2013**) added that, nurses had satisfactory knowledge related to hypotension, sepsis, anaphylaxis, cerebral disequilibrium syndrome.

Regarding hemodialysis patients' satisfaction with psychological care, the results of the present study revealed that, three-fifths of hemodialysis patients were dissatisfied with psychological care. It could be due to large numbers of patients and heavy workloads that cause nurses fatigue that negatively affect nurse patient relationship and meeting their psychological needs. This finding is supported by (**Metwally, 2014**) who found that, nurses' attitudes and behaviors negatively influence patients' satisfaction. However, this finding is in contrast with (**Tang, et al., 2013**) who found that, the majority of the patients were highly satisfied with the affective support provided by nephrology nurses.

Regarding using a therapeutic communication technique, it was found that, more than half of patients were dissatisfied with communication. This finding disagrees with (**Mansour & Shnishil 2013**) who found that, the majority of patients were highly satisfied with communication and nurse patient relationship.

As regards dealing with patient anxiety, the results showed that the majority of patients were dissatisfied with dealing with patient anxiety aspect as the nurses did not stay enough time with the patient when he was anxious and did not encourage him to express his feelings. This finding agrees with (**Ahmed et al.,**

2014) who found that most patients were dissatisfied with the amount of time nurses spent with them, helpfulness of the nurses, the way things were explained and the way in which nurses inform them before doing procedures. While, this finding disagrees with (**El Nagger, et al., 2013**) who found that, the majority of studied patients were satisfied about the amount of time nurse spends with the patient to discuss his condition.

In relation to **humanity of care**, (**Guerrerro, et al., 2014**) [61] stated that humanization of care had greater value in patients' lives because they need human and integral care according to their individual needs. Healthcare professionals must not only consider and be focused on the biological aspects of the patients, which are related to the dialysis efficiency, but they should also consider their concerns, experiences, feelings, their condition as human beings, their relationships, and mainly their communication and understanding with the health team.

This study represented that, about two-thirds of patients were either highly satisfied or satisfied with humanity of care as nurses dealing with them with respect, and keeping their privacy. This finding was in agreement with (**Samir et al., 2012**) who found that patients were more satisfied with ethical aspects of nursing care including maintaining privacy, being sympathetic and having respectful communication.

The present study reflected that, the majority of patients were dissatisfied with social care. Nurses know the patients' dialysis prescriptions and the best sites to insert the needles in their vascular access, but they do not know how the patients lead their lives and function as individuals outside the hemodialysis unit. The nurses had little knowledge or understanding of the effort the patients expend in order to hold down a job, maintain a relationship or just to attain some normality in their time. This finding is in agreement with (**Freitas et al., 2014**) who found that patients' satisfaction with social care was poor and the nursing team hardly valued the social needs of patients.

The present study reflected that, more than half of patients were dissatisfied with spiritual care. It could be due to lack of nurses' experience in providing spiritual care   and dealing with spiritual distress. Nurses may perceive that spiritual care takes extra time and may be uncomfortable discussing these matters with patients. This finding is supported by (**Valcanti et al., 2012**) who found that, the spiritual needs of most hemodialysis patients are not attended, and they need support to adequately manage the challenge of living with the disease.

Regarding hemodialysis patients' satisfaction with nursing health teaching, the results of the present study revealed that, the majority of patients were dissatisfied with nursing health teaching. It might be due to large numbers of technical nurses and diploma holders who have lack of knowledge secondary to lack of continuous educational programs for nurses. In addition, nurses don't have enough time to teach the patient because of the increased workload. This finding is in agreement with (**Mansour & Shnishil 2013**) who found that, most hemodialysis patients were dissatisfied with nursing health teaching. Moreover, this finding is supported by (**Abd El Hafeez, 2014**) who emphasized that, patients with chronic renal failure need more health teaching about the disease, hemodialysis, its adverse events and self-care practices related to these adverse events.

Regarding Patient satisfaction with overall nursing care, the results of the present study illustrated that, the majority of patients were dissatisfied with nursing care which indicated a defect in the provided nursing care to hemodialysis patients and poor nursing care quality. It might be due to improper nurse-patient ratio resulting from increased numbers of hemodialysis patients and shortage of nursing staff. Moreover, nurses are exposed to high level of stress and increased workload which causes burnout and exhaustion, and negatively affects the nursing care provided.

Moreover, this study revealed a statistically significant difference between the four selected settings about patients' satisfaction with introduced nursing care as El Shefaa hospital (private hospital) had the highest patients' level of satisfaction. It might be due to it is a private hospital and there is a proper nurse-patient ratio, availability of resources, effective supervision and the majority of nurses are professional nurses. In addition, the presence of good environmental factors and more advanced machines may positively affect the patients' satisfaction. This finding is consistent with (**Ozlu & Uzun, 2015**) who found a statistical significant difference between the patients' satisfaction levels and the hospitals in which they stayed.

The results from this study revealed no statistical significant relation between socio-demographic characteristics (sex, age, area of residence, occupation, marital status and income) and patients' overall satisfaction with nursing care in hemodialysis units of the four selected hospitals. This finding is congruent with (**Samir, et al., 2012**) who found no statistical significant relation between patients' socio-demographic characteristics and satisfaction with nursing care. This finding, however contradicts with (**Milutinovic, et al., 2012**) who found a significant relation between gender, age, marital status and patients' satisfaction with nursing care.

On the other hand, a statistical significant relation was found between level of education and patients' overall satisfaction with nursing care as, three-

quarters of satisfied patients were illiterate. It might be due to higher educational level increases the patients' expectations about care and improves their ability to evaluate it.

The current results illustrated that, no statistical significant relation was found regarding to previous hospitalization, number of hemodialysis hours per session and patients' overall satisfaction with nursing care. This finding is in contrast with (**Milutinovic, et al., 2012**) who found that previous hospitalization experience strongly affects patient satisfaction with nursing care provided.

From the ongoing discussion, it can be concluded that, nursing care for hemodialysis patients was not satisfactory. Therefore, adequate supervision, guidance and reinforcement by praising are essential to improve the nurses' performance. Moreover, in-service educational and training programs are required to upgrade the nurses' knowledge and practices.

Conclusion

The majority of hemodialysis patients were dissatisfied with nursing care**.** A statistical significant difference was found between the four selected settings about HD patients' satisfaction with introduced nursing care at the favor of El Shefaa hospital (private). A statistical significant relation was found between level of education and patients' satisfaction with nursing care in hemodialysis units for the favor of highly educated.

Recommendations

- Nurses should assess and identify the defects in nursing care, and carry out appropriate changes to improve the quality of nursing care and raise the patients' level of satisfaction.
- Ongoing assessment of patient satisfaction with nursing care is very important as it is a desired outcome of care and indicator of the quality of nursing care.
- Nurses should provide a holistic care for hemodialysis patients that include physical, psychological, social, spiritual and teaching aspects.
- Research about the "factors that affect patients' satisfaction and the evidence based interventional strategies used to enhance their satisfaction

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