

ASSESS HEMODIALYSIS PATIENTS COMPLIANCES TO THERAPUTIC REGIMEN

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Abstract:

Aim of the study: Assess compliance of hemodialysis patient to the therapeutic regimen. **Study design:** A descriptive study was followed in this study. **Study subjects:** A sample composed of 120 adult hemodialysis patients and met inclusion criteria were included in this study. **Settings:** The study was done at hemodialysis units at Urology and Nephrology Center- Mansoura University. **Tool of the study:** two tools were used, interview questionnaire and Compliance scale. **Results:** The result revealed that (46.7%) of patients were in age group from 40 to < 50 years, (58.3.%) were males and (30.8%) were illiterate. Result also showed that (64.25%) were compliant while (35.8%) of them were non-compliant. **Conclusions:** present study illustrated that more than one third of hemodialysis patients didn't comply with therapeutic regimen. Hence, they also didn't follow the correct practice related to therapeutic regimen. **Recommendations:** Family counseling and social support network should be strengthen in health promotion programs to improve their quality of life.

Key words: End stage renal disease , Hemodialysis, Adherence, Non adherence, Therapeutic regimen

Introduction:

End Stage Renal Disease (ESRD) is an irreversible loss of kidney function to the point that the kidneys fail to support life. When this occurs, Renal Replacement Therapy (RRT), also called kidney dialysis, or transplantation is required. Currently 1.4 million patients are reported to be receiving RRT globally with the incidence of ESRD growing at approximately 8% annually. The burden of costs to meet the rising incidence and prevalence of ESRD is expected to increase substantially⁽¹⁾.

Hemodialysis is one of the alternative treatments used in patients with end-stage renal disease. Hemodialysis treatment influences the lifestyle, health status, and

role of the individual within the family and community⁽²⁾.

adherence to the therapeutic regimen has been shown to be a complex and multidimensional behavior,⁽³⁾ which goes beyond the simple intake of prescribed medication. Dialysis is a highly invasive non-curing treatment. Successful treatment of End-stage renal disease (ESRD) patients by haemodialysis requires a specific diet, fluid restriction, and a large number of daily pills, all of which involve a high cost for the patients and their families⁽⁴⁾.

Non-adherence leads to considerable morbidity, mortality, and avoidable health care costs.⁽⁵⁾ Because of non adherence to therapeutic regimen, hemodialysis patients

are experienced with many problems as hypertension, anemia and sodium and water retention. So, patients on hemodialysis require ongoing education about nature of disease, medical treatment and risks of non adherence to treatment⁽⁶⁾.

Aim of study:

The aim of this study was to assess compliance of patients on hemodialysis to therapeutic regimen.

Research question:

- 1-Is the patients on hemodialysis comply to the therapeutic regimen or not?
- 2-What are the causes of non-compliance?
- 3-What are the factors affecting compliance?

Operational definition

Compliance is appropriate following of an instruction to perform specific response within a reasonable and / or designated time.⁽⁷⁾.

Materials & Method:

Study Design:

A descriptive research design was used in this study⁽⁸⁾.

Setting:

The study was carried out at hemodialysis units at Urology and Nephrology Center- Mansoura University.

Subjects:

The study was conducted on a sample composed of 120 adult patients undergoes hemodialysis.

Inclusion criteria:

- Patients were adult from both sex.
- Aged from 18 to 60 years.
- Willing to participate in the study.
- They were undergoing hemodialysis for not less than 6 months.

Exclusion criteria:

- Unconscious or critically ill patients.

- Having any type of diseases such as mental impairment, neurological disorders.
- Patients who refused to give consent.

Tools:

Two tools were used for data collection:

A) Interview questionnaire sheet:

This tool was constructed by the researcher after extensive review of related literatures. It was developed in Arabic language to accomplish the purpose of this study. Tool consists of six main parts:

First part is concerned with the socio-demographic characteristics of patients such as age, sex, residence, social status, income and level of education.

Second part includes the medical history such as causes of renal failure.

Third part is concerned with the present medical history such as the number of hemodialysis session/week and time schedule of session, physical health assessment signs and symptoms and blood pressure.

Fourth part includes 19 questions related to the patient knowledge regarding disease and the therapeutic regimen.

Fifth part is concerned with the patient practice regarding therapeutic regimen.

Sixth part displays health beliefs and perception of patient toward the disease and the therapeutic regimen.

Different scores related to correct answers in knowledge, health practice and health beliefs were allotted. Giving a total score of 31 for knowledge, 32 for health practice and a 29 for health beliefs.

B) Compliance scale.

It was developed by ^(9,10,11). It was used to assess compliance of patients on

hemodialysis to therapeutic regimen. The scale included 4 parts:

1. The degree of symptoms perception:

It includes 6 items of symptoms (hypertension, fatigue, oliguria, itching, anemia and deteriorated consciousness).

Scoring system

Each item of symptoms has score as; sever task (0) point, moderate task (1), mild task (2) points, and not present task (3) points. The total score of degree of symptoms is "18" points. The patient's scores were collected and ranged as the following:

- High degree of symptoms (0 - < 11).

- Low degree of symptoms (≥ 11).

2. Daily activities performance:

It includes 9 items of activities (washing face, washing hair, combing hair, shower, dressing, shaving, tooth brushing, food preparation and house arrangement).

Scoring system

Each item of symptoms has score as; very good task (2) points, slightly tired task (1) point and markedly tired task (0) point. The total score of the daily activities performance is "18" points. The patient's scores were collected and ranged as the following:

- Notable (0 - < 11).

- Able (≥ 11).

3. Degree of patient compliance toward different instructions:

It includes two main categories: patient himself assessment and patient's relative assessment. Each category has 6 items (comply with treatment, suitable fluids intake, taking low salty diet, taking suitable amount of proteins, avoidance of stress and regular dialysis session).

Scoring system. Each item of the degree of patient's compliance toward different instructions has score as; all time take (2) point, sometimes takes (1), and never takes (0) point. The total score of degree of

patient compliance toward different instructions is "24" points. The patient's scores were collected and ranged as the following:

-No (0 - < 8).

-Yes (≥ 8).

4. Degree of patient's ability to learn self-care skills:

It consists of 7 items (tendency for asking questions, desire to reach good health level, self-responsibility, excited to learn, follow instructions, tendency for reaching accurate information and accept advice).

Scoring system. Each item of the degree of patient's compliance toward different instructions has score as; Yes takes (1) point and No takes (0) point. The total score of the daily activities performance is "7" points. The patient's scores were collected and ranged as the following:

-Not able to learn (0 - < 5).

-Able to learn (≥ 5).

The total score of the patient's compliance is "67" points.

The patient's scores were collected and ranged as the following:

-Non compliant (0 - < 41).

-Compliant (≥ 41).

Method:

1. An official permission to conduct the study was obtained from the faculty of nursing -Mansoura University to carry out the study.
2. An official letter to conduct the study was received from the hospital (Urology and Nephrology Center- Mansoura University) administrative authority after sending official letter from the faculty and explanation of the aim and nature of the study.
3. After a thorough review of literature, tool was developed by the researcher.

Validity:

The Content validity of tools was validated by a panel of 7 expertise in the field of the study (6 were nurse professors working at faculty of nursing and 1 was medical professor working in faculty of medicine) who reviewed the tools for clarity, relevance, applicability, understanding, comprehensiveness and ease for implementation. According to experts opinion , some modifications were applied.

Reliability:

Cronbach alpha coefficient was used to assess reliability of the tool.

Pilot study:

A pilot study was conducted on 12 patients (10% of sample size) who fulfilling the research criteria in order to assess feasibility, clarity and applicability of the developed tool, and the necessary modification were done prior to data collection. Those patients were excluded from the study sample.

3. Patients were informed verbally about the aim and nature of the study, in addition, it is written at the beginning of the tool. They were asked if they were agreed to participate or not.
4. Each patient was interviewed individually before the procedure in order to collect the necessary data using the study tool.

Ethical consideration:

5. The researcher emphasized participation is absolutely and confidential.

6. Anonymity, privacy, safety and confidentiality absolutely were assured throughout the study.
7. Each patient has the right to withdraw from the study at any time.
8. Patients were given the opportunity to ask any questions regarding the study. In addition, for educated patients they were asked to read the instruction given carefully and answer the questionnaire. For illiterate patients the researcher read the questionnaire and was marked on the answers that choose it.
9. Data was collected using interview questionnaire during a period of three months from the beginning of May 2014 to the end of July 2014.

Statistical analysis:

The collected data were organized, categorized , tabulated and analyzed using the statistical package of social science “SPSS” software. Data were offered in tables and charts using numbers and percentages . Statistics and association were done using standard deviation, chi-square(χ^2), t- test and p- value.

Results:

The data collected were analyzed statistically and the results are categorized into 3main parts which are: Socio-demographic, pattern of compliance according to severity of symptoms, daily living activities and Factors affecting compliance and the causes of non compliance

Table (1): Socio demographic characteristics of patients with hemodialysis therapy.

Items	(N=120)	%
Age group (years)		
20 to < 30	13	10.8
30 to < 40	16	13.3
40 to < 50	56	46.7
50 and > 60	35	29.2
Range	20-65	
Mean ± SD	39.4± 9.3	
Gender		
Male	70	58.3
Female	50	41.7
Residence		
Rural	85	70.8
Urban	35	29.2
Marital Status		
Single	12	10.0
Married	77	64.2
Divorce	6	5.0
Widow	25	20.8
Job		
Works	47	39.2
Don't not work	73	60.8
Education		
Illiterate	37	30.8
read and write	17	14.2
Average or more	56	46.7
University education	10	8.3
Income		
Enough	78	65.0
Not enough	42	35.0

Table (1): shows that 46.7 % of the study subjects were at age group of 40 with the mean age 39.4± 9.3. (58.3%)of the study were males while 41.7 %of them were female. Regarding their occupation, 60.8 %don't work. In relation to marital status, 64.2% were married while 10.0 were single. Concerning the educational level of patients, 30.8 % were illiterate, 14.2 can read and write, 46.7% of them were average education and 8.3% of them were university graduates. As regards.

treatment fees paid, 49.2 % depend on Ministry of Health while 47.5% were depend on health insurance. 70.8 % were from rustic area and 65.0 % had enough income

Table (2):Distribution of patients with hemodialysis in relation to past medical history and family history for renal failure

Past Medical History	(N=120)	%
Chronic Disease		
Diabetes	21	17.5
Hypertension	30	25.0
Urithritis	11	9.2
Glomerulonephritis	19	15.8
Past history of surgery in urinary system		
Yes	40	33.3
No	80	66.7
Family history of renal failure		
Yes	7	5.8
No	113	94.2
Degree of relevance		
First degree	6	5
Second degree	1	0.8

Table (2): clarifies that the highest percentages of the causes of renal failure were Hypertension, Diabetes and Glomerulonephritis (25.0% &17.5% & 15.8%) respectively. 33.3 % of the sample had Past history of surgery in urinary system and most of them (94.2%) had no family history of renal failure.

Table (3):Description the performance of daily activities among the patients.

Daily activities	very good		Slightly tired		Very tired	
	No	%	No	%	No	%
Washing Face	114	95.0	5	0.8	1	0.8
Washing Hair	107	89.2	12	10.0	1	0.8
Combing Hair	98	81.7	20	16.7	2	1.7
Bathing	61	50.8	53	44.2	6	5.0
Dressing	60	50.0	59	49.2	1	0.8
Tooth Brushing	82	68.3	13	10.8	5	4.2
Shaving	39	32.5	28	23.3	1	0.8
Food preparation	16	13.3	29	24.2	14	11.7
House arrangement	13	10.8	26	21.7	21	17.5
Ability of performing daily living activities						
Able	(87) 72.5%					
Not able	(33) 27.5%					

Table (3): reveals the performance of daily activities among the patients. About (95.0%& 89.2%& 81.7%&50.8%& 50.0%& 68.3% & 32.5%) were able to wash their faces, hair wash, hair combing, taking shower, dressing, brushing tooth and shaving very good respectively. (24.2% &21.7%) were Slightly tired while preparing the food and during

house arrangement respectively. In relation to total ability to perform the daily living activities, 72.5% of all patients were able to carry out daily living activities while 27.5% of them not able to do that at all.

Table (4): Percentage distribution of patients as regard the pattern of compliance to therapeutic regimen.

Items	Number	Percent
Over all patient's compliance		
Compliant	77	64.2
Non compliant	43	35.8

Table (4): In relation to the overall patient's compliance, the above table shows that more than half of patients (64.25%) were compliant while (35.8%) of them were non-compliant.

Table (5): Means and standard deviations scores of knowledge of compliant and non-compliant patients in relation to therapeutic regimen.

Items	Compliance group		T	P
	Compliance (N=77)	Non-compliance (N=43)		
Knowledge related to				
Disease	9.29 ± 1.60	8.21 ± 1.34	3.746	<0.001***
Diet	9.44 ± 1.40	9.05 ± 2.09	1.235	0.219
Fluid intake	.53 ± .50	.51 ± .51	0.217	0.828
Drug therapy	1.52 ± .96	.84 ± .84	3.872	<0.001***
Total Knowledge	20.76 ± 2.87	18.60 ± 2.95	3.885	<0.001***

Table (5): shows the knowledge of compliant and non-compliant patients in relation to therapeutic regimen. There were highly statistically significant differences between compliant and non-compliant patients in knowledge related to disease and drug therapy

Table (6): Means and standard deviations scores of practice of compliant and non-compliant patients in relation to therapeutic regimen.

Items	Compliance group		T	P
	Compliance (N=77)	Non-compliance (N=43)		
Practice related to				
Diet	6.42 ± 2.08	4.14 ± 1.46	7.006	<0.001***
Fluid intake	3.04 ± 1.46	3.70 ± 1.74	2.102	0.039**
Drug therapy	0.95 ± 0.83	0.35 ± 0.57	4.669	<0.001***
Dialysis sessions	2.52 ± 0.66	1.93 ± 0.77	4.414	<0.001***
Follow up	0.27 ± 0.45	0.14 ± 0.35	1.801	0.075
Total practice	13.1 ± 3.11	10.26 ± 2.85	5.112	<0.001***

Table (6): clarifies the practice of compliant and non-compliant patients in relation to therapeutic regimen. There were highly statistically significant differences between compliant and non-compliant patients in practices related to diet, drug therapy and dialysis sessions while fluid intake was only significant.

Table (7): Response of patients toward barriers of compliance with therapeutic regimen.

Items	Compliance group				χ^2	P
	Compliance (n=77)		Non-compliance (n=43)			
	N	%	N	%		
Financial problems	(17)	22.1%	(14)	32.6%	1.582	0.209
Work problems	(21)	27.3%	(11)	25.6%	0.040	0.841
Transportation problems	(8)	10.4%	(3)	7.0%	0.386	0.534
No support from family members	(6)	7.8%	(4)	9.3%	0.082	0.774
Low skills of staff regard fistula handling	(3)	3.9%	(1)	2.3%	0.211	0.646
No value of dialysis treatment	(1)	1.3%	(9)	20.9%	13.921	<0.001***
No reasons found	(17)	22.1%	(1)	2.3%	8.443	0.004***
Other reason	(4)	5.2%	(0)	0%	2.311	0.128

Table (7): illustrates the response of patients toward barriers of compliance with therapeutic regimen. The highest percentages (32.6% & 25.6%) of non-compliant patients had financial problems and work problems respectively compared with 22.1% and 27.3% of compliant patients respectively. There were highly statistically significant differences between both groups in relation to no value of dialysis treatment as perceived barriers of compliance with therapeutic regimen.

Table (8): Relation between compliant and non-compliant patients in relation to socio demographic characteristics.

Items	Compliance group				χ^2	P
	Compliance		Non-compliance			
	No	%	No	%		
Gender						
Female	33	42.9%	17	39.5%	0.125	0.723*
Male	44	57.1%	26	60.5%		
Age						
20-	10	13.0%	3	7.0%	6.741	0.081*
30-	13	16.9%	3	7.0%		
40-	37	48.1%	19	44.2%		
50 +	17	22.1%	18	41.9%		
Residence						
Rustic	54	70.1%	31	72.1%	0.051	0.821*
Urban	23	29.9%	12	27.9%		
Marital status						
Single	10	13.0%	2	4.7%	5.662	0.129*
Married	52	67.5%	25	58.1%		
Divorce	3	3.9%	3	7.0%		
Widow	12	15.6%	13	30.2%		
Education						
Illiterate	17	22.1%	20	46.5%	10.450	0.015***
Read and Write	10	13.0%	7	16.3%		
Average or more	41	53.2%	15	34.9%		
University	9	11.7%	1	2.3%		
Job						
Don't work	49	63.6%	24	55.8%	0.709	0.400*
Works	28	36.4%	19	44.2%		
Income						
Not enough	23	29.9%	19	44.2%	2.486	0.115*
Enough	54	70.1%	24	55.8%		

Table (8): represents the relation between compliant and non-compliant patients in relation to socio demographic characteristics. Regarding education, there was statistically significant differences between both groups. However, in relation to gender, age, residence, marital status, job and Income, there were no statistically significant differences between both groups.

Discussion:

The findings of present study showed that almost two third of studied sample were compliant with therapeutic regimen of hemodialysis. This finding is in agreement with ⁽¹²⁾who reported that more than half of patients were compliant to therapeutic treatment. This results demonstrate that patients want to reach the best level of health and participate in life without any problems.

The finding of current study showed the knowledge of compliant and non-compliant patients in relation to therapeutic regimen. There were highly statistically significant differences between compliant and non-compliant patients in knowledge related to disease and drug therapy and there is no statistically significant differences related to diet and fluid restriction. This is because the majority of the sample subjects are educated and want to reach the best outcome. The finding is in agreement with ⁽¹³⁾who found a large number of hemodialysis patients in both countries (US and German) have difficulties maintaining their diet and they had difficulties in maintaining fluid restrictions. In addition, ⁽¹⁴⁾mentioned that there is a statistical significance regarding hemodialysis treatment and medication,

but there is no statistical significant finding present in adherence to diet restriction.

Concerning practice of complaints and non-compliant patients in relation to therapeutic regimen, there were highly statistically significant differences between compliant and non-compliant patients in practices related to diet, drug therapy and dialysis sessions. In this regard ⁽¹⁵⁾commented that the relation between, information and adherence to treatment in nephrology is still dialectical. In this sense, hemodialysis patients reported having more information about diet and this makes sense because any dietary contravention can be a life threatening emergency for a patient on hemodialysis. On contrary with this results, ⁽¹⁶⁾have observed that patients on hemodialysis who had greater dietary knowledge on phosphorus control were also the patients who displayed the least adherence so although information is necessary, it is not enough to change adherence behavior.

The findings of the present study revealed that, as regards the perceived barriers, financial problems represented the first of non compliance accounting for one third of them. The finding goes in line with ⁽¹⁷⁾who showed that the majority of patients did not have any health insurance. So, high cost was one of the main factors responsible for poor adherence This result indicated that hemodialysis patients need social support and health resources.

The second barrier for non compliance was work problems accounting for almost one quarter of study sample. Fatigue, illness process and attending dialysis sessions affect work of the sample subjects by increasing absence from work. It is

contraindicated with ⁽¹⁸⁾who stated that, large number of the participants reported that their health was not a barrier to work.

No support from family members was also another barrier for non compliance to therapeutic regimen. This may be due to lack of information about patients condition and inadequate management.⁽¹⁹⁾reports that family support enhanced the ability of people to keep their positive attitude for the duration of their disease. So, it is necessary to train health professionals to meet the different aspects of need .

The findings of the present study revealed a significant statistical correlation between compliant and non-compliant patients in relation to educational level ($p = 0.015$).⁽²⁰⁾were in agreement of this results in which they mentioned that there was a significant difference in adherence ($P = 0.024$) between participants who had no or less than high school education, participants who have high school education and those with a baccalaureate degree. On contrary to this result, the study conducted by ⁽²¹⁾shown that an increase in knowledge does not necessarily increase a patient's adherence to the prescribed treatment. In addition,⁽²²⁾reported that educational level had no significant impact on the compliance of HD patients.

Limitation of the study:

The tool used for data collection was too long and needed a long time to be filled and applied at the field of the work. This was exhaustive to the researcher adding to some patients were not able to continue in one session due to some physical problems raised as hypertension, and fatigue which are common problems occurring during hemodialysis. Additionally, interviewing

patients during night shifts affected the researcher's social life .

Conclusion:

Based on the findings of the present study the following can be concluded that:

More than one third of hemodialytic patients didn't comply with therapeutic regimen. There was because patients hadn't enough knowledge concerning their disease and its treatment. Also Financial problems and work problems were the most common barriers for non compliance to therapeutic regimen as well as patient's beliefs that there was no value of dialysis treatment.

Recommendations:

In the light of the findings of the present study, the following recommendations are suggested:

1. Simple booklet written in Arabic language should be available for all hemodialysis patients included all needed information.
2. Good communication between nurses staff , patient and his / her family can improve compliance.
3. Designing a systematic program and investigating the clients before leaving the hospitals to ensure that such a basic need is fulfilled and patients have received the needed self-care programs.
4. Further studies should investigate factors that hinder the compliance of patients to therapeutic regimen.

References:

1. Reid C, Hall J, Boys J, Lewis S, Chang A,(2011): Self management of haemodialysis for End Stage Renal Disease: a systematic review. The

-
- Joanna Briggs Library of Systematic Reviews;9(3):69-103.
2. **Rezaiee O, Shahgholian N, Shahidi S (2016):** Assessment of hemodialysis adequacy and its relationship with individual and personal factors. *Iran J Nurse Midwifery Res.* 2016 Nov-Dec;21(6):577-582. doi: 10.4103/1735-9066.197673.
 3. **Remor, E. (2011):** Predictors of treatment difficulties and satisfaction with haemophilia therapy in adult patients. *Haemophilia*, 17, e901-905.
 4. **Cukor, D., Cohen, S.D., Peterson, R.A., & Kimmel, P.L. (2007):** Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. *Journal of the American Society of Nephrology*, 18, 3042-3055.
 5. **Gabr WM, Shams ME (2015):** Adherence to medication among outpatient adolescents with epilepsy *Saudi Pharm J.* 2015 Jan;23(1):33-40. doi: 10.1016/j.jsps.2014.05.003. Epub 2014 May 26.
 6. **Alikari, V., Zyga, S. (2015):** Family support social and demographic correlation of non adherence among hemodialysis patients. *American Journal of Nursing Science*.4: 60- 65.
 7. **Jimmy B, Jose J (2011):** Patient medication adherence: measures in daily practice. *Oman Med J* 26(3): 155–159.
 8. **Williams C (2007):** Research Methods. *Journal of Business & Economic Research*. Grand Canyon University Volume 5, Number 3.
 9. **Jackson, K., Kuebon, L., Watkin, K. and Gilliam, J. (1994):** Methodology for measuring compliance and facilitating change, *Journal of Administration*, 24(1):34-40.
 10. **Hellen, L. and Brandt, D. (1995):** An analysis of coping with chronic illness, F.A. Davis, Philadelphia, pp. 215-243.
 11. **American Heart Association (2004):** Inc All rights reserved. Unauthorized use prohibited. <http://www.americanheart.org/presenter.jhtml?identifier=1657>.
 12. **AbdElazeem, N. (2008):** Compliance of Patient on Hemodialysis to the Therapeutic Regimen, Unpublished Master Thesis, Ain Shams University, pp: 155-167.
 13. **Kugler, Maeding, and Russell (2011):** Non-adherence in patients on chronic hemodialysis: an international comparison study *Journal of nephrology*; 24(03): 366-375.
 14. **Abo Deif ,H.I., Elsayi,K.H., Selim, M., NasrAllah, M.M. (2015):** Effect of an Educational Program on Adherence to Therapeutic Regimen among Chronic Kidney Disease Stage5 (CKD5) Patients under Maintenance Hemodialysis. *Journal of Education and Practice*. Vol.6, No.5.
 15. **Llana, H. Remor, E. & Selgas, R. (2014):** Adherence to treatment, emotional state and quality of life in patients with end-stage renal disease undergoing dialysis *Psicothema*, 25, (1), 79-86.
 16. **Durose CL, Holdsworth M, Watson V, Przygodzka F. (2004):** Knowledge of dietary restrictions and the medical consequences of noncompliance by patients on haemodialysis are not predictive of dietary compliance. *J Am Diet Assoc* 2004; 104 (1): 35.
 17. **Sontakke, S., Budania, R., Bajait, CH., Jaiswal, K., Pimpalkhute, S. (2015):** Evaluation of adherence to therapy in patients of chronic kidney disease. *Indian J Pharmacol.* 47(6):
-

- 668–671. doi: 10.4103/0253-7613.169597.
- 18. Gerogianni, S.(2016):**Social Life of Patients Undergoing Haemodialysis. *International Journal of Caring Sciences*. Volume 9| Issue 1| Page 122.
- 19. Koutlaki SA(2010):** Among the Iranians: A guide to Iran's culture and customs. London: International Press: Boston.
- 20. Abdulmalik M. Sarah M. Najla A. Abdulkareem, M. Shemylan, A. Fayze, F A. Abdullah, A. Abeer, M. Amjad, M. (2014):** Saudi Journal of Kidney Diseases and Transplantation, 25, (4) 762-768.
- 21. Martin KJ, Gonzalez EA (2011):**Prevention and control of phosphate retention/hyperphosphatemia in CKD-MBD: What is normal, when to start, and how to treat? *Clinical Journal of the American Society of Nephrology*. 6:440–446.National Kidney Foundation, coping effectively, a guide to living well with renal failure, 2010 www.kidney.org.
- 22. Ibrahim S, Hossam M, Belal D(2015):**Study of non-compliance among chronic hemodialysis patients and its impact on patients' outcomes. *Saudi J Kidney Dis Transpl* [serial online] [cited 2017 Aug 19];26:243-9.