

Therapeutic Regimen Compliance in Iranian Hemodialysis Patients

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The aim of this study was to determine the therapeutic regimen compliance in hemodialysis patients in hospitals of Shahid Beheshti University of Medical Sciences and Health Services in 2010. This study, which was descriptive in nature, consisted of 100 hemodialysis patients who were selected through random sampling method. Tools included a questionnaire consisting of two parts: demographic data and disease. The questionnaire was completed by patients during hemodialysis. In order to determine the therapeutic regimen compliance, the researcher recorded the mean of the last three months' values of P, K, interdialytic weight gain, and the numbers of missed dialysis sessions using patient's documents. 78% of patients had missed less than 3 session of dialysis in three month ago, the serum potassium level of 85% of them was up to 5.5 meq/ lit and serum phosphorus level in 64% of them was up to 6 mg/ dl. 87% of the patients were adhered to fluid restricted regimen. 56% of patients had therapeutic regimen compliance. Compliance in hemodialysis patients in hospitals of Shahid Beheshti University of Medical Sciences and Health Services was more than 50 % and it can be said that therapeutic regimen compliance in these patients was acceptable.

Key words: Compliance, Hemodialysis, Chronic Renal Failure

Chronic kidney disease (CKD) is a pathophysiological process with various causes that usually ends in late-stage to renal disease. Renal disease is the last stage of a clinical board in which endogenous renal function is lost irreversibly so that the patient has to rely permanently on alternative renal treatments (dialysis and kidney transplant) in order to prevent from fatal uremia¹.

The prevalence of chronic renal failure is 242 per one million with 8 percent being added each year¹. According to statistic center of Special Diseases Society of Iran and Kidney Disease Patients Support Association, the number of renal failure disease in Iran with 70 million populations reached to 25,000 patients in 2006, which will probably increase to 40,000 by 2011 in 12 percent rate².

Hemodialysis is a life-saving treatment, but at best, it is only the replacement of renal function for about 10 percent; thus chronic hemodialysis patients suffer from several problems

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and they should adhere to various regimens for controlling these problems. These complex therapeutic regimens impose significant burden on patient^{3,4}.

Hemodialysis regimen is based on two factors: restriction of certain nutrients and removal of waste metabolites from the blood by regular dialysis, thus successful hemodialysis depends on 4 factors: restricting fluid intake, considering nutritional recommendations, using prescribed medicine and attendance at hemodialysis sessions. Sometimes fluid intake is limited up to 500 ml daily and the recommended regimen includes restrictions on sodium, potassium and protein³.

The goal of medication prescription is prevention or treatment of cardiovascular problems and maintenance of blood electrolyte balance for instance by prescribing phosphate binders. In addition, hemodialysis patients take other drugs including vitamin D supplements, anti hypertension drugs, the blood sugar lowering drugs, erythropoietin and iron supplements^{5,6}. This regimen often includes 12 kinds of medication in average⁵. Also, these patients should spend considerable time on hemodialysis per week, these complex therapeutic regimens impose significant burden on the patient, while success in controlling chronic renal failure depends on its compliance.

Since 1970, therapeutic regimen compliance has become widely investigated due to widespread nature of treatment non-compliance⁷. Therapeutic regimen non-compliance is common in hemodialysis patients. According to a definition for non-compliance, almost 86% of hemodialysis patients have non-compliance in one or more aspects of therapeutic regimen. Poor therapeutic regimen compliance is considered as the most common failure to respond to medication and poor treatment outcomes⁴. Non-compliance of therapeutic regimen in hemodialysis patients has various complications³ and directly and indirectly causes financial consequences^{4,7}.

Considering high level for therapeutic regimen non compliance in hemodialysis patients and limitation of studies in Iran, the authors attempted to investigate compliance in hemodialysis patients in hospitals of Shahid Beheshti University of Medical Sciences and Health Services.

Methodology

This is a descriptive study. 100 male and female patients suffering from chronic renal failure under hemodialysis treatment participated in this study using available sampling method. The researcher-made questionnaire including two sections were used for demographic and disease data for data collection.

After obtaining the necessary consent and introducing the researcher to the research environment, questionnaires were completed by patients during hemodialysis. While completing the questionnaire by patients, researcher recorded the last three months of serum potassium and phosphorus levels before dialysis and interdialytic weight gain for each patient and as well as their dry weight. It was done using patient's documents. In addition, according to presence or absence of patients in specified dates in treatment schedule, the number of sessions missed by patients in the last three months was recorded. Criteria for therapeutic regimen compliance include mean interdialytic weight gain less than 5.7 of dry weight, mean of three consecutive monthly serum potassium levels 5.5 meq/lit or less, mean of three consecutive monthly serum phosphorus levels 6 mg dl or less and no more than 3 missed hemodialysis sessions in a three-month period.

Research environment was hemodialysis wards of Shahid Modarres, Shahid Dr. Labafi-Nejad, Ayatollah-Taleghani and Imam Hossein Hospitals in Tehran afflicted to Shahid Beheshti University of Medical Sciences and Health Services. Researchers attended in the research environment in morning, evening and night shifts for data collection.

Descriptive and referential statistics were used for data analysis and SPSS 16 was used.

RESULTS

Regarding gender and age it was shown that 59 ones (59%) were male and 41 ones (41%) were female patients. There was highest frequency in above 55-year-old group in terms of age. Age average in patients was 53.42 ± 10.14 .

45 percent of patients had 1 to 2 children. The average number of their children was 2.86 ± 1.42 .

35 percent of respondents had high school diploma.

77 percent of patients lived with their spouse and children and only 23 percent lived just with their spouse.

Majority of patients (28%) were under hemodialysis treatment for 3-5 years. The majority of patients (98%) were dialysed via brachial fistula. All patients were dialyzed 3 times weekly each time for 4 hours.

66 percent of patients suffered from another disease in addition to chronic renal failure, which hypertension as the disease with highest frequency (45.4%) (Table 1). 78% of patients did not missed more than three dialysis sessions during last three months (Table 2). The serum potassium

level of 85% of them was up to 5.5 meq/ lit and it was above 5.5 meq/ lit in 15 percent of them. Serum phosphorus level in 64% of them was up to 6 mg/dl and it was above 6 mg/dl in 36% of patients. 87% of the patients were adhered to fluid restriction and only 13% didn't adhere. Thus, 56% of patients had therapeutic regimen compliance.

Also, correlation between therapeutic regimen compliance and age, gender, income, the number of children and treatment period and dialysis was investigated. Only a significant correlation was found between therapeutic regimen compliance and income ($P < 0.05$); therapeutic regimen compliance in patients with lower income was higher than others.

Table 1. Frequency distribution of other diseases in dialysis patients

Variable	Groups	Frequency	%
Kind of disease	Hypertention	30	45.4
	Diabetes	4	6
	Cardiovascular disease	3	4.5
	Diabetes and hypertention	17	25.8
	Cardiovascular and hypertention	7	10.6
	Lupus and hypertention	1	1.5
	Diabetes and cardiovascular and hypertention	3	4.5
	Diabetes and Hypothyroidism and hypertention	1	1.5
	Total	66	100

Table 2. Frequency distribution of missed session of dialysis in hemodialysis patients

Variable	Groups	Frequency	%
Missed sessions	No absence	78	78
	1-3 sessions	20	20
	4 sessions and more	2	2
	Total	100	100

DISCUSSION

Results indicate that these patients are in appropriate condition in terms of therapeutic regimen compliance. In Feyzollah Zadeh's study (1997) it was found that only 14.7% of hemodialysis patients investigated in hospitals afflicted to Shahid Beheshti University of Medical Sciences and Health Services had therapeutic regimen adherence⁸, hence it can be concluded that since

1997 therapeutic regimen compliance in patients under hemodialysis treatment has been improved.

78 percent of patients didn't have dialysis missed sessions over last 3 months. For 30 percent of patients, there was 1 to 3 missed sessions, and only 2 percent of patients had 4 and more missed sessions. Sherman *et al.* (1994) found that at least 50 percent of patients had one absence from dialysis sessions during last 12 weeks of their treatment period⁹, which is in consistency with

findings of this study. Taskapan *et al.* (2005) found that 2.5 percent of patients missed one session during their last 2 months of treatment period¹⁰. Results of the study showed that serum potassium level of 85% of them was up to 5.5 meq/ lit and it was above 5.5 meq/ lit in 15 percent of them. It suggests that patients under hemodialysis treatment adhered potassium intake restricted regimen well, and their mean serum potassium is almost desirable compared to patients with chronic renal failure. Liang and Lin (1997) observed four-month average serum potassium was 3.5-5.5 for 70.9 percent of patients¹¹ which is close to our finding. Also, Gerbino et al (2011) found that only 16.4 percent of patients had potassium level above 6 meq/ lit¹².

Results showed that serum phosphorus level in 64% of them was up to 6 mg/ dl and it was above 6 mg/dl in 36% of patients. In a study by Durose *et al.* (2004) mean serum phosphorus in three months was above 6 mg/dl in 31% of patients¹³ which is similar to our finding. However, in a study by Lee and Molassiotis (2002) mean serum phosphorus in three months was above 6 mg/dl in 56.5% of patients¹⁴ which is different from findings in this study.

87% of the patients adhered to fluid restricted regimen and only 13% didn't. Results of a study by Hecking *et al.* (2004) were inconsistent with this finding suggesting 48.5% of patients didn't adhere fluid restricted regimen¹⁵.

Rambod *et al.*, (2010) found results inconsistent with this study, and observed that 56% of patients in their study didn't adhere fluid restricted regimen¹⁶. Leggat *et al.* (1998) only 1% of patients showed noncompliance in fluid restricted regimen¹⁷.

CONCLUSION

Over 50 percent of patients under dialysis treatment in hospitals of Shahid Beheshti University of Medical Sciences and Health Services had therapeutic regimen compliance and there was significant correlation between therapeutic regimen compliance and income so that therapeutic regimen compliance is higher in patients with lower income. However, there was no significant statistical correlation between therapeutic regimen compliance and age, gender and treatment period.

It can be said that in terms of therapeutic regimen compliance, patients in this study are in good situation.

Investigating factors affecting therapeutic regimen compliance in patients under hemodialysis treatment will help to provide strategies so as to promote therapeutic regimen compliance in these patients.

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