

# Investigating Some Factors Relevant to Diet Observance in Hemodialysis Patients Based on Health Belief Model in 2014-Qom, Iran

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## A-R-T-I-C-L-E I-N-F-O

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## A-B-S-T-R-A-C-T

**Background & Aims of the Study:** Diet observance plays a crucial role in improvement of life quality for hemodialysis patients. The present survey aims at determining the factors relevant to diet observance in hemodialysis patients admitted in hemodialysis centers in Qom in 2014.

**Materials and Methods:** Through this descriptive survey, the sample population, which included 60 qualified hemodialysis patients admitted in four hemodialysis centers in Qom, was given a researcher-made questionnaire consisting of demographic information such as age, gender, marital status, education, the hospital, and duration of disease. The questionnaire also included 19 yes/ no questions determining the hemodialysis patients' awareness about diet, and 31 questions as awareness evaluation in terms of health-belief model based diet in Likert scale. The validity of the questionnaires was confirmed by six faculty members, and through Cronbach's Alpha, their coefficient of consistency showed 81%, correlation coefficient was 0.81, and slight standard deviation was reported.

**Results:** The data was analyzed through Cronbach's Alpha, Pearson correlation coefficient, ANOVA, T test, and 31<sup>st</sup> version of SPSS software. The results indicated that there was a meaningful and indirect relationship between age and factors such as structures of perceived susceptibility ( $r = -0.169$ ), and perceived severity ( $r = -0.193$ ), self efficacy ( $r = -0.206$ ), and also between duration of disease and factors such as structures of perceived susceptibility ( $r = -0.166$ ), perceived severity ( $r = -0.108$ ), and finally, self efficacy ( $r = -0.188$ ). However, there is a significant and direct relationship between age and some factors such as perceived barriers ( $r = 0.208$ ), and between duration of disease and awareness ( $r = 0.117$ ), and perceived barriers ( $r = 0.266$ ).

**Conclusion:** Among the results of this study, it is noticeable that the older the patients become, the more their awareness about the dialysis diet must increase; while, as the patients grow older and their duration of disease lasts longer, some of their model structures such as severity, susceptibility and efficacy which relate to their dialysis diet, do decline.

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## Background

Controlling the contagious diseases during former decades and increasing the hope to life, the chronic diseases took place as one of the most crucial problems in health. Meanwhile, chronic renal failure possesses a special

position, for this defect of kidney is irreversible and finally, the affected person needs either dialysis or transplant (1). Malnutrition is one of the most significant factors that lead the patient under dialysis to die. Reduction in energy and protein reception creates a negative balance of nitrogen in hemodialysis patients (2).

(Malnutrition rates among dialysis patients is reported 23%) (3). Underlying diseases, economic problems and unwitting limitation of protein sources are included among the important factors of malnutrition (4). Due to the effects of uremia, diet is an important factor for dialysis patients, whose aim is maintaining good nutritional status through consumption of protein and calories (5). Considering that the urinary tract, in patients undergoing hemodialysis, is not able to exit the waste from their body normally, such patients have to consume appropriate diet (6). Diet is considered as a part of the treatment of hemodialysis patients so that a proper diet schedule can delay need for dialysis and transplant. As a result, for improving their conditions, such patients must take appropriate medication prescribed by doctor, and observe proper diet through which the patients can play a dynamic role in their treatment (7).

Sodium intake is known as a risk factor in hemodialysis patients diet; it was announced in a research in 2012 the more sodium intake appears in the diet, the more the need for ultrafiltration will be felt during dialysis, which in turn, guarantees further mortality; though, the results of this research have not supported the increase in blood pressure following Sodium consumption during dialysis, and has left it for other researchers (8).

Another study associated with the actual model of diet in hemodialysis patients and their clinical outcome determined that the patients with non-balanced diets, compared to those with balanced diets, were further exposed to the highly morbid clinical outcomes. A balanced diet includes consumption of nutritional groups such as meat, fish and vegetables (9). Now the significance and the necessity of observing an appropriate and balanced diet for hemodialysis patients, who are accomplished through education, highlights. Observing a better and more appropriate diet, the efficiency of dialysis increases, and it is confirmed that such an issue can relatively improve the qualitative defect of

hemodialysis in most of the region in country. It can also play an important role in decreasing mortality and morbidity of the patients (10).

Due to the lack of enough emotional stability for this responsibility, some of patients and their families are not able to understand the objective of hemodialysis or care procedures, thus, particular anxieties about the disease and its probability can change the emotional stability and affect the patient's interest of learning (11). Health belief model is one of the models to determine the needs of dialysis patients in observing the diet and its prediction. Health belief model is one of health education models which is also used in nutrition education; it roots in behavioral sciences. The philosophy of this model is subject to the fact that education can make behavioral changes in four facets: behavioral change can bring benefits in economic, familial and cultural fields (perceived benefits) (12). Perceived benefits consist of understanding the positive benefits resulting from a healthy operation (13). As the second issue, the health educators recognize the obstacles in health education (perceived barriers); for instance, the patients accepts that non-smoking leads to saving money, or, a change in diet can improve their health (14). Third, a health education program should be able to consider those underlying factors and probabilities which belong to the patient and lead to complications, and health, social and economic risks (perceived susceptibility) (12). In other words, perceived susceptibility consists of how much a disease or condition is probable to jeopardize the health of people (13). As an instance, one may ask, "how much may I be susceptible to developing colon cancer?" (14). The next component includes perceived severity which relates to the degree of a disease severity (13). Finally, choosing a healthy behavior is necessary to operate as a guide and a key for the patient's function; it includes individual training and using educational equipment (cue of action) (12). The next point involves self-efficacy in which the patient's

self-confidence for confronting the problem is evaluated (13) (for instance: “surely I am able to change my diet” (14).

### Aims of the study:

The present survey aims at determining the factors relevant to diet observance in hemodialysis patients admitted in dialysis centers in Qom in 2014.

## Materials & Methods

This descriptive cross sectional survey was conducted during from March 21<sup>st</sup>, 2014, for 6 months in Qom City. The statistical population involved all qualified hemodialysis patients admitted in research units of hemodialysis centers in Qom. Through purposive sampling, 60 hemodialysis patients were chosen from four hospitals, namely Vali Asr Hospital, Ayatullah Golpayegani, Ali ibn Abitaleb and Kamkaar. The inclusion criteria included having the age between 18 and 75, literacy, suffering from chronic renal failure for at least 6 months, the absence of mental diseases and diabetes. The exclusion criteria included no interest in participation, loss of consciousness; severe anxiety and tension, and all the factors that would lead patient to long term admission in hospital. Data collection for this research was performed through researcher-made questionnaire which was divided into two sections including demographic and health belief model.

Demographic questionnaire included age, sex, marital status, education, occupation, during the course of the disease, and health belief-oriented model questionnaire involved 28 true/false awareness questions, 5 Perceived susceptibility questions, 5 perceived severity questions, 6 perceived benefits questions, 5 perceived barriers, and 10 self-efficacy questions based on Likert's scale of 5 alternative attitudes (from completely agree to completely disagree). The scores were reported according to the number of questions per section out of 100 scores. The validity of the

form and the content of the questionnaire, using a panel of experts, were by 7 members of the faculty. The coefficient of internal consistency of the questionnaire in different parts (according to the used model) was accepted and in sum, the structures were less than 81%. Questionnaires were completed as organized interviews by the trained interviewer during hemodialysis of patients. Due to the moral considerations in this study, after obtaining permission from the relevant authorities, informed consent was obtained from patients, and they were assured that their privacy is protected.

### Data analysis:

The data was analyzed through 18<sup>th</sup> version of SPSS software, descriptive indexes, T-tests, ANOVA, and Pearson Correlation Coefficient. The significance level was considered as 0.05.

## Results

The sample population of this research included 39 men (65%) and 21 women (35%). The mean and the standard deviation of age and the time span of disease were respectively  $13.94 \pm 14.90$  years for mean and  $3.35 \pm 4.70$  for standard deviation. 43.3% (26) of the patients belonged to Kamkaar Hospital, 18.3% (11) from Golpayegani, 21.7% (13) from Vali Asr Hospital and 16.7% (10) from Ali ibn Abitaleb. The rest of individual features are listed in table 1.

**Table 1) Distribution of some individual variables of patients under study**

Individual Variables	Number	Percentage
<b>Gender</b>	Man	39
	Woman	21
<b>Marital status</b>	Single	25
	Married	35
	Primary	14
<b>Education</b>	Secondary	17
	Highschool	18
	University	11
	Business	19
<b>career</b>	Clerk	25
	House	13
	Keeper	13
	Jobless	3

The results showed that the mean and standard deviation of awareness of dialysis diet was  $55.47 \pm 13.86$ . Table 2 illustrates the descriptive characteristics of health belief model structures on the dialysis diet of samples.

**Table 2) The mean and standard deviation of the health belief model constructs in the diet of patients on dialysis**

variety	mean	St. deviation	Min.	Max.
Awareness	55.47	13.86	28.57	89.29
Perceived susceptibility	36.46	15.91	20	72
Perceived severity	47.80	15.34	20	84
Perceived benefits	45.66	14.74	20	76.76
Perceived barriers	59.66	16.48	20	92
Self-efficacy	55.88	8.00	36.36	68.18

**Table 3) The mean score of health belief model structures in terms of gender, marital status and education in samples**

Demographic Variables		Awareness	Perceived susceptibility	Perceived severity	Perceived benefits	Perceived barriers	Self-efficacy
Gender	Man	51.83 $\pm 12.71$	38.97 $\pm 17.18$	47.48 $\pm 14.85$	46.32 $\pm 16.21$	58.36 $\pm 17.25$	56.70 $\pm 7.87$
	Woman	62.24 $\pm 13.62$	31.80 $\pm 12.29$	48.38 $\pm 16.58$	44.44 $\pm 11.80$	62.09 $\pm 15.05$	54.22 $\pm 8.20$
	T-test	P=0.005	P=0.068	P=0.832	P=0.642	P = 0.407	P=0.256
Marital status	Single	56.00 $\pm 12.74$	34.56 $\pm 16.68$	49.12 $\pm 12.62$	43.46 $\pm 12.18$	60.80 $\pm 13.26$	55.36 $\pm 8.62$
	Married	55.10 $\pm 14.78$	37.82 $\pm 15.44$	46.85 $\pm 17.15$	47.23 $\pm 16.31$	58.85 $\pm 18.59$	56.16 $\pm 7.62$
	T-test	P=0.807	P=0.438	P=0.578	P= 0.333	P= 0.639	P=0.705
Education	Primary	50.51 $\pm 14.41$	39.14 $\pm 16.69$	46.85 $\pm 11.68$	48.33 $\pm 16.42$	58.28 $\pm 12.02$	53.57 $\pm 10.03$
	Secondary	56.72 $\pm 15.61$	34.5 $\pm 14.96$	47.05 $\pm 17.91$	45.49 $\pm 15.31$	58.58 $\pm 20.04$	55.74 $\pm 7.41$
	High School	59.92 $\pm 12.99$	41.11 $\pm 17.18$	49.11 $\pm 14.24$	47.59 $\pm 14.63$	67.44 $\pm 17.01$	56.94 $\pm 7.29$
	University	55.47 $\pm 13.86$	36.46 $\pm 15.91$	48.00 $\pm 18.34$	39.39 $\pm 14.74$	55.27 $\pm 14.62$	57.02 $\pm 7.063$
	ANOVA	P=0.237	P=0.170	P= 0.975	P = 0.439	P=0.492	P=0.646

**Table 4) Correlation between age and duration of disease by health belief model structures on dialysis diet**

Variables		Awareness	Perceived susceptibility	Perceived severity	Perceived benefits	Perceived barriers	Self-efficacy
Age	R	0.112	-0.169	-0.193	-0.097	0.208	-0.206
	P	0.452	0.036	0.044	0.062	0.023	0.040
Duration of Disease	R	0.117	-0.166	-0.108	-0.201	0.266	-0.188
	p	0.043	0.031	0.041	0.074	0.033	0.029

## Discussion

Since this research aimed at determining the factors relevant to hemodialysis patients' diet

In this study, the results showed that there was a significant difference between two groups of women and men in terms of awareness of dialysis diet ( $p=0.005$ ). T-test and ANOVA test showed no difference in mean of health belief model structures on dialysis diet based on marital status, education as well as jobs ( $p> 0.05$ ). Table 3 demonstrates the details in such terms.

Pearson correlation coefficient test indicated that there is a significant correlation between age and duration of disease and some of health belief model structures (Table 4).

who are admitted in hemodialysis centers in 2014 in Qom, the most important results included: there was a significant relationship between age and perceived susceptibility ( $p=0.036$ ), perceived severity ( $p=0.044$ ),

perceived barriers ( $p=0.23$ ), and self-efficacy ( $p=0.04$ ), and it was indicated that this relationship is indirect with other constructions of health-belief model, so that, as the age grows, perceived susceptibility, perceived severity and self-efficacy decreases among the sample individuals, while as the age grows, the barriers perceived by the patient increases as well. Accordingly, there is a negative and significant relationship between some structures of the model such as perceived susceptibility ( $p=0.031$ ), perceived severity ( $p=0.041$ ) and self-efficacy ( $p=0.029$ ), that is, as the disease lasts for a longer time, the importance of above structures decreases in patients' view; on the other hand, a direct and significant relationship was observed between duration of disease and perceived barriers ( $p=0.033$ ). the perceived barriers is one of the important structures of health belief model which, in many studies, indicates a significant difference compared with other structures in this model, and this can emphasize its significance. Among parallel surveys, the one by Mazaheri et.al (2012) illustrated that, after a period of training, there appeared a significant difference between perceived barriers and benefits before education, and those after education (15). Also, a survey by Mokhtari Lakeh et al (2013) confirmed that smoking used to make direct relationship with more perceived barriers (16). A research belonging to Namdaar et.al (2012) validated a significant relationship between perceived barriers and women's preventive behavior (17).

Among other results of the present survey is the direct and significant ( $p=0.043$ ) relationship between awareness and duration of disease; accordingly, as the disease lasted longer, the awareness of the patients increased. The reason for this can be found in recurring items of diet by staff, and the mass media; gradually, such beliefs become internalized in patients' mind. This single issue, of course, is not adequate, and the practical use of such awareness is necessary for the patients.

Eventually, it's important to designate that since in this survey, age and duration of disease is accompanied with reducing the perceived severity, perceived susceptibility and self-efficacy, the elder patients are needed to have educational programs to further emphasize the dimensions of the health belief model, because the chronic essence of hemodialysis can weaken the learning stimuli in hemodialysis patients. Kidney diseases that end in hemodialysis can affect the motivation of dialysis patients (18). Beside the fact that, due to the elder age and the duration of disease, the weakened self efficacy requires more emphasis on self-efficacy in hemodialysis patients, self-efficacy is considered as an important criterion in determining and predicting patients' behavior. Also, Peyman and Moqadas (2013) emphasized educational programs and relying upon self-efficacy, they increased and enforced the perceived susceptibility and perceived severity (19).

As a result, reduction in self-efficacy can accompany the reduction of patients' following their proper diet. It is considerable that recognizing the factors relating to the hemodialysis patient's diet illustrates the key role of nurses in using health belief model in encouraging the hemodialysis patients to observe appropriate diet. In this regard, the nurses must motivate the patients for interventions that largely focus upon perceived barriers; this is the case whose absence (also in the present survey) is felt (20).

The results of the study confirmed that, among all demographic variables, the only statistical significant difference in terms of awareness about proper diet was observed among men and women; this can be due to the difference in susceptibility in men and women regarding appropriate diet, or due to the larger number of men compared to women participating in this survey. Also, the statistical information announce that end stage renal disease (ESRD) leading to hemodialysis occurs more in men than in women, and it is still increasing (21). It



worth to indicate that, in a survey by Motamedi et.al (2009), there was a significant relationship between awareness and patients' gender in behaviors preventing Aleppo boil (22).

## Conclusion

Although, announcing this requires more studies, according to the difference in awareness and gender-oriented needs of hemodialysis patients, the necessity of different educational courses for hemodialysis men and women is proposed.

## Footnotes

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## Conflict of Interest:

The authors declared no conflict of interest.

## References

1. Narimani K. A Study of the Effect of Self-Care Training on the Hemodialysis Patients' Quality of Life. *J Shahed Univ* 2009;16(79):63-70. (Full Text in Persian)
2. Khoshknab Y, Keshavarz SA. The survey of nutrition status in patient with hemodialysis. *Behboud Quarterly* 2012;19(4):21. (Full Text in Persian)
3. Kashefani O, Entezari MH, Hossein M, Moheb Rsoul M, Sohrabi F, Torabi A. Correlation of inflammatory and nutrient intake in Isfahan hemodialysis patients. *Health Sys Res* 2010;6(2):344-350. (Full Text in Persian)
4. Rashid Farrokhi F, Madj Zade N, Dehghani M. The evaluation of dietary protein intake by calculation of urea generation rate in chronic dialysis patients in Kerman, 2002. *J Kerman Univ Med Sci* 2001;11(4):193-199. (Full Text in Persian)
5. Smith D, Smeltzer. *Brunner and Suddarths Text book of Medical surgical Nursing*. Nassabe Z, Hazrati M, Translator. Tehran: Salemi Published; 2007. P. 77,82. (Persian)
6. Rezai Dehaghani A, Hosseini H, Tavakol Kh, Bakhtiyari S. The effect of diet on blood pressure and weight in hemodialysis patients in Kashan city. *Iranian J Nurs Midwif Res* 2005;1(29):128-132. (Full Text in Persian)
7. Khalili M. Nutrition Dietary in Renal Patients. *Shafa J* 1993; 27(17):21-25. (Full Text in Persian)
8. Rambod M, Tolouian R. Dietary sodium and clinical outcome in hemodialysis; Where do we stand and what is next? *Kidney Int* 2012;82(2):130-132.
9. Kazuhiko K, Fukuma Sh, Wakita T, Ninomiya T, Nagata M, Yoshida H, et al. Dietary Patterns, Clinical Outcomes in hemodialysis patients in Japan: a cohort study. *PLOS one* 2015; 10(1): e0116677.
10. Talebpour B, Hosseini F. The effect of diet education on the effectiveness of hemodialysis in patients with chronic renal failure in Shahid Beheshti hospital. *Sci J Zanzan* 2001;9(36):60-65. (Full Text in Persian)
11. Cupisti A, D'Alessandro C, Valeri A, Capitanini A, Meola M, Betti G, Barsotti G. Food intake and nutritional status in stable hemodialysis patients. *Ren Fail* 2010;32(1):47-54.
12. Sharifirad R, Tol A, Mohebi S, Matlabi M, Shahnazi H, Shahsiah M. The effectiveness of nutrition education program based on health belief model compared with traditional training. *J Educ Health Promot* 2013;2:15.
13. Taylor D, Bury M, Campling N, Carter S, Garfied S, Newbould J, et al. A Review of the use of the HBM, The theory of reasoned action, The theory of planned behavior and the Trans-Theoretical Model to study and predict health related behavior change. London: National Institute for Health and Clinical Excellence; 2007. P. 3.
14. Ogen J. *Health Pycology Text book*. 5<sup>th</sup> ed. NewYork: Open University Press; 2012. P. 1-383.
15. Mazaheri M, Ramadankhani A, Dehdari T. The effect of health education based on health belief model (HBM) for promoting preventive behavior of tooth decay among the boy students, who are in five-grade in the primary school. *Payesh* 2012;11(4):415-423. (Full Text in Persian)
16. Mokhtari L, Ghodsi H, Asiri S, Kazemnejad L. Relationship between health belief model and smoking among boy students at Guilan university of medical

sciences. J Guilan Univ Med Sci 2013;22(85):33-41.  
(Full Text in Persian)

17. Namdar A, Beigizade Sh, Naghizade MM. Measuring Health Belief Model components in adopting preventive behaviors of cervical cancer. J Fasa Univ Med Sci 2012;2(1):34-44. (Full Text in Persian)
18. Armstrong SN, Anderson M, Le ET, Nguyen LH. Application of Health belief model to Bariatric Surgery. Gastroenterol Nurs 2009 May-Jun;32(3):171-8
19. Peyman N, Moghaddas M. Value of the Health Belief Model in predicting preventive behaviors of occupational accidents among building workers. Payesh (2013);12(5):527-534. (Full Text in Persian)
20. Kara B. Health Beliefs Related to Salt-Restricted Diet in Patients on Hemodialysis: Psychometric Evaluation of the Turkish Version of the Beliefs About Dietary Compliance Scale. J Transcult Nurs 2014;25(3):256-264.
21. Nakai S, Akiba T, Kazama J, Yokoyama K, Fukagawa M, Tominaga Y, et al. Effects of serum calcium, phosphorous, and intact parathyroid hormone levels on survival in chronic hemodialysis patients in Japan. Ther Apher Dial 2008;12(1):49-54.
22. Motamedi N, Hejazi SH, Hazavei MM. The Effect of education based on health belief model on promoting preventive behaviors of cutaneous leishmaniasis. J of Mil Med 2009;11(4):231-236. (Full Text in Persian)