Need assessment of hemodialysis patients to improve dialysis adequacy in Iran: a qualitative study

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ABSTRACT

Introduction: The assessment and improvement of dialysis adequacy have an important place in the care plan of dialysis patients. Thus, identifying factors affecting dialysis adequacy and how to enhancing the adequacy is essential. This study aimed to assess educational and caring needs among hemodialysis patients to improve dialysis adequacy. **Method:** This was a qualitative study. A sample of patients, families, nursing staff and physician in hemodialysis unit took part in the study. To collect data all participants were interviewed. The focus of the interview was on assessing patients’ educational and caring needs. The interviews were analyzed using MAXQDA software. Results: In all 13 participants agreed to be interviewed and the following themes extracted from interviews and indicated that hemodialysis patients’ needs were a subset of these themes: lifestyle, the hemodialysis disease complications, problems related to adherence of treatment, and issues related to financial, mental, management and educational needs. Conclusion: Patients, families, and clinical staff indicated a wide range of educational and caring needs. However, to improve hemodialysis adequacy the most important intervention seems to be nursing and clinical staff training so that they could educate patients and families.

Keywords: needs, hemodialysis patients, dialysis adequacy.

1. INTRODUCTION

Complications arising from various diseases often affect different parts of the person's life. Considering that complication rate of some diseases significantly effects on the person's life, therefore, comprehensive studies are needed to alleviate these complications. One of this important disease is chronic renal failure defined as a progressive, irreversible kidney function disorder. Reports have shown that 2 to 3 percent of the world's population suffers from this disease which the most commonly used method of treatment is hemodialysis today (1, 2). The prevalence of chronic renal failure in throughout the world is 242 per million and approximately 8% annually is added to this amount (3). According to the latest statistics reported by the Iranian Center for Transplant and Specific Diseases, the number of patients with advanced renal failure in Iran is around 25 thousand (4). Hemodialysis is the most common methods of treatment for this group of patients, in which water and waste products produced in the body during various functions, are removed from the body if they accumulated in the body led to discomfort, inefficiency for the individual (5, 6). Studies have determined that about 90% of patients with chronic renal failure are undergoing hemodialysis and hemodialysis increases life expectancy and improves quality of life. Although hemodialysis patients experience significant changes during treatment and life, they often will face different problems (7, 8). The dialysis adequacy is a term that used to more and more decrease the problems of hemodialysis patients. Studying and improvement of dialysis adequacy have an important place in the care plan and given the fact that whatever dialysis is done the better the patients will have better state and higher life expectancy as well as fewer complication, thus it is important to recognize factors affecting on improving dialysis adequacy and how to enhance the adequacy, therefore in dialysis like any treatment plan we must able to measure its adequacy (9, 10). In other words, if dialysis which is done is not enough the adequacy, the level of waste products in the blood and clinical signs are not well- controlled and the rate of disability and mortality in hemodialysis patients will increase subsequently. There are many known factors influencing dialysis adequacy including diet, type of filter, the circle of the device pump, time of dialysis, the existence of comorbidity (especially diabetes) and finally the adherence of treatment by patients (11, 12). Patients with an advanced, chronic renal failure who underwent treatment with hemodialysis have different problems and essential changes in life pattern due to multiple and complex medical treatments which affect their mental and social function. Since hemodialysis treatment is a long-term process, these patients need to use a series of strategies to better cope and manage their illness; on the other hand, the treatment of these patients cannot be effective enough without the participation of the patient which obtaining th...
needs for the hemodialysis patients in Ayatollah Taleghani Hospital, Urmia; current study aimed to assess educational / caring needs of the hemodialysis patients to improve dialysis adequacy the patients.

2. METHODS

Design and procedure: The current research was a qualitative study. Participants were interviewed. Given that up to reach data saturation stage and to receive repetitive data.

Participants and Data collection: The study population included all patients admitted to Ayatollah Taleghani Hospital Urmia in 2016 their families, nurses and physicians who worked on hemodialysis unit. Inclusion criteria for participant patient were having consent to take part in the study and at least for six months underwent hemodialysis. The interview was conducted by the participants, the number of participants in this study was eight patients treated with hemodialysis, two their families, two nurses and one physician worked at dialysis unit.

Analysis: The data extracted from the interview were analyzed by MAXQDA software version 12, and finally, they were reported as a subcategory, category, and theme.

Ethics: The ethics committee of the Uromieh University of the Medical Sciences approved the study.

3. RESULTS

Participants: The number of participants in the study was 13. Five male patients and 3 female patients participated in the study, with an average age of 48 years and a mean dialysis of 5.5 years. Also, 2 nurses and 1 physician with a median 6 years’ work experience for nurses and 11 years for a doctor participated in the study. For further information, 2 families of dialysis patients were interviewed (Table 1).

After interviewing the participants and extracting the interview data, 273 concepts were extracted. The data were analyzed by MAXQDA software. 86 subcategories were made from concepts and according to the same content in it, 30 categories were extracted, and finally, 8 themes from these categories were taken, including lifestyle, hemodialysis disease complications, problems related to adherence to treatment, and issues related to cultural, financial, mental, management and educational needs (Table 2).

Table 1 Participants characteristics

<table>
<thead>
<tr>
<th>Patients</th>
<th>Clinical staff</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>48</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2 The extracting of theme from category based on interviewed data

<table>
<thead>
<tr>
<th>Theme</th>
<th>Category</th>
</tr>
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<tbody>
<tr>
<td>1 Lifestyle</td>
<td>Lack of physical activity</td>
</tr>
<tr>
<td></td>
<td>Hopeless</td>
</tr>
<tr>
<td></td>
<td>Lack of life skills</td>
</tr>
<tr>
<td>2 hemodialysis complications</td>
<td>Complication of hemodialysis</td>
</tr>
<tr>
<td>3 problems related to adherence to treatment</td>
<td>Salt limitation</td>
</tr>
<tr>
<td></td>
<td>Diet regimen</td>
</tr>
<tr>
<td></td>
<td>Water drinking limitation</td>
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<tr>
<td></td>
<td>Medications follow up</td>
</tr>
<tr>
<td>4 Cultural issue</td>
<td>Cultural barriers</td>
</tr>
<tr>
<td>5 Financial issues</td>
<td>Impaired medical follow up</td>
</tr>
<tr>
<td></td>
<td>Diet regimen</td>
</tr>
</tbody>
</table>
Lifestyle: the content that led to the creation of a lifestyle theme in the interview with the participants were: lack of patients' physical activity, role of family to give hope to patients is pale, lack of life expectancy in the patients, there isn't life expectancy or is low, hopeless in patients prevents the adoption of a therapeutic treatment, failure to adhere to diet in parties, and lack of skill "not saying" in parties by the patients.

The hemodialysis complications: the content that led to the creation of the hemodialysis disease complications theme was: complications of dialysis during hemodialysis, problems and complications after dialysis at home, and there are marital issues due to dialysis.

Problems related to adherence of treatment: the content that led to the creation of problems related to adherence of treatment theme were: unable to comply with consuming salt, unable to comply with diet regimen, being stomach, to excuse of dialysis machine function, they don't adhere to diet regimen, the wife doesn't help to cook the dialysis food, unable or non-cooperation by family members to supply separately food, patient hasn't willing for recommended food, unable to comply with fluid, great temptation to drink water, patients drink water to decrease the stresses, and unable to follow up medical treatments or orders.

Cultural issues: the content that led to the creation of the cultural issues was: there are cultural obstacles to implementation of curriculum or treatment plans.

Financial issues: The content that led to the creation of the financial issues were: there is financial issue for supply medication, financial issue impedes therapeutic medication, financial issue lead to depression, there is a financial issue for supply of recommended diet regimen, unemployment and lack of money income, the existence of transportation barriers due to poverty, and there are financial issues in managing life affairs.

Mental issues: The content that led to the creation of the mental issues were: not afraid of the dialysis complications is main cause of non-compliance with therapeutic plan, the patients' negative aspect of their life impede performing the educational plan, appearance of depression after dialysis, low willingness of patients to comply with treatment, dialysis patient is treated with pity and compassion, patients do not consider themselves ill and therefore do not need to adhere to the plan, and patients keep their disease hidden from others.

Management issues: The content that led to the creation of a management issues theme were: the dialysis unit is blind to the patient, the absence of comfort in unit, the existence of health problems in the ward, the lack of order in the ward, the absence of peace in the ward, the lack of modern dialysis device, lack of medical facilities, the nurses aren't serious about dialysis of patients, the Lack of staffs strict about commitment patients to comply with treatment program, the workability of nurses lowers the quality of work, not spending enough time to solve patients' problems during dialysis patients, the lack of psychologists consular in hemodialysis unit, the effect of job dissatisfaction on the quality of personnel and patient's dialysis, reduced staff efficacy due to the large amount of nurses' work, failure to deal with patients, the lack of respect for patients, lack of nurses' attention to the quality of

<table>
<thead>
<tr>
<th>6 Mental issues</th>
<th>7 Management issues</th>
<th>8 Educational issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afraid of the dialysis</td>
<td>Dialysis machines and medical equipment</td>
<td>Related to patient</td>
</tr>
<tr>
<td>Negative aspect of life</td>
<td>Importance of hemodialysis</td>
<td>Understanding educational contents</td>
</tr>
<tr>
<td>Depression</td>
<td>Psychiatrist</td>
<td>Relevant to staff</td>
</tr>
<tr>
<td>Low willingness</td>
<td>Staff efficacy</td>
<td></td>
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<tr>
<td>Pity and compassion</td>
<td>Dialysis schedule</td>
<td></td>
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<tr>
<td>Denial disease</td>
<td>Respect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social worker</td>
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work and care of patients, improper management of dialysis schedule in terms of distance for reservation, distance aspect is cause of lagging to start dialysis and decrement of 4-hour dialysis, disregarding to the patient by nurse, the lack of communication with patients, ignoring comments hemodialysis patients in the hemodialysis ward, improper management responsible for dealing with the patient and solving their problems, and the lack of social worker in the ward.

**Educational issues:** The content that led to the creation of the theme of an educational issue were: unbelieving to education and its effect, low level of patients’ literacy, without repeating the training plan and don’t need to recall education by the patient, patients did not justify their concerns. After kidney disease, lack of awareness among patients of a treatment plan that must be performed, unawareness of patients from dialysis process, forgotten educational materials from patients, ignoring to perform of educational cases by the patients, impact of illiteracy on the rejection of the educational program, the lack of an educational program with content that is understandable to everyone, non-matching educational content with patient literacy, the inadequacy of the curriculum for illiterate patients, lack of family education based on cooperation in compliance with the patient’s treatment plan, lack of individual education program, nurses and physician do not take the training seriously, do not follow the educational curriculum, staff don’t take enough education, staff don’t teach anything, training to nurses in term of educating the patient, training to nurses regarding proper using of dialysis device, uninteresting physicians to educating and justifying to the patients, absence one person educator who training an approval educational process, lack of good attention to the teaching of patients by nurses and doctors, the lack of a written education program to dialysis patient by the hospital, and the lack of nurses’ familiarity with the principles of patient education.

4. DISCUSSION

Since the dialysis treatment was first introduced, various problems arising the disease has motivated interest of many researchers especially when researchers were aware of the relationship between some of these psychosocial problems and the outcomes of the disease (11, 12). Of course, some therapeutic strategies produced to deal with these problems has imposed various challenges to physicians, nurses, and specialists who deal with hemodialysis patients (16, 17). Each of the two main treatment for renal failure i.e. hemodialysis and kidney implant has specific and various complications and they may cause many problems to the person (18). While hemodialysis patients must coordinate themselves to dietary – therapeutic regimens of dialysis, the health care provider team also must provide complex care plans for this group of patients who have multiple medical issues and take many drugs (16, 17). Caring staff needs to apply strategies to better understand the positive impact of dialysis treatment on a patient, its effects on activity patient in daily life and his function ability in the family. It is difficult to assess effectively these effects. In our study, we focused on educational/ caring needs of hemodialysis patients.

Researchers have reported that lack of awareness and insufficient knowledge about appropriate diet, consumption liquid rate and care of vessel pathway in hemodialysis patients has caused a variety of problems and finally it will lead to various complications and mortality. Therefore, considering a chronic form of the disease and type of problems belong to the patients as well as the inefficiency of dialysis in eliminating these problems and necessity of continuous care, education can provide an active, informed participation of the patients to take care of themselves (19, 20). Moranti et al. (2014) have reported in this regard that education about not only improve dietary knowledge but also can improve laboratory indexes related to a diet including albumin, ferritin, iron, cholesterol, triglyceride, creatinine and urea two months after studying (21). Gargaza et al. also have introduced that counseling individual nutritional can improve some laboratory indexes related to nutrition such as albumin, calcium, phosphor, and potassium one month after the study (22). Prior studies have determined that with an increase in the number of dialysis sessions and nutrition reform of the patients them the quality of life increase significantly (23). The results of our study showed in this regard that one of the needs suggested by patients is the lack of access to and an unawareness of the diet.

Hemodialysis is a high technology-based treatment approach that is used as an effective method of renal failure therapy. These patients are often faced with many physical and psychological stressors that are not even controlled with new advancements (24). Researchers have shown that the total of these physical, psychological and social problems often leads to diminished dialysis adequacy in hemodialysis patients (25). As previously mentioned, when the quality of life will improve that the waste products removed from the body at the optimum rate which as it shows high dialysis adequacy. The studies had determined that the prevalence of sleep disorders in patients with chronic uremia is high in comparison with the general population and it developed by following disrupt cognitive functions in hemodialysis patients (26).

Another problem for the patients in this regard was a mental disorder and disease complications. Sadeghi et al. in 2010 have recommended that running the continuous care model has a positive effect on hemodialysis patients’ the quality of sleep and they also suggested that nurses training about the use of this model can be effective on improving the patients’ quality of sleep (27). Molahadi et al., in 2009 have reported that depression, anxiety, and stress have a high prevalence on hemodialysis patients and
patients with kidney implant, which is higher in hemodialysis patients, therefore, it seems to be necessary strict and rapid diagnose of psychiatric problems and treatment of it. It is also recommended for these patients educating the control and prevention methods of the depression, anxiety, and stress (28). Dialysis is a stressful process that entails numerous social and psychological problems which can be the cause of mental disorder in the patients (29). Researchers have reported that these patients are always depressed for two reasons: the first they suffer from a chronic disease and the second cause is fear of death (30). In our study, one of the problems was a state of depression and unhappiness in the patients.

Although hemodialysis increases longevity, however, kidney disease affects patients' lives and in its advanced stages lead to dysfunction, changes in their state and their quality of life. Most of these patients lose their jobs over time and they are experiencing the economic problems (31). In this study, one of the most important is economic need referred by the patients. Given the fact that patients' efficacy regarding function was declined economic need of patients was justifiable, which it requires the support of charitable associations and relevant government officials. Researchers have been investigated the effective factor on dialysis adequacy and they have reported that among various influential factors, adherence to diet regimen and providing good education has the most important role. Although the nutritional knowledge of these patients is higher than other people, they still have mistaken in the use of food sources and adhere of the effective factors on improving the adequacy of dialysis (32). Shomali et al. (2013) investigated the effects of education on the rate of changes weight in hemodialysis patients in his study after analyzed the results they have reported that patient's training is the most important nursing practices which allow to health and prevention of disease complications (33). Morante et al. investigated the effect of training diet plan on hemodialysis patients' state have revealed that it is necessary to use of educational methods to improve nutrition level of hemodialysis patients and from the results of their study pointed that group nutrition training is a way to improve knowledge level and the serum indicators of nutrition in the patients (34). Garagarza et al., (2015) have concluded that Empowering patients to achieve effective dialysis and improve nutritional status through education are an important step in enhancing self-care ability of the patients (35). Hassanzadeh et al., (2012) have introduced that education is an important part of improving the attitude associated with compliance with diet and fluids in hemodialysis patients (36). From the studies mentioned above, it can be concluded that although training is known as the first essential step by a nurse working at the unit when the patient is hospitalized, not only it is important the training and how it is provided, but also individual and group face-to-face sessions and its repetition are essential in educating patients.

Researchers have realized that using combinational training is more effective among various educational methods. Several studies have defined the combinational training as using of two or more educational methods including individual, group, lecture, distance learning as well as using of educational aids such as the presentation of video, providing pamphlet, follow up by telephone and E-learning. Combinational training allows for better and deep learning (37).

5. CONCLUSION
Considering the results from our study, it is recommended for improving dialysis adequacy of hemodialysis patients the quality of nursing care should be improved at the same time the effective educating to the patients and families also put on the top of therapeutic/caring practices. Also, considering the low-income level of these persons and the potential effect of financial probabilities on compliance with the plan of dietary and medicine, it considers to support patient's financial status and providing welfare for them. On the other hand, given the many data received on the theme of management issues, the attention of head nurses in the hemodialysis department to the content of the category and subcategory obtained from participants interviews and to resolve the problems presented in it, can improve the adequacy of dialysis.

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AUTHORS’ CONTRIBUTION
Hossein Esmaili was the main investigator, collected the data and wrote the first draft. Fereshteh Majlessi and Ali Montazeri took the lead in writing the manuscript and paper. Saharnaz Nedjat, Roya Sadeghi, and Javad Zeinali discussed the results and commented on the manuscript.
CONFLICT OF INTEREST
The authors declare that they have no competing interest.

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